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# **Pylint Documentation**

***Release 2.6.2***

**Logilab, PyCQA and contributors**

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Pylint is a tool that checks for errors in Python code, tries to enforce a coding standard and looks for code smells. It can also look for certain type errors, it can recommend suggestions about how particular blocks can be refactored and can offer you details about the code's complexity.



### 1.1 What is Pylint?

Pylint is a tool that checks for errors in Python code, tries to enforce a coding standard and looks for `code smells`. It can also look for certain type errors, it can recommend suggestions about how particular blocks can be refactored and can offer you details about the code's complexity.

Other similar projects would include `pychecker` (now defunct), `pyflakes`, `flake8`, and `mypy`. The default coding style used by Pylint is close to [PEP 8](#).

Pylint will display a number of messages as it analyzes the code and it can also be used for displaying some statistics about the number of warnings and errors found in different files. The messages are classified under various categories such as errors and warnings.

Last but not least, the code is given an overall mark, based on the number and severity of the warnings and errors.

### 1.2 What Pylint is not?

What Pylint says is not to be taken as gospel and Pylint isn't smarter than you are: it may warn you about things that you have conscientiously done.

Pylint tries hard to report as few false positives as possible for errors, but it may be too verbose with warnings. That's for example because it tries to detect things that may be dangerous in a context, but are not in others, or because it checks for some things that you don't care about. Generally, you shouldn't expect Pylint to be totally quiet about your code, so don't necessarily be alarmed if it gives you a hell lot of messages for your project!

The best way to tackle pylint's verbosity is to:

- enable or disable the messages or message categories that you want to be activated or not for when pylint is analyzing your code. This can be done easily through a command line flag. For instance, disabling all convention messages is simple as a `--disable=C` option added to pylint command.
- create a custom configuration file, tailored to your needs. You can generate one using pylint's command `--generate-rcfile`.





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## 2.1 Intro

Beginner to coding standards? Pylint can be your guide to reveal what's really going on behind the scenes and help you to become a more aware programmer.

Sharing code is a rewarding endeavor. Putting your code `out there` can be either an act of philanthropy, `coming of age`, or a basic extension of belief in open source. Whatever the motivation, your good intentions may not have the desired outcome if people find your code hard to use or understand. The Python community has formalized some recommended programming styles to help everyone write code in a common, agreed-upon style that makes the most sense for shared code. This style is captured in [PEP 8](#), the "Style Guide for Python Code". Pylint can be a quick and easy way of seeing if your code has captured the essence of [PEP 8](#) and is therefore `friendly` to other potential users.

Perhaps you're not ready to share your code but you'd like to learn a bit more about writing better code and don't know where to start. Pylint can tell you where you may have run astray and point you in the direction to figure out what you have done and how to do better.

This tutorial is all about approaching coding standards with little or no knowledge of in-depth programming or the code standards themselves. It's the equivalent of skipping the manual and jumping right in.

My command line prompt for these examples is:

```
robertk01 Desktop$
```

## 2.2 Getting Started

Running Pylint with no arguments will invoke the help dialogue and give you an idea of the arguments available to you. Do that now, i.e.:

```
robertk01 Desktop$ pylint
...
a bunch of stuff
...
```

A couple of the options that we'll focus on here are:

```
Commands:
  --help-msg=<msg-id>
  --generate-rcfile
Messages control:
  --disable=<msg-ids>
Reports:
  --reports=<y_or_n>
  --output-format=<format>
```

If you need more detail, you can also ask for an even longer help message, like so:

```
robertk01 Desktop$ pylint --long-help
...
Even more stuff
...
```

Pay attention to the last bit of this longer help output. This gives you a hint of what Pylint is going to pick on:

```
Output:
Using the default text output, the message format is :
MESSAGE_TYPE: LINE_NUM:[OBJECT:] MESSAGE
There are 5 kind of message types :
* (C) convention, for programming standard violation
* (R) refactor, for bad code smell
* (W) warning, for python specific problems
* (E) error, for probable bugs in the code
* (F) fatal, if an error occurred which prevented pylint from doing
further processing.
```

When Pylint is first run on a fresh piece of code, a common complaint is that it is too *noisy*. The current default configuration is set to enforce all possible warnings. We'll use some of the options I noted above to make it suit your preferences a bit better (and thus make it emit messages only when needed).

## 2.3 Your First Pylint'ing

We'll use a basic Python script as fodder for our tutorial. The starting code we will use is called `simplecaesar.py` and is here in its entirety:

```
1  #!/usr/bin/env python3
2
3  import string
4
5  shift = 3
6  choice = input("would you like to encode or decode?")
7  word = input("Please enter text")
8  letters = string.ascii_letters + string.punctuation + string.digits
9  encoded = ''
10 if choice == "encode":
```

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```

11     for letter in word:
12         if letter == ' ':
13             encoded = encoded + ' '
14         else:
15             x = letters.index(letter) + shift
16             encoded=encoded + letters[x]
17 if choice == "decode":
18     for letter in word:
19         if letter == ' ':
20             encoded = encoded + ' '
21         else:
22             x = letters.index(letter) - shift
23             encoded = encoded + letters[x]
24
25 print(encoded)

```

Let's get started.

If we run this:

```

robertk01 Desktop$ pylint simplecaesar.py
***** Module simplecaesar
simplecaesar.py:16:19: C0326: Exactly one space required around assignment
                        encoded=encoded + letters[x]
                        ^ (bad-whitespace)
simplecaesar.py:1:0: C0111: Missing module docstring (missing-docstring)
simplecaesar.py:5:0: C0103: Constant name "shift" doesn't conform to UPPER_CASE_
↳naming style (invalid-name)
simplecaesar.py:6:0: C0103: Constant name "choice" doesn't conform to UPPER_CASE_
↳naming style (invalid-name)
simplecaesar.py:7:0: C0103: Constant name "word" doesn't conform to UPPER_CASE naming_
↳style (invalid-name)
simplecaesar.py:8:0: C0103: Constant name "letters" doesn't conform to UPPER_CASE_
↳naming style (invalid-name)
simplecaesar.py:9:0: C0103: Constant name "encoded" doesn't conform to UPPER_CASE_
↳naming style (invalid-name)

-----
Your code has been rated at 6.32/10

```

Previous experience taught me that the default output for the messages needed a bit more info. We can see the second line is:

```
"simplecaesar.py:1:0: C0111: Missing module docstring (missing-docstring)"
```

This basically means that line 1 violates a convention C0111. It's telling me I really should have a docstring. I agree, but what if I didn't fully understand what rule I violated. Knowing only that I violated a convention isn't much help if I'm a newbie. Another piece of information there is the message symbol between parens, `missing-docstring` here.

If I want to read up a bit more about that, I can go back to the command line and try this:

```

robertk01 Desktop$ pylint --help-msg=missing-docstring
:missing-docstring (C0111): *Missing %s docstring*
Used when a module, function, class or method has no docstring. Some special
methods like __init__ don't necessarily require a docstring. This message
belongs to the basic checker.

```

Yeah, ok. That one was a bit of a no-brainer, but I have run into error messages that left me with no clue about what went wrong, simply because I was unfamiliar with the underlying mechanism of code theory. One error that puzzled my newbie mind was:

```
:too-many-instance-attributes (R0902): *Too many instance attributes (%s/%s)*
```

I get it now thanks to Pylint pointing it out to me. If you don't get that one, pour a fresh cup of coffee and look into it - let your programmer mind grow!

## 2.4 The Next Step

Now that we got some configuration stuff out of the way, let's see what we can do with the remaining warnings.

If we add a docstring to describe what the code is meant to do that will help. There are 5 `invalid-name` messages that we will get to later. Lastly, I violated the convention of using spaces around an operator such as `=` so I'll fix that too. To sum up, I'll add a docstring to line 2, and put spaces around the `=` sign on line 16.

Here is the updated code:

```
1  #!/usr/bin/env python3
2  """This script prompts a user to enter a message to encode or decode
3  using a classic Caesar shift substitution (3 letter shift)"""
4
5  import string
6
7  shift = 3
8  choice = input("would you like to encode or decode?")
9  word = input("Please enter text")
10 letters = string.ascii_letters + string.punctuation + string.digits
11 encoded = ''
12 if choice == "encode":
13     for letter in word:
14         if letter == ' ':
15             encoded = encoded + ' '
16         else:
17             x = letters.index(letter) + shift
18             encoded = encoded + letters[x]
19 if choice == "decode":
20     for letter in word:
21         if letter == ' ':
22             encoded = encoded + ' '
23         else:
24             x = letters.index(letter) - shift
25             encoded = encoded + letters[x]
26
27 print(encoded)
```

Here is what happens when we run it:

```
robertk01 Desktop$ pylint simplecaesar.py
***** Module simplecaesar
simplecaesar.py:7:0: C0103: Constant name "shift" doesn't conform to UPPER_CASE_
↳ naming style (invalid-name)
simplecaesar.py:8:0: C0103: Constant name "choice" doesn't conform to UPPER_CASE_
↳ naming style (invalid-name)
simplecaesar.py:9:0: C0103: Constant name "word" doesn't conform to UPPER_CASE naming_
↳ style (invalid-name)
```

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```
simplecaesar.py:10:0: C0103: Constant name "letters" doesn't conform to UPPER_CASE_
↳naming style (invalid-name)
simplecaesar.py:11:0: C0103: Constant name "encoded" doesn't conform to UPPER_CASE_
↳naming style (invalid-name)

-----
Your code has been rated at 7.37/10 (previous run: 6.32/10, +1.05)
```

Nice! Pylint told us how much our code rating has improved since our last run, and we're down to just the `invalid-name` messages.

There are fairly well defined conventions around naming things like instance variables, functions, classes, etc. The conventions focus on the use of UPPERCASE and lowercase as well as the characters that separate multiple words in the name. This lends itself well to checking via a regular expression, thus the **should match** `(([A-Z_][A-Z1-9_]*)|(_.*)_*)$`.

In this case Pylint is telling me that those variables appear to be constants and should be all UPPERCASE. This is an in-house convention that has lived with Pylint since its inception. You too can create your own in-house naming conventions but for the purpose of this tutorial, we want to stick to the [PEP 8](#) standard. In this case, the variables I declared should follow the convention of all lowercase. The appropriate rule would be something like: "should match `[a-z_][a-z0-9_]{2,30}$`". Notice the lowercase letters in the regular expression (a-z versus A-Z).

If we run that rule using a `--const-rgx='[a-z_][a-z0-9_]{2,30}$'` option, it will now be quite quiet:

```
robertk01 Desktop$ pylint --const-rgx='[a-z_][a-z0-9_]{2,30}$' simplecaesar.py

-----
Your code has been rated at 10.00/10 (previous run: 7.37/10, +2.63)
```

Regular expressions can be quite a beast so take my word on this particular example but go ahead and [read up](#) on them if you want.

---

**Tip:** It would really be a pain to specify that regex on the command line all the time, particularly if we're using many other options. That's what a configuration file is for. We can configure our Pylint to store our options for us so we don't have to declare them on the command line. Using a configuration file is a nice way of formalizing your rules and quickly sharing them with others. Invoking `pylint --generate-rcfile` will create a sample rcfile with all the options set and explained in comments.

---

That's it for the basic intro. More tutorials will follow.



## 3.1 Installation

### 3.1.1 Python packages

Pylint should be easily installable using pip.

```
pip install pylint
```

### 3.1.2 Source distribution installation

From the source distribution, extract the tarball, go to the extracted directory and simply run

```
python setup.py install
```

Or you can install it in editable mode, using

```
python setup.py develop
```

## 3.2 Running Pylint

### 3.2.1 Invoking Pylint

Pylint is meant to be called from the command line. The usage is

```
pylint [options] modules_or_packages
```

You should give Pylint the name of a python package or module, or some number of packages or modules. Pylint will not import this package or module, though uses Python internals to locate them and as such is subject

to the same rules and configuration. You should pay attention to your `PYTHONPATH`, since it is a common error to analyze an installed version of a module instead of the development version.

It is also possible to analyze Python files, with a few restrictions. The thing to keep in mind is that Pylint will try to convert the file name to a module name, and only be able to process the file if it succeeds.

```
pylint mymodule.py
```

should always work since the current working directory is automatically added on top of the python path

```
pylint directory/mymodule.py
```

will work if `directory` is a python package (i.e. has an `__init__.py` file or it is an implicit namespace package) or if "directory" is in the python path.

For more details on this see the [Frequently Asked Questions](#).

It is also possible to call Pylint from another Python program, thanks to the `Run()` function in the `pylint.lint` module (assuming Pylint options are stored in a list of strings `pylint_options`) as:

```
import pylint.lint
pylint_opts = ['--version']
pylint.lint.Run(pylint_opts)
```

To silently run Pylint on a `module_name.py` module, and get its standard output and error:

```
from pylint import epylint as lint
(pylint_stdout, pylint_stderr) = lint.py_run('module_name.py', return_std=True)
```

## 3.2.2 Command line options

First of all, we have two basic (but useful) options.

- |                   |  |
|-------------------|--|
| <b>--version</b>  | show program's version number and exit   |
| <b>-h, --help</b> | show help about the command line options |

Pylint is architected around several checkers. You can disable a specific checker or some of its messages or message categories by specifying `--disable=<symbol>`. If you want to enable only some checkers or some message symbols, first use `--disable=all` then `--enable=<symbol>` with `<symbol>` being a comma-separated list of checker names and message symbols. See the list of available features for a description of provided checkers with their functionalities. The `--disable` and `--enable` options can be used with comma-separated lists mixing checkers, message ids and categories like `-d C,W,no-error,design`

It is possible to disable all messages with `--disable=all`. This is useful to enable only a few checkers or a few messages by first disabling everything, and then re-enabling only what you need.

Each checker has some specific options, which can take either a yes/no value, an integer, a python regular expression, or a comma-separated list of values (which are generally used to override a regular expression in special cases). For a full list of options, use `--help`

Specifying all the options suitable for your setup and coding standards can be tedious, so it is possible to use a configuration file to specify the default values. You can specify a configuration file on the command line using the `--rcfile` option. Otherwise, Pylint searches for a configuration file in the following order and uses the first one it finds:

1. `pylintrc` in the current working directory
2. `.pylintrc` in the current working directory



3. `pyproject.toml` in the current working directory, providing it has at least one `tool.pylint.` section.
4. `setup.cfg` in the current working directory, providing it has at least one `pylint.` section
5. If the current working directory is in a Python module, Pylint searches up the hierarchy of Python modules until it finds a `pylintrc` file. This allows you to specify coding standards on a module-by-module basis. Of course, a directory is judged to be a Python module if it contains an `__init__.py` file.
6. The file named by environment variable `PYLINTRC`
7. if you have a home directory which isn't `/root`:
  1. `.pylintrc` in your home directory
  2. `.config/pylintrc` in your home directory
8. `/etc/pylintrc`

The `--generate-rcfile` option will generate a commented configuration file on standard output according to the current configuration and exit. This includes:

- Any configuration file found as explained above
- Options appearing before `--generate-rcfile` on the Pylint command line

Of course you can also start with the default values and hand-tune the configuration.

Other useful global options include:

- `--ignore=<file[,file...]>`** Add files or directories to the blacklist. They should be base names, not paths.
- `--output-format=<format>`** Select output format (text, json, custom).
- `--msg-template=<template>`** Modify text output message template.
- `--list-msgs`** Generate pylint's messages.
- `--list-msgs-enabled`** Display a list of what messages are enabled and disabled with the given configuration.
- `--full-documentation`** Generate pylint's full documentation, in reST format.

### 3.2.3 Parallel execution

It is possible to speed up the execution of Pylint. If the running computer has more CPUs than one, then the work for checking all files could be spread across all cores via Pylint's sub-processes. This functionality is exposed via the `-j` command-line parameter. If the provided number is 0, then the total number of CPUs will be autodetected and used.

Example:

```
pylint -j 4 mymodule1.py mymodule2.py mymodule3.py mymodule4.py
```

This will spawn 4 parallel Pylint sub-process, where each provided module will be checked in parallel. Discovered problems by checkers are not displayed immediately. They are shown just after checking a module is complete.

There are some limitations in running checks in parallel in the current implementation. It is not possible to use custom plugins (i.e. `--load-plugins` option), nor it is not possible to use initialization hooks (i.e. the `--init-hook` option).

### 3.2.4 Exit codes

Pylint returns bit-encoded exit codes. If applicable, the table below lists the related stderr stream message output.

exit code	meaning	stderr stream message
0	no error	
1	fatal message issued	
2	error message issued	
4	warning message issued	
8	refactor message issued	
16	convention message issued	
32	usage error	<ul style="list-style-type: none"><li>• "internal error while receiving resultsfrom child linter" "Error occurred, stopping the linter."</li><li>• "&lt;return of linter.help()&gt;"</li><li>• "Jobs number &lt;#&gt; should be greater than 0"</li></ul>

## 3.3 Pylint output

The default format for the output is raw text. You can change this by passing pylint the `--output-format=<value>` option. Possible values are: json, parseable, colorized and msvs (visual studio).

Moreover you can customize the exact way information are displayed using the `-msg-template=<format string>` option. The *format string* uses the [Python new format syntax](#) and the following fields are available :

**path** relative path to the file

**abspath** absolute path to the file

**line** line number

**column** column number

**module** module name

**obj** object within the module (if any)

**msg** text of the message

**msg\_id** the message code (eg. I0011)

**symbol** symbolic name of the message (eg. locally-disabled)

**C** one letter indication of the message category

**category** fullname of the message category

For example, the former (pre 1.0) default format can be obtained with:

```
pylint --msg-template='{msg_id}:{line:3d},{column}: {obj}: {msg}'
```

A few other examples:

- the default format:

```
{path}:{line}:{column}: {msg_id}: {msg} ({symbol})
```

- Visual Studio compatible format (former 'msvs' output format):

```
{path}({line}): [{msg_id}{obj}] {msg}
```

- Parseable (Emacs and all, former 'parseable' output format) format:

```
{path}:{line}: [{msg_id}({symbol}), {obj}] {msg}
```

### 3.3.1 Source code analysis section

For each python module, Pylint will first display a few '\*' characters followed by the name of the module. Then, a number of messages with the following format:

```
MESSAGE_TYPE: LINE_NUM:[OBJECT:] MESSAGE
```

You can get another output format, useful since it's recognized by most editors or other development tools using the `--output-format=parseable` option.

The message type can be:

- [I]nformational messages that Pylint emits (do not contribute to your analysis score)
- [R]efactor for a "good practice" metric violation
- [C]onvention for coding standard violation
- [W]arning for stylistic problems, or minor programming issues
- [E]rror for important programming issues (i.e. most probably bug)
- [F]atal for errors which prevented further processing

Sometimes the line of code which caused the error is displayed with a caret pointing to the error. This may be generalized in future versions of Pylint.

Example (extracted from a run of Pylint on itself...):

```
***** Module pylint.checkers.format
W: 50: Too long line (86/80)
W:108: Operator not followed by a space
      print >>sys.stderr, 'Unable to match %r', line
          ^
W:141: Too long line (81/80)
W: 74:searchall: Unreachable code
W:171:FormatChecker.process_tokens: Redefining built-in (type)
W:150:FormatChecker.process_tokens: Too many local variables (20/15)
W:150:FormatChecker.process_tokens: Too many branches (13/12)
```

### 3.3.2 Reports section

Following the analysis message, Pylint can display a set of reports, each one focusing on a particular aspect of the project, such as number of messages by categories, modules dependencies. These features can be enabled through the `--reports=y` option, or its shorthand version `-rn`.

For instance, the metrics report displays summaries gathered from the current run.

- the number of processed modules
- for each module, the percentage of errors and warnings
- the total number of errors and warnings
- percentage of classes, functions and modules with docstrings, and a comparison from the previous run
- percentage of classes, functions and modules with correct name (according to the coding standard), and a comparison from the previous run
- a list of external dependencies found in the code, and where they appear

### 3.3.3 Score section

Finally, Pylint displays a global evaluation score for the code, rated out of a maximum score of 10.0. This output can be suppressed through the `--score=n` option, or its shorthand version `-sn`.

The evaluation formula can be overridden with the `--evaluation=<python_expression>` option.

## 3.4 Messages control

`pylint` has an advanced message control for its checks, offering the ability to enable / disable a message either from the command line or from the configuration file, as well as from the code itself.

For all of these controls, `pylint` accepts the following values:

- a symbolic message: `no-member`, `undefined-variable` etc.
- a numerical ID: `E1101`, `E1102` etc.
- The name of the group of checks. You can grab those with `pylint --list-groups`. For example, you can disable / enable all the checks related to type checking, with `typecheck` or all the checks related to variables with `variables`
- Corresponding category of the checks
  - C convention related checks
  - R refactoring related checks
  - W various warnings
  - E errors, for probable bugs in the code
  - F fatal, if an error occurred which prevented `pylint` from doing further processing.
- All the checks with `all`

### 3.4.1 Block disables

This describes how the pragma controls operate at a code level.

The pragma controls can disable / enable:

- All the violations on a single line

```
a, b = ... # pylint: disable=unbalanced-tuple-unpacking
```

- All the violations in a single scope

```
def test():
    # Disable all the no-member violations in this function
    # pylint: disable=no-member
    ...
```

- All the violations in a *block*. For instance, each separate branch of an `if` statement is considered a separate block, as in the following example:

```
def meth5(self):
    # pylint: disable=no-member
    # no error
    print(self.bla)
    if self.blop:
        # pylint: enable=no-member
        # disable all no-members for this block
        print(self.blip)
    else:
        # This is affected by the scope disable
        print(self.blip)
    # pylint: enable=no-member
    print(self.blip)
    if self.blop:
        # pylint: enable=no-member
        # disable all no-members for this block
        print(self.blip)
    else:
        # This emits a violation
        print(self.blip)
```

- If the violation occurs on a block starting line, then it applies only to that line

```
if self.blop: # pylint: disable=no-member; applies only to this line
    # Here we get an error
    print(self.blip)
else:
    # error
    print(self.blip)
```

Here's an example with all these rules in a single place:

```
"""pylint option block-disable"""

__revision__ = None

class Foo(object):
    """block-disable test"""

    def __init__(self):
        pass

    def meth1(self, arg):
        """this issues a message"""
        print(self)

    def meth2(self, arg):
        """and this one not"""
        # pylint: disable=unused-argument
```

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```

        print(self\
              + "foo")

def meth3(self):
    """test one line disabling"""
    # no error
    print(self.bla) # pylint: disable=no-member
    # error
    print(self.blop)

def meth4(self):
    """test re-enabling"""
    # pylint: disable=no-member
    # no error
    print(self.bla)
    print(self.blop)
    # pylint: enable=no-member
    # error
    print(self.blip)

def meth5(self):
    """test IF sub-block re-enabling"""
    # pylint: disable=no-member
    # no error
    print(self.bla)
    if self.blop:
        # pylint: enable=no-member
        # error
        print(self.blip)
    else:
        # no error
        print(self.blip)
    # no error
    print(self.blip)

def meth6(self):
    """test TRY/EXCEPT sub-block re-enabling"""
    # pylint: disable=no-member
    # no error
    print(self.bla)
    try:
        # pylint: enable=no-member
        # error
        print(self.blip)
    except UndefinedName: # pylint: disable=undefined-variable
        # no error
        print(self.blip)
    # no error
    print(self.blip)

def meth7(self):
    """test one line block opening disabling"""
    if self.blop: # pylint: disable=no-member
        # error
        print(self.blip)
    else:
        # error

```

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```

        print(self.blip)
    # error
    print(self.blip)

    def meth8(self):
        """test late disabling"""
        # error
        print(self.blip)
        # pylint: disable=no-member
        # no error
        print(self.bla)
        print(self.blop)

```

## 3.5 Configuration

### 3.5.1 Naming Styles

#### Introduction

Pylint recognizes a number of different name types internally. With a few exceptions, the type of the name is governed by the location the assignment to a name is found in, and not the type of object assigned.

Name Type	Description
module	Module and package names, same as the file names.
const	Module-level constants, any variable defined at module level that is not bound to a class object.
class	Names in <code>class</code> statements, as well as names bound to class objects at module level.
function	Functions, toplevel or nested in functions or methods.
method	Methods, functions defined in class bodies. Includes static and class methods.
attr	Attributes created on class instances inside methods.
argument	Arguments to any function type, including lambdas.
variable	Local variables in function scopes.
class-attribute	Attributes defined in class bodies.
inlinevar	Loop variables in list comprehensions and generator expressions.

#### Default behavior

By default, Pylint will enforce [PEP8](#)-suggested names.

#### Predefined Naming Styles

Pylint provides set of predefined naming styles. Those predefined naming styles may be used to adjust Pylint configuration to coding style used in linted project.

Following predefined naming styles are available:

- `snake_case`
- `camelCase`
- `PascalCase`

- UPPER\_CASE
- any - fake style which does not enforce any limitations

Following options are exposed:

```
--module-naming-style=<style>
--const-naming-style=<style>
--class-naming-style=<style>
--function-naming-style=<style>
--method-naming-style=<style>
--attr-naming-style=<style>
--argument-naming-style=<style>
--variable-naming-style=<style>
--class-attribute-naming-style=<style>
--inlinevar-naming-style=<style>
```

### Custom regular expressions

If predefined naming styles are too limited, checker behavior may be further customized. For each name type, a separate regular expression matching valid names of this type can be defined. If any of custom regular expressions are defined, it overrides `*-naming-style` option value.

Regular expressions for the names are anchored at the beginning, any anchor for the end must be supplied explicitly. Any name not matching the regular expression will lead to an instance of `invalid-name`.

```
--module-rgx=<regex>
--const-rgx=<regex>
--class-rgx=<regex>
--function-rgx=<regex>
--method-rgx=<regex>
--attr-rgx=<regex>
--argument-rgx=<regex>
--variable-rgx=<regex>
--class-attribute-rgx=<regex>
--inlinevar-rgx=<regex>
```

Multiple naming styles for custom regular expressions ~~~~~^

Large code bases that have been worked on for multiple years often exhibit an evolution in style as well. In some cases, modules can be in the same package, but still have different naming style based on the stratum they belong to. However, intra-module consistency should still be required, to make changes inside a single file easier. For this case, Pylint supports regular expression with several named capturing group.

Rather than emitting name warnings immediately, Pylint will determine the prevalent naming style inside each module and enforce it on all names.

Consider the following (simplified) example:



```
pylint --function-rgx='(?: (?P<snake>[a-z_]+) | (?P<camel>_?[A-Z]+)) $' sample.py
```

The regular expression defines two naming styles, `snake` for snake-case names, and `camel` for camel-case names.

In `sample.py`, the function name on line 1 and 7 will mark the module and enforce the match of named group `snake` for the remaining names in the module:

```
def valid_snake_case(arg):
    ...

def InvalidCamelCase(arg):
    ...

def more_valid_snake_case(arg):
    ...
```

Because of this, the name on line 4 will trigger an `invalid-name` warning, even though the name matches the given regex.

Matches named `exempt` or `ignore` can be used for non-tainting names, to prevent built-in or interface-dictated names to trigger certain naming styles.

**--name-group**=<name1:name2:..., ...>

Default value: empty

Format: comma-separated groups of colon-separated names.

This option can be used to combine name styles. For example, `function:method` enforces that functions and methods use the same style, and a style triggered by either name type carries over to the other. This requires that the regular expression for the combined name types use the same group names.

## Name Hints

**--include-naming-hint**=y|n

Default: off

Include a hint (regular expression used) for the correct name format with every `invalid-name` warning.

## 3.6 Editor and IDE integration

To use Pylint with:

- Emacs, see <https://www.emacswiki.org/emacs/PythonProgrammingInEmacs#toc8>,
- Vim, see [https://www.vim.org/scripts/script.php?script\\_id=891](https://www.vim.org/scripts/script.php?script_id=891),
- Visual Studio, see <https://docs.microsoft.com/visualstudio/python/code-pylint>,
- Eclipse and PyDev, see [https://pydev.org/manual\\_adv\\_pylint.html](https://pydev.org/manual_adv_pylint.html),
- Komodo, see <http://mateusz.loskot.net/posts/2006/01/15/running-pylint-from-komodo/>,
- gedit, see <https://launchpad.net/gedit-pylint-2> or <https://wiki.gnome.org/Apps/Gedit/PylintPlugin>,
- WingIDE, see <https://www.wingware.com/doc/edit/pylint>,
- PyCharm, see *the section below*,
- TextMate, see *the section below*

- Visual Studio Code, see [https://code.visualstudio.com/docs/python/linting#\\_pylint](https://code.visualstudio.com/docs/python/linting#_pylint),

Pylint is integrated in:

- Visual Studio, see the *Python > Run PyLint* command on a project's context menu.
- Eric IDE, see the *Project > Check* menu,
- Spyder, see the *View -> Panes -> Static code analysis* pane and its [corresponding documentation](#).
- pyscripter, see the *Tool -> Tools* menu.
- Visual Studio Code, see the *Preferences -> Settings* menu.

### 3.6.1 Using Pylint thru flymake in Emacs

To enable flymake for Python, insert the following into your .emacs:

```
;; Configure flymake for Python
(when (load "flymake" t)
  (defun flymake-pylint-init ()
    (let* ((temp-file (flymake-init-create-temp-buffer-copy
                      'flymake-create-temp-inplace))
          (local-file (file-relative-name
                      temp-file
                      (file-name-directory buffer-file-name))))
      (list "epylint" (list local-file))))
  (add-to-list 'flymake-allowed-file-name-masks
    '("\\.py\\\\" flymake-pylint-init)))

;; Set as a minor mode for Python
(add-hook 'python-mode-hook '(lambda () (flymake-mode)))
```

Above stuff is in `pylint/elisp/pylint-flymake.el`, which should be automatically installed on Debian systems, in which cases you don't have to put it in your .emacs file.

Other things you may find useful to set:

```
;; Configure to wait a bit longer after edits before starting
(setq-default flymake-no-changes-timeout '3)

;; Keymaps to navigate to the errors
(add-hook 'python-mode-hook '(lambda () (define-key python-mode-map "\C-cn" 'flymake-
  ↪goto-next-error)))
(add-hook 'python-mode-hook '(lambda () (define-key python-mode-map "\C-cp" 'flymake-
  ↪goto-prev-error)))
```

Finally, by default flymake only displays the extra information about the error when you hover the mouse over the highlighted line. The following will use the minibuffer to display messages when you the cursor is on the line.

```
;; To avoid having to mouse hover for the error message, these functions make flymake_
  ↪error messages
  ↪appear in the minibuffer
(defun show-fly-err-at-point ()
  "If the cursor is sitting on a flymake error, display the message in the minibuffer"
  (require 'cl)
  (interactive)
  (let ((line-no (line-number-at-pos)))
    (dolist (elem flymake-err-info)
```

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```
(if (eq (car elem) line-no)
  (let ((err (car (second elem))))
    (message "%s" (flymake-ler-text err))))))

(add-hook 'post-command-hook 'show-fly-err-at-point)
```

Alternative, if you only wish to pollute the minibuffer after an explicit flymake-goto-\* then use the following instead of a post-command-hook

```
(defadvice flymake-goto-next-error (after display-message activate compile)
  "Display the error in the mini-buffer rather than having to mouse over it"
  (show-fly-err-at-point))

(defadvice flymake-goto-prev-error (after display-message activate compile)
  "Display the error in the mini-buffer rather than having to mouse over it"
  (show-fly-err-at-point))
```

### 3.6.2 Integrate Pylint with PyCharm

Install Pylint the usual way:

```
pip install pylint
```

Remember the path at which it's installed:

```
which pylint
```

#### Using pylint-pycharm plugin

1. In PyCharm go to *Preferences > Plugins > Browse repositories...*
2. Right-click on the plugin named **Pylint**, select **Download and Install** and restart PyCharm when prompted

If the plugin is not finding the Pylint executable (e.g. is not inside the PATH environmental variable), you can specify it manually using the plugin settings:

1. *Preferences > Other Settings > Pylint* or simply click the gear icon from the side bar of the Pylint tool window
2. Type the path directly or use the Browse button to open a file selection dialog
3. Press the Test button to check if the plugin is able to run the executable

For more info on how to use the plugin please check the [official plugin documentation](#).

#### Using External Tools

Within PyCharm:

1. Navigate to the preferences window
2. Select "External Tools"
3. Click the plus sign at the bottom of the dialog to add a new external task
4. In the dialog, populate the following fields:

**Name** Pylint

**Description** A Python source code analyzer which looks for programming errors, helps enforcing a coding standard and sniffs for some code smells.

**Synchronize files after execution** unchecked

**Program** /path/to/pylint

**Parameters** \$FilePath\$

5. Click OK

The option to check the current file with Pylint should now be available in *Tools > External Tools > Pylint*.

### 3.6.3 Integrate Pylint with TextMate

Install Pylint in the usual way:

```
pip install pylint
```

Install the [Python bundle for TextMate](#):

1. select *TextMate > Preferences*
2. select the *Bundles* tab
3. find and tick the *Python* bundle in the list

You should now see it in *Bundles > Python*.

In *Preferences*, select the *Variables* tab. If a `TM_PYCHECKER` variable is not already listed, add it, with the value `pylint`.

The default keyboard shortcut to run the syntax checker is *Control-Shift-V* - open a `.py` file in Textmate, and try it.

You should see the output in a new window:

```
PyCheckMate 1.2 – Pylint 1.4.4
No config file found, using default configuration
```

Then all is well, and most likely Pylint will have expressed some opinions about your Python code (or will exit with 0 if your code already conforms to its expectations).

If you receive a message:

Please install PyChecker, PyFlakes, Pylint, PEP 8 or flake8 for more extensive code checking.

That means that Pylint wasn't found, which is likely an issue with command paths - TextMate needs be looking for Pylint on the right paths.

Check where Pylint has been installed, using `which`:

```
$ which pylint
/usr/local/bin/pylint
```

The output will tell you where Pylint can be found; in this case, in `/usr/local/bin`.

1. select *TextMate > Preferences*
2. select the *Variables* tab
3. find and check that a `PATH` variable exists, and that it contains the appropriate path (if the path to Pylint were `/usr/local/bin/pylint` as above, then the variable would need to contain `/usr/local/bin`). An actual example in this case might be `$PATH:/opt/local/bin:/usr/local/bin:/usr/texbin`, which includes other paths.

... and try running Pylint again.

### 3.6.4 Integrate Pylint with Visual Studio Code

#### Command-line arguments and configuration files

See [Pylint command line arguments](#) for general switches. Command line arguments can be used to load Pylint plugins, such as that for Django:

```
"python.linting.pylintArgs": ["--load-plugins", "pylint_django"]
```

Options can also be specified in a `pylintrc` or `.pylintrc` file in the workspace folder, as described on [Pylint command line arguments](#).

To control which Pylint messages are shown, add the following contents to an options file:

```
[MESSAGES CONTROL]

# Enable the message, report, category or checker with the given id(s). You can
# either give multiple identifier separated by comma (,) or put this option
# multiple time.
#enable=

# Disable the message, report, category or checker with the given id(s). You
# can either give multiple identifier separated by comma (,) or put this option
# multiple time (only on the command line, not in the configuration file where
# it should appear only once).
#disable=
```

#### Message category mapping

The Python extension maps Pylint message categories to VS Code categories through the following settings. If desired, change the setting to change the mapping.

Pylint category	Applicable setting (python.linting.)	VS Code category mapping
convention	pylintCategorySeverity.convention	Information
refactor	pylintCategorySeverity.refactor	Hint
warning	pylintCategorySeverity.warning	Warning
error	pylintCategorySeverity.error	Error
fatal	pylintCategorySeverity.fatal	Error



## 4.1 How to Write a Checker

You can find some simple examples in the distribution (`custom.py` and `custom_raw.py`).

There are three kinds of checkers:

- Raw checkers, which analyse each module as a raw file stream.
- Token checkers, which analyse a file using the list of tokens that represent the source code in the file.
- AST checkers, which work on an AST representation of the module.

The AST representation is provided by the `astroid` library. `astroid` adds additional information and methods over `ast` in the standard library, to make tree navigation and code introspection easier.

### 4.1.1 Writing an AST Checker

Let's implement a checker to make sure that all `return` nodes in a function return a unique constant. Firstly we will need to fill in some required boilerplate:

```
import astroid

from pylint.checkers import BaseChecker
from pylint.interfaces import IAstroidChecker

class UniqueReturnChecker(BaseChecker):
    __implements__ = IAstroidChecker

    name = 'unique-returns'
    priority = -1
    msgs = {
        'W0001': (
            'Returns a non-unique constant.',
```

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```

        'non-unique-returns',
        'All constants returned in a function should be unique.'
    ),
}
options = (
    (
        'ignore-ints',
        {
            'default': False, 'type': 'yn', 'metavar' : '<y_or_n>',
            'help': 'Allow returning non-unique integers',
        }
    ),
)

```

So far we have defined the following required components of our checker:

- **A name.** The name is used to generate a special configuration section for the checker, when options have been provided.
- **A priority.** This must be to be lower than 0. The checkers are ordered by the priority when run, from the most negative to the most positive.
- **A message dictionary.** Each checker is being used for finding problems in your code, the problems being displayed to the user through messages. The message dictionary should specify what messages the checker is going to emit. It has the following format:

```

msgs = {
    'message-id': (
        'displayed-message', 'message-symbol', 'message-help'
    )
}

```

- The message-id should be a 5-digit number, prefixed with a **message category**. There are multiple message categories, these being C, W, E, F, R, standing for Convention, Warning, Error, Fatal and Refactoring. The rest of the 5 digits should not conflict with existing checkers and they should be consistent across the checker. For instance, the first two digits should not be different across the checker.
- The displayed-message is used for displaying the message to the user, once it is emitted.
- The message-symbol is an alias of the message id and it can be used wherever the message id can be used.
- The message-help is used when calling `pylint --help-msg`.

We have also defined an optional component of the checker. The options list defines any user configurable options. It has the following format:

```

options = (
    'option-symbol': {'argparse-like-kwarg': 'value'},
)

```

- The option-symbol is a unique name for the option. This is used on the command line and in config files. The hyphen is replaced by an underscore when used in the checker, similarly to how you would use `argparse.Namespace`.

Next we'll track when we enter and leave a function.



```
def __init__(self, linter=None):
    super(UniqueReturnChecker, self).__init__(linter)
    self._function_stack = []

def visit_functiondef(self, node):
    self._function_stack.append([])

def leave_functiondef(self, node):
    self._function_stack.pop()
```

In the constructor we initialise a stack to keep a list of return nodes for each function. An AST checker is a visitor, and should implement `visit_<lowered class name>` or `leave_<lowered class name>` methods for the nodes it's interested in. In this case we have implemented `visit_functiondef` and `leave_functiondef` to add a new list of return nodes for this function, and to remove the list of return nodes when we leave the function.

Finally we'll implement the check. We will define a `visit_return` function, which is called with a `astroid.node_classes.Return` node.

We'll need to be able to figure out what attributes a `astroid.node_classes.Return` node has available. We can use `astroid.extract_node()` for this:

```
>>> node = astroid.extract_node("return 5")
>>> node
<Return 1.1 at 0x7efe62196390>
>>> help(node)
>>> node.value
<Const.int 1.1 at 0x7efe62196ef0>
```

We could also construct a more complete example:

```
>>> node_a, node_b = astroid.extract_node("""
... def test():
...     if True:
...         return 5 #@
...     return 5 #@
... """)
>>> node_a.value
<Const.int 1.4 at 0x7efe621a74e0>
>>> node_a.value.value
5
>>> node_a.value.value == node_b.value.value
True
```

For `astroid.extract_node()`, you can use `#@` at the end of a line to choose which statements will be extracted into nodes.

For more information on `astroid.extract_node()`, see the [astroid documentation](#).

Now we know how to use the `astroid` node, we can implement our check.

```
def visit_return(self, node):
    if not isinstance(node.value, astroid.node_classes.Const):
        return

    for other_return in self._function_stack[-1]:
        if (node.value.value == other_return.value.value and
            not (self.config.ignore_ints and node.value.pytype() == int)):
            self.add_message(
```

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```
        'non-unique-returns', node=node,
    )

    self._function_stack[-1].append(node)
```

Once we have established that the source code has failed our check, we use `add_message()` to emit our failure message.

Finally, we need to register the checker with pylint. Add the `register` function to the top level of the file.

```
def register(linter):
    linter.register_checker(UniqueReturnChecker(linter))
```

We are now ready to debug and test our checker!

### 4.1.2 Debugging a Checker

It is very simple to get to a point where we can use `pdb`. We'll need a small test case. Put the following into a Python file:

```
def test():
    if True:
        return 5
    return 5

def test2():
    if True:
        return 1
    return 5
```

After inserting `pdb` into our checker and installing it, we can run pylint with only our checker:

```
$ pylint --load-plugins=my_plugin --disable=all --enable=non-unique-returns test.py
(Pdb)
```

Now we can debug our checker!

---

**Note:** `my_plugin` refers to a module called `my_plugin.py`. This module can be made available to pylint by putting this module's parent directory in your `PYTHONPATH` environment variable or by adding the `my_plugin.py` file to the `pylint/checkers` directory if running from source.

---

### 4.1.3 Testing a Checker

Pylint is very well suited to test driven development. You can implement the template of the checker, produce all of your test cases and check that they fail, implement the checker, then check that all of your test cases work.

Pylint provides a `pylint.testutils.CheckerTestCase` to make test cases very simple. We can use the example code that we used for debugging as our test cases.

```
import my_plugin
import pylint.testutils
```

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```

class TestUniqueReturnChecker(pylint.testutils.CheckerTestCase):
    CHECKER_CLASS = my_plugin.UniqueReturnChecker

    def test_finds_non_unique_ints(self):
        func_node, return_node_a, return_node_b = astroid.extract_node("""
        def test(): #@
            if True:
                return 5 #@
            return 5 #@
        """)

        self.checker.visit_functiondef(func_node)
        self.checker.visit_return(return_node_a)
        with self.assertAddsMessages(
            pylint.testutils.Message(
                msg_id='non-unique-returns',
                node=return_node_b,
            ),
        ):
            self.checker.visit_return(return_node_b)

    def test_ignores_unique_ints(self):
        func_node, return_node_a, return_node_b = astroid.extract_node("""
        def test(): #@
            if True:
                return 1 #@
            return 5 #@
        """)

        with self.assertNoMessages():
            self.checker.visit_functiondef(func_node)
            self.checker.visit_return(return_node_a)
            self.checker.visit_return(return_node_b)

```

Once again we are using `astroid.extract_node()` to construct our test cases. `pylint.testutils.CheckerTestCase` has created the linter and checker for us, we simply simulate a traversal of the AST tree using the nodes that we are interested in.

## 4.2 How To Write a Pylint Plugin

Pylint provides support for writing two types of extensions. First, there is the concept of **checkers**, which can be used for finding problems in your code. Secondly, there is also the concept of **transform plugin**, which represents a way through which the inference and the capabilities of Pylint can be enhanced and tailored to a particular module, library or framework.

In general, a plugin is a module which should have a function `register`, which takes an instance of `pylint.lint.PyLinter` as input.

A plugin can optionally define a function, `load_configuration`, which takes an instance of `pylint.lint.PyLinter` as input. This function is called after Pylint loads configuration from configuration file and command line interface. This function should load additional plugin specific configuration to Pylint.

So a basic hello-world plugin can be implemented as:

```
# Inside hello_plugin.py
def register(linter):
    print('Hello world')
```

We can run this plugin by placing this module in the PYTHONPATH and invoking **pylint** as:

```
$ pylint -E --load-plugins hello_plugin foo.py
Hello world
```

We can extend hello-world plugin to ignore some specific names using `load_configuration` function:

```
# Inside hello_plugin.py
def register(linter):
    print('Hello world')

def load_configuration(linter):

    name_checker = get_checker(linter, NameChecker)
    # We consider as good names of variables Hello and World
    name_checker.config.good_names += ('Hello', 'World')

    # We ignore bin directory
    linter.config.black_list += ('bin',)
```

Depending if we need a **transform plugin** or a **checker**, this might not be enough. For the former, this is enough to declare the module as a plugin, but in the case of the latter, we need to register our checker with the linter object, by calling the following inside the `register` function:

```
linter.register_checker(OurChecker(linter))
```

For more information on writing a checker see *[How to Write a Checker](#)*.

## 4.3 Transform plugins

### 4.3.1 Why write a plugin?

Pylint is a static analysis tool and Python is a dynamically typed language. So there will be cases where Pylint cannot analyze files properly (this problem can happen in statically typed languages also if reflection or dynamic evaluation is used).

The plugins are a way to tell Pylint how to handle such cases, since only the user would know what needs to be done. They are usually operating on the AST level, by modifying or changing it in a way which can ease its understanding by Pylint.

### 4.3.2 Example

Let us run Pylint on a module from the Python source: `warnings.py` and see what happens:

```
amitdev$ pylint -E Lib/warnings.py
E:297,36: Instance of 'WarningMessage' has no 'message' member (no-member)
E:298,36: Instance of 'WarningMessage' has no 'filename' member (no-member)
E:298,51: Instance of 'WarningMessage' has no 'lineno' member (no-member)
E:298,64: Instance of 'WarningMessage' has no 'line' member (no-member)
```

Did we catch a genuine error? Let's open the code and look at `WarningMessage` class:

```
class WarningMessage(object):

    """Holds the result of a single showwarning() call."""

    _WARNING_DETAILS = ("message", "category", "filename", "lineno", "file",
                        "line")

    def __init__(self, message, category, filename, lineno, file=None,
                  line=None):
        local_values = locals()
        for attr in self._WARNING_DETAILS:
            setattr(self, attr, local_values[attr])
        self._category_name = category.__name__ if category else None

    def __str__(self):
        ...
```

Ah, the fields (`message`, `category` etc) are not defined statically on the class. Instead they are added using `setattr`. Pylint would have a tough time figuring this out.

### 4.3.3 Enter Plugin

We can write a transform plugin to tell Pylint how to analyze this properly.

One way to fix our example with a plugin would be to transform the `WarningMessage` class, by setting the attributes so that Pylint can see them. This can be done by registering a transform function. We can transform any node in the parsed AST like `Module`, `Class`, `Function` etc. In our case we need to transform a class. It can be done so:

```
import astroid
from astroid import MANAGER

def register(linter):
    # Needed for registering the plugin.
    pass

def transform(cls):
    if cls.name == 'WarningMessage':
        import warnings
        for f in warnings.WarningMessage._WARNING_DETAILS:
            cls.locals[f] = [astroid.ClassDef(f, None)]

MANAGER.register_transform(astroid.ClassDef, transform)
```

Let's go through the plugin. First, we need to register a class transform, which is done via the `register_transform` function in `MANAGER`. It takes the node type and function as parameters. We need to change a class, so we use `astroid.ClassDef`. We also pass a transform function which does the actual transformation.

transform function is simple as well. If the class is `WarningMessage` then we add the attributes to its locals (we are not bothered about type of attributes, so setting them as class will do. But we could set them to any type we want). That's it.

Note: We don't need to do anything in the `register` function of the plugin since we are not modifying anything in the linter itself.

Lets run Pylint with this plugin and see:

```
amitdev$ pylint -E --load-plugins warning_plugin Lib/warnings.py
amitdev$
```

All the false positives associated with `WarningMessage` are now gone. This is just an example, any code transformation can be done by plugins.

See [astroid/brain](#) for real life examples of transform plugins.

## 5.1 Startup and the Linter Class

The two main classes in `pylint.lint` are `pylint.lint.Run` and `pylint.lint.PyLinter`.

The `pylint.lint.Run` object is responsible for starting up pylint. It does some basic checking of the given command line options to find the initial hook to run, find the config file to use, and find which plugins have been specified. It can then create the master `pylint.lint.PyLinter` instance and initialise it with the config file and plugins that were discovered when preprocessing the command line options. Finally the `pylint.lint.Run` object launches any child linters for parallel jobs, and starts the linting process.

The `pylint.lint.PyLinter` is responsible for coordinating the linting process. It parses the configuration and provides it for the checkers and other plugins, it handles the messages emitted by the checkers, it handles the output reporting, and it launches the checkers.

## 5.2 Checkers

All of the default pylint checkers exist in `pylint.checkers`. This is where most of pylint's brains exist. Most checkers are AST based and so use `astroid`. `pylint.checkers.utils` provides a large number of utility methods for dealing with `astroid`.

## 5.3 Optional Pylint checkers in the extensions module

Pylint provides the following optional plugins:

- *Deprecated Builtins checker*
- *Broad Try Clause checker*
- *Else If Used checker*
- *Compare-To-Zero checker*

- *Parameter Documentation checker*
- *Docstyle checker*
- *Compare-To-Empty-String checker*
- *Design checker*
- *Overlap-Except checker*
- *Multiple Types checker*

You can activate any or all of these extensions by adding a `load-plugins` line to the MASTER section of your `.pylintrc`, for example:

```
load-plugins=pylint.extensions.docparams,pylint.extensions.docstyle
```

### 5.3.1 Broad Try Clause checker

This checker is provided by `pylint.extensions.broad_try_clause`. Verbatim name of the checker is `broad_try_clause`.

#### Broad Try Clause checker Options

**max-try-statements** Maximum number of statements allowed in a try clause  
Default: 1

#### Broad Try Clause checker Messages

**too-many-try-statements (W0717)** Try clause contains too many statements.

### 5.3.2 Compare-To-Empty-String checker

This checker is provided by `pylint.extensions.emptystring`. Verbatim name of the checker is `compare-to-empty-string`.

#### Compare-To-Empty-String checker Messages

**compare-to-empty-string (C1901)** *Avoid comparisons to empty string* Used when Pylint detects comparison to an empty string constant.

### 5.3.3 Compare-To-Zero checker

This checker is provided by `pylint.extensions.comparetozero`. Verbatim name of the checker is `compare-to-zero`.

#### Compare-To-Zero checker Messages

**compare-to-zero (C2001)** *Avoid comparisons to zero* Used when Pylint detects comparison to a 0 constant.



### 5.3.4 Deprecated Builtins checker

This checker is provided by `pylint.extensions.bad_builtin`. Verbatim name of the checker is `deprecated_builtins`.

#### Deprecated Builtins checker Documentation

This used to be the `bad-builtin` core checker, but it was moved to an extension instead. It can be used for finding prohibited used builtins, such as `map` or `filter`, for which other alternatives exists.

If you want to control for what builtins the checker should warn about, you can use the `bad-functions` option:

```
$ pylint a.py --load-plugins=pylint.extensions.bad_builtin --bad-functions=apply,
↪reduce
...
```

#### Deprecated Builtins checker Options

**bad-functions** List of builtins function names that should not be used, separated by a comma

Default: `map,filter`

#### Deprecated Builtins checker Messages

**bad-builtin (W0141)** *Used builtin function %s* Used when a black listed builtin function is used (see the `bad-function` option). Usual black listed functions are the ones like `map`, or `filter`, where Python offers now some cleaner alternative like list comprehension.

### 5.3.5 Design checker

This checker is provided by `pylint.extensions.mccabe`. Verbatim name of the checker is `design`.

#### Design checker Documentation

You can now use this plugin for finding complexity issues in your code base.

Activate it through `pylint --load-plugins=pylint.extensions.mccabe`. It introduces a new warning, `too-complex`, which is emitted when a code block has a complexity higher than a preestablished value, which can be controlled through the `max-complexity` option, such as in this example:

```
$ cat a.py
def f10():
    """McCabe rating: 11"""
    myint = 2
    if myint == 5:
        return myint
    elif myint == 6:
        return myint
    elif myint == 7:
        return myint
    elif myint == 8:
        return myint
```

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```

elif myint == 9:
    return myint
elif myint == 10:
    if myint == 8:
        while True:
            return True
    elif myint == 8:
        with myint:
            return 8
else:
    if myint == 2:
        return myint
    return myint
return myint
$ pylint a.py --load-plugins=pylint.extensions.mccabe
R:1: 'f10' is too complex. The McCabe rating is 11 (too-complex)
$ pylint a.py --load-plugins=pylint.extensions.mccabe --max-complexity=50
$

```

## Design checker Options

**max-complexity** McCabe complexity cyclomatic threshold

Default: 10

## Design checker Messages

**too-complex (R1260)** *%s is too complex. The McCabe rating is %d* Used when a method or function is too complex based on McCabe Complexity Cyclomatic

## 5.3.6 Docstyle checker

This checker is provided by `pylint.extensions.docstyle`. Verbatim name of the checker is `docstyle`.

## Docstyle checker Messages

**bad-docstring-quotes (C0198)** *Bad docstring quotes in %s, expected """, given %s* Used when a docstring does not have triple double quotes.

**docstring-first-line-empty (C0199)** *First line empty in %s docstring* Used when a blank line is found at the beginning of a docstring.

## 5.3.7 Else If Used checker

This checker is provided by `pylint.extensions.check elif`. Verbatim name of the checker is `else_if_used`.

### Else If Used checker Messages

**else-if-used (R5501)** *Consider using "elif" instead of "else if"* Used when an else statement is immediately followed by an if statement and does not contain statements that would be unrelated to it.

### 5.3.8 Multiple Types checker

This checker is provided by `pylint.extensions.redefined_variable_type`. Verbatim name of the checker is `multiple_types`.

#### Multiple Types checker Messages

**redefined-variable-type (R0204)** *Redefinition of %s type from %s to %s* Used when the type of a variable changes inside a method or a function.

### 5.3.9 Overlap-Except checker

This checker is provided by `pylint.extensions.overlapping_exceptions`. Verbatim name of the checker is `overlap-except`.

#### Overlap-Except checker Messages

**overlapping-except (W0714)** *Overlapping exceptions (%s)* Used when exceptions in handler overlap or are identical

### 5.3.10 Parameter Documentation checker

This checker is provided by `pylint.extensions.docparams`. Verbatim name of the checker is `parameter_documentation`.

#### Parameter Documentation checker Documentation

If you document the parameters of your functions, methods and constructors and their types systematically in your code this optional component might be useful for you. Sphinx style, Google style, and Numpy style are supported. (For some examples, see <https://pypi.python.org/pypi/sphinxcontrib-napoleon> .)

You can activate this checker by adding the line:

```
load-plugins=pylint.extensions.docparams
```

to the MASTER section of your `.pylintrc`.

This checker verifies that all function, method, and constructor docstrings include documentation of the

- parameters and their types
- return value and its type
- exceptions raised

and can handle docstrings in

- Sphinx style (param, type, return, rtype, raise / except):

```
def function_foo(x, y, z):
    '''function foo ...

    :param x: bla x
    :type x: int

    :param y: bla y
    :type y: float

    :param int z: bla z

    :return: sum
    :rtype: float

    :raises OSError: bla
    '''
    return x + y + z
```

- or the Google style (Args:, Returns:, Raises:):

```
def function_foo(x, y, z):
    '''function foo ...

    Args:
        x (int): bla x
        y (float): bla y

        z (int): bla z

    Returns:
        float: sum

    Raises:
        OSError: bla
    '''
    return x + y + z
```

- or the Numpy style (Parameters, Returns, Raises):

```
def function_foo(x, y, z):
    '''function foo ...

    Parameters
    -----
    x: int
        bla x
    y: float
        bla y

    z: int
        bla z

    Returns
    -----
    float
        sum
```

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```

    Raises
    -----
    OSError
        bla
    '''
    return x + y + z

```

You'll be notified of **missing parameter documentation** but also of **naming inconsistencies** between the signature and the documentation which often arise when parameters are renamed automatically in the code, but not in the documentation.

Constructor parameters can be documented in either the class docstring or the `__init__` docstring, but not both:

```

class ClassFoo(object):
    '''Sphinx style docstring foo

    :param float x: bla x

    :param y: bla y
    :type y: int
    '''
    def __init__(self, x, y):
        pass

class ClassBar(object):
    def __init__(self, x, y):
        '''Google style docstring bar

        Args:
            x (float): bla x
            y (int): bla y
        '''
        pass

```

In some cases, having to document all parameters is a nuisance, for instance if many of your functions or methods just follow a **common interface**. To remove this burden, the checker accepts missing parameter documentation if one of the following phrases is found in the docstring:

- For the other parameters, see
- For the parameters, see

(with arbitrary whitespace between the words). Please add a link to the docstring defining the interface, e.g. a superclass method, after "see":

```

def callback(x, y, z):
    '''Sphinx style docstring for callback ...

    :param x: bla x
    :type x: int

    For the other parameters, see
    :class:`MyFrameworkUsingAndDefiningCallback`
    '''
    return x + y + z

def callback(x, y, z):
    '''Google style docstring for callback ...

```

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```

Args:
    x (int): bla x

For the other parameters, see
:class:`MyFrameworkUsingAndDefiningCallback`
'''
return x + y + z

```

Naming inconsistencies in existing parameter and their type documentations are still detected.

## Parameter Documentation checker Options

**accept-no-param-doc** Whether to accept totally missing parameter documentation in the docstring of a function that has parameters.

Default: yes

**accept-no-raise-doc** Whether to accept totally missing raises documentation in the docstring of a function that raises an exception.

Default: yes

**accept-no-return-doc** Whether to accept totally missing return documentation in the docstring of a function that returns a statement.

Default: yes

**accept-no-yields-doc** Whether to accept totally missing yields documentation in the docstring of a generator.

Default: yes

**default-docstring-type** If the docstring type cannot be guessed the specified docstring type will be used.

Default: default

## Parameter Documentation checker Messages

**differing-param-doc (W9017)** *"%s" differing in parameter documentation* Please check parameter names in declarations.

**differing-type-doc (W9018)** *"%s" differing in parameter type documentation* Please check parameter names in type declarations.

**multiple-constructor-doc (W9005)** *"%s" has constructor parameters documented in class and \_\_init\_\_* Please remove parameter declarations in the class or constructor.

**missing-param-doc (W9015)** *"%s" missing in parameter documentation* Please add parameter declarations for all parameters.

**missing-type-doc (W9016)** *"%s" missing in parameter type documentation* Please add parameter type declarations for all parameters.

**missing-raises-doc (W9006)** *"%s" not documented as being raised* Please document exceptions for all raised exception types.

**missing-return-doc (W9011)** *Missing return documentation* Please add documentation about what this method returns.

**missing-return-type-doc (W9012)** *Missing return type documentation* Please document the type returned by this method.

**missing-yield-doc (W9013)** *Missing yield documentation* Please add documentation about what this generator yields.

**missing-yield-type-doc (W9014)** *Missing yield type documentation* Please document the type yielded by this method.

**redundant-returns-doc (W9008)** *Redundant returns documentation* Please remove the return/rtype documentation from this method.

**redundant-yields-doc (W9010)** *Redundant yields documentation* Please remove the yields documentation from this method.

## 5.4 Pylint features

### 5.4.1 Pylint global options and switches

Pylint provides global options and switches.

#### General options

**ignore** Add files or directories to the blacklist. They should be base names, not paths.

Default: CVS

**ignore-patterns** Add files or directories matching the regex patterns to the blacklist. The regex matches against base names, not paths.

**persistent** Pickle collected data for later comparisons.

Default: yes

**load-plugins** List of plugins (as comma separated values of python module names) to load, usually to register additional checkers.

**fail-under** Specify a score threshold to be exceeded before program exits with error.

Default: 10.0

**jobs** Use multiple processes to speed up Pylint. Specifying 0 will auto-detect the number of processors available to use.

Default: 1

**unsafe-load-any-extension** Allow loading of arbitrary C extensions. Extensions are imported into the active Python interpreter and may run arbitrary code.

**limit-inference-results** Control the amount of potential inferred values when inferring a single object. This can help the performance when dealing with large functions or complex, nested conditions.

Default: 100

**extension-pkg-whitelist** A comma-separated list of package or module names from where C extensions may be loaded. Extensions are loading into the active Python interpreter and may run arbitrary code.

**suggestion-mode** When enabled, pylint would attempt to guess common misconfiguration and emit user-friendly hints instead of false-positive error messages.

Default: yes

**exit-zero** Always return a 0 (non-error) status code, even if lint errors are found. This is primarily useful in continuous integration scripts.

**from-stdin** Interpret the stdin as a python script, whose filename needs to be passed as the `module_or_package` argument.

## Messages control options

**confidence** Only show warnings with the listed confidence levels. Leave empty to show all. Valid levels: HIGH, INFERENCE, INFERENCE\_FAILURE, UNDEFINED.

**enable** Enable the message, report, category or checker with the given id(s). You can either give multiple identifier separated by comma (,) or put this option multiple time (only on the command line, not in the configuration file where it should appear only once). See also the `--disable` option for examples.

**disable** Disable the message, report, category or checker with the given id(s). You can either give multiple identifiers separated by comma (,) or put this option multiple times (only on the command line, not in the configuration file where it should appear only once). You can also use `--disable=all` to disable everything first and then reenables specific checks. For example, if you want to run only the similarities checker, you can use `--disable=all --enable=similarities`. If you want to run only the classes checker, but have no Warning level messages displayed, use `--disable=all --enable=classes --disable=W`.

Default: `print-statement,parameter-unpacking,unpacking-in-except,old-raise-syntax,backtick,long-suffix,old-ne-operator,old-octal-literal,import-star-module-level,non-ascii-bytes-literal,apply-builtin,basestring-builtin,buffer-builtin,cmp-builtin,coerce-builtin,execfile-builtin,file-builtin,long-builtin,raw_input-builtin,reduce-builtin,stderr-builtin,unicode-builtin,xrange-builtin,coerce-method,delslice-method,getslice-method,setslice-method,no-absolute-import,old-division,dict-iter-method,dict-view-method,next-method-called,metaclass-assignment,indexing-exception,raising-string,reload-builtin,oct-method,hex-method,nonzero-method,cmp-method,input-builtin,round-builtin,intern-builtin,unichr-builtin,map-builtin-not-iterating,zip-builtin-not-iterating,range-builtin-not-iterating,filter-builtin-not-iterating,using-cmp-argument,eq-without-hash,div-method,idiv-method,rdiv-method,exception-message-attribute,invalid-str-codec,sys-max-int,bad-python3-import,deprecated-string-function,deprecated-str-translate-call,deprecated-itertools-function,deprecated-types-field,next-method-defined,dict-items-not-iterating,dict-keys-not-iterating,dict-values-not-iterating,deprecated-operator-function,deprecated-urllib-function,xreadlines-attribute,deprecated-sys-function,exception-escape,comprehension-escape`

## Reports options

**output-format** Set the output format. Available formats are text, parseable, colorized, json and msvs (visual studio). You can also give a reporter class, e.g. `mypackage.mymodule.MyReporterClass`.

Default: text

**reports** Tells whether to display a full report or only the messages.



**evaluation** Python expression which should return a score less than or equal to 10. You have access to the variables 'error', 'warning', 'refactor', and 'convention' which contain the number of messages in each category, as well as 'statement' which is the total number of statements analyzed. This score is used by the global evaluation report (RP0004).

Default: `10.0 - ((float(5 * error + warning + refactor + convention) / statement) * 10)`

**score** Activate the evaluation score.

Default: `yes`

**msg-template** Template used to display messages. This is a python new-style format string used to format the message information. See doc for all details.

## 5.4.2 Pylint checkers' options and switches

Pylint checkers can provide three set of features:

- options that control their execution,
- messages that they can raise,
- reports that they can generate.

Below is a list of all checkers and their features.

### Async checker

Verbatim name of the checker is `async`.

#### Async checker Messages

**not-async-context-manager (E1701)** *Async context manager '%s' doesn't implement `__aenter__` and `__aexit__`.* Used when an async context manager is used with an object that does not implement the async context management protocol. This message can't be emitted when using Python < 3.5.

**yield-inside-async-function (E1700)** *Yield inside async function* Used when an `yield` or `yield from` statement is found inside an async function. This message can't be emitted when using Python < 3.5.

### Basic checker

Verbatim name of the checker is `basic`.

#### Basic checker Options

**good-names** Good variable names which should always be accepted, separated by a comma.

Default: `i, j, k, ex, Run, _`

**good-names-rgxs** Good variable names regexes, separated by a comma. If names match any regex, they will always be accepted

**bad-names** Bad variable names which should always be refused, separated by a comma.

Default: `foo, bar, baz, toto, tutu, tata`

**bad-names-rgxs** Bad variable names regexes, separated by a comma. If names match any regex, they will always be refused

**name-group** Colon-delimited sets of names that determine each other's naming style when the name regexes allow several styles.

**include-naming-hint** Include a hint for the correct naming format with invalid-name.

**property-classes** List of decorators that produce properties, such as `abc.abstractproperty`. Add to this list to register other decorators that produce valid properties. These decorators are taken in consideration only for invalid-name.

Default: `abc.abstractproperty`

**argument-naming-style** Naming style matching correct argument names.

Default: `snake_case`

**argument-rgx** Regular expression matching correct argument names. Overrides argument-naming-style.

**attr-naming-style** Naming style matching correct attribute names.

Default: `snake_case`

**attr-rgx** Regular expression matching correct attribute names. Overrides attr-naming-style.

**class-naming-style** Naming style matching correct class names.

Default: `PascalCase`

**class-rgx** Regular expression matching correct class names. Overrides class-naming-style.

**class-attribute-naming-style** Naming style matching correct class attribute names.

Default: `any`

**class-attribute-rgx** Regular expression matching correct class attribute names. Overrides class-attribute-naming-style.

**const-naming-style** Naming style matching correct constant names.

Default: `UPPER_CASE`

**const-rgx** Regular expression matching correct constant names. Overrides const-naming-style.

**function-naming-style** Naming style matching correct function names.

Default: `snake_case`

**function-rgx** Regular expression matching correct function names. Overrides function-naming-style.

**inlinevar-naming-style** Naming style matching correct inline iteration names.

Default: `any`

**inlinevar-rgx** Regular expression matching correct inline iteration names. Overrides inlinevar-naming-style.

**method-naming-style** Naming style matching correct method names.

Default: `snake_case`

**method-rgx** Regular expression matching correct method names. Overrides method-naming-style.

**module-naming-style** Naming style matching correct module names.

Default: `snake_case`

**module-rgx** Regular expression matching correct module names. Overrides module-naming- style.

**variable-naming-style** Naming style matching correct variable names.

Default: `snake_case`

**variable-rgx** Regular expression matching correct variable names. Overrides variable- naming-style.

**no-docstring-rgx** Regular expression which should only match function or class names that do not require a docstring.

Default: `^_`

**docstring-min-length** Minimum line length for functions/classes that require docstrings, shorter ones are exempt.

Default: `-1`

## Basic checker Messages

**not-in-loop (E0103)** *%r not properly in loop* Used when break or continue keywords are used outside a loop.

**function-redefined (E0102)** *%s already defined line %s* Used when a function / class / method is redefined.

**continue-in-finally (E0116)** *'continue' not supported inside 'finally' clause* Emitted when the *continue* keyword is found inside a finally clause, which is a `SyntaxError`. This message can't be emitted when using Python `>= 3.8`.

**abstract-class-instantiated (E0110)** *Abstract class %r with abstract methods instantiated* Used when an abstract class with *abc.ABCMeta* as metaclass has abstract methods and is instantiated.

**star-needs-assignment-target (E0114)** *Can use starred expression only in assignment target* Emitted when a star expression is not used in an assignment target.

**duplicate-argument-name (E0108)** *Duplicate argument name %s in function definition* Duplicate argument names in function definitions are syntax errors.

**return-in-init (E0101)** *Explicit return in \_\_init\_\_* Used when the special class method `__init__` has an explicit return value.

**too-many-star-expressions (E0112)** *More than one starred expression in assignment* Emitted when there are more than one starred expressions (*\*x*) in an assignment. This is a `SyntaxError`.

**nonlocal-and-global (E0115)** *Name %r is nonlocal and global* Emitted when a name is both nonlocal and global.

**used-prior-global-declaration (E0118)** *Name %r is used prior to global declaration* Emitted when a name is used prior a global declaration, which results in an error since Python 3.6. This message can't be emitted when using Python `< 3.6`.

**return-outside-function (E0104)** *Return outside function* Used when a "return" statement is found outside a function or method.

**return-arg-in-generator (E0106)** *Return with argument inside generator* Used when a "return" statement with an argument is found outside in a generator function or method (e.g. with some "yield" statements). This message can't be emitted when using Python `>= 3.3`.

**invalid-star-assignment-target (E0113)** *Starred assignment target must be in a list or tuple* Emitted when a star expression is used as a starred assignment target.

- bad-reversed-sequence (E0111)** *The first reversed() argument is not a sequence* Used when the first argument to reversed() builtin isn't a sequence (does not implement `__reversed__`, nor `__getitem__` and `__len__`)
- nonexistent-operator (E0107)** *Use of the non-existent %s operator* Used when you attempt to use the C-style pre-increment or pre-decrement operator – and ++, which doesn't exist in Python.
- yield-outside-function (E0105)** *Yield outside function* Used when a "yield" statement is found outside a function or method.
- init-is-generator (E0100)** *\_\_init\_\_ method is a generator* Used when the special class method `__init__` is turned into a generator by a yield in its body.
- misplaced-format-function (E0119)** *format function is not called on str* Emitted when format function is not called on str object. e.g doing `print("value: {}".format(123))` instead of `print("value: {}".format(123))`. This might not be what the user intended to do.
- nonlocal-without-binding (E0117)** *nonlocal name %s found without binding* Emitted when a nonlocal variable does not have an attached name somewhere in the parent scopes
- lost-exception (W0150)** *%s statement in finally block may swallow exception* Used when a break or a return statement is found inside the finally clause of a try...finally block: the exceptions raised in the try clause will be silently swallowed instead of being re-raised.
- assert-on-tuple (W0199)** *Assert called on a 2-item-tuple. Did you mean 'assert x,y'?* A call of assert on a tuple will always evaluate to true if the tuple is not empty, and will always evaluate to false if it is.
- assert-on-string-literal (W0129)** *Assert statement has a string literal as its first argument. The assert will %s fail.* Used when an assert statement has a string literal as its first argument, which will cause the assert to always pass.
- self-assigning-variable (W0127)** *Assigning the same variable %r to itself* Emitted when we detect that a variable is assigned to itself
- comparison-with-callable (W0143)** *Comparing against a callable, did you omit the parenthesis?* This message is emitted when pylint detects that a comparison with a callable was made, which might suggest that some parenthesis were omitted, resulting in potential unwanted behaviour.
- dangerous-default-value (W0102)** *Dangerous default value %s as argument* Used when a mutable value as list or dictionary is detected in a default value for an argument.
- duplicate-key (W0109)** *Duplicate key %r in dictionary* Used when a dictionary expression binds the same key multiple times.
- useless-else-on-loop (W0120)** *Else clause on loop without a break statement* Loops should only have an else clause if they can exit early with a break statement, otherwise the statements under else should be on the same scope as the loop itself.
- expression-not-assigned (W0106)** *Expression "%s" is assigned to nothing* Used when an expression that is not a function call is assigned to nothing. Probably something else was intended.
- confusing-with-statement (W0124)** *Following "as" with another context manager looks like a tuple.* Emitted when a with statement component returns multiple values and uses name binding with as only for a part of those values, as in `with ctx() as a, b:`. This can be misleading, since it's not clear if the context manager returns a tuple or if the node without a name binding is another context manager.
- unnecessary-lambda (W0108)** *Lambda may not be necessary* Used when the body of a lambda expression is a function call on the same argument list as the lambda itself; such lambda expressions are in all but a few cases replaceable with the function being called in the body of the lambda.
- assign-to-new-keyword (W0111)** *Name %s will become a keyword in Python %s* Used when assignment will become invalid in future Python release due to introducing new keyword.

- redeclared-assigned-name (W0128)** *Redeclared variable %r in assignment* Emitted when we detect that a variable was redeclared in the same assignment.
- pointless-statement (W0104)** *Statement seems to have no effect* Used when a statement doesn't have (or at least seems to) any effect.
- pointless-string-statement (W0105)** *String statement has no effect* Used when a string is used as a statement (which of course has no effect). This is a particular case of W0104 with its own message so you can easily disable it if you're using those strings as documentation, instead of comments.
- unnecessary-pass (W0107)** *Unnecessary pass statement* Used when a "pass" statement that can be avoided is encountered.
- unreachable (W0101)** *Unreachable code* Used when there is some code behind a "return" or "raise" statement, which will never be accessed.
- eval-used (W0123)** *Use of eval* Used when you use the "eval" function, to discourage its usage. Consider using *ast.literal\_eval* for safely evaluating strings containing Python expressions from untrusted sources.
- exec-used (W0122)** *Use of exec* Used when you use the "exec" statement (function for Python 3), to discourage its usage. That doesn't mean you cannot use it !
- using-constant-test (W0125)** *Using a conditional statement with a constant value* Emitted when a conditional statement (If or ternary if) uses a constant value for its test. This might not be what the user intended to do.
- missing-parentheses-for-call-in-test (W0126)** *Using a conditional statement with potentially wrong function or method call due to missing parentheses* Emitted when a conditional statement (If or ternary if) seems to wrongly call a function due to missing parentheses
- literal-comparison (R0123)** *Comparison to literal* Used when comparing an object to a literal, which is usually what you do not want to do, since you can compare to a different literal than what was expected altogether.
- comparison-with-itself (R0124)** *Redundant comparison - %s* Used when something is compared against itself.
- non-ascii-name (C0144)** *%s name "%s" contains a non-ASCII unicode character* Used when the name contains at least one non-ASCII unicode character.
- invalid-name (C0103)** *%s name "%s" doesn't conform to %s* Used when the name doesn't conform to naming rules associated to its type (constant, variable, class...).
- blacklisted-name (C0102)** *Black listed name "%s"* Used when the name is listed in the black list (unauthorized names).
- misplaced-comparison-constant (C0122)** *Comparison should be %s* Used when the constant is placed on the left side of a comparison. It is usually clearer in intent to place it in the right hand side of the comparison.
- singleton-comparison (C0121)** *Comparison to %s should be %s* Used when an expression is compared to singleton values like True, False or None.
- empty-docstring (C0112)** *Empty %s docstring* Used when a module, function, class or method has an empty docstring (it would be too easy ;).
- missing-class-docstring (C0115)** *Missing class docstring* Used when a class has no docstring. Even an empty class must have a docstring.
- missing-function-docstring (C0116)** *Missing function or method docstring* Used when a function or method has no docstring. Some special methods like `__init__` do not require a docstring.

**missing-module-docstring (C0114)** *Missing module docstring* Used when a module has no docstring. Empty modules do not require a docstring.

**unidiomatic-typecheck (C0123)** *Using type() instead of isinstance() for a typecheck*. The idiomatic way to perform an explicit typecheck in Python is to use `isinstance(x, Y)` rather than `type(x) == Y`, `type(x)` is `Y`. Though there are unusual situations where these give different results.

## Basic checker Reports

**RP0101** Statistics by type

## Classes checker

Verbatim name of the checker is `classes`.

## Classes checker Options

**defining-attr-methods** List of method names used to declare (i.e. assign) instance attributes.

Default: `__init__, __new__, setUp, __post_init__`

**valid-classmethod-first-arg** List of valid names for the first argument in a class method.

Default: `cls`

**valid-metaclass-classmethod-first-arg** List of valid names for the first argument in a metaclass class method.

Default: `cls`

**exclude-protected** List of member names, which should be excluded from the protected access warning.

Default: `_asdict, _fields, _replace, _source, _make`

## Classes checker Messages

**access-member-before-definition (E0203)** *Access to member %r before its definition line %s* Used when an instance member is accessed before it's actually assigned.

**method-hidden (E0202)** *An attribute defined in %s line %s hides this method* Used when a class defines a method which is hidden by an instance attribute from an ancestor class or set by some client code.

**assigning-non-slot (E0237)** *Assigning to attribute %r not defined in class slots* Used when assigning to an attribute not defined in the class slots.

**duplicate-bases (E0241)** *Duplicate bases for class %r* Used when a class has duplicate bases.

**inconsistent-mro (E0240)** *Inconsistent method resolution order for class %r* Used when a class has an inconsistent method resolution order.

**inherit-non-class (E0239)** *Inheriting %r, which is not a class.* Used when a class inherits from something which is not a class.

**invalid-slots (E0238)** *Invalid \_\_slots\_\_ object* Used when an invalid `__slots__` is found in class. Only a string, an iterable or a sequence is permitted.

**invalid-slots-object (E0236)** *Invalid object %r in \_\_slots\_\_, must contain only non empty strings* Used when an invalid (non-string) object occurs in `__slots__`.

- no-method-argument (E0211)** *Method has no argument* Used when a method which should have the bound instance as first argument has no argument defined.
- no-self-argument (E0213)** *Method should have "self" as first argument* Used when a method has an attribute different the "self" as first argument. This is considered as an error since this is a so common convention that you shouldn't break it!
- unexpected-special-method-signature (E0302)** *The special method %r expects %s param(s), %d %s given* Emittted when a special method was defined with an invalid number of parameters. If it has too few or too many, it might not work at all.
- class-variable-slots-conflict (E0242)** *Value %r in slots conflicts with class variable* Used when a value in `__slots__` conflicts with a class variable, property or method.
- invalid-bool-returned (E0304)** *\_\_bool\_\_ does not return bool* Used when a `__bool__` method returns something which is not a bool
- invalid-bytes-returned (E0308)** *\_\_bytes\_\_ does not return bytes* Used when a `__bytes__` method returns something which is not bytes
- invalid-format-returned (E0311)** *\_\_format\_\_ does not return str* Used when a `__format__` method returns something which is not a string
- invalid-getnewargs-returned (E0312)** *\_\_getnewargs\_\_ does not return a tuple* Used when a `__getnewargs__` method returns something which is not a tuple
- invalid-getnewargs-ex-returned (E0313)** *\_\_getnewargs\_ex\_\_ does not return a tuple containing (tuple, dict)* Used when a `__getnewargs_ex__` method returns something which is not of the form `tuple(tuple, dict)`
- invalid-hash-returned (E0309)** *\_\_hash\_\_ does not return int* Used when a `__hash__` method returns something which is not an integer
- invalid-index-returned (E0305)** *\_\_index\_\_ does not return int* Used when an `__index__` method returns something which is not an integer
- non-iterator-returned (E0301)** *\_\_iter\_\_ returns non-iterator* Used when an `__iter__` method returns something which is not an iterable (i.e. has no `__next__` method)
- invalid-length-returned (E0303)** *\_\_len\_\_ does not return non-negative integer* Used when a `__len__` method returns something which is not a non-negative integer
- invalid-length-hint-returned (E0310)** *\_\_length\_hint\_\_ does not return non-negative integer* Used when a `__length_hint__` method returns something which is not a non-negative integer
- invalid-repr-returned (E0306)** *\_\_repr\_\_ does not return str* Used when a `__repr__` method returns something which is not a string
- invalid-str-returned (E0307)** *\_\_str\_\_ does not return str* Used when a `__str__` method returns something which is not a string
- protected-access (W0212)** *Access to a protected member %s of a client class* Used when a protected member (i.e. class member with a name beginning with an underscore) is access outside the class or a descendant of the class where it's defined.
- attribute-defined-outside-init (W0201)** *Attribute %r defined outside \_\_init\_\_* Used when an instance attribute is defined outside the `__init__` method.
- no-init (W0232)** *Class has no \_\_init\_\_ method* Used when a class has no `__init__` method, neither its parent classes.
- abstract-method (W0223)** *Method %r is abstract in class %r but is not overridden* Used when an abstract method (i.e. raise `NotImplementedError`) is not overridden in concrete class.

- invalid-overridden-method (W0236)** *Method %r was expected to be %r, found it instead as %r* Used when we detect that a method was overridden in a way that does not match its base class which could result in potential bugs at runtime.
- arguments-differ (W0221)** *Parameters differ from %s %r method* Used when a method has a different number of arguments than in the implemented interface or in an overridden method.
- signature-differs (W0222)** *Signature differs from %s %r method* Used when a method signature is different than in the implemented interface or in an overridden method.
- bad-staticmethod-argument (W0211)** *Static method with %r as first argument* Used when a static method has "self" or a value specified in valid-classmethod-first-arg option or valid-metaclass-classmethod-first-arg option as first argument.
- useless-super-delegation (W0235)** *Useless super delegation in method %r* Used whenever we can detect that an overridden method is useless, relying on super() delegation to do the same thing as another method from the MRO.
- non-parent-init-called (W0233)** *\_\_init\_\_ method from a non direct base class %r is called* Used when an \_\_init\_\_ method is called on a class which is not in the direct ancestors for the analysed class.
- super-init-not-called (W0231)** *\_\_init\_\_ method from base class %r is not called* Used when an ancestor class method has an \_\_init\_\_ method which is not called by a derived class.
- property-with-parameters (R0206)** *Cannot have defined parameters for properties* Used when we detect that a property also has parameters, which are useless, given that properties cannot be called with additional arguments.
- useless-object-inheritance (R0205)** *Class %r inherits from object, can be safely removed from bases in python3* Used when a class inherit from object, which under python3 is implicit, hence can be safely removed from bases.
- no-classmethod-decorator (R0202)** *Consider using a decorator instead of calling classmethod* Used when a class method is defined without using the decorator syntax.
- no-staticmethod-decorator (R0203)** *Consider using a decorator instead of calling staticmethod* Used when a static method is defined without using the decorator syntax.
- no-self-use (R0201)** *Method could be a function* Used when a method doesn't use its bound instance, and so could be written as a function.
- single-string-used-for-slots (C0205)** *Class \_\_slots\_\_ should be a non-string iterable* Used when a class \_\_slots\_\_ is a simple string, rather than an iterable.
- bad-classmethod-argument (C0202)** *Class method %s should have %s as first argument* Used when a class method has a first argument named differently than the value specified in valid-classmethod-first-arg option (default to "cls"), recommended to easily differentiate them from regular instance methods.
- bad-mcs-classmethod-argument (C0204)** *Metaclass class method %s should have %s as first argument* Used when a metaclass class method has a first argument named differently than the value specified in valid-metaclass-classmethod-first-arg option (default to "mcs"), recommended to easily differentiate them from regular instance methods.
- bad-mcs-method-argument (C0203)** *Metaclass method %s should have %s as first argument* Used when a metaclass method has a first argument named differently than the value specified in valid-classmethod-first-arg option (default to "cls"), recommended to easily differentiate them from regular instance methods.
- method-check-failed (F0202)** *Unable to check methods signature (%s / %s)* Used when Pylint has been unable to check methods signature compatibility for an unexpected reason. Please report this kind if you don't make sense of it.



## Design checker

Verbatim name of the checker is `design`.

## Design checker Options

**max-args** Maximum number of arguments for function / method.

Default: 5

**max-locals** Maximum number of locals for function / method body.

Default: 15

**max-returns** Maximum number of return / yield for function / method body.

Default: 6

**max-branches** Maximum number of branch for function / method body.

Default: 12

**max-statements** Maximum number of statements in function / method body.

Default: 50

**max-parents** Maximum number of parents for a class (see R0901).

Default: 7

**max-attributes** Maximum number of attributes for a class (see R0902).

Default: 7

**min-public-methods** Minimum number of public methods for a class (see R0903).

Default: 2

**max-public-methods** Maximum number of public methods for a class (see R0904).

Default: 20

**max-bool-expr** Maximum number of boolean expressions in an if statement (see R0916).

Default: 5

## Design checker Messages

**too-few-public-methods (R0903)** *Too few public methods (%s/%s)* Used when class has too few public methods, so be sure it's really worth it.

**too-many-ancestors (R0901)** *Too many ancestors (%s/%s)* Used when class has too many parent classes, try to reduce this to get a simpler (and so easier to use) class.

**too-many-arguments (R0913)** *Too many arguments (%s/%s)* Used when a function or method takes too many arguments.

**too-many-boolean-expressions (R0916)** *Too many boolean expressions in if statement (%s/%s)* Used when an if statement contains too many boolean expressions.

**too-many-branches (R0912)** *Too many branches (%s/%s)* Used when a function or method has too many branches, making it hard to follow.

**too-many-instance-attributes (R0902)** *Too many instance attributes (%s/%s)* Used when class has too many instance attributes, try to reduce this to get a simpler (and so easier to use) class.

**too-many-locals (R0914)** *Too many local variables (%s/%s)* Used when a function or method has too many local variables.

**too-many-public-methods (R0904)** *Too many public methods (%s/%s)* Used when class has too many public methods, try to reduce this to get a simpler (and so easier to use) class.

**too-many-return-statements (R0911)** *Too many return statements (%s/%s)* Used when a function or method has too many return statement, making it hard to follow.

**too-many-statements (R0915)** *Too many statements (%s/%s)* Used when a function or method has too many statements. You should then split it in smaller functions / methods.

## Exceptions checker

Verbatim name of the checker is `exceptions`.

## Exceptions checker Options

**overgeneral-exceptions** Exceptions that will emit a warning when being caught. Defaults to "BaseException, Exception".

Default: `BaseException, Exception`

## Exceptions checker Messages

**bad-except-order (E0701)** *Bad except clauses order (%s)* Used when except clauses are not in the correct order (from the more specific to the more generic). If you don't fix the order, some exceptions may not be caught by the most specific handler.

**catching-non-exception (E0712)** *Catching an exception which doesn't inherit from Exception: %s* Used when a class which doesn't inherit from `Exception` is used as an exception in an except clause.

**bad-exception-context (E0703)** *Exception context set to something which is not an exception, nor None* Used when using the syntax "raise ... from ...", where the exception context is not an exception, nor `None`.

**notimplemented-raised (E0711)** *NotImplemented raised - should raise NotImplementedError* Used when `NotImplemented` is raised instead of `NotImplementedError`

**raising-bad-type (E0702)** *Raising %s while only classes or instances are allowed* Used when something which is neither a class, an instance or a string is raised (i.e. a `TypeError` will be raised).

**raising-non-exception (E0710)** *Raising a new style class which doesn't inherit from BaseException* Used when a new style class which doesn't inherit from `BaseException` is raised.

**misplaced-bare-raise (E0704)** *The raise statement is not inside an except clause* Used when a bare raise is not used inside an except clause. This generates an error, since there are no active exceptions to be reraised. An exception to this rule is represented by a bare raise inside a finally clause, which might work, as long as an exception is raised inside the try block, but it is nevertheless a code smell that must not be relied upon.

**duplicate-except (W0705)** *Catching previously caught exception type %s* Used when an except catches a type that was already caught by a previous handler.

- broad-except (W0703)** *Catching too general exception %s* Used when an except catches a too general exception, possibly burying unrelated errors.
- raise-missing-from (W0707)** *Consider explicitly re-raising using the 'from' keyword* Python 3's exception chaining means it shows the traceback of the current exception, but also the original exception. Not using *raise from* makes the traceback inaccurate, because the message implies there is a bug in the exception-handling code itself, which is a separate situation than wrapping an exception.
- raising-format-tuple (W0715)** *Exception arguments suggest string formatting might be intended* Used when passing multiple arguments to an exception constructor, the first of them a string literal containing what appears to be placeholders intended for formatting
- binary-op-exception (W0711)** *Exception to catch is the result of a binary "%s" operation* Used when the exception to catch is of the form "except A or B:". If intending to catch multiple, rewrite as "except (A, B):"
- wrong-exception-operation (W0716)** *Invalid exception operation. %s* Used when an operation is done against an exception, but the operation is not valid for the exception in question. Usually emitted when having binary operations between exceptions in except handlers.
- bare-except (W0702)** *No exception type(s) specified* Used when an except clause doesn't specify exceptions type to catch.
- try-except-raise (W0706)** *The except handler raises immediately* Used when an except handler uses raise as its first or only operator. This is useless because it raises back the exception immediately. Remove the raise operator or the entire try-except-raise block!

## Format checker

Verbatim name of the checker is `format`.

## Format checker Options

- max-line-length** Maximum number of characters on a single line.  
Default: 100
- ignore-long-lines** Regexp for a line that is allowed to be longer than the limit.  
Default: `^\s*(# )?<?https?:\/\/\S+>?$`
- single-line-if-stmt** Allow the body of an if to be on the same line as the test if there is no else.
- single-line-class-stmt** Allow the body of a class to be on the same line as the declaration if body contains single statement.
- max-module-lines** Maximum number of lines in a module.  
Default: 1000
- indent-string** String used as indentation unit. This is usually " " (4 spaces) or "t" (1 tab).  
Default: ' '
- indent-after-paren** Number of spaces of indent required inside a hanging or continued line.  
Default: 4
- expected-line-ending-format** Expected format of line ending, e.g. empty (any line ending), LF or CRLF.

## Format checker Messages

- bad-indentation (W0311)** *Bad indentation. Found %s %s, expected %s* Used when an unexpected number of indentation's tabulations or spaces has been found.
- unnecessary-semicolon (W0301)** *Unnecessary semicolon* Used when a statement is ended by a semicolon (";"), which isn't necessary (that's python, not C ;).
- missing-final-newline (C0304)** *Final newline missing* Used when the last line in a file is missing a newline.
- line-too-long (C0301)** *Line too long (%s/%s)* Used when a line is longer than a given number of characters.
- mixed-line-endings (C0327)** *Mixed line endings LF and CRLF* Used when there are mixed (LF and CRLF) newline signs in a file.
- multiple-statements (C0321)** *More than one statement on a single line* Used when more than one statement are found on the same line.
- too-many-lines (C0302)** *Too many lines in module (%s/%s)* Used when a module has too many lines, reducing its readability.
- trailing-newlines (C0305)** *Trailing newlines* Used when there are trailing blank lines in a file.
- trailing-whitespace (C0303)** *Trailing whitespace* Used when there is whitespace between the end of a line and the newline.
- unexpected-line-ending-format (C0328)** *Unexpected line ending format. There is '%s' while it should be '%s'.* Used when there is different newline than expected.
- superfluous-parens (C0325)** *Unnecessary parens after %r keyword* Used when a single item in parentheses follows an if, for, or other keyword.

## Imports checker

Verbatim name of the checker is `imports`.

## Imports checker Options

- deprecated-modules** Deprecated modules which should not be used, separated by a comma.  
Default: `optparse,tkinter.tix`
- preferred-modules** Couples of modules and preferred modules, separated by a comma.
- import-graph** Create a graph of every (i.e. internal and external) dependencies in the given file (report RP0402 must not be disabled).
- ext-import-graph** Create a graph of external dependencies in the given file (report RP0402 must not be disabled).
- int-import-graph** Create a graph of internal dependencies in the given file (report RP0402 must not be disabled).
- known-standard-library** Force import order to recognize a module as part of the standard compatibility libraries.
- known-third-party** Force import order to recognize a module as part of a third party library.  
Default: `enchant`

**allow-any-import-level** List of modules that can be imported at any level, not just the top level one.

**analyse-fallback-blocks** Analyse import fallback blocks. This can be used to support both Python 2 and 3 compatible code, which means that the block might have code that exists only in one or another interpreter, leading to false positives when analysed.

**allow-wildcard-with-all** Allow wildcard imports from modules that define `__all__`.

## Imports checker Messages

**relative-beyond-top-level (E0402)** *Attempted relative import beyond top-level package* Used when a relative import tries to access too many levels in the current package.

**import-error (E0401)** *Unable to import %s* Used when pylint has been unable to import a module.

**import-self (W0406)** *Module import itself* Used when a module is importing itself.

**preferred-module (W0407)** *Prefer importing %r instead of %r* Used when a module imported has a preferred replacement module.

**reimported (W0404)** *Reimport %r (imported line %s)* Used when a module is reimported multiple times.

**deprecated-module (W0402)** *Uses of a deprecated module %r* Used a module marked as deprecated is imported.

**wildcard-import (W0401)** *Wildcard import %s* Used when *from module import \** is detected.

**misplaced-future (W0410)** *\_\_future\_\_ import is not the first non docstring statement* Python 2.5 and greater require `__future__` import to be the first non docstring statement in the module.

**cyclic-import (R0401)** *Cyclic import (%s)* Used when a cyclic import between two or more modules is detected.

**wrong-import-order (C0411)** *%s should be placed before %s* Used when PEP8 import order is not respected (standard imports first, then third-party libraries, then local imports)

**wrong-import-position (C0413)** *Import "%s" should be placed at the top of the module* Used when code and imports are mixed

**useless-import-alias (C0414)** *Import alias does not rename original package* Used when an import alias is same as original package.e.g using `import numpy as numpy` instead of `import numpy as np`

**import-outside-toplevel (C0415)** *Import outside toplevel (%s)* Used when an import statement is used anywhere other than the module toplevel. Move this import to the top of the file.

**ungrouped-imports (C0412)** *Imports from package %s are not grouped* Used when imports are not grouped by packages

**multiple-imports (C0410)** *Multiple imports on one line (%s)* Used when import statement importing multiple modules is detected.

## Imports checker Reports

**RP0401** External dependencies

**RP0402** Modules dependencies graph

## Logging checker

Verbatim name of the checker is `logging`.

## Logging checker Options

**logging-modules** Logging modules to check that the string format arguments are in logging function parameter format.

Default: logging

**logging-format-style** The type of string formatting that logging methods do. *old* means using % formatting, *new* is for {} formatting.

Default: old

## Logging checker Messages

**logging-format-truncated (E1201)** *Logging format string ends in middle of conversion specifier* Used when a logging statement format string terminates before the end of a conversion specifier.

**logging-too-few-args (E1206)** *Not enough arguments for logging format string* Used when a logging format string is given too few arguments.

**logging-too-many-args (E1205)** *Too many arguments for logging format string* Used when a logging format string is given too many arguments.

**logging-unsupported-format (E1200)** *Unsupported logging format character %r (%#02x) at index %d* Used when an unsupported format character is used in a logging statement format string.

**logging-format-interpolation (W1202)** *Use %s formatting in logging functions* Used when a logging statement has a call form of "logging.<logging method>(format\_string.format(format\_args...))". Use another type of string formatting instead. You can use % formatting but leave interpolation to the logging function by passing the parameters as arguments. If logging-fstring- interpolation is disabled then you can use fstring formatting. If logging- not-lazy is disabled then you can use % formatting as normal.

**logging-fstring-interpolation (W1203)** *Use %s formatting in logging functions* Used when a logging statement has a call form of "logging.<logging method>(f'...')". Use another type of string formatting instead. You can use % formatting but leave interpolation to the logging function by passing the parameters as arguments. If logging-format-interpolation is disabled then you can use str.format. If logging-not-lazy is disabled then you can use % formatting as normal.

**logging-not-lazy (W1201)** *Use %s formatting in logging functions* Used when a logging statement has a call form of "logging.<logging method>(format\_string % (format\_args...))". Use another type of string formatting instead. You can use % formatting but leave interpolation to the logging function by passing the parameters as arguments. If logging-fstring- interpolation is disabled then you can use fstring formatting. If logging- format-interpolation is disabled then you can use str.format.

## Metrics checker

Verbatim name of the checker is `metrics`.

## Metrics checker Reports

**RP0701** Raw metrics

## Miscellaneous checker

Verbatim name of the checker is `miscellaneous`.

## Miscellaneous checker Options

**notes** List of note tags to take in consideration, separated by a comma.

Default: `FIXME, XXX, TODO`

**notes-rgx** Regular expression of note tags to take in consideration.

## Miscellaneous checker Messages

**fixme (W0511)** Used when a warning note as `FIXME` or `XXX` is detected.

**use-symbolic-message-instead (I0023)** Used when a message is enabled or disabled by id.

## Newstyle checker

Verbatim name of the checker is `newstyle`.

## Newstyle checker Messages

**bad-super-call (E1003)** *Bad first argument %r given to super()* Used when another argument than the current class is given as first argument of the `super` builtin.

## Python3 checker

Verbatim name of the checker is `python3`.

## Python3 checker Messages

**unpacking-in-except (E1603)** *Implicit unpacking of exceptions is not supported in Python 3* Python3 will not allow implicit unpacking of exceptions in `except` clauses. See <https://www.python.org/dev/peps/pep-3110/>

**import-star-module-level (E1609)** *Import \* only allowed at module level* Used when the `import star` syntax is used somewhere else than the module level. This message can't be emitted when using Python  $\geq 3.0$ .

**non-ascii-bytes-literal (E1610)** *Non-ascii bytes literals not supported in 3.x* Used when non-ascii bytes literals are found in a program. They are no longer supported in Python 3. This message can't be emitted when using Python  $\geq 3.0$ .

**parameter-unpacking (E1602)** *Parameter unpacking specified* Used when parameter unpacking is specified for a function (Python 3 doesn't allow it)

**long-suffix (E1606)** *Use of long suffix* Used when `"l"` or `"L"` is used to mark a long integer. This will not work in Python 3, since `int` and `long` types have merged. This message can't be emitted when using Python  $\geq 3.0$ .

- old-octal-literal (E1608)** *Use of old octal literal* Used when encountering the old octal syntax, removed in Python 3. To use the new syntax, prepend 0o on the number. This message can't be emitted when using Python >= 3.0.
- old-ne-operator (E1607)** *Use of the <> operator* Used when the deprecated "<>" operator is used instead of "!=". This is removed in Python 3. This message can't be emitted when using Python >= 3.0.
- backtick (E1605)** *Use of the `` operator* Used when the deprecated "``" (backtick) operator is used instead of the str() function.
- old-raise-syntax (E1604)** *Use raise ErrorClass(args) instead of raise ErrorClass, args.* Used when the alternate raise syntax 'raise foo, bar' is used instead of 'raise foo(bar)'.
- print-statement (E1601)** *print statement used* Used when a print statement is used (*print* is a function in Python 3)
- deprecated-types-field (W1652)** *Accessing a deprecated fields on the types module* Used when accessing a field on types that has been removed in Python 3.
- deprecated-itertools-function (W1651)** *Accessing a deprecated function on the itertools module* Used when accessing a function on itertools that has been removed in Python 3.
- deprecated-string-function (W1649)** *Accessing a deprecated function on the string module* Used when accessing a string function that has been deprecated in Python 3.
- deprecated-operator-function (W1657)** *Accessing a removed attribute on the operator module* Used when accessing a field on operator module that has been removed in Python 3.
- deprecated-sys-function (W1660)** *Accessing a removed attribute on the sys module* Used when accessing a field on sys module that has been removed in Python 3.
- deprecated-urllib-function (W1658)** *Accessing a removed attribute on the urllib module* Used when accessing a field on urllib module that has been removed or moved in Python 3.
- xreadlines-attribute (W1659)** *Accessing a removed xreadlines attribute* Used when accessing the xreadlines() function on a file stream, removed in Python 3.
- metaclass-assignment (W1623)** *Assigning to a class's \_\_metaclass\_\_ attribute* Used when a metaclass is specified by assigning to \_\_metaclass\_\_ (Python 3 specifies the metaclass as a class statement argument)
- next-method-called (W1622)** *Called a next() method on an object* Used when an object's next() method is called (Python 3 uses the next() built-in function)
- dict-iter-method (W1620)** *Calling a dict.iter\*() method* Used for calls to dict.iterkeys(), itervalues() or iteritems() (Python 3 lacks these methods)
- dict-view-method (W1621)** *Calling a dict.view\*() method* Used for calls to dict.viewkeys(), viewvalues() or viewitems() (Python 3 lacks these methods)
- exception-message-attribute (W1645)** *Exception.message removed in Python 3* Used when the message attribute is accessed on an Exception. Use str(exception) instead.
- eq-without-hash (W1641)** *Implementing \_\_eq\_\_ without also implementing \_\_hash\_\_* Used when a class implements \_\_eq\_\_ but not \_\_hash\_\_. In Python 2, objects get object.\_\_hash\_\_ as the default implementation, in Python 3 objects get None as their default \_\_hash\_\_ implementation if they also implement \_\_eq\_\_.
- indexing-exception (W1624)** *Indexing exceptions will not work on Python 3* Indexing exceptions will not work on Python 3. Use exception.args[index] instead.



- bad-python3-import (W1648)** *Module moved in Python 3* Used when importing a module that no longer exists in Python 3.
- raising-string (W1625)** *Raising a string exception* Used when a string exception is raised. This will not work on Python 3.
- standarderror-builtin (W1611)** *StandardError built-in referenced* Used when the StandardError built-in function is referenced (missing from Python 3)
- comprehension-escape (W1662)** *Using a variable that was bound inside a comprehension* Emitted when using a variable, that was bound in a comprehension handler, outside of the comprehension itself. On Python 3 these variables will be deleted outside of the comprehension.
- exception-escape (W1661)** *Using an exception object that was bound by an except handler* Emitted when using an exception, that was bound in an except handler, outside of the except handler. On Python 3 these exceptions will be deleted once they get out of the except handler.
- deprecated-str-translate-call (W1650)** *Using str.translate with deprecated deletechars parameters* Used when using the deprecated deletechars parameters from str.translate. Use re.sub to remove the desired characters
- using-cmp-argument (W1640)** *Using the cmp argument for list.sort / sorted* Using the cmp argument for list.sort or the sorted builtin should be avoided, since it was removed in Python 3. Using either key or functools.cmp\_to\_key should be preferred.
- cmp-method (W1630)** *\_\_cmp\_\_ method defined* Used when a \_\_cmp\_\_ method is defined (method is not used by Python 3)
- coerce-method (W1614)** *\_\_coerce\_\_ method defined* Used when a \_\_coerce\_\_ method is defined (method is not used by Python 3)
- delslice-method (W1615)** *\_\_delslice\_\_ method defined* Used when a \_\_delslice\_\_ method is defined (method is not used by Python 3)
- div-method (W1642)** *\_\_div\_\_ method defined* Used when a \_\_div\_\_ method is defined. Using \_\_true-div\_\_ and setting \_\_div\_\_ = \_\_truediv\_\_ should be preferred.(method is not used by Python 3)
- getslice-method (W1616)** *\_\_getslice\_\_ method defined* Used when a \_\_getslice\_\_ method is defined (method is not used by Python 3)
- hex-method (W1628)** *\_\_hex\_\_ method defined* Used when a \_\_hex\_\_ method is defined (method is not used by Python 3)
- idiv-method (W1643)** *\_\_idiv\_\_ method defined* Used when an \_\_idiv\_\_ method is defined. Using \_\_itrue-div\_\_ and setting \_\_idiv\_\_ = \_\_itrue-div\_\_ should be preferred.(method is not used by Python 3)
- nonzero-method (W1629)** *\_\_nonzero\_\_ method defined* Used when a \_\_nonzero\_\_ method is defined (method is not used by Python 3)
- oct-method (W1627)** *\_\_oct\_\_ method defined* Used when an \_\_oct\_\_ method is defined (method is not used by Python 3)
- rdiv-method (W1644)** *\_\_rdiv\_\_ method defined* Used when a \_\_rdiv\_\_ method is defined. Using \_\_rtruediv\_\_ and setting \_\_rdiv\_\_ = \_\_rtruediv\_\_ should be preferred.(method is not used by Python 3)
- setslice-method (W1617)** *\_\_setslice\_\_ method defined* Used when a \_\_setslice\_\_ method is defined (method is not used by Python 3)
- apply-builtin (W1601)** *apply built-in referenced* Used when the apply built-in function is referenced (missing from Python 3)

- basestring-builtin (W1602)** *basestring built-in referenced* Used when the basestring built-in function is referenced (missing from Python 3)
- buffer-builtin (W1603)** *buffer built-in referenced* Used when the buffer built-in function is referenced (missing from Python 3)
- cmp-builtin (W1604)** *cmp built-in referenced* Used when the cmp built-in function is referenced (missing from Python 3)
- coerce-builtin (W1605)** *coerce built-in referenced* Used when the coerce built-in function is referenced (missing from Python 3)
- dict-items-not-iterating (W1654)** *dict.items referenced when not iterating* Used when dict.items is referenced in a non-iterating context (returns an iterator in Python 3)
- dict-keys-not-iterating (W1655)** *dict.keys referenced when not iterating* Used when dict.keys is referenced in a non-iterating context (returns an iterator in Python 3)
- dict-values-not-iterating (W1656)** *dict.values referenced when not iterating* Used when dict.values is referenced in a non-iterating context (returns an iterator in Python 3)
- old-division (W1619)** *division w/o \_\_future\_\_ statement* Used for non-floor division w/o a float literal or from `__future__ import division` (Python 3 returns a float for int division unconditionally)
- execfile-builtin (W1606)** *execfile built-in referenced* Used when the execfile built-in function is referenced (missing from Python 3)
- file-builtin (W1607)** *file built-in referenced* Used when the file built-in function is referenced (missing from Python 3)
- filter-builtin-not-iterating (W1639)** *filter built-in referenced when not iterating* Used when the filter built-in is referenced in a non-iterating context (returns an iterator in Python 3)
- no-absolute-import (W1618)** *import missing 'from \_\_future\_\_ import absolute\_import'* Used when an import is not accompanied by `from __future__ import absolute_import` (default behaviour in Python 3)
- input-builtin (W1632)** *input built-in referenced* Used when the input built-in is referenced (backwards-incompatible semantics in Python 3)
- intern-builtin (W1634)** *intern built-in referenced* Used when the intern built-in is referenced (Moved to `sys.intern` in Python 3)
- long-builtin (W1608)** *long built-in referenced* Used when the long built-in function is referenced (missing from Python 3)
- map-builtin-not-iterating (W1636)** *map built-in referenced when not iterating* Used when the map built-in is referenced in a non-iterating context (returns an iterator in Python 3)
- next-method-defined (W1653)** *next method defined* Used when a next method is defined that would be an iterator in Python 2 but is treated as a normal function in Python 3.
- invalid-str-codec (W1646)** *non-text encoding used in str.decode* Used when using `str.encode` or `str.decode` with a non-text encoding. Use `codecs` module to handle arbitrary codecs.
- range-builtin-not-iterating (W1638)** *range built-in referenced when not iterating* Used when the range built-in is referenced in a non-iterating context (returns a range in Python 3)
- raw\_input-builtin (W1609)** *raw\_input built-in referenced* Used when the raw\_input built-in function is referenced (missing from Python 3)
- reduce-builtin (W1610)** *reduce built-in referenced* Used when the reduce built-in function is referenced (missing from Python 3)

**reload-builtin (W1626)** *reload built-in referenced* Used when the reload built-in function is referenced (missing from Python 3). You can use instead `imp.reload` or `importlib.reload`.

**round-builtin (W1633)** *round built-in referenced* Used when the round built-in is referenced (backwards-incompatible semantics in Python 3)

**sys-max-int (W1647)** *sys.maxint removed in Python 3* Used when accessing `sys.maxint`. Use `sys.maxsize` instead.

**unichr-builtin (W1635)** *unichr built-in referenced* Used when the unichr built-in is referenced (Use `chr` in Python 3)

**unicode-builtin (W1612)** *unicode built-in referenced* Used when the unicode built-in function is referenced (missing from Python 3)

**xrange-builtin (W1613)** *xrange built-in referenced* Used when the xrange built-in function is referenced (missing from Python 3)

**zip-builtin-not-iterating (W1637)** *zip built-in referenced when not iterating* Used when the zip built-in is referenced in a non-iterating context (returns an iterator in Python 3)

## Refactoring checker

Verbatim name of the checker is `refactoring`.

## Refactoring checker Options

**max-nested-blocks** Maximum number of nested blocks for function / method body

Default: 5

**never-returning-functions** Complete name of functions that never returns. When checking for inconsistent-return-statements if a never returning function is called then it will be considered as an explicit return statement and no message will be printed.

Default: `sys.exit`

## Refactoring checker Messages

**simplify-boolean-expression (R1709)** *Boolean expression may be simplified to %s* Emitted when redundant pre-python 2.5 ternary syntax is used.

**consider-using-in (R1714)** *Consider merging these comparisons with "in" to %r* To check if a variable is equal to one of many values, combine the values into a tuple and check if the variable is contained "in" it instead of checking for equality against each of the values. This is faster and less verbose.

**consider-merging-isinstance (R1701)** *Consider merging these isinstance calls to isinstance(%s, (%s))* Used when multiple consecutive `isinstance` calls can be merged into one.

**super-with-arguments (R1725)** *Consider using Python 3 style super() without arguments* Emitted when calling the `super()` builtin with the current class and instance. On Python 3 these arguments are the default and they can be omitted.

**consider-using-dict-comprehension (R1717)** *Consider using a dictionary comprehension* Emitted when we detect the creation of a dictionary using the `dict()` callable and a transient list. Although there is nothing syntactically wrong with this code, it is hard to read and can be simplified to a dict comprehension. Also it is faster since you don't need to create another transient list

- consider-using-set-comprehension (R1718)** *Consider using a set comprehension* Although there is nothing syntactically wrong with this code, it is hard to read and can be simplified to a set comprehension. Also it is faster since you don't need to create another transient list
- consider-using-get (R1715)** *Consider using dict.get for getting values from a dict if a key is present or a default if not* Using the builtin dict.get for getting a value from a dictionary if a key is present or a default if not, is simpler and considered more idiomatic, although sometimes a bit slower
- consider-using-join (R1713)** *Consider using str.join(sequence) for concatenating strings from an iterable* Using str.join(sequence) is faster, uses less memory and increases readability compared to for-loop iteration.
- consider-using-sys-exit (R1722)** *Consider using sys.exit()* Instead of using exit() or quit(), consider using the sys.exit().
- consider-using-ternary (R1706)** *Consider using ternary (%s)* Used when one of known pre-python 2.5 ternary syntax is used.
- consider-swap-variables (R1712)** *Consider using tuple unpacking for swapping variables* You do not have to use a temporary variable in order to swap variables. Using "tuple unpacking" to directly swap variables makes the intention more clear.
- trailing-comma-tuple (R1707)** *Disallow trailing comma tuple* In Python, a tuple is actually created by the comma symbol, not by the parentheses. Unfortunately, one can actually create a tuple by misplacing a trailing comma, which can lead to potential weird bugs in your code. You should always use parentheses explicitly for creating a tuple.
- stop-iteration-return (R1708)** *Do not raise StopIteration in generator, use return statement instead* According to PEP479, the raise of StopIteration to end the loop of a generator may lead to hard to find bugs. This PEP specify that raise StopIteration has to be replaced by a simple return statement
- inconsistent-return-statements (R1710)** *Either all return statements in a function should return an expression, or none of them should.* According to PEP8, if any return statement returns an expression, any return statements where no value is returned should explicitly state this as return None, and an explicit return statement should be present at the end of the function (if reachable)
- redefined-argument-from-local (R1704)** *Redefining argument with the local name %r* Used when a local name is redefining an argument, which might suggest a potential error. This is taken in account only for a handful of name binding operations, such as for iteration, with statement assignment and exception handler assignment.
- chained-comparison (R1716)** *Simplify chained comparison between the operands* This message is emitted when pylint encounters boolean operation like "a < b and b < c", suggesting instead to refactor it to "a < b < c"
- simplifiable-if-expression (R1719)** *The if expression can be replaced with %s* Used when an if expression can be replaced with 'bool(test)'.
- simplifiable-if-statement (R1703)** *The if statement can be replaced with %s* Used when an if statement can be replaced with 'bool(test)'.
- too-many-nested-blocks (R1702)** *Too many nested blocks (%s/%s)* Used when a function or a method has too many nested blocks. This makes the code less understandable and maintainable.
- no-else-break (R1723)** *Unnecessary "%s" after "break"* Used in order to highlight an unnecessary block of code following an if containing a break statement. As such, it will warn when it encounters an else following a chain of ifs, all of them containing a break statement.
- no-else-continue (R1724)** *Unnecessary "%s" after "continue"* Used in order to highlight an unnecessary block of code following an if containing a continue statement. As such, it will warn when it encounters an else following a chain of ifs, all of them containing a continue statement.

**no-else-raise (R1720)** *Unnecessary "%s" after "raise"* Used in order to highlight an unnecessary block of code following an if containing a raise statement. As such, it will warn when it encounters an else following a chain of ifs, all of them containing a raise statement.

**no-else-return (R1705)** *Unnecessary "%s" after "return"* Used in order to highlight an unnecessary block of code following an if containing a return statement. As such, it will warn when it encounters an else following a chain of ifs, all of them containing a return statement.

**unnecessary-comprehension (R1721)** *Unnecessary use of a comprehension* Instead of using an identity comprehension, consider using the list, dict or set constructor. It is faster and simpler.

**useless-return (R1711)** *Useless return at end of function or method* Emitted when a single "return" or "return None" statement is found at the end of function or method definition. This statement can safely be removed because Python will implicitly return None

**unneeded-not (C0113)** *Consider changing "%s" to "%s"* Used when a boolean expression contains an unneeded negation.

**consider-iterating-dictionary (C0201)** *Consider iterating the dictionary directly instead of calling .keys()* Emitted when the keys of a dictionary are iterated through the .keys() method. It is enough to just iterate through the dictionary itself, as in "for key in dictionary".

**consider-using-enumerate (C0200)** *Consider using enumerate instead of iterating with range and len* Emitted when code that iterates with range and len is encountered. Such code can be simplified by using the enumerate builtin.

**len-as-condition (C1801)** *Do not use 'len(SEQUENCE)' without comparison to determine if a sequence is empty* Used when Pylint detects that len(sequence) is being used without explicit comparison inside a condition to determine if a sequence is empty. Instead of coercing the length to a boolean, either rely on the fact that empty sequences are false or compare the length against a scalar.

## Similarities checker

Verbatim name of the checker is `similarities`.

## Similarities checker Options

**min-similarity-lines** Minimum lines number of a similarity.

Default: 4

**ignore-comments** Ignore comments when computing similarities.

Default: yes

**ignore-docstrings** Ignore docstrings when computing similarities.

Default: yes

**ignore-imports** Ignore imports when computing similarities.

## Similarities checker Messages

**duplicate-code (R0801)** *Similar lines in %s files* Indicates that a set of similar lines has been detected among multiple file. This usually means that the code should be refactored to avoid this duplication.

## Similarities checker Reports

**RP0801** Duplication

## Spelling checker

Verbatim name of the checker is `spelling`.

## Spelling checker Options

**spelling-dict** Spelling dictionary name. Available dictionaries: none. To make it work, install the python-enchant package.

**spelling-ignore-words** List of comma separated words that should not be checked.

**spelling-private-dict-file** A path to a file that contains the private dictionary; one word per line.

**spelling-store-unknown-words** Tells whether to store unknown words to the private dictionary (see the `--spelling-private-dict-file` option) instead of raising a message.

**max-spelling-suggestions** Limits count of emitted suggestions for spelling mistakes.

Default: 4

## Spelling checker Messages

**invalid-characters-in-docstring (C0403)** *Invalid characters %r in a docstring* Used when a word in docstring cannot be checked by enchant.

**wrong-spelling-in-comment (C0401)** *Wrong spelling of a word '%s' in a comment:* Used when a word in comment is not spelled correctly.

**wrong-spelling-in-docstring (C0402)** *Wrong spelling of a word '%s' in a docstring:* Used when a word in docstring is not spelled correctly.

## Stdlib checker

Verbatim name of the checker is `stdlib`.

## Stdlib checker Messages

**invalid-envvar-value (E1507)** *%s does not support %s type argument* Env manipulation functions support only string type arguments. See <https://docs.python.org/3/library/os.html#os.getenv>.

**bad-open-mode (W1501)** *"%s" is not a valid mode for open.* Python supports: r, w, a[, x] modes with b, +, and U (only with r) options. See <https://docs.python.org/2/library/functions.html#open>

**invalid-envvar-default (W1508)** *%s default type is %s. Expected str or None.* Env manipulation functions return None or str values. Supplying anything different as a default may cause bugs. See <https://docs.python.org/3/library/os.html#os.getenv>.

**redundant-unittest-assert (W1503)** *Redundant use of %s with constant value %r* The first argument of `assertTrue` and `assertFalse` is a condition. If a constant is passed as parameter, that condition will be always true. In this case a warning should be emitted.

**shallow-copy-environ (W1507)** *Using copy.copy(os.environ). Use os.environ.copy() instead.* os.environ is not a dict object but proxy object, so shallow copy has still effects on original object. See <https://bugs.python.org/issue15373> for reference.

**boolean-datetime (W1502)** *Using datetime.time in a boolean context.* Using datetime.time in a boolean context can hide subtle bugs when the time they represent matches midnight UTC. This behaviour was fixed in Python 3.5. See <https://bugs.python.org/issue13936> for reference. This message can't be emitted when using Python >= 3.5.

**deprecated-method (W1505)** *Using deprecated method %s()* The method is marked as deprecated and will be removed in a future version of Python. Consider looking for an alternative in the documentation.

**subprocess-popen-preexec-fn (W1509)** *Using preexec\_fn keyword which may be unsafe in the presence of threads* The preexec\_fn parameter is not safe to use in the presence of threads in your application. The child process could deadlock before exec is called. If you must use it, keep it trivial! Minimize the number of libraries you call into. <https://docs.python.org/3/library/subprocess.html#popen-constructor>

**subprocess-run-check (W1510)** *Using subprocess.run without explicitly set 'check' is not recommended.* The check parameter should always be used with explicitly set check keyword to make clear what the error-handling behavior is. <https://docs.python.org/3/library/subprocess.html#subprocess.run>

**bad-thread-instantiation (W1506)** *threading.Thread needs the target function* The warning is emitted when a threading.Thread class is instantiated without the target function being passed. By default, the first parameter is the group param, not the target param.

## String checker

Verbatim name of the checker is `string`.

## String checker Options

**check-str-concat-over-line-jumps** This flag controls whether the implicit-str-concat should generate a warning on implicit string concatenation in sequences defined over several lines.

**check-quote-consistency** This flag controls whether inconsistent-quotes generates a warning when the character used as a quote delimiter is used inconsistently within a module.

## String checker Messages

**bad-string-format-type (E1307)** *Argument %r does not match format type %r* Used when a type required by format string is not suitable for actual argument type

**format-needs-mapping (E1303)** *Expected mapping for format string, not %s* Used when a format string that uses named conversion specifiers is used with an argument that is not a mapping.

**truncated-format-string (E1301)** *Format string ends in middle of conversion specifier* Used when a format string terminates before the end of a conversion specifier.

**missing-format-string-key (E1304)** *Missing key %r in format string dictionary* Used when a format string that uses named conversion specifiers is used with a dictionary that doesn't contain all the keys required by the format string.

- mixed-format-string (E1302)** *Mixing named and unnamed conversion specifiers in format string* Used when a format string contains both named (e.g. `'%(foo)d'`) and unnamed (e.g. `'%d'`) conversion specifiers. This is also used when a named conversion specifier contains `*` for the minimum field width and/or precision.
- too-few-format-args (E1306)** *Not enough arguments for format string* Used when a format string that uses unnamed conversion specifiers is given too few arguments
- bad-str-strip-call (E1310)** *Suspicious argument in `%.%s` call* The argument to a `str.{l,r,}strip` call contains a duplicate character,
- too-many-format-args (E1305)** *Too many arguments for format string* Used when a format string that uses unnamed conversion specifiers is given too many arguments.
- bad-format-character (E1300)** *Unsupported format character `%r` ( `%#02x`) at index `%d`* Used when an unsupported format character is used in a format string.
- anomalous-unicode-escape-in-string (W1402)** *Anomalous Unicode escape in byte string: `'%s'`. String constant might be missing an `r` or `u` prefix.* Used when an escape like `u` is encountered in a byte string where it has no effect.
- anomalous-backslash-in-string (W1401)** *Anomalous backslash in string: `'%s'`. String constant might be missing an `r` prefix.* Used when a backslash is in a literal string but not as an escape.
- duplicate-string-formatting-argument (W1308)** *Duplicate string formatting argument `%r`, consider passing as named argument* Used when we detect that a string formatting is repeating an argument instead of using named string arguments
- format-combined-specification (W1305)** *Format string contains both automatic field numbering and manual field specification* Used when a PEP 3101 format string contains both automatic field numbering (e.g. `'{ }'`) and manual field specification (e.g. `'{0}'`).
- bad-format-string-key (W1300)** *Format string dictionary key should be a string, not `%s`* Used when a format string that uses named conversion specifiers is used with a dictionary whose keys are not all strings.
- implicit-str-concat (W1404)** *Implicit string concatenation found in `%s`* String literals are implicitly concatenated in a literal iterable definition : maybe a comma is missing ?
- bad-format-string (W1302)** *Invalid format string* Used when a PEP 3101 format string is invalid.
- missing-format-attribute (W1306)** *Missing format attribute `%r` in format specifier `%r`* Used when a PEP 3101 format string uses an attribute specifier (`{0.length}`), but the argument passed for formatting doesn't have that attribute.
- missing-format-argument-key (W1303)** *Missing keyword argument `%r` for format string* Used when a PEP 3101 format string that uses named fields doesn't receive one or more required keywords.
- inconsistent-quotes (W1405)** *Quote delimiter `%s` is inconsistent with the rest of the file* Quote delimiters are not used consistently throughout a module (with allowances made for avoiding unnecessary escaping).
- unused-format-string-argument (W1304)** *Unused format argument `%r`* Used when a PEP 3101 format string that uses named fields is used with an argument that is not required by the format string.
- unused-format-string-key (W1301)** *Unused key `%r` in format string dictionary* Used when a format string that uses named conversion specifiers is used with a dictionary that contains keys not required by the format string.
- f-string-without-interpolation (W1309)** *Using an f-string that does not have any interpolated variables* Used when we detect an f-string that does not use any interpolation variables, in which case it can be either a normal string or a bug in the code.



**invalid-format-index (W1307)** *Using invalid lookup key %r in format specifier %r* Used when a PEP 3101 format string uses a lookup specifier (`{a[1]}`), but the argument passed for formatting doesn't contain or doesn't have that key as an attribute.

## Typecheck checker

Verbatim name of the checker is `typecheck`.

## Typecheck checker Options

**ignore-on-opaque-inference** This flag controls whether pylint should warn about no-member and similar checks whenever an opaque object is returned when inferring. The inference can return multiple potential results while evaluating a Python object, but some branches might not be evaluated, which results in partial inference. In that case, it might be useful to still emit no-member and other checks for the rest of the inferred objects.

Default: `yes`

**ignore-mixin-members** Tells whether missing members accessed in mixin class should be ignored. A mixin class is detected if its name ends with "mixin" (case insensitive).

Default: `yes`

**ignore-none** Tells whether to warn about missing members when the owner of the attribute is inferred to be `None`.

Default: `yes`

**ignored-modules** List of module names for which member attributes should not be checked (useful for modules/projects where namespaces are manipulated during runtime and thus existing member attributes cannot be deduced by static analysis). It supports qualified module names, as well as Unix pattern matching.

**ignored-classes** List of class names for which member attributes should not be checked (useful for classes with dynamically set attributes). This supports the use of qualified names.

Default: `optparse.Values, thread._local, _thread._local`

**generated-members** List of members which are set dynamically and missed by pylint inference system, and so shouldn't trigger E1101 when accessed. Python regular expressions are accepted.

**contextmanager-decorators** List of decorators that produce context managers, such as `contextlib.contextmanager`. Add to this list to register other decorators that produce valid context managers.

Default: `contextlib.contextmanager`

**missing-member-hint-distance** The minimum edit distance a name should have in order to be considered a similar match for a missing member name.

Default: `1`

**missing-member-max-choices** The total number of similar names that should be taken in consideration when showing a hint for a missing member.

Default: `1`

**missing-member-hint** Show a hint with possible names when a member name was not found. The aspect of finding the hint is based on edit distance.

Default: `yes`

**signature-mutators** List of decorators that change the signature of a decorated function.

## Typecheck checker Messages

**unsupported-assignment-operation (E1137)** *%r does not support item assignment* Emitted when an object does not support item assignment (i.e. doesn't define `__setitem__` method).

**unsupported-delete-operation (E1138)** *%r does not support item deletion* Emitted when an object does not support item deletion (i.e. doesn't define `__delitem__` method).

**invalid-unary-operand-type (E1130)** Emitted when a unary operand is used on an object which does not support this type of operation.

**unsupported-binary-operation (E1131)** Emitted when a binary arithmetic operation between two operands is not supported.

**no-member (E1101)** *%s %r has no %r member%s* Used when a variable is accessed for an unexistent member.

**not-callable (E1102)** *%s is not callable* Used when an object being called has been inferred to a non callable object.

**redundant-keyword-arg (E1124)** *Argument %r passed by position and keyword in %s call* Used when a function call would result in assigning multiple values to a function parameter, one value from a positional argument and one from a keyword argument.

**assignment-from-no-return (E1111)** *Assigning result of a function call, where the function has no return* Used when an assignment is done on a function call but the inferred function doesn't return anything.

**assignment-from-none (E1128)** *Assigning result of a function call, where the function returns None* Used when an assignment is done on a function call but the inferred function returns nothing but None.

**not-context-manager (E1129)** *Context manager '%s' doesn't implement \_\_enter\_\_ and \_\_exit\_\_.* Used when an instance in a with statement doesn't implement the context manager protocol(`__enter__`/`__exit__`).

**unhashable-dict-key (E1140)** *Dict key is unhashable* Emitted when a dict key is not hashable (i.e. doesn't define `__hash__` method).

**repeated-keyword (E1132)** *Got multiple values for keyword argument %r in function call* Emitted when a function call got multiple values for a keyword.

**invalid-metaclass (E1139)** *Invalid metaclass %r used* Emitted whenever we can detect that a class is using, as a metaclass, something which might be invalid for using as a metaclass.

**missing-kwoa (E1125)** *Missing mandatory keyword argument %r in %s call* Used when a function call does not pass a mandatory keyword-only argument.

**no-value-for-parameter (E1120)** *No value for argument %s in %s call* Used when a function call passes too few arguments.

**not-an-iterable (E1133)** *Non-iterable value %s is used in an iterating context* Used when a non-iterable value is used in place where iterable is expected

**not-a-mapping (E1134)** *Non-mapping value %s is used in a mapping context* Used when a non-mapping value is used in place where mapping is expected

- invalid-sequence-index (E1126)** *Sequence index is not an int, slice, or instance with `__index__`* Used when a sequence type is indexed with an invalid type. Valid types are ints, slices, and objects with an `__index__` method.
- invalid-slice-index (E1127)** *Slice index is not an int, None, or instance with `__index__`* Used when a slice index is not an integer, None, or an object with an `__index__` method.
- too-many-function-args (E1121)** *Too many positional arguments for %s call* Used when a function call passes too many positional arguments.
- unexpected-keyword-arg (E1123)** *Unexpected keyword argument %r in %s call* Used when a function call passes a keyword argument that doesn't correspond to one of the function's parameter names.
- dict-iter-missing-items (E1141)** *Unpacking a dictionary in iteration without calling `.items()`* Emitted when trying to iterate through a dict without calling `.items()`
- unsupported-membership-test (E1135)** *Value '%s' doesn't support membership test* Emitted when an instance in membership test expression doesn't implement membership protocol (`__contains__`/`__iter__`/`__getitem__`).
- unsubscriptable-object (E1136)** *Value '%s' is unsubscriptable* Emitted when a subscripted value doesn't support subscription (i.e. doesn't define `__getitem__` method or `__class_getitem__` for a class).
- keyword-arg-before-vararg (W1113)** *Keyword argument before variable positional arguments list in the definition of %s function* When defining a keyword argument before variable positional arguments, one can end up in having multiple values passed for the aforementioned parameter in case the method is called with keyword arguments.
- non-str-assignment-to-dunder-name (W1115)** *Non-string value assigned to `__name__`* Emitted when a non-string value is assigned to `__name__`
- arguments-out-of-order (W1114)** *Positional arguments appear to be out of order* Emitted when the caller's argument names fully match the parameter names in the function signature but do not have the same order.
- isinstance-second-argument-not-valid-type (W1116)** *Second argument of `isinstance` is not a type* Emitted when the second argument of an `isinstance` call is not a type.
- c-extension-no-member (I1101)** *%s %r has no %r member%s, but source is unavailable. Consider adding this module to extension-pkg-whitelist if you want to perform analysis based on run-time introspection of living objects.* Used when a variable is accessed for non-existent member of C extension. Due to unavailability of source static analysis is impossible, but it may be performed by introspecting living objects in run-time.

## Variables checker

Verbatim name of the checker is `variables`.

## Variables checker Options

- init-import** Tells whether we should check for unused import in `__init__` files.
- dummy-variables-rgx** A regular expression matching the name of dummy variables (i.e. expected to not be used).
- Default: `_(?!\s*$)|(_?[a-zA-Z0-9_]*[a-zA-Z0-9]?+)?$)|dummy|^ignored_|^unused_`

**additional-builtins** List of additional names supposed to be defined in builtins. Remember that you should avoid defining new builtins when possible.

**callbacks** List of strings which can identify a callback function by name. A callback name must start or end with one of those strings.

Default: `cb_, _cb`

**redefining-builtins-modules** List of qualified module names which can have objects that can redefine builtins.

Default: `six.moves, past.builtins, future.builtins, builtins, io`

**ignored-argument-names** Argument names that match this expression will be ignored. Default to name with leading underscore.

Default: `_. *|^ignored_|^unused_`

**allow-global-unused-variables** Tells whether unused global variables should be treated as a violation.

Default: `yes`

## Variables checker Messages

**unpacking-non-sequence (E0633)** *Attempting to unpack a non-sequence%s* Used when something which is not a sequence is used in an unpack assignment

**invalid-all-object (E0604)** *Invalid object %r in \_\_all\_\_, must contain only strings* Used when an invalid (non-string) object occurs in `__all__`.

**no-name-in-module (E0611)** *No name %r in module %r* Used when a name cannot be found in a module.

**undefined-variable (E0602)** *Undefined variable %r* Used when an undefined variable is accessed.

**undefined-all-variable (E0603)** *Undefined variable name %r in \_\_all\_\_* Used when an undefined variable name is referenced in `__all__`.

**used-before-assignment (E0601)** *Using variable %r before assignment* Used when a local variable is accessed before its assignment.

**cell-var-from-loop (W0640)** *Cell variable %s defined in loop* A variable used in a closure is defined in a loop. This will result in all closures using the same value for the closed-over variable.

**global-variable-undefined (W0601)** *Global variable %r undefined at the module level* Used when a variable is defined through the "global" statement but the variable is not defined in the module scope.

**self-cls-assignment (W0642)** *Invalid assignment to %s in method* Invalid assignment to self or cls in instance or class method respectively.

**unbalanced-tuple-unpacking (W0632)** *Possible unbalanced tuple unpacking with sequence%s: left side has %d label(s), right side has %d value(s)* Used when there is an unbalanced tuple unpacking in assignment

**possibly-unused-variable (W0641)** *Possibly unused variable %r* Used when a variable is defined but might not be used. The possibility comes from the fact that `locals()` might be used, which could consume or not the said variable

**redefined-builtin (W0622)** *Redefining built-in %r* Used when a variable or function override a built-in.

**redefine-in-handler (W0623)** *Redefining name %r from %s in exception handler* Used when an exception handler assigns the exception to an existing name

- redefined-outer-name (W0621)** *Redefining name %r from outer scope (line %s)* Used when a variable's name hides a name defined in the outer scope.
- unused-import (W0611)** *Unused %s* Used when an imported module or variable is not used.
- unused-argument (W0613)** *Unused argument %r* Used when a function or method argument is not used.
- unused-wildcard-import (W0614)** *Unused import %s from wildcard import* Used when an imported module or variable is not used from a `'from X import *'` style import.
- unused-variable (W0612)** *Unused variable %r* Used when a variable is defined but not used.
- global-variable-not-assigned (W0602)** *Using global for %r but no assignment is done* Used when a variable is defined through the "global" statement but no assignment to this variable is done.
- undefined-loop-variable (W0631)** *Using possibly undefined loop variable %r* Used when a loop variable (i.e. defined by a for loop or a list comprehension or a generator expression) is used outside the loop.
- global-statement (W0603)** *Using the global statement* Used when you use the "global" statement to update a global variable. Pylint just try to discourage this usage. That doesn't mean you cannot use it !
- global-at-module-level (W0604)** *Using the global statement at the module level* Used when you use the "global" statement at the module level since it has no effect

## 5.5 Pylint and C extensions

If you are getting the dreaded **no-member** error, there is a possibility that either **pylint** found a bug in your code or that it actually tries to lint a C extension module.

Linting C extension modules is not supported out of the box, especially since pylint has no way to get an AST object out of the extension module.

But **pylint** actually has a mechanism which you might use in case you want to analyze C extensions. **pylint** has a flag, called **extension-pkg-whitelist**, through which you can tell it to import that module and to build an AST from that imported module:

```
$ pylint --extension-pkg-whitelist=your_c_extension
```

Be aware though that using this flag means that extensions are loaded into the active Python interpreter and may run arbitrary code, which you may not want. This is the reason why we disable by default loading C extensions. In case you do not want the hassle of passing C extensions module with this flag all the time, you can enable **unsafe-load-any-extension** in your configuration file, which will build AST objects from all the C extensions that **pylint** encounters:

```
$ pylint --unsafe-load-any-extension=y
```

Alternatively, since **pylint** emits a separate error for attributes that cannot be found in C extensions, **c-extension-no-member**, you can disable this error for your project.



## 6.1 Contributing

### 6.1.1 Bug reports, feedback

You think you have found a bug in Pylint? Well, this may be the case since Pylint is under heavy development!

Please take the time to check if it is already in the issue tracker at <https://github.com/PyCQA/pylint>

If you cannot find it in the tracker, create a new issue there or discuss your problem on the [code-quality@python.org](mailto:code-quality@python.org) mailing list.

The code-quality mailing list is also a nice place to provide feedback about Pylint, since it is shared with other tools that aim at improving the quality of python code.

Note that if you don't find something you have expected in Pylint's issue tracker, it may be because it is an issue with one of its dependencies, namely astroid:

- <https://github.com/PyCQA/astroid>

### 6.1.2 Mailing lists

You can subscribe to this mailing list at <https://mail.python.org/mailman/listinfo/code-quality>

Archives are available at <https://mail.python.org/pipermail/code-quality/>

Archives before April 2013 are available at <https://lists.logilab.org/pipermail/python-projects/>

### 6.1.3 Repository

Pylint is developed using the [git](#) distributed version control system.

You can clone Pylint and its dependencies from

```
git clone https://github.com/PyCQA/pylint
git clone https://github.com/PyCQA/astroid
```

Got a change for Pylint? Below are a few steps you should take to make sure your patch gets accepted.

- Test your code
  - Pylint is very well tested, with a high good code coverage. It has two types of tests, usual unittests and functional tests.

The usual unittests can be found under `/pylint/test` directory and they can be used for testing almost anything Pylint related. But for the ease of testing Pylint's messages, we also have the concept of functional tests.

- You should also run all the tests to ensure that your change isn't breaking one. You can run the tests using the `tox` package, as in:

```
python -m tox
python -m tox -epy36 # for Python 3.6 suite only
python -m tox -epylint # for running Pylint over Pylint's codebase
python -m tox -eformating # for running formatting checks over Pylint's
↪codebase
```

- It's usually a good idea to run `tox` with `--recreate`. This is needed because the `tox` environment might use an older version of `astroid`, which can cause various failures when you are running against the latest `pylint`:

```
python -m tox --recreate # The entire tox environment is going to be recreated
```

- To run only a specific test suite, use a pattern for the test filename (**without** the `.py` extension), as in:

```
python -m tox -e py36 -- -k test_functional
python -m tox -e py36 -- -k \*func\*
```

- Since we just use `pytest` to run the tests, you can also use it as well, although we highly recommend using `tox` instead:

```
pytest pylint -k test_functional
```

- `pylint` uses `black` and `isort` Python autoformatter for formatting its code. We have a pre-commit hook which should take care of the autoformatting for you for when you are working on a patch. To enable it, do the following:

- \* install pre-commit using `pip install pre-commit`
- \* then run `pre-commit install` in the `pylint` root directory to enable the git hooks.

- Add a short entry to the `ChangeLog` describing the change, except for internal implementation only changes. Not usually required, but for changes other than small bugs we also add a couple of sentences in the release document for that release, (*What's New* section). For the release document we usually write some more details, and it is also a good place to offer examples on how the new change is supposed to work.
- Add yourself to the `CONTRIBUTORS` file, if you are not already there.
- Write a comprehensive commit message
- Relate your change to an issue in the tracker if such an issue exists (see [Closing issues via commit messages](#) of the GitHub documentation for more information on this)
- Document your change, if it is a non-trivial one.



- Send a pull request from GitHub (see [About pull requests](#) for more insight about this topic)

### 6.1.4 Functional Tests

These are residing under `'pylint/test/functional'` and they are formed of multiple components. First, each Python file is considered to be a test case and it should be accompanied by a `.txt` file, having the same name, with the messages that are supposed to be emitted by the given test file.

In the Python file, each line for which Pylint is supposed to emit a message has to be annotated with a comment in the form `# [message_symbol]`, as in:

```
a, b, c = 1 # [unbalanced-tuple-unpacking]
```

If multiple messages are expected on the same line, then this syntax can be used:

```
a, b, c = 1.test # [unbalanced-tuple-unpacking, no-member]
```

The syntax of the `.txt` file has to be this:

```
symbol:line_number:function_or_class:Expected message
```

For example, this is a valid message line:

```
abstract-class-instantiated:79:main:Abstract class 'BadClass' with abstract methods_
↪instantiated
```

If the Python file is expected to not emit any errors, then the `.txt` file has to be empty. If you need special control over Pylint's flag, you can also create a `.rc` file, which can have sections of Pylint's configuration.

During development, it's sometimes helpful to run all functional tests in your current environment in order to have faster feedback. Run with:

```
python pylint/test/test_functional.py
```

### 6.1.5 Tips for Getting Started with Pylint Development

- Read the *Technical Reference*. It gives a short walkthrough of the pylint codebase and will help you identify where you will need to make changes for what you are trying to implement.
- `astroid.extract_node()` is your friend. Most checkers are AST based, so you will likely need to interact with `astroid`. A short example of how to use `astroid.extract_node()` is given [here](#).
- When fixing a bug for a specific check, search the code for the warning message to find where the warning is raised, and therefore where the logic for that code exists.

### 6.1.6 Building the documentation

We use `tox` for building the documentation:

```
$ tox -e docs
```



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## Frequently Asked Questions

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### 7.1 1. About Pylint

#### 7.1.1 1.1 What is Pylint?

Pylint is a [static code checker](#), meaning it can analyse your code without actually running it. Pylint checks for errors, tries to enforce a coding standard, and tries to enforce a coding style.

### 7.2 2. Installation

#### 7.2.1 2.1 How do I install Pylint?

Everything should be explained on [Installation](#).

#### 7.2.2 2.2 What kind of versioning system does Pylint use?

Pylint uses the git distributed version control system. The URL of the repository is: <https://github.com/PyCQA/pylint>. To get the latest version of Pylint from the repository, simply invoke

```
git clone https://github.com/PyCQA/pylint
```

#### 7.2.3 2.3 What are Pylint's dependencies?

Pylint depends on [astroid](#) and a couple of other packages. See the following section for details on what versions of Python are supported.

## 7.2.4 2.4 What versions of Python is Pylint supporting?

The supported running environment since Pylint 2.X is Python 3.5+.

## 7.3 3. Running Pylint

### 7.3.1 3.1 Can I give pylint a file as an argument instead of a module?

Pylint expects the name of a package or module as its argument. As a convenience, you can give it a file name if it's possible to guess a module name from the file's path using the python path. Some examples :

"pylint mymodule.py" should always work since the current working directory is automatically added on top of the python path

"pylint directory/mymodule.py" will work if "directory" is a python package (i.e. has an `__init__.py` file), an implicit namespace package or if "directory" is in the python path.

"pylint /whatever/directory/mymodule.py" will work if either:

- "/whatever/directory" is in the python path
- your cwd is "/whatever/directory"
- "directory" is a python package and "/whatever" is in the python path
- "directory" is an implicit namespace package and is in the python path.
- "directory" is a python package and your cwd is "/whatever" and so on...

### 7.3.2 3.2 Where is the persistent data stored to compare between successive runs?

Analysis data are stored as a pickle file in a directory which is localized using the following rules:

- value of the PYLINTHOME environment variable if set
- **".pylint.d" subdirectory of the user's home directory if it is found** (not always findable on Windows platforms)
- ".pylint.d" directory in the current directory

### 7.3.3 3.3 How do I find the option name (for pylintrc) corresponding to a specific command line option?

You can always generate a sample pylintrc file with `--generate-rcfile` Every option present on the command line before this will be included in the rc file

For example:

```
pylint --disable=bare-except,invalid-name --class-rgx='[A-Z][a-z]+' --generate-rcfile
```

### 7.3.4 3.4 I'd rather not run Pylint from the command line. Can I integrate it with my editor?

Much probably. Read *Editor and IDE integration*

## 7.4 4. Message Control

### 7.4.1 4.1 Is it possible to locally disable a particular message?

Yes, this feature has been added in Pylint 0.11. This may be done by adding "#pylint: disable=some-message,another-one" at the desired block level or at the end of the desired line of code

### 7.4.2 4.2 Is there a way to disable a message for a particular module only?

Yes, you can disable or enable (globally disabled) messages at the module level by adding the corresponding option in a comment at the top of the file:

```
# pylint: disable=wildcard-import, method-hidden
# pylint: enable=too-many-lines
```

### 7.4.3 4.3 How can I tell Pylint to never check a given module?

With Pylint < 0.25, add "#pylint: disable-all" at the beginning of the module. Pylint 0.26.1 and up have renamed that directive to "#pylint: skip-file" (but the first version will be kept for backward compatibility).

In order to ease finding which modules are ignored an Information-level message *file-ignored* is emitted. With recent versions of Pylint, if you use the old syntax, an additional *deprecated-disable-all* message is emitted.

### 7.4.4 4.4 Do I have to remember all these numbers?

No, starting from 0.25.3, you can use symbolic names for messages:

```
# pylint: disable=fixme, line-too-long
```

### 7.4.5 4.5 I have a callback function where I have no control over received arguments. How do I avoid getting unused argument warnings?

Prefix (ui) the callback's name by *cb\_*, as in *cb\_onclick(...)*. By doing so arguments usage won't be checked. Another solution is to use one of the names defined in the "dummy-variables" configuration variable for unused argument ("\_" and "dummy" by default).

### 7.4.6 4.6 What is the format of the configuration file?

Pylint uses ConfigParser from the standard library to parse the configuration file. It means that if you need to disable a lot of messages, you can use tricks like:

```
# disable wildcard-import, method-hidden and too-many-lines because I do
# not want it
disable= wildcard-import,
method-hidden,
too-many-lines
```

### 7.4.7 4.7 Why are there a bunch of messages disabled by default?

pylint does have some messages disabled by default, either because they are prone to false positives or that they are opinionated enough for not being included as default messages. But most of the disabled messages are from the Python 3 porting checker, which is disabled by default. It needs special activation with the `--py3k` flag.

### 7.4.8 4.8 I am using another popular linter alongside pylint. Which messages should I disable to avoid duplicates?

`pycodestyle`: `unneeded-not`, `line-too-long`, `unnecessary-semicolon`, `trailing-whitespace`, `missing-final-newline`, `bad-indentation`, `multiple-statements`, `bare-except`

`pyflakes`: `undefined-variable`, `unused-import`, `unused-variable`

`mccabe`: `too-many-branches`

`pydocstyle`: `missing-module-docstring`, `missing-class-docstring`, `missing-function-docstring`

`pep8-naming`: `invalid-name`, `bad-classmethod-argument`, `bad-mcs-classmethod-argument`, `no-self-argument`

`flake8-import-order`: `wrong-import-order`

## 7.5 5. Classes and Inheritance

### 7.5.1 5.1 When is Pylint considering a class as an abstract class?

A class is considered as an abstract class if at least one of its methods is doing nothing but raising `NotImplementedError`.

### 7.5.2 5.2 How do I avoid "access to undefined member" messages in my mixin classes?

To do so you have to set the `ignore-mixin-members` option to "yes" (this is the default value) and to name your mixin class with a name which ends with "mixin" (whatever case).

## 7.6 6. Troubleshooting

### 7.6.1 6.1 Pylint gave my code a negative rating out of ten. That can't be right!

Even though the final rating Pylint renders is nominally out of ten, there's no lower bound on it. By default, the formula to calculate score is

```
10.0 - ((float(5 * error + warning + refactor + convention) / statement) * 10)
```

However, this option can be changed in the Pylint rc file. If having negative values really bugs you, you can set the formula to be the maximum of 0 and the above expression.

### 7.6.2 6.2 I think I found a bug in Pylint. What should I do?

Read *Bug reports, feedback*

### 7.6.3 6.3 I have a question about Pylint that isn't answered here.

Read *Mailing lists*





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### Some projects using Pylint

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The following projects are known to use Pylint to help develop better Python code:

- edX (<https://github.com/edx>)
- qutebrowser (<https://github.com/The-Compiler/qutebrowser>)
- Odoo (<https://github.com/OCA>)
- Landscape.io (<https://github.com/landscapeio/>)
- Codacy (<https://github.com/Codacy/>)
- SaltStack (<https://github.com/saltstack>)
- CodeFactor (<https://github.com/codefactor-io>)
- many more...



## CHAPTER 9

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### Support

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Professional support for pylint is available as part of the [Tidelift Subscription](#). Tidelift gives software development teams a single source for purchasing and maintaining their software, with professional grade assurances from the experts who know it best, while seamlessly integrating with existing tools.



High level descriptions of the most important changes between major Pylint versions.

### 10.1 What's New in Pylint 2.6

**Release** 2.6

**Date** 2020-08-20

#### 10.1.1 Summary – Release highlights

#### 10.1.2 New checkers

- Add *super-with-arguments* check for flagging instances of Python 2 style super calls.
- Add *raise-missing-from* check for exceptions that should have a cause.

#### 10.1.3 Other Changes

- *bad-continuation* and *bad-whitespace* have been removed. *black* or another formatter can help you with this better than Pylint
- The *no-space-check* option has been removed, it's no longer possible to consider empty line like a *trailing-whitespace* by using clever options.
- *mixed-indentation* has been removed, it is no longer useful since `TabError` is included directly in `python3`
- Fix superfluous-parens false-positive for the walrus operator
- Add support for both isort 4 and isort 5. If you have pinned isort 4 in your projet requirements, nothing changes. If you use isort 5, though, note that the *known-standard-library* option is not interpreted the same in isort 4 and isort 5 (see [the migration guide in isort documentation](#) for further details). For compatibility's sake for most pylint users, the *known-standard-library* option in pylint now maps to *extra-standard-library* in isort 5. If you

really want what *known-standard-library* now means in isort 5, you must disable the *wrong-import-order* check in pylint and run isort manually with a proper isort configuration file.

## 10.2 What's New in Pylint 2.5

**Release** 2.5

**Date** 2020-04-27

### 10.2.1 Summary – Release highlights

#### 10.2.2 New checkers

- A new check `isinstance-second-argument-not-valid-type` was added.

This check is emitted whenever **pylint** finds a call to the `isinstance` function with a second argument that is not a type. Such code is likely unintended as it will cause a `TypeError` to be thrown at runtime error.

- A new check `assert-on-string-literal` was added.

This check is emitted whenever **pylint** finds an `assert` statement with a string literal as its first argument. Such `assert` statements are probably unintended as they will always pass.

- A new check `f-string-without-interpolation` was added.

This check is emitted whenever **pylint** detects the use of an f-string without having any interpolated values in it, which means that the f-string can be a normal string.

- Multiple checks for invalid return types of protocol functions were added:

- `invalid-bool-returned: __bool__ did not return a bool`
- `invalid-index-returned: __index__ did not return an integer`
- `invalid-repr-returned: __repr__ did not return a string`
- `invalid-str-returned: __str__ did not return a string`
- `invalid-bytes-returned: __bytes__ did not return a string`
- `invalid-hash-returned: __hash__ did not return an integer`
- `invalid-length-hint-returned: __length_hint__ did not return a non-negative integer`
- `invalid-format-returned: __format__ did not return a string`
- `invalid-getnewargs-returned: __getnewargs__ did not return a tuple`
- `invalid-getnewargs-ex-returned: __getnewargs_ex__ did not return a tuple of the form (tuple, dict)`

- A new check `inconsistent-quotes` was added.

This check is emitted when quotes delimiters ( " and ' ) are not used consistently throughout a module. It allows avoiding unnecessary escaping, allowing, for example, `"Don't error"` in a module in which single-quotes otherwise delimit strings so that the single quote in `Don't` doesn't need to be escaped.

- A new check `non-str-assignment-to-dunder-name` was added to ensure that only strings are assigned to `__name__` attributes.

### 10.2.3 Other Changes

- Configuration can be read from a `setup.cfg` or `pyproject.toml` file in the current directory. A `setup.cfg` must prepend pylintrc section names with `pylint.`, for example `[pylint.MESSAGES CONTROL]`. A `pyproject.toml` file must prepend section names with `tool.pylint.`, for example `[tool.pylint.'MESSAGES CONTROL']`. These files can also be passed in on the command line.

- Add new `good-names-rgx` and `bad-names-rgx` to enable permitting or disallowing of names via regular expressions

To enable better handling of whitelisting/blacklisting names, we added two new config options: `good-names-rgxs`: a comma-separated list of regexes, that if a name matches will be exempt of naming-checking. `bad-names-rgxs`: a comma-separated list of regexes, that if a name matches will be always marked as a blacklisted name.

- Mutable `collections.*` are now flagged as dangerous defaults.
- Add new `--fail-under` flag for setting the threshold for the score to fail overall tests. If the score is over the fail-under threshold, pylint will complete `SystemExit` with value 0 to indicate no errors.
- Added a new option `notes-rgx` to make fixme warnings more flexible. Now either `notes` or `notes-rgx` option can be used to detect fixme warnings.
- Non-ASCII characters are now allowed by `invalid-name`.
- `pylint` no longer emits `invalid-name` for non-constants found at module level.

Pylint was considering all module level variables as constants, which is not what PEP 8 is actually mandating.

- A new check `non-ascii-name` was added to detect identifiers with non-ASCII characters.
- Overloaded typing functions no longer trigger `no-self-use`, `unused-argument`, `missing-docstring` and similar checks that assumed that overloaded functions are normal functions.
- `python -m pylint` can no longer be made to import files from the local directory.
- A new command `--list-extensions` was added.

This command lists all extensions present in `pylint.extensions`.

- Various false positives have been fixed which you can read more about in the Changelog files.
- Multiple types of string formatting are allowed in logging functions.

The `logging-fstring-interpolation` message has been brought back to allow multiple types of string formatting to be used. The type of formatting to use is chosen through enabling and disabling messages rather than through the `logging-format-style` option. The `fstr` value of the `logging-format-style` option is not valid.

## 10.3 What's New in Pylint 2.4

**Release** 2.4

**Date** 2019-09-24

### 10.3.1 Summary – Release highlights

#### 10.3.2 New checkers

- `import-outside-toplevel`

This check warns when modules are imported from places other than a module toplevel, e.g. inside a function or a class.

- Added a new check, `consider-using-sys-exit`

This check is emitted when we detect that a `quit()` or `exit()` is invoked instead of `sys.exit()`, which is the preferred way of exiting in program.

Close #2925

- Added a new check, `arguments-out-of-order`

This check warns if you have arguments with names that match those in a function's signature but you are passing them in to the function in a different order.

Close #2975

- Added new checks, `no-else-break` and `no-else-continue`

These checks highlight unnecessary `else` and `elif` blocks after `break` and `continue` statements.

Close #2327

- Added *unnecessary-comprehension* that detects unnecessary comprehensions.

This check is emitted when `pylint` finds list-, set- or dict-comprehensions, that are unnecessary and can be rewritten with the list-, set- or dict-constructors.

Close #2905

- Added a new check, `invalid-overridden-method`

This check is emitted when we detect that a method is overridden as a property or a property is overridden as a method. This can indicate a bug in the application code that will trigger a runtime error.

Close #2670

- Added a new check, `redeclared-assigned-name`

This check is emitted when `pylint` detects that a name was assigned one or multiple times in the same assignment, which indicate a potential bug.

Close #2898

- Added a new check, `self-assigning-variable`

This check is emitted when we detect that a variable is assigned to itself, which might indicate a potential bug in the code application.

For example, the following would raise this warning:

```
def new_a(attr, attr2):
    a_inst = Aclass()
    a_inst.attr2 = attr2
    # should be: a_inst.attr = attr, but have a typo
    attr = attr
    return a_inst
```

Close #2930

- Added a new check `property-with-parameters` which detects when a property has more than a single argument.

Close #3006



- Added *subprocess-run-check* to handle `subprocess.run` without explicitly set *check* keyword.

Close #2848

- We added a new check message `dict-iter-missing-items`. This is emitted when trying to iterate through a dict in a for loop without calling its `.items()` method.

Closes #2761

- We added a new check message `missing-parentheses-for-call-in-test`. This is emitted in case a call to a function is made inside a test but it misses parentheses.
- A new check `class-variable-slots-conflict` was added.

This check is emitted when `pylint` finds a class variable that conflicts with a slot name, which would raise a `ValueError` at runtime.

For example, the following would raise an error:

```
class A:
    __slots__ = ('first', 'second')
    first = 1
```

- A new check `preferred-module` was added.

This check is emitted when `pylint` finds an imported module that has a preferred replacement listed in `preferred-modules`.

For example, you can set the preferred modules as `xml:defusedxml, json:ujson` to make `pylint` suggest using `defusedxml` instead of `xml` and `ujson` rather than `json`.

- A new extension `broad_try_clause` was added.

This extension enforces a configurable maximum number of statements inside of a try clause. This facilitates enforcing PEP 8's guidelines about try / except statements and the amount of code in the try clause.

You can enable this extension using `--load-plugins=pylint.extensions.broad_try_clause` and you can configure the amount of statements in a try statement using `--max-try-statements`.

### 10.3.3 Other Changes

- Don't emit `protected-access` when a single underscore prefixed attribute is used inside a special method

Close #1802

- `len-as-condition` now only fires when a `len(x)` call is made without an explicit comparison.

The message and description accompanying this checker has been changed reflect this new behavior, by explicitly asking to either rely on the fact that empty sequence are false or to compare the length with a scalar.

OK:

```
if len(x) == 0:
    pass

while not len(x) == 0:
    pass

assert len(x) > 5, message
```

KO:

```
if not len(x):
    pass

while len(x) and other_cond:
    pass

assert len(x), message
```

- A file is now read from stdin if the `--from-stdin` flag is used on the command line. In addition to the `--from-stdin` flag a (single) file name needs to be specified on the command line, which is needed for the report.
- The checker for ungrouped imports is now more permissive.

The import can now be sorted alphabetically by import style. This makes pylint compatible with isort.

The following imports do not trigger an `ungrouped-imports` anymore

```
import unittest
import zipfile
from unittest import TestCase
from unittest.mock import MagicMock
```

- The checker for missing return documentation is now more flexible.

The following does not trigger a `missing-return-doc` anymore

```
def my_func(self):
    """This is a docstring.

    Returns
    -----
    :obj:`list` of :obj:`str`
        List of strings
    """
    return ["hi", "bye"] #@
```

- `signature-mutators` CLI and config option was added.

With this option, users can choose to ignore *too-many-function-args*, *unexpected-keyword-arg*, and *no-value-for-parameter* for functions decorated with decorators that change the signature of a decorated function.

For example a test may want to make use of hypothesis. Adding *hypothesis.extra.numpy.arrays* to *signature\_mutators* would mean that *no-value-for-parameter* would not be raised for:

```
@given(img=arrays(dtype=np.float32, shape=(3, 3, 3, 3)))
def test_image(img):
    ...
```

- Allow the option of f-strings as a valid logging string formatting method.

*logging-fstring-interpolation* has been merged into *logging-format-interpolation* to allow the *logging-format-style* option to control which logging string format style is valid. To allow this, a new *fstr* value is valid for the *logging-format-style* option.

- `--list-msgs-enabled` command was added.

When enabling/disabling several messages and groups in a config file, it can be unclear which messages are actually enabled and which are disabled. This new command produces the final resolved lists of enabled/disabled messages, sorted by symbol but with the ID provided for use with `--help-msg`.

## 10.4 What's New in Pylint 2.3

**Release** 2.3

**Date** 2019-02-27

### 10.4.1 Summary – Release highlights

- This release improves the performance of the 2.X series after it was affected by a performance regression a couple of releases ago.

### 10.4.2 New checkers

- We added a new check message `wrong-exception-operation`. This is emitted when an operation is done against an exception, but the operation is not valid for the exception in question. Usually emitted when having binary operations between exceptions in except handlers.

Closes #2494

- We added a new `no-else-raise` warning similar to `no-else-return`

Closes #2558

- We added a new option `check-str-concat-over-line-jumps` to check `implicit-str-concat-in-sequence` over multiple lines.

### 10.4.3 Other Changes

Quite a lot of bug fixes and improvements went into this release, here's a handful of them. For the full changes, check the Changelog.

- We no longer emit `--not-iterating` checks for builtins consumed by `itertools`
- We fixed some false positives for `no-self-argument` and `unsubscriptable-object` when using `__class_getitem__` (new in Python 3.7)
- `pylint` now supports Ellipsis as a synonym for `pass` statements.
- `fixme` gets triggered only on comments.
- `pylint` exempts starred unpacking from `--not-iterating` Python 3 checks.
- `compare-to-zero` is now less zealous by checking against equality and identity.

*“yield from” is exempted from “--not-iterating” Python 3 checks.*

- A false positive with `not-async-context-manager` caused by not understanding `contextlib.asynccontextmanager` was fixed.
- We refactored `bad-reversed-sequence` to account for more objects that can define `__reversed__`.
- `no-member` is now emitted for enums when they lack a member.
- Plugins can now use the `load_configuration()` hook. This hook is executed after configuration is loaded to prevent overwriting plugin specific configuration via user-based configuration.
- There's a new command line option `list-groups` for listing all the check groups `pylint` knows about. This is useful to know what groups you can disable or enable individually.

## 10.5 What's New in Pylint 2.2

**Release** 2.2

**Date** 2018-11-25

### 10.5.1 Summary – Release highlights

#### 10.5.2 New checkers

- String checker now reports format string type mismatches.
- `duplicate-string-formatting-argument` was added for detecting duplicate string formatting arguments that should be passed instead as named arguments.
- `logging-format-style` is a new option for the logging checker for usage of `str.format()` style format strings in calls to loggers.

It accepts two options: `--logging-format-style=old` for using `%` style formatting, which is the assumed default, and `--logging-format-style=new` for using `{}` style formatting.

- `implicit-str-concat-in-sequence` detects string concatenation inside lists, sets & tuples.

Example of code that would generate such warning:

```
woops = ('a', 'b' 'c')
```

#### 10.5.3 Other Changes

- `try-except-raise` checker now handles multilevel inheritance hierarchy for exceptions correctly.  
Close #2484
- Ignore import `x.y.z` as `z` cases for checker `useless-import-alias`.
- `unnecessary-pass` is now also emitted when a function or class contains only docstring and pass statement, in which case, docstring is enough for empty definition.
- Fix false positive `undefined-variable` and `used-before-assignment` with `nonlocal` keyword usage.
- Fix exceptions being raised when one of the params is not a `ClassDef` for `checkers.utils.is_subclass_of()`.
- `pylint` now picks the latest value from the inferred values of the exception that gets raised, when looking for `raising-non-exception`. This helps when reusing a variable name for multiple types, since `pylint` was picking just the first inferred value, leading to spurious false positives.  
Close #2431
- `pylint` used to emit a `not-an-iterable` error when looking at coroutines built with `asyncio.coroutine`. This is no longer the case as we handle coroutines explicitly.  
Close #996
- `pylint` used to emit a `unused-variable` error if unused import was found in the function. Now instead of `unused-variable`, `unused-import` is emitted.  
Close #2421

## 10.6 What's New in Pylint 2.1

**Release** 2.1

**Date** 2018-08-01

### 10.6.1 Summary – Release highlights

- This release mostly includes fixes for bugs found after the launch of 2.0.

### 10.6.2 New checkers

- A new check was added, `misplaced-format-function`.

This message is emitted when pylint detects that a format function is called on non str object. This can occur due to wrong placement of closing bracket, e.g

```
print('value: {}'.format(123) # bad
print('value: {}'.format(123)) # good
```

### 10.6.3 Other Changes

- `try-except-raise` check was demoted from an error to a warning, as part of issue #2323.
- Correctly handle the new name of the Python implementation of the `abc` module.

In Python 3.7, the `abc` module has both a C implementation as well as a Python one, but the Python implementation has a different file name that what `pylint` was expecting, resulting in some checks getting confused.

- Modules with `__getattr__` are exempted by default from `no-member`

There's no easy way to figure out if a module has a particular member when the said module uses `__getattr__`, which is a new addition to Python 3.7. Instead we assume the safe thing to do, in the same way we do for classes, and skip those modules from checking.

- `invalid name` is no longer triggered for function and attribute names longer than 30 characters. The upper limit was removed completely.
- Fix false-positive `undefined-variable` for self referential class name in `lamdbas`
- `no-else-return` also specifies the type of the branch that is causing the error.
- Fixed inconsistent behaviour for `bad-continuation` on first line of file.
- Fixed a bug where `pylint` was not able to disable certain messages on the last line through the global disable option.
- `pylint` no longer emits `useless-return` when it finds a single statement that is the `return` itself  
We still want to be explicit when a function is supposed to return an optional value; even though `pass` could still work, it's not explicit enough and the function might look like it's missing an implementation.
- Fixed a bug where `pylint` was crashing when being unable to infer the value of an argument to `next()`
- `pylint` no longer emit `not-an-iterable` when dealing with async iterators.

- `pylint` gained the ability to specify a default docstring type for when the check cannot guess the type. For this we added a `--default-docstring-type` command line option.

## 10.7 What's New in Pylint 2.0

**Release** 2.0

**Date** 2018-07-15

### 10.7.1 Summary – Release highlights

- Dropped support for Python 2. This release will work only on Python 3.4+.

If you need to use `pylint` with Python 2, you can use Pylint 1.9+. We'll continue to do bug releases until 2020, when Python 2 goes officially EOL. `pylint` will gain the ability to analyze Python 2 files, but some checks might not work as they will assume that their running environment is Python 2.

- Given the dropping of Python 2, the Python 3 porting mode (enabled via `--py3k`) can now also run with Python 3.

The porting mode used to be a no-op on Python 3, but most of the messages can now be emitted when the running interpreter is Python 3. The only messages that won't be emitted are those that rely on a particular syntax specific to Python 2, for instance `print` as a statement.

### 10.7.2 New checkers

- A new check was added, `useless-object-inheritance`.

This refactoring message is emitted when `pylint` detects that a class inherits from `object`, which is redundant as in Python 3, every class implicitly inherits from `object`.

```
class A(object):  
    pass  
  
class A:      # better  
    pass
```

- A new check was added, `comparison-with-callable`.

This refactoring message is emitted when `pylint` detects that a comparison with a callable was made, which might suggest that some parenthesis were omitted, resulting in potential unwanted behaviour.

```
def foo():  
    return None  
  
def goo():  
    return None  
  
if foo == 786:  # bad  
    pass  
  
if foo() == 786:  # good  
    pass
```

- A new check was added, chained-comparison.

This refactoring message is emitted if a boolean operation can be simplified by chaining some of its operations. check below example:

```
if a < b and b < c:
    pass

if a < b < c:    # better
    pass
```

- A new check was added, useless-import-alias.

This refactoring message is emitted when an import alias does not rename the original package.

```
import numpy as numpy # bad
import numpy as np # good
from collection import OrderedDict as OrderedDict # bad
from collection import OrderedDict as ordered_dict # good
```

- A new check was added, comparison-with-itself.

This refactoring message is emitted when a variable is compared against itself.

```
if variable == variable: # bad
    pass
```

- A new check was added, consider-using-in.

This refactoring message is emitted when a variable is compared against multiple values concatenated by ors instead of using the faster, more idiomatic "in" check.

```
if variable == 1 or variable == 2 or variable == 3: # bad
    pass

if variable in (1, 2, 3): # good
    pass
```

- A new check was added, consider-using-get.

This refactoring message is emitted when manually checking if a key is in a dictionary and getting its value if it is (and optionally a default if not) instead of the more idiomatic dict.get.

```
if 'key' in dictionary: # bad
    variable = dictionary['key']
else:
    variable = 'default'

variable = dictionary.get('key', 'default') # good
```

- A new check was added, consider-using-join.

This refactoring message is emitted when using a for loop over an iterable to join strings instead of the faster, less memory consuming and more idiomatic str.join(sequence).

```
result = '' # bad
for number in ['1', '2', '3']:
    result += number

result = ''.join(['1', '2', '3']) # good
```

- New `useless-return` message when function or method ends with a "return" or "return None" statement and this is the only return statement in the body.
- New `use-symbolic-message-instead` message when a message is activated or deactivated by id instead of symbol. The use of symbol is more explicit and easier to remind.
- A new check was added, `consider-swap-variables`.

This refactoring message is emitted when using a temporary variable in order to swap the values of two variables instead of the shorter, more idiomatic approach with tuple-unpacking.

Instead of a temporary variable, the one-line syntax with commas should be used.

See this [style guide](#) document or this [swap values presentation](#) for details.

```
temp = a  # the wrong way
a = b
b = temp

a, b = b, a  # the right way
```

- Two new checks, `invalid-envvar-value` and `invalid-envvar-default`, were added.

The former is trigger whenever pylint detects that environment variable manipulation functions uses a different type than strings, while the latter is emitted whenever the said functions are using a default variable of different type than expected.

- A new check was added, `subprocess-popen-preexec-fn`,

This refactoring message is emitted when using the keyword argument `preexec_fn` when creating `subprocess.Popen` instances which may be unsafe when used in the presence of threads.

See [subprocess.Popen](#) for full warning details.

- New `try-except-raise` message when an except handler block has a bare `raise` statement as its first operator or the exception type being raised is the same as the one being handled.
- New `possibly-unused-variable` check added.

This is similar to `unused-variable`, the only difference is that it is emitted when we detect a `locals()` call in the scope of the unused variable. The `locals()` call could potentially use the said variable, by consuming all values that are present up to the point of the call. This new check allows to disable this error when the user intentionally uses `locals()` to consume everything.

For instance, the following code will now trigger this new error:

```
def func():
    some_value = some_call()
    return locals()
```

- New `unhashable-dict-key` check added to detect dict lookups using unhashable keys such as lists or dicts.
- New `self-cls-assignment` warning check added.

This is warning if the first argument of an instance/ class method gets assigned

```
class Foo(object):
    def foo(self, bar):
        self = bar
```

- New verbose mode option `--verbose` to display of extra non-checker-related output. Disabled by default.



- Two new checks were added for recommending dict and set comprehensions where possible.

These two checks are going to flag the following examples:

```
dict([(k, v) for (k, v) in ...]) # better as {k: v for k, v in ...}
set([k for k in ...]) # better as {k for k in ...}
```

### 10.7.3 Other Changes

- A couple of performance improvements brought to `astroid` should make `pylint` should be a bit faster as well.

We added a new flag, `max_inferable_values` on `astroid.MANAGER` for limiting the maximum amount of values that `astroid` can infer when inferring values. This change should improve the performance when dealing with large frameworks such as `django`. You can also control this behaviour with `pylint --limit-inference-results`

We also rewrote how `nodes_of_class` and `get_children` methods operate which should result in a performance boost for a couple of checks.

- Fix a false positive `inconsistent-return-statements` message when exception is raised inside an else statement.
- Don't warn for `missing-type-doc` and/or `missing-return-type-doc`, if type annotations exist on the function signature for a parameter and/or return type.
- Fix a false positive `inconsistent-return-statements` message when if statement is inside try/except.
- Fix a false positive `inconsistent-return-statements` message when while loop are used.
- Fix emission of false positive `no-member` message for class with "private" attributes whose name is mangled.
- Fix `unused-argument` false positives with overshadowed variable in dictionary comprehension.
- Fixing false positive `inconsistent-return-statements` when never returning functions are used (i.e such as `sys.exit`).
- Fix false positive `inconsistent-return-statements` message when a function is defined under an if statement.
- Fix false positive `inconsistent-return-statements` message by avoiding useless exception inference if the exception is not handled.
- Fix false positive `undefined-variable` for lambda argument in class definitions
- Suppress false-positive `not-callable` messages from certain staticmethod descriptors
- Expand `ignored-argument-names` include starred arguments and keyword arguments
- `singleton-comparison` will suggest better boolean conditions for negative conditions.
- `undefined-loop-variable` takes in consideration non-empty itered objects before emitting.  
For instance, if the loop iterable is not empty, this check will no longer be emitted.
- Enum classes no longer trigger `too-few-methods`
- Special methods now count towards `too-few-methods`, and are considered part of the public API. They are still not counted towards the number of methods for `too-many-methods`.
- `docparams` extension allows abstract methods to document returns documentation even if the default implementation does not return something. They also no longer need to document raising a `NotImplementedError`.

- Skip wildcard import check for `__init__.py`.
- Don't warn 'useless-super-delegation' if the subclass method has different type annotations.
- Don't warn that a global variable is unused if it is defined by an import

```
def func():
    global sys
    import sys
```

- Added basic support for postponed evaluation of function annotations.

If `pylint` detects the corresponding `from __future__ import annotations` import, it will not emit `used-before-assignment` and `undefined-variable` in the cases triggered by the annotations.

More details on the postponed evaluation of annotations can be read in [PEP 563](#).

- A new command line option was added, `--exit-zero`, for the use of continuous integration scripts which abort if a command returns a non-zero status code. If the option is specified, and `Pylint` runs successfully, it will exit with 0 regardless of the number of lint issues detected.

Configuration errors, parse errors, and calling `Pylint` with invalid command-line options all still return a non-zero error code, even if `--exit-zero` is specified.

- Don't emit `unused-import` anymore for typing imports used in type comments. For instance, in the following example `pylint` used to complain that `Any` and `List` are not used, while they should be considered used by a type checker.

```
from typing import Any, List
a = 1 # type: List[Any]
```

- Fix false positive `line-too-long` for commented lines at the end of module
- Fix emitting `useless-super-delegation` when changing the default value of keyword arguments.
- Support `typing.TYPE_CHECKING` for *unused-import* errors

When modules are imported under `typing.TYPE_CHECKING` guard, `pylint` will no longer emit *unused-import*.

- Fix false positive `unused-variable` in lambda default arguments
- `assignment-from-no-return` considers methods as well as functions.

If you have a method that doesn't return a value, but later on you assign a value to a function call to that method (so basically it will be `None`), then `pylint` is going to emit an `assignment-from-no-return` error.

- A new flag was added, `--ignore-none` which controls the `no-member` behaviour with respect to `None` values.

Previously `pylint` was not emitting `no-member` if it inferred that the owner of an attribute access is a `None` value. In some cases, this might actually cause bugs, so if you want to check for `None` values as well, pass `--ignore-none=n` to `pylint`.

- Fix false-positive `bad-continuation` for with statements
- Fix false-positive `bad-whitespace` message for typing annotations with ellipses in them
- Fix false-positive `undefined-variable` for nested lambdas

## 10.8 What's New In Pylint 1.9

**Release** 1.9

**Date** 2018-05-15

### 10.8.1 Summary – Release highlights

- None so far

### 10.8.2 New checkers

- A new Python 3 checker was added to warn about the removed `operator.div` function.
- A new Python 3 checker was added to warn about accessing functions that have been moved from the `urllib` module in corresponding subpackages, such as `urllib.request`.

```
from urllib import urlencode
```

Instead the previous code should use `urllib.parse` or `six.moves` to import a module in a Python 2 and 3 compatible fashion:

```
from six.moves.urllib.parse import urlencode
```

To have this working on Python 3 as well, please use the `six` library:

```
six.reraise(Exception, "value", tb)
```

- A new check was added to warn about using unicode raw string literals. This is a syntax error in Python 3:

```
a = ur'...'
```

- Added a new *deprecated-sys-function* check, emitted when accessing removed `sys` members.
- Added *xreadlines-attribute* check, emitted when the *xreadlines()* attribute is accessed on a file object.
- Added two new Python 3 porting checks, *exception-escape* and *comprehension-escape*

These two are emitted whenever pylint detects that a variable defined in the said blocks is used outside of the given block. On Python 3 these values are deleted.

```
try:
    1/0
except ZeroDivisionError as exc:
    ...
print(exc) # This will raise a NameError on Python 3

[i for i in some_iterator if some_condition(i)]
print(i) # This will raise a NameError on Python 3
```

### 10.8.3 Other Changes

- *defaultdict* and subclasses of *dict* are now handled for *dict-iter-\** checks. That means that the following code will now emit warnings for when *iteritems* and friends are accessed:

```
some_dict = defaultdict(list)
...
some_dict.iterkeys()
```

- Enum classes no longer trigger *too-few-methods*
- Special methods now count towards *too-few-methods*, and are considered part of the public API. They are still not counted towards the number of methods for *too-many-methods*.
- docparams allows abstract methods to document returns documentation even if the default implementation does not return something. They also no longer need to document raising a `NotImplementedError`.

## 10.9 What's New In Pylint 1.8

**Release** 1.8

**Date** 2017-12-15

### 10.9.1 Summary – Release highlights

- None so far

### 10.9.2 New checkers

- A new check was added, `shallow-copy-environ`.

This warning message is emitted when shallow copy of `os.environ` is created. Shallow copy of `os.environ` doesn't work as people may expect. `os.environ` is not a dict object but rather a proxy object, so any changes made on copy may have unexpected effects on `os.environ`

Instead of `copy.copy(os.environ)` method `os.environ.copy()` should be used.

See <https://bugs.python.org/issue15373> for details.

```
import copy
import os
wrong_env_copy = copy.copy(os.environ) # will emit pylint warning
wrong_env_copy['ENV_VAR'] = 'new_value' # changes os.environ
assert os.environ['ENV_VAR'] == 'new_value'

good_env_copy = dict(os.environ) # the right way
good_env_copy['ENV_VAR'] = 'different_value' # doesn't change os.environ
assert os.environ['ENV_VAR'] == 'new_value'
```

- A new check was added, `keyword-arg-before-vararg`.

This warning message is emitted when a function is defined with a keyword argument appearing before variable-length positional arguments (`*args`). This may lead to `args` list getting modified if keyword argument's value is not provided in the function call assuming it will take default value provided in the definition.

```
def foo(a, b=3, *args):
    print(a, b, args)

# Case1: a=0, b=2, args=(4,5)
```

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```
foo(0,2,4,5) # 0 2 (4,5) ==> Observed values are same as expected values

# Case2: a=0, b=<default_value>, args=(4,5)
foo(0,4,5) # 0 4 (5,) ==> args list got modified as well as the observed value of
↪b

# Case3: Syntax Error if tried as follows
foo(0,b=2,4,5) # syntax error
```

- A new check was added, simplify-boolean-expression.

This message is emitted when consider-using-ternary check would emit not equivalent code, due to truthy element being falsy in boolean context.

```
value = condition and False or other_value
```

This flawed construct may be simplified to:

```
value = other_value
```

- A new check was added, bad-thread-instantiation.

This message is emitted when the threading.Thread class does not receive the target argument, but receives just one argument, which is by default the group parameter.

In the following example, the instantiation will fail, which is definitely not desired:

```
import threading
threading.Thread(lambda: print(1)) # Oups, this is the group parameter
```

- A new Python 3 checker was added to warn about accessing functions that have been removed from the itertools module izip, imap, ifilter, izip\_longest, and ifilterfalse.

```
from itertools import izip
print(list(izip([1, 2], [3])))
```

Instead use six.moves to import a Python 2 and Python 3 compatible function:

```
from six.moves import zip
print(list(zip([1, 2], [3])))
```

- A new Python 3 checker was added to warn about accessing deprecated fields from the types module like ListType or IntType

```
from types import ListType
print(isinstance([], ListType))
```

Instead use the declarations in the builtin namespace:

```
print(isinstance([], list))
```

- A new Python 3 checker was added to warn about declaring a next method that would have implemented the Iterator protocol in Python 2 but is now a normal method in Python 3.

```
class Foo(object):
    def next(self):
        return 42
```

Instead implement a `__next__` method and use `six.Iterator` as a base class or alias next to `__next__`:

```
class Foo(object):
    def __next__(self):
        return 42
    next = __next__
```

- Three new Python 3 checkers were added to warn about using dictionary methods in non-iterating contexts.

For example, the following are returning iterators in Python 3:

```
.. code-block:: python
```

```
d = {} d.keys()[0] d.items()[0] d.values() + d.keys()
```

- A new Python 3 porting check was added, `non-ascii-bytes-literals`

This message is emitted whenever we detect that a bytes string contain non-ASCII characters, which results in a `SyntaxError` on Python 3.

- A new warning, `raising-format-tuple`, will catch situations where the intent was likely raising an exception with a formatted message string, but the actual code did omit the formatting and instead passes template string and value parameters as separate arguments to the exception constructor. So it detects things like

```
raise SomeError('message about %s', foo)
raise SomeError('message about {}'.format(foo))
```

which likely were meant instead as

```
raise SomeError('message about %s' % foo)
raise SomeError('message about {}'.format(foo))
```

This warning can be ignored on projects which deliberately use lazy formatting of messages in all user-facing exception handlers.

- Following the recommendations of [PEP479](#), a new Python 3.0 checker was added to warn about raising a `StopIteration` inside a generator. Raising a `StopIteration` inside a generator may be due a direct call to `raise StopIteration`:

```
def gen_stopiter():
    yield 1
    yield 2
    yield 3
    raise StopIteration
```

Instead use a simple `return` statement

```
def gen_stopiter():
    yield 1
    yield 2
    yield 3
    return
```

Raising a `StopIteration` may also be due to the call to `next` function with a generator as argument:

```
def gen_next_raises_stopiter():
    g = gen_ok()
    while True:
        yield next(g)
```

In this case, surround the call to `next` with a try/except block:

```
def gen_next_raises_stopiter():
    g = gen_ok()
    while True:
        try:
            yield next(g)
        except StopIteration:
            return
```

The check about raising a `StopIteration` inside a generator is also valid if the exception raised inherit from `StopIteration`. Close #1385

- A new Python checker was added to warn about using a `+` operator inside call of logging methods when one of the operands is a literal string:

```
import logging
var = "123"
logging.log(logging.INFO, "Var: " + var)
```

Instead use formatted string and positional arguments :

```
import logging
var = "123"
logging.log(logging.INFO, "Var: %s", var)
```

- A new Python checker was added to warn about `inconsistent-return-statements`. A function or a method has inconsistent return statements if it returns both explicit and implicit values :

```
def mix_implicit_explicit_returns(arg):
    if arg < 10:
        return True
    elif arg < 20:
        return
```

According to [PEP8](#), if any return statement returns an expression, any return statements where no value is returned should explicitly state this as `return None`, and an explicit return statement should be present at the end of the function (if reachable). Thus, the previous function should be written:

```
def mix_implicit_explicit_returns(arg):
    if arg < 10:
        return True
    elif arg < 20:
        return None
```

Close #1267

### 10.9.3 Other Changes

- Fixing `u''` string in `superfluous-parens` message.
- Configuration options of invalid name checker are significantly redesigned. Predefined rules for common naming styles were introduced. For typical setups, user friendly options like

`--function-naming-style=camelCase` may be used in place of hand-written regular expressions. Default linter config enforce PEP8-compatible naming style. See documentation for details.

- Raise meaningful exception in case of invalid reporter class (output format) being selected.
- The docparams extension now allows a property docstring to document both the property and the setter. Therefore setters can also have no docstring.
- The docparams extension now understands property type syntax.

```
class Foo(object):
    @property
    def foo(self):
        """My Sphinx style docstring description.

        :type: int
        """
        return 10
```

```
class Foo(object):
    @property
    def foo(self):
        """int: My Numpy and Google docstring style description."""
        return 10
```

- In case of `--output-format=json`, the dictionary returned holds a new key-value pair. The key is `message-id` and the value the message id.
- Spelling checker has a new configuration parameter `max-spelling-suggestions`, which affects maximum count of suggestions included in emitted message.
- The **invalid-name** check contains the name of the template that caused the failure.

For the given code, **pylint** used to emit `invalid-name` in the form `Invalid constant name var`, without offering any context why `var` is not such a good name.

With this change, it is now more clear what should be improved for a name to be accepted according to its corresponding template.

- New configuration flag, `suggestion-mode` was introduced. When enabled, pylint would attempt to emit user-friendly suggestions instead of spurious errors for some known false-positive scenarios. Flag is enabled by default.
- `superfluous-parens` is no longer wrongly emitted for logical statements involving `in` operator (see example below for what used to be false-positive).

```
foo = None
if 'bar' in (foo or {}):
    pass
```

- Redefinition of dummy function is now possible. `function-redefined` message won't be emitted anymore when dummy functions are redefined.
- `missing-param-doc` and `missing-type-doc` are no longer emitted when `Args` and `Keyword Args` are mixed in Google docstring.
- Fix of false positive `useless-super-delegation` message when parameters default values are different from those used in the base class.
- Fix of false positive `useless-else-on-loop` message when `break` statements are deeply nested inside loop.



- The Python 3 porting checker no longer emits multiple *no-absolute-import* per file.
- The Python 3 porting checker respects disabled checkers found in the config file.
- Modules, classes, or methods consist of compound statements that exceed the `docstring-min-length` are now correctly emitting *missing-docstring*
- Fix no `wrong-import-order` message emitted on ordering of first and third party libraries. With this fix, pylint distinguishes first and third party modules when checking import order.
- Fix the ignored `pylint disable=fixme` directives for comments following the last statement in a file.
- Fix `line-too-long` message deactivated by wrong `disable` directive. The directive `disable=fixme` doesn't deactivate anymore the emission of `line-too-long` message for long commented lines.
- If the `rcfile` specified on the command line doesn't exist, then an `IOError` exception is raised.
- Fix the wrong scope of `disable=` directive after a commented line. For example when a `disable=line-too-long` directive is at the end of a long commented line, it no longer disables the emission of `line-too-long` message for lines that follow.

## 10.10 What's New In Pylint 1.7

**Release** 1.7

**Date** 2017-04-13

### 10.10.1 Summary – Release highlights

- None yet.

### 10.10.2 New checkers

- `single-string-used-for-slots` check was added, which is used whenever a class is using a single string as a slot value. While this is technically not a problem per se, it might trip users when manipulating the slots value as an iterable, which would in turn iterate over characters of the slot value. In order to be more straight-forward, always try to use a container such as a list or a tuple for defining slot values.
- We added a new check, `literal-comparison`, which is used whenever **pylint** can detect a comparison to a literal. This is usually not what we want and, potentially, error prone. For instance, in the given example, the first string comparison returns true, since smaller strings are interned by the interpreter, while for larger ones, it will return False:

```
mystring = "ok"
if mystring is "ok": # Returns true
    # do stuff

mystring = "a" * 1000
if mystring is ("a" * 1000): # This will return False
    # do stuff
```

Instead of using the `is` operator, you should use the `==` operator for this use case.

- We added a new refactoring message, `consider-merging-isinstance`, which is emitted whenever we can detect that consecutive *isinstance* calls can be merged together. For instance, in this example, we can merge the first two *isinstance* calls:

```
# $ cat a.py
if isinstance(x, int) or isinstance(x, float):
    pass
if isinstance(x, (int, float)) or isinstance(x, str):
    pass
# $ pylint a.py
# R: 1, 0: Consider merging these isinstance calls to isinstance(x, (float,
↳int)) (consider-merging-isinstance)
# R: 3, 0: Consider merging these isinstance calls to isinstance(x, (int, float,
↳str)) (consider-merging-isinstance)
```

- A new error check was added, `invalid-metaclass`, which is used whenever *pylint* can detect that a given class is using a metaclass which is invalid for the purpose of the class. This usually might indicate a problem in the code, rather than something done on purpose.

```
# Needs to inherit from *type* in order to be valid
class SomeClass(object):
    ...

class MyClass(metaclass=SomeClass):
    pass
```

- A new warning was added, `useless-super-delegation`, which is used whenever we can detect that an overridden method is useless, relying on *super()* delegation to do the same thing as another method from the MRO.

For instance, in this example, the first two methods are useless, since they do the exact same thing as the methods from the base classes, while the next two methods are not, since they do some extra operations with the passed arguments.

```
class Impl(Base):

    def __init__(self, param1, param2):
        super(Impl, self).__init__(param1, param2)

    def useless(self, first, second):
        return super(Impl, self).useless(first, second)

    def not_useless(self, first, **kwargs):
        debug = kwargs.pop('debug', False)
        if debug:
            ...
        return super(Impl, self).not_useless(first, **kwargs)

    def not_useless_1(self, first, *args):
        return super(Impl, self).not_useless_1(first + some_value, *args)
```

- A new warning was added, `len-as-condition`, which is used whenever we detect that a condition uses `len(SEQUENCE)` incorrectly. Instead one could use `if SEQUENCE` or `if not SEQUENCE`.

For instance, all of the examples below:

```
if len(S):
    pass

if not len(S):
    pass
```

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```
if len(S) > 0:
    pass

if len(S) != 0:
    pass

if len(S) == 0:
    pass
```

can be written in a more natural way:

```
if S:
    pass

if not S:
    pass
```

See <https://www.python.org/dev/peps/pep-0008/#programming-recommendations> for more information.

- A new extension was added, `emptystring.py` which detects whenever we detect comparisons to empty string constants. This extension is disabled by default. For instance, the examples below:

```
if S != "":
    pass

if S == '':
    pass
```

can be written in a more natural way:

```
if S:
    pass

if not S:
    pass
```

An exception to this is when empty string is an allowed value whose meaning is treated differently than `None`. For example the meaning could be user selected no additional options vs. user has not made their selection yet!

You can activate this checker by adding the line:

```
load-plugins=pylint.extensions.emptystring
```

to the MASTER section of your `.pylintrc` or using the command:

```
$ pylint a.py --load-plugins=pylint.extensions.emptystring
```

- A new extension was added, `comparetozero.py` which detects whenever we compare integers to zero. This extension is disabled by default. For instance, the examples below:

```
if X != 0:
    pass

if X == 0:
    pass
```

can be written in a more natural way:

```
if X:
    pass

if not X:
    pass
```

An exception to this is when zero is an allowed value whose meaning is treated differently than `None`. For example the meaning could be `None` means no limit, while `0` means the limit is zero!

You can activate this checker by adding the line:

```
load-plugins=pylint.extensions.comparetozero
```

to the MASTER section of your `.pylintrc` or using the command:

```
$ pylint a.py --load-plugins=pylint.extensions.comparetozero
```

- We've added new error conditions for `bad-super-call` which now detect the usage of `super(type(self), self)` and `super(self.__class__, self)` patterns. These can lead to recursion loop in derived classes. The problem is visible only if you override a class that uses these incorrect invocations of `super()`.

For instance, `Derived.__init__()` will correctly call `Base.__init__`. At this point `type(self)` will be equal to `Derived` and the call again goes to `Base.__init__` and we enter a recursion loop.

```
class Base(object):
    def __init__(self, param1, param2):
        super(type(self), self).__init__(param1, param2)

class Derived(Base):
    def __init__(self, param1, param2):
        super(Derived, self).__init__(param1, param2)
```

- The warnings `missing-returns-doc` and `missing-yields-doc` have each been replaced with two new warnings - `missing-[return|yield]-doc` and `missing-[return|yield]-type-doc`. Having these as separate warnings allows the user to choose whether their documentation style requires text descriptions of function return/yield, specification of return/yield types, or both.

```
# This will raise missing-return-type-doc but not missing-return-doc
def my_sphinx_style_func(self):
    """This is a Sphinx-style docstring.

    :returns: Always False
    """
    return False

# This will raise missing-return-doc but not missing-return-type-doc
def my_google_style_func(self):
    """This is a Google-style docstring.

    Returns:
        bool:
    """
    return False
```

- A new refactoring check was added, `redefined-argument-from-local`, which is emitted when **pylint** can detect that a function argument is redefined locally in some potential error prone cases. For instance, in

the following piece of code, we have a bug, since the check will never return True, given the fact that we are comparing the same object to its attributes.

```
def test(resource):
    for resource in resources:
        # The ``for`` is reusing ``resource``, which means that the following
        # ``resource`` is not what we wanted to check against.
        if resource.resource_type == resource:
            call_resource(resource)
```

Other places where this check looks are *with* statement name bindings and except handler's name binding.

- A new refactoring check was added, no-else-return, which is emitted when pylint encounters an else following a chain of ifs, all of them containing a return statement.

```
def fool(x, y, z):
    if x:
        return y
    else: # This is unnecessary here.
        return z
```

We could fix it deleting the else statement.

```
def fool(x, y, z):
    if x:
        return y
    return z
```

- A new Python 3 check was added, eq-without-hash, which enforces classes that implement `__eq__` also implement `__hash__`. The behavior around classes which implement `__eq__` but not `__hash__` changed in Python 3; in Python 2 such classes would get `object.__hash__` as their default implementation. In Python 3, aforementioned classes get None as their implementation thus making them unhashable.

```
class JustEq(object):
    def __init__(self, x):
        self.x = x

    def __eq__(self, other):
        return self.x == other.x

class Neither(object):
    def __init__(self, x):
        self.x = x

class HashAndEq(object):
    def __init__(self, x):
        self.x = x

    def __eq__(self, other):
        return self.x == other.x

    def __hash__(self):
        return hash(self.x)

{Neither(1), Neither(2)} # OK in Python 2 and Python 3
{HashAndEq(1), HashAndEq(2)} # OK in Python 2 and Python 3
{JustEq(1), JustEq(2)} # Works in Python 2, throws in Python 3
```

In general, this is a poor practice which motivated the behavior change.

```
as_set = {JustEq(1), JustEq(2)}
print(JustEq(1) in as_set) # prints False
print(JustEq(1) in list(as_set)) # prints True
```

In order to fix this error and avoid behavior differences between Python 2 and Python 3, classes should either explicitly set `__hash__` to `None` or implement a hashing function.

```
class JustEq(object):
    def __init__(self, x):
        self.x = x

    def __eq__(self, other):
        return self.x == other.x

    __hash__ = None

{JustEq(1), JustEq(2)} # Now throws an exception in both Python 2 and Python 3.
```

- 3 new Python 3 checkers were added, `div-method`, `idiv-method` and `rddiv-method`. The magic methods `__div__` and `__idiv__` have been phased out in Python 3 in favor of `__truediv__`. Classes implementing `__div__` that still need to be used from Python 2 code not using `from __future__ import division` should implement `__truediv__` and alias `__div__` to that implementation.

```
from __future__ import division

class DivisibleThing(object):
    def __init__(self, x):
        self.x = x

    def __truediv__(self, other):
        return DivisibleThing(self.x / other.x)

    __div__ = __truediv__
```

- A new Python 3 checker was added to warn about accessing the `message` attribute on Exceptions. The `message` attribute was deprecated in Python 2.7 and was removed in Python 3. See <https://www.python.org/dev/peps/pep-0352/#retracted-ideas> for more information.

```
try:
    raise Exception("Oh No!!")
except Exception as e:
    print(e.message)
```

Instead of relying on the `message` attribute, you should explicitly cast the exception to a string:

```
try:
    raise Exception("Oh No!!")
except Exception as e:
    print(str(e))
```

- A new Python 3 checker was added to warn about using `encode` or `decode` on strings with non-text codecs. This check also checks calls to `open` with the keyword argument `encoding`. See <https://docs.python.org/3/whatsnew/3.4.html#improvements-to-codec-handling> for more information.

```
'hello world'.encode('hex')
```

Instead of using the `encode` method for non-text codecs use the `codecs` module.

```
import codecs
codecs.encode('hello world', 'hex')
```

- A new warning was added, `overlapping-except`, which is emitted when an except handler treats two exceptions which are *overlapping*. This means that one exception is an ancestor of the other one or it is just an alias.

For example, in Python 3.3+, `IOError` is an alias for `OSError`. In addition, `socket.error` is an alias for `OSError`. The intention is to find cases like the following:

```
import socket
try:
    pass
except (ConnectionError, IOError, OSError, socket.error):
    pass
```

- A new Python 3 checker was added to warn about accessing `sys.maxint`. This attribute was removed in Python 3 in favor of `sys.maxsize`.

```
import sys
print(sys.maxint)
```

Instead of using `sys.maxint`, use `sys.maxsize`

```
import sys
print(sys.maxsize)
```

- A new Python 3 checker was added to warn about importing modules that have either moved or been removed from the standard library.

One of the major undertakings with Python 3 was a reorganization of the standard library to remove old or supplanted modules and reorganize some of the existing modules. As a result, roughly 100 modules that exist in Python 2 no longer exist in Python 3. See <https://www.python.org/dev/peps/pep-3108/> and <https://www.python.org/dev/peps/pep-0004/> for more information. For suggestions on how to handle this, see <https://pythonhosted.org/six/#module-six.moves> or <http://python3porting.com/stdlib.html>.

```
from cStringIO import StringIO
```

Instead of directly importing the deprecated module, either use `six.moves` or a conditional import.

```
from six.moves import cStringIO as StringIO

if sys.version_info[0] >= 3:
    from io import StringIO
else:
    from cStringIO import StringIO
```

This checker will assume any imports that happen within a conditional or a `try/except` block are valid.

- A new Python 3 checker was added to warn about accessing deprecated functions on the `string` module. Python 3 removed functions that were duplicated from the builtin `str` class. See <https://docs.python.org/2/library/string.html#deprecated-string-functions> for more information.

```
import string
print(string.upper('hello world!'))
```

Instead of using `string.upper`, call the `upper` method directly on the string object.

```
"hello world!".upper()
```

- A new Python 3 checker was added to warn about calling `str.translate` with the removed `deletchars` parameter. `str.translate` is frequently used as a way to remove characters from a string.

```
'hello world'.translate(None, 'low')
```

Unfortunately, there is not an idiomatic way of writing this call in a 2and3 compatible way. If this code is not in the critical path for your application and the use of `translate` was a premature optimization, consider using `re.sub` instead:

```
import re
chars_to_remove = re.compile('[low]')
chars_to_remove.sub('', 'hello world')
```

If this code is in your critical path and must be as fast as possible, consider declaring a helper method that varies based upon Python version.

```
if six.PY3:
    def _remove_characters(text, deletchars):
        return text.translate({ord(x): None for x in deletchars})
else:
    def _remove_characters(text, deletchars):
        return text.translate(None, deletchars)
```

- A new refactoring check was added, `consider-using-ternary`, which is emitted when pylint encounters constructs which were used to emulate ternary statement before it was introduced in Python 2.5.

```
value = condition and truth_value or false_value
```

Warning can be fixed by using standard ternary construct:

```
value = truth_value if condition else false_value
```

- A new refactoring check was added, `trailing-comma-tuple`, which is emitted when pylint finds an one-element tuple, created by a stray comma. This can suggest a potential problem in the code and it is recommended to use parantheses in order to emphasise the creation of a tuple, rather than relying on the comma itself.

The warning is emitted for such a construct:

```
a = 1,
```

The warning can be fixed by adding parantheses:

```
a = (1, )
```

- Two new check were added for detecting an unsupported operation over an instance, `unsupported-assignment-operation` and `unsupported-delete-operation`. The first one is emitted whenever an object does not support item assignment, while the second is emitted when an object does not support item deletion:

```
class A:
    pass
instance = A()
instance[4] = 4 # unsupported-assignment-operation
del instance[4] # unsupported-delete-operation
```



- A new check was added, `relative-beyond-top-level`, which is emitted when a relative import tries to access too many levels in the current package.
- A new check was added, `trailing-newlines`, which is emitted when a file has trailing new lines.
- `invalid-length-returned` check was added, which is emitted when a `__len__` implementation does not return a non-negative integer.
- There is a new extension, `pylint.extensions.mccabe`, which can be used for computing the McCabe complexity of classes and functions.

You can enable this extension through `--load-plugins=pylint.extensions.mccabe`

- A new check was added, `used-prior-global-declaration`. This is emitted when a name is used prior a global declaration, resulting in a `SyntaxError` in Python 3.6.
- A new message was added, `assign-to-new-keyword`. This is emitted when used name is known to become a keyword in future Python release. Assignments to keywords would result in `SyntaxError` after switching to newer interpreter version.

```
# While it's correct in Python 2.x, it raises a SyntaxError in Python 3.x
True = 1
False = 0

# Same as above, but it'll be a SyntaxError starting from Python 3.7
async = "async"
await = "await"
```

### 10.10.3 Other Changes

- We don't emit by default `no-member` if we have opaque inference objects in the inference results

This is controlled through the new flag `--ignore-on-opaque-inference`, which is by default `True`. The inference can return multiple potential results while evaluating a Python object, but some branches might not be evaluated, which results in partial inference. In that case, it might be useful to still emit `no-member` and other checks for the rest of the inferred objects.

- Namespace packages are now supported by pylint. This includes both explicit namespace packages and implicit namespace packages, supported in Python 3 through PEP 420.
- A new option was added, `--analyse-fallback-block`.

This can be used to support both Python 2 and 3 compatible import block code, which means that the import block might have code that exists only in one or another interpreter, leading to false positives when analysed. By default, this is false, you can enable the analysis for both branches using this flag.

- `ignored-argument-names` option is now used for ignoring arguments for unused-variable check.

This option was used for ignoring arguments when computing the correct number of arguments a function should have, but for handling the arguments with regard to unused-variable check, `dummy-variables-rgx` was used instead. Now, `ignored-argument-names` is used for its original purpose and also for ignoring the matched arguments for the unused-variable check. This offers a better control of what should be ignored and how. Also, the same option was moved from the design checker to the variables checker, which means that the option now appears under the `[VARIABLES]` section inside the configuration file.

- A new option was added, `redefining-builtins-modules`, for controlling the modules which can redefine builtins, such as `six.moves` and `future.builtins`.
- A new option was added, `ignore-patterns`, which is used for building a blacklist of directories and files matching the regex patterns, similar to the `ignore` option.

- The reports are now disabled by default, as well as the information category warnings.
- `arguments-differ` check was rewritten to take in consideration keyword only parameters and variadics.

Now it also complains about losing or adding capabilities to a method, by introducing positional or keyword variadics. For instance, *pylint* now complains about these cases:

```
class Parent(object):

    def foo(self, first, second):
        ...

    def bar(self, **kwargs):
        ...

    def baz(self, *, first):
        ...

class Child(Parent):

    # Why subclassing in the first place?
    def foo(self, *args, **kwargs):
        # mutate args or kwargs.
        super(Child, self).foo(*args, **kwargs)

    def bar(self, first=None, second=None, **kwargs):
        # The overridden method adds two new parameters,
        # which can also be passed as positional arguments,
        # breaking the contract of the parent's method.

    def baz(self, first):
        # Not keyword-only
```

- `redefined-outer-name` is now also emitted when a nested loop's target variable is the same as an outer loop.

```
for i, j in [(1, 2), (3, 4)]:
    for j in range(i):
        print(j)
```

- relax character limit for method and function names that starts with `_`. This will let people to use longer descriptive names for methods and functions with a shorter scope (considered as private). The same idea applies to variable names, only with an inverse rule: you want long descriptive names for variables with bigger scope, like globals.
- Add `InvalidMessageError` exception class and replace `assert` in `pylint.utils` with `raise InvalidMessageError`.
- `UnknownMessageError` (formerly `UnknownMessage`) and `EmptyReportError` (formerly `EmptyReport`) are now provided by the new `pylint.exceptions` submodule instead of `pylint.utils` as before.
- We now support inline comments for comma separated values in the configurations

For instance, you can now use the `#` sign for having comments inside comma separated values, as seen below:

```
disable=no-member, # Don't care about it for now
bad-indentation, # No need for this
import-error
```

Of course, interweaving comments with values is also working:

```
disable=no-member,
    # Don't care about it for now
    bad-indentation # No need for this
```

This works by setting the inline comment prefixes accordingly.

- Added epytext docstring support to the docparams extension.
- We added support for providing hints when not finding a missing member.

For example, given the following code, it should be obvious that the programmer intended to use the `mail` attribute, rather than `email`.

```
class Contribution:
    def __init__(self, name, email, date):
        self.name = name
        self.mail = mail
        self.date = date

for c in contributions:
    print(c.email) # Oups
```

**pylint** will now warn that there is a chance of having a typo, suggesting new names that could be used instead.

```
$ pylint a.py
E: 8,10: Instance of 'Contribution' has no 'email' member; maybe 'mail'?
```

The behaviour is controlled through the `--missing-member-hint` option. Other options that come with this change are `--missing-member-max-choices` for choosing the total number of choices that should be picked in this situation and `--missing-member-hint-distance`, which specifies a metric for computing the distance between the names (this is based on Levenshtein distance, which means the lower the number, the more pickier the algorithm will be).

- `PyLinter.should_analyze_file` has a new parameter, `is_argument`, which specifies if the given path is a **pylint** argument or not.

`should_analyze_file` is called whenever **pylint** tries to determine if a file should be analyzed, defaulting to files with the `.py` extension, but this function gets called only in the case where the said file is not passed as a command line argument to **pylint**. This usually means that pylint will analyze a file, even if that file has a different extension, as long as the file was explicitly passed at command line. Since `should_analyze_file` cannot be overridden to handle all the cases, the check for the provenience of files was moved into `should_analyze_file`. This means we now can write something similar with this example, for ignoring every file respecting the desired property, disregarding the provenience of the file, being it a file passed as CLI argument or part of a package.

```
from pylint.lint import Run, PyLinter

class CustomPyLinter(PyLinter):

    def should_analyze_file(self, modname, path, is_argument=False):
        if respect_condition(path):
            return False
        return super().should_analyze_file(modname, path, is_argument=is_
↪argument)
```

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```
class CustomRun(Run):
    LinterClass = CustomPyLinter

CustomRun(sys.argv[1:])
```

- Imports aliased with underscore are skipped when checking for unused imports.
- bad-builtin and redefined-variable-type are now extensions, being disabled by default. They can be enabled through: `--load-plugins=pylint.extensions.redefined_variable_type, pylint.extensions.bad_builtin`
  - Imports checker supports new switch `allow-wildcard-with-all` which disables warning on wildcard import when imported module defines `__all__` variable.
- differing-param-doc is now used for the differing part of the old missing-param-doc, and differing-type-doc for the differing part of the old missing-type-doc.

### 10.10.4 Bug fixes

- Fix a false positive of redundant-returns-doc, occurred when the documented function was using `yield` instead of `return`.
- Fix a false positive of missing-param-doc and missing-type-doc, occurred when a class docstring uses the `For the parameters, see magic string` but the class `__init__` docstring does not, or vice versa.
- Added proper exception type inference for missing-raises-doc. Now:

```
def my_func():
    """My function."""
    ex = ValueError('foo')
    raise ex
```

will properly be flagged for missing documentation of `:raises ValueError:` instead of `:raises ex:`, among other scenarios.

- Fix false positives of missing-[raises|params|type]-doc due to not recognizing valid keyword synonyms supported by Sphinx.
- More thorough validation in `MessagesStore.register_messages()` to detect conflicts between a new message and any existing message id, symbol, or old\_names.
- We now support having plugins that shares the same name and with each one providing options.

A plugin can be logically split into multiple classes, each class providing certain capabilities, all of them being tied under the same name. But when two or more such classes are also adding options, then **pylint** crashed, since it already added the first encountered section. Now, these should work as expected.

```
from pylint.checkers import BaseChecker

class DummyPlugin1(BaseChecker):
    name = 'dummy_plugin'
    msgs = {'I9061': ('Dummy short desc 01', 'dummy-message-01', 'Dummy long desc
→')}
    options = (
        ('dummy_option_1', {
```

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```

        'type': 'string',
        'metavar': '<string>',
        'help': 'Dummy option 1',
    }},
)

class DummyPlugin2(BaseChecker):
    name = 'dummy_plugin'
    msgs = {'I9060': ('Dummy short desc 02', 'dummy-message-02', 'Dummy long desc
→')}
    options = (
        ('dummy_option_2', {
            'type': 'string',
            'metavar': '<string>',
            'help': 'Dummy option 2',
        })),
    )

def register(linter):
    linter.register_checker(DummyPlugin1(linter))
    linter.register_checker(DummyPlugin2(linter))

```

- We do not yield unused-argument for singledispatch implementations and do not warn about function-redefined for multiple implementations with same name.

```

from functools import singledispatch

@singledispatch
def f(x):
    return 2*x

@f.register(str)
def _(x):
    return -1

@f.register(int)
@f.register(float)
def _(x):
    return -x

```

- unused-variable checker has new functionality of warning about unused variables in global module namespace. Since globals in module namespace may be a part of exposed API, this check is disabled by default. For enabling it, set allow-global-unused-variables option to false.
- Fix a false-positive logging-format-interpolation message, when format specifications are used in formatted string. In general, these operations are not always convertible to old-style formatting used by logging module.
- Added a new switch single-line-class-stmt to allow single-line declaration of empty class bodies (as seen in the example below). Pylint won't emit a multiple-statements message when this option is enabled.

```

class MyError(Exception): pass

```

- *too-many-format-args* and *too-few-format-args* are emitted correctly (or not emitted at all, when exact

count of elements in RHS cannot be inferred) when starred expressions are used in RHS tuple. For example, code block as shown below detects correctly that the used tuple has in fact three elements, not two.

```
meat = ['spam', 'ham']
print('%s%s%s' % ('eggs', *meat))
```

- *cyclic-import* checker supports local disable clauses. When one of cycle imports was done in scope where disable clause was active, cycle is not reported as violation.

### 10.10.5 Removed Changes

- `pylint-gui` was removed, because it was deemed unfit for being included in *pylint*. It had a couple of bugs and misfeatures, its usability was subpar and since its development was neglected, we decided it is best to move on without it.
- The HTML reporter was removed, including the `--output-format=html` option. It was lately a second class citizen in Pylint, being mostly neglected. Since we now have the JSON reporter, it can be used as a basis for building more prettier HTML reports than what Pylint can currently generate. This is part of the effort of removing cruft from Pylint, by removing less used features.
- The `--files-output` option was removed. While the same functionality cannot be easily replicated, the JSON reporter, for instance, can be used as a basis for generating the messages per each file.
- `--required-attributes` option was removed.
- `--ignore-iface-methods` option was removed.
- The `--optimize-ast` flag was removed.

The option was initially added for handling pathological cases, such as joining too many strings using the addition operator, which was leading pylint to have a recursion error when trying to figure out what the string was. Unfortunately, we decided to ignore the issue, since the pathological case would have happen when the code was parsed by Python as well, without actually reaching the runtime step and as such, we decided to remove the error altogether.

- `epylint.py_run`'s *script* parameter was removed.

Now `epylint.py_run` is always using the underlying `epylint.lint` method from the current interpreter. This avoids some issues when multiple instances of **pylint** are installed, which means that `epylint.py_run` might have ran a different `epylint` script than what was intended.

## 10.11 What's New In Pylint 1.6

**Release** 1.6.0

**Date** 2016-07-07

### 10.11.1 Summary – Release highlights

Nothing major.

### 10.11.2 New checkers

- We added a new recommendation check, `consider-iterating-dictionary`, which is emitted when a dictionary is iterated by using `.keys()`.

For instance, the following code would trigger this warning, since the dictionary's keys can be iterated without calling the method explicitly.

```
for key in dictionary.keys():
    ...

# Can be refactored to:
for key in dictionary:
    ...
```

- `trailing-newlines` check was added, which is emitted when a file has trailing newlines.
- `invalid-length-returned` check was added, which is emitted when the `__len__` special method returns something else than a non-negative number. For instance, this example is triggering it:

```
class Container(object):
    def __len__(self):
        return self._items # Oups, forgot to call len() over it.
```

- Add a new check to the `check_docs` extension for looking for duplicate constructor parameters in a class constructor docstring or in a class docstring.

The check `multiple-constructor-doc` is emitted when the parameter is documented in both places.

- We added a new extension plugin, `pylint.extensions.mccabe`, which can be used for warning about the complexity in the code.

You can enable it as in:

```
$ pylint module_or_project --load-plugins=pylint.extensions.mccabe
```

See more at [Design checker](#)

### 10.11.3 New features

- `generated-members` now supports qualified names through regular expressions.

For instance, for ignoring all the errors generated by `numpy.core`'s attributes, we can now use:

```
$ pylint a.py --generated-members=numpy.*
```

- Add the ability to ignore files based on regex matching, with the new `--ignore-patterns` option.

Rather than clobber the existing `ignore` option, we decided to have a separate option for it. For instance, for ignoring all the test files, we can now use:

```
$ pylint myproject --ignore-patterns=test.*?py
```

- We added a new option, `redefining-builtins-modules`, which is used for defining the modules which can redefine builtins. `pylint` will emit an error when a builtin is redefined, such as defining a variable called `next`. But in some cases, the builtins can be redefined in the case they are imported from other places, different than the `builtins` module, such is the case for `six.moves`, which contains more forward-looking functions:

```
$ cat a.py
# Oops, now pylint emits a redefined-builtin message.
from six.moves import open
$ pylint a.py --redefining-builtins-modules=six.moves
```

Default values: `six.moves`, `future.builtins`

### 10.11.4 Bug fixes

- Fixed a bug where the top name of a qualified import was detected as an unused variable.
- We don't warn about `invalid-sequence-index` if the indexed object has unknown base classes, that Pylint cannot deduce.

### 10.11.5 Other Changes

- The `bad-builtin` check was moved into an extension.

The check was complaining about used builtin functions which were supposed to not be used. For instance, `map` and `filter` were falling into this category, since better alternatives can be used, such as list comprehensions. But the check was annoying, since using `map` or `filter` can have its use cases and as such, we decided to move it to an extension check instead. It can now be enabled through `--load-plugins=pylint.extensions.bad_builtin`.

- We use the `configparser` backport internally, for Python 2.

This allows having comments inside list values, in the configuration, such as:

```
disable=no-member,
    # Don't like this check
    bad-indentation
```

- We now use the `isort` package internally.

This improves the `wrong-import-order` check, so now we should have less false positives regarding the import order.

- We do not emit `import-error` or `no-name-in-module` for fallback import blocks by default.

A fallback import block can be considered a `TryExcept` block, which contains imports in both branches, such as:

```
try:
    import urllib.request as request
except ImportError:
    import urllib2 as request
```

In the case where **pylint** can not find one import from the `except` branch, then it will emit an `import-error`, but this gets cumbersome when trying to write compatible code for both Python versions. As such, we don't check these blocks by default, but the analysis can be enforced by using the new `--analyse-fallback-block` flag.

- `reimported` is emitted when the same name is imported from different module, as in:

```
from collections import deque, OrderedDict, deque
```



### 10.11.6 Deprecated features

- The HTML support was deprecated and will be eventually removed in Pylint 1.7.0.

This feature was lately a second class citizen in Pylint, being often neglected and having a couple of bugs. Since we now have the JSON reporter, this can be used as a basis for more prettier HTML outputs than what Pylint can currently offer.

- The `--files-output` option was deprecated and will be eventually removed in Pylint 1.7.0.
- The `--optimize-ast` option was deprecated and will be eventually removed in Pylint 1.7.0.

The option was initially added for handling pathological cases, such as joining too many strings using the addition operator, which was leading pylint to have a recursion error when trying to figure out what the string was. Unfortunately, we decided to ignore the issue, since the pathological case would have happen when the code was parsed by Python as well, without actually reaching the runtime step and as such, we will remove the option in the future.

- The `check_docs` extension is now deprecated. The extension is still available under the `docparams` name, so this should work:

```
$ pylint module_or_package --load-extensions=pylint.extensions.docparams
```

The old name is still kept for backward compatibility, but it will be eventually removed.

### 10.11.7 Removed features

- None yet

The "Changelog" contains *all* nontrivial changes to Pylint for the current version.

## 10.12 Pylint's ChangeLog

### 10.12.1 What's New in Pylint 2.6.1?

- Astroid version has been set as `< 2.5`

Close #4093

### 10.12.2 What's New in Pylint 2.6.0?

Release date: 2020-08-20

- Fix various scope-related bugs in `undefined-variable` checker

Close #1082, #3434, #3461

- `bad-continuation` and `bad-whitespace` have been removed, `black` or another formatter can help you with this better than Pylint

Close #246, #289, #638, #747, #1148, #1179, #1943, #2041, #2301, #2304, #2944, #3565

- The `no-space-check` option has been removed. It's no longer possible to consider empty line like a *trailing-whitespace* by using clever options

Close #1368

- `missing-kwoa` is no longer emitted when dealing with overload functions  
Close #3655
- `mixed-indentation` has been removed, it is no longer useful since `TabError` is included directly in python3  
Close #2984 #3573
- Add *super-with-arguments* check for flagging instances of Python 2 style super calls.
- Add an `faq` detailing which messages to disable to avoid duplicates w/ other popular linters
- Fix superfluous-parens false-positive for the walrus operator  
Close #3383
- Fix *fail-under* not accepting floats
- Fix a bug with *ignore-docstrings* ignoring all lines in a module
- Fix *pre-commit* config that could lead to undetected duplicate lines of code
- Fix a crash in parallel mode when the module's filepath is not set  
Close #3564
- Add *raise-missing-from* check for exceptions that should have a cause.
- Support both isort 4 and isort 5. If you have pinned isort 4 in your projet requirements, nothing changes. If you use isort 5, though, note that the *known-standard-library* option is not interpreted the same in isort 4 and isort 5 (see the migration guide in isort documentation for further details). For compatibility's sake for most pylint users, the *known-standard-library* option in pylint now maps to *extra-standard-library* in isort 5. If you really want what *known-standard-library* now means in isort 5, you must disable the *wrong-import-order* check in pylint and run isort manually with a proper isort configuration file.  
Close #3722

### 10.12.3 What's New in Pylint 2.5.4?

- Fix a crash caused by not guarding against *InferenceError* when calling *infer\_call\_result*  
Close #3690
- Fix a crash in parallel mode when the module's filepath is not set  
Close #3564

### 10.12.4 What's New in Pylint 2.5.3?

Release date: 2020-06-8

- Fix a regression where disable comments that have checker names with numbers in them are not parsed correctly  
Close #3666
- *property-with-parameters* properly handles abstract properties  
Close #3600
- *continue-in-finally* no longer emitted on Python 3.8 where it's now valid  
Close #3612

- Fix a regression where messages with dash are not fully parsed

Close #3604

- In a TOML configuration file, it's now possible to use rich (non-string) types, such as list, integer or boolean instead of strings. For example, one can now define a *list* of message identifiers to enable like this:

```
enable = [  
    "use-symbolic-message-instead",  
    "useless-suppression",  
]
```

Close #3538

- Fix a regression where the score was not reported with multiple jobs

Close #3547

- Protect against *AttributeError* when checking *cell-var-from-loop*

Close #3646

### 10.12.5 What's New in Pylint 2.5.2?

Release date: 2020-05-05

- `pylint.Run` accepts `do_exit` as a deprecated parameter

Close #3590

### 10.12.6 What's New in Pylint 2.5.1?

Release date: 2020-05-05

- Fix a crash in *method-hidden* lookup for unknown base classes

Close #3527

- Revert `pylint.Run`'s *exit* parameter to `do_exit`

This has been inadvertently changed several releases ago to `do_exit`.

Close #3533

- `no-value-for-parameter` variadic detection has improved for assign statements

Close #3563

- Allow package files to be properly discovered with multiple jobs

Close #3524

- Allow linting directories without `__init__.py` which was a regression in 2.5.

Close #3528

### 10.12.7 What's New in Pylint 2.5.0?

Release date: 2020-04-27

- Fix a false negative for `undefined-variable` when using class attribute in comprehension.  
Close #3494
- Fix a false positive for `undefined-variable` when using class attribute in decorator or as type hint.  
Close #511 Close #1976
- Remove HTML quoting of messages in JSON output.  
Close #2769
- Adjust the *invalid-name* rule to work with non-ASCII identifiers and add the *non-ascii-name* rule.  
Close #2725
- Positional-only arguments are taken in account for `useless-super-delegation`
- `unidiomatic-typecheck` is no longer emitted for `in` and `not in` operators  
Close #3337
- Positional-only argument annotations are taken in account for `unused-import`  
Close #3462
- Add a command to list available extensions.
- Allow used variables to be properly consumed when different checks are enabled / disabled  
Close #3445
- Fix dangerous-default-value rule to account for keyword argument defaults  
Close #3373
- Fix a false positive of `self-assigning-variable` on tuple unpacking.  
Close #3433
- `no-self-use` is no longer emitted for typing stubs.  
Close #3439
- Fix a false positive for `undefined-variable` when `__class__` is used  
Close #3090
- Emit *invalid-name* for variables defined in loops at module level.  
Close #2695
- Add a check for cases where the second argument to *isinstance* is not a type.  
Close #3308
- Add 'notes-rgx' option, to be used for fixme check.  
Close #2874
- `function-redefined` exempts function redefined on a condition.  
Close #2410
- `typing.overload` functions are exempted from docstring checks  
Close #3350
- Emit *invalid-overridden-method* for improper `async def` overrides.  
Close #3355

- Do not allow `python -m pylint ...` to import user code

`python -m pylint ...` adds the current working directory as the first element of `sys.path`. This opens up a potential security hole where `pylint` will import user level code as long as that code resides in modules having the same name as `stdlib` or `pylint`'s own modules.

Close #3386

- Add *dummy-variables-rgx* option for *\_redeclared-assigned-name* check.

Close #3341

- Fixed graph creation for relative paths
- Add a check for asserts on string literals.

Close #3284

- *not in* is considered iterating context for some of the Python 3 porting checkers.
- A new check *inconsistent-quotes* was added.
- Add a check for non string assignment to `__name__` attribute.

Close #583

- `__pow__`, `__imatmul__`, `__trunc__`, `__floor__`, and `__ceil__` are recognized as special method names.

Close #3281

- Added errors for protocol functions when invalid return types are detected. E0304 (invalid-bool-returned): `__bool__` did not return a bool E0305 (invalid-index-returned): `__index__` did not return an integer E0306 (invalid-repr-returned): `__repr__` did not return a string E0307 (invalid-str-returned): `__str__` did not return a string E0308 (invalid-bytes-returned): `__bytes__` did not return a string E0309 (invalid-hash-returned): `__hash__` did not return an integer E0310 (invalid-length-hint-returned): `__length_hint__` did not return a non-negative integer E0311 (invalid-format-returned): `__format__` did not return a string E0312 (invalid-getnewargs-returned): `__getnewargs__` did not return a tuple E0313 (invalid-getnewargs-ex-returned): `__getnewargs_ex__` did not return a tuple of the form (tuple, dict)

Close #560

- `missing-*-docstring` can look for `__doc__` assignments.

Close #3301

- `undefined-variable` can now find undefined loop iterables

Close #498

- `safe_infer` can infer a value as long as all the paths share the same type.

Close #2503

- Add a `-fail-under <score>` flag, also configurable in a `.pylintrc` file. If the final score is more than the specified score, it's considered a success and `pylint` exits with `exitcode 0`. Otherwise, it's considered a failure and `pylint` exits with its current `exitcode` based on the messages issued.

Close #2242

- Don't emit `line-too-long` for multilines when `disable=line-too-long` comment stands at their end

Close #2957

- Fixed an `AttributeError` caused by improper handling of `dataclasses` inference in `pyreverse`

Close #3256

- Do not exempt bare except from undefined-variable and similar checks

If a node was wrapped in a `TryExcept`, pylint was taking a hint from the except handler when deciding to emit or not a message. We were treating bare except as a fully fledged ignore but only the corresponding exceptions should be handled that way (e.g. `NameError` or `ImportError`)

Close #3235

- No longer emit `assignment-from-no-return` when a function only raises an exception

Close #3218

- Allow import aliases to exempt `import-error` when used in type annotations.

Close #3178

- Ellipsis` is exempted from ``multiple-statements for function overloads.

Close #3224

- No longer emit `invalid-name` for non-constants found at module level.

Pylint was taking the following statement from PEP-8 too far, considering all module level variables as constants, which is not what the statement is saying:

*Constants are usually defined on a module level and written in all capital letters with underscores separating words.*

Close #3111 Close #3132

- Allow `implicit-str-concat-in-sequence` to be emitted for string juxtaposition

Close #3030

- `implicit-str-concat-in-sequence` was renamed `implicit-str-concat`

- The `json` reporter no longer bypasses `redirect_stdout`. Close #3227

- Move `NoFileError`, `OutputLine`, `FunctionalTestReporter`, `FunctionalTestFile`, `LintModuleTest` and related methods from `test_functional.py` to `pylint.testutils` to help testing for 3rd party pylint plugins.

- Can read config from a `setup.cfg` or `pyproject.toml` file.

Close #617

- Fix exception-escape false positive with generators

Close #3128

- `inspect.getargvalues` is no longer marked as deprecated.

- A new check `f-string-without-interpolation` was added

Close #3190

- Flag mutable `collections.*` utilities as dangerous defaults

Close #3183

- `docparams` extension supports multiple types in raises sections.

Multiple types can also be separated by commas in all valid sections.

Closes #2729

- Allow parallel linting when run under Prospector

- Fixed false positives of `method-hidden` when a subclass defines the method that is being hidden.  
Closes #414
- Python 3 porting mode is 30-50% faster on most codebases
- Python 3 porting mode no longer swallows syntax errors  
Closes #2956
- Pass the actual PyLinter object to sub processes to allow using custom PyLinter classes.  
PyLinter object (and all its members except reporter) needs to support pickling so the PyLinter object can be passed to worker processes.
- Clean up setup.py  
Make pytest-runner a requirement only if running tests, similar to McCabe.  
Clean up the setup.py file, resolving a number of warnings around it.
- Handle SyntaxError in files passed via `--from-stdin` option  
PyLint no longer outputs a traceback, if a file, read from stdin, contains a syntaxerror.
- Fix uppercase style to disallow 3+ uppercase followed by lowercase.
- Fixed `undefined-variable` and `unused-import` false positives when using a metaclass via an attribute.  
Close #1603
- Emit `unused-argument` for functions that partially uses their argument list before raising an exception.  
Close #3246
- Fixed `broad_try_clause` extension to check try/finally statements and to check for nested statements (e.g., inside of an `if` statement).
- Recognize classes explicitly inheriting from `abc.ABC` or having an `abc.ABCMeta` metaclass as abstract. This makes them not trigger W0223.  
Closes #3098
- Fix overzealous *arguments-differ* when overridden function uses variadics  
No message is emitted if the overriding function provides positional or keyword variadics in its signature that can feasibly accept and pass on all parameters given by the overridden function.  
Close #1482 Close #1553
- Multiple types of string formatting are allowed in logging functions.  
The *logging-fstring-interpolation* message has been brought back to allow multiple types of string formatting to be used.  
Close #3361

### 10.12.8 What's New in PyLint 2.4.4?

Release date: 2019-11-13

- Exempt all the names found in type annotations from `unused-import`  
The previous code was assuming that only `typing` names need to be exempted, but we need to do that for the rest of the type comment names as well.  
Close #3112

- Relax type import detection for names that do not come from the `typing` module

Close #3191

### 10.12.9 What's New in Pylint 2.4.3?

Release date: 2019-10-18

- Fix an issue with `unnecessary-comprehension` in comprehensions with additional repacking of elements.

Close #3148

- `import-outside-toplevel` is emitted for `ImportFrom` nodes as well.

Close #3175

- Do not emit `no-method-argument` for functions using positional only args.

Close #3161

- `consider-using-sys-exit` is no longer emitted when `exit` is imported in the local scope.

Close #3147

- `invalid-overridden-method` takes `abc.abstractproperty` in account

Close #3150

- Fixed `missing-yield-type-doc` getting incorrectly raised when a generator does not document a yield type but has a type annotation.

Closes #3185

- `typing.overload` functions are exempted from `too-many-function-args`

Close #3170

### 10.12.10 What's New in Pylint 2.4.2?

Release date: 2019-09-30

- `ignored-modules` can skip submodules. Close #3135

- `self-assigning-variable` skips class level assignments.

Close #2930

- `consider-using-sys-exit` is exempted when `exit()` is imported from `sys`

Close #3145

- Exempt annotated assignments without variable from `class-variable-slots-conflict`

Close #3141

- Fix `utils.is_error` to account for functions returning early.

This fixes a false negative with `unused-variable` which was no longer triggered when a function raised an exception as the last instruction, but the body of the function still had unused variables.

Close #3028



### 10.12.11 What's New in Pylint 2.4.1?

Release date: 2019-09-25

- Exempt type checking definitions defined in both clauses of a type checking guard

Close #3127

- Exempt type checking definitions inside the type check guard

In `a7f236528bb3758886b97285a56f3f9ce5b13a99` we added basic support for emitting *used-before-assignment* if a variable was only defined inside a type checking guard (using `TYPE_CHECKING` variable from `typing`) Unfortunately that missed the case of using those type checking imports inside the guard itself, which triggered spurious used-before-assignment errors.

Close #3119

- Require astroid `>= 2.3` to avoid any compatibility issues.

### 10.12.12 What's New in Pylint 2.4.0?

Release date: 2019-09-24

- New check: `import-outside-toplevel`

This check warns when modules are imported from places other than a module toplevel, e.g. inside a function or a class.

- Handle inference ambiguity for `invalid-format-index`

Close #2752

- Removed Python 2 specific checks such as `relative-import`, `invalid-encoded-data`, `missing-super-argument`.

- Support forward references for `function-redefined` check.

Close #2540

- Handle redefinitions in case of type checking imports.

Close #2834

- Added a new check, `consider-using-sys-exit`

This check is emitted when we detect that a `quit()` or `exit()` is invoked instead of `sys.exit()`, which is the preferred way of exiting in program.

Close #2925

- `useless-suppression` check now ignores `cyclic-import` suppressions, which could lead to false positives due to incomplete context at the time of the check.

Close #3064

- Added new checks, `no-else-break` and `no-else-continue`

These checks highlight unnecessary `else` and `elif` blocks after `break` and `continue` statements.

Close #2327

- Don't emit `protected-access` when a single underscore prefixed attribute is used inside a special method

Close #1802

- Fix the "statement" values in the PyLinter's stats reports by module.

- Added a new check, `invalid-override-method`

This check is emitted when we detect that a method is overridden as a property or a property is overridden as a method. This can indicate a bug in the application code that will trigger a runtime error.

Close #2670

- Added a new check, `arguments-out-of-order`

This check warns if you have arguments with names that match those in a function's signature but you are passing them in to the function in a different order.

Close #2975

- Added a new check, `redeclared-assigned-name`

This check is emitted when `pylint` detects that a name was assigned one or multiple times in the same assignment, which indicate a potential bug. Close #2898

- Ignore lambda calls with variadic arguments without a context.

Inferring variadic positional arguments and keyword arguments will result into empty Tuples and Dicts, which can lead in some cases to false positives with regard to `no-value-for-parameter`. In order to avoid this, until we'll have support for call context propagation, we're ignoring such cases if detected. We already did that for function calls, but the previous fix was not taking in consideration `lambdas`

Close #2918

- Added a new check, `self-assigning-variable`

This check is emitted when we detect that a variable is assigned to itself, which might indicate a potential bug in the code application. Close #2930

- Added a new check, `property-with-parameters`.

This check is emitted when we detect that a defined property also has parameters, which are useless. Close #3006

- Excluded protocol classes from a couple of checks. Close #3002.

- Add a check *unnecessary-comprehension* that detects unnecessary comprehensions.

This check is emitted when `pylint` finds list-, set- or dict-comprehensions, that are unnecessary and can be rewritten with the list-, set- or dict-constructors.

Close #2905

- Excluded PEP 526 instance and class variables from `no-member`. Close #2945

- Excluded `attrs` from *too-few-public-methods* check. Close #2988.

- `unused-import` emitted for the right import names in function scopes.

Close #2928

- Dropped support for Python 3.4.

- `assignment-from-no-return` not triggered for async methods.

Close #2902

- Don't emit `attribute-defined-outside-init` for variables defined in setters.

Close #409

- Syntax errors report the column number.

Close #2914

- Support fully qualified typing imports for type annotations.

Close #2915

- Exclude `__dict__` from `attribute-defined-outside-init`
- Fix pointer on spelling check when the error are more than one time in the same line.

Close #2895

- Fix crash happening when parent of called object cannot be determined
- Allow of in *GoogleDocstring.re\_multiple\_type*
- Added *subprocess-run-check* to handle `subprocess.run` without explicitly set *check* keyword.

Close #2848

- When we can't infer bare except handlers, skip `try-except-raise`

Close #2853

- Handle more *unnecessary-lambda* cases when dealing with additional kwargs in wrapped calls

Close #2845

- Better postponed evaluation of annotations handling

Close #2847

- Support postponed evaluation of annotations for variable annotations.

Close #2838

- `epylint.py_run` defaults to `python` in case the current executable is not a Python one.

Close #2837

- Ignore raw docstrings when running Similarities checker with *ignore-docstrings=yes* option
- Fix crash when calling `inherit_from_std_ex` on a class which is its own ancestor

Close #2680

- Added a new check that warns the user if a function call is used inside a test but parentheses are missing.

Close #2658

- `len-as-condition` now only fires when a `len(x)` call is made without an explicit comparison

The message and description accompanying this checker has been changed reflect this new behavior, by explicitly asking to either rely on the fact that empty sequence are false or to compare the length with a scalar.

Close #2684

- Add `preferred-module` checker that notify if an import has a replacement module that should be used.

This check is emitted when `pylint` finds an imported module that has a preferred replacement listed in `preferred-modules`.

- `assigning-non-slot` not emitted for classes with unknown base classes.

Close #2807

- `old-division` is not emitted for non-Const nodes.

Close #2808

- Added method arguments to the dot writer for `pyreverse`.

Close #2139

- Support for linting file from stdin.

IDEs may benefit from the support for linting from an in-memory file.

Close #1187

- Added a new check *class-variable-slots-conflict*

This check is emitted when `pylint` finds a class variable that conflicts with a slot name, which would raise a `ValueError` at runtime.

- Added new check: dict-iter-missing-items (E1141)

Close #2761

- Fix issue with pylint name in output of `python -m pylint --version`

Close #2764

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- Skip *if* expressions from f-strings for the *checkelif* checker

Close #2816

- C0412 (ungrouped-import) is now compatible with isort.

Close #2806

- Added new extension to detect too much code in a try clause

Close #2877

- `signature-mutators` option was added

With this option, users can choose to ignore *too-many-function-args*, *unexpected-keyword-arg*, and *no-value-for-parameter* for functions decorated with decorators that change the signature of a decorated function.

Close #259

- Fixed a pragma comment on its own physical line being ignored when part of a logical line with the previous physical line.

Close #199

- Fixed false *undefined-loop-variable* for a function defined in the loop, that uses the variable defined in that loop.

Close #202

- Fixed *unused-argument* and *function-redefined* getting raised for functions decorated with *typing.overload*.

Close #1581

- Fixed a false positive with `consider-using-dict-comprehension` for constructions that can't be converted to a comprehension

Close #2963

- Added `__post_init__` to `defining-attr-methods` in order to avoid `attribute-defined-outside-init` in dataclasses.

Close #2581

- Changed description of W0199 to use the term 2-item-tuple instead of 2-uple.

- Allow a `.` as a prefix for Sphinx name resolution.

- Checkers must now keep a 1 to 1 relationship between "msgid" (ie: C1234) and "symbol" (ie : human-readable-symbol)
- In checkers, an `old_names` can now be used for multiple new messages and pylint is now a little faster

Caused by #1164. It means if you do a partial `old_names` for a message definition an exception will tell you that you must rename the associated identification.

- Allow the choice of f-strings as a valid way of formatting logging strings.  
Closes #2395
- Added `--list-msgs-enabled` command to list all enabled and disabled messages given the current RC file and command line arguments.

### 10.12.13 What's New in Pylint 2.3.0?

Release date: 2019-02-27

- Protect against *NonDeducibleTypeHierarchy* when calling semi-private *is\_subtype*  
*astroid.helpers.is\_subtype* raises *NonDeducibleTypeHierarchy* when it cannot infer the base classes of the given types, but that makes sense in its context given that the method is mostly used to inform the inference process about the hierarchy of classes. Doesn't make that much sense for *pylint* itself, which is why we're handling the exception here, rather than in *astroid*  
Close PyCQA/astroid#644
- Added a new command line option `list-groups` for listing all the check groups *pylint* knows about.
- Allow *BaseException* for emitting `broad-except`, just like *Exception*.  
Close #2741
- Fixed a crash that occurred for `bad-str-strip-call` when `strip()` received `None`  
Close #2743
- Don't emit `*-not-iterating` checks for builtins consumed by *itertools*  
Close #2731
- Fix a crash caused by iterating over *Uninferable* in a string formatting check.  
Close #2727
- Fixed false positives for `no-self-argument` and `unsubscriptable-object` when using `__class_getitem__` (new in Python 3.7)  
Close #2416
- Support *Ellipsis* as a synonym for `pass` statements.  
Close #2718
- `fixme` gets triggered only on comments.  
Close #2321
- Fixed a false positive for `unused-variable` and `nonlocal` assignments  
Close #2671
- Added `load_configuration()` hook for plugins  
New optional hook for plugins is added: `load_configuration()`. This hook is executed after configuration is loaded to prevent overwriting plugin specific configuration via user-based configuration.

Close #2635

- Fix missing-raises-doc false positive (W9006)

Close #1502

- Exempt starred unpacking from `*-not-iterating` Python 3 checks

Close #2651

- Make `compare-to-zero` less zealous by checking against equality and identity

Close #2645

- Add `no-else-raise` warning (R1720)

Close #2558

- Exempt `yield from` from `*-not-iterating` Python 3 checks.

Close #2643

- Fix incorrect generation of `no-else-return` warnings (R1705)

Fixed issue where `if` statements with nested `if` statements were incorrectly being flagged as `no-else-return` in some cases and not being flagged as `no-else-return` in other cases. Added tests for verification and updated pylint source files to eliminate newly exposed warnings.

- Fix false positive with `not-async-context-manager` caused by not understanding `contextlib.asynccontextmanager`

Close #2440

- Refactor `bad-reversed-sequence` to account for more objects that can define `__reversed__`

One such object would be an enum class, for which `__reversed__` yields each individual enum. As such, the check for `bad-reversed-sequence` needs to not differentiate between classes and instances when it comes for checking of `__reversed__` presence.

Close #2598

- Added `wrong-exception-operation`

Used when an operation is done against an exception, but the operation is not valid for the exception in question. Usually emitted when having binary operations between exceptions in except handlers.

Close #2494

- `no-member` is emitted for enums when they lack a member

Previously we weren't doing this because we detected a `__getattr__` implementation on the `Enum` class (and this check is skipped for classes with `__getattr__`), but that is fine for Enums, given that they are inferred in a customised way in `astroid`.

Close #2565

- Generalize `chained-comparison`

Previous version incorrectly detects `a < b < c` and `b < d` and fails to detect `a < b < c` and `c < d`.

- Avoid popping `__main__` when using multiple jobs

Close #2689

- Add a new option `'check-str-concat-over-line-jumps'` to check `'implicit-str-concat-in-sequence'`

- Fixes for the new style logging format linter.

The number of arguments was not handled properly, leading to an always successful check.

- Fix false positive `not-callable` for uninferable properties.
- Fix false positive `useless-else-on-loop` if the `break` is deep in the `else` of an inner loop.
- Minor improvements to the help text for a few options.

### 10.12.14 What's New in Pylint 2.2.2?

Release date: 2018-11-28

- Change the `logging-format-style` to use name identifier instead of their corresponding Python identifiers

This is to prevent users having to think about escaping the default value for `logging-format-style` in the generated config file. Also our config parsing utilities don't quite support escaped values when it comes to `choices` detection, so this would have needed various hacks around that.

Closes #2614

### 10.12.15 What's New in Pylint 2.2.1?

Release date: 2018-11-27

- Fix a crash caused by *implicit-str-concat-in-sequence* and multi-bytes characters.

Closes #2610

### 10.12.16 What's New in Pylint 2.2?

Release date: 2018-11-25

- Consider `range()` objects for `undefined-loop-variable` leaking from iteration.

Close #2533

- `deprecated-method` can use the attribute name for identifying a deprecated method

Previously we were using the fully qualified name, which we still do, but the fully qualified name for some `unittest` deprecated aliases leads to a generic deprecation function. Instead on relying on that, we now also rely on the attribute name, which should solve some false positives.

Close #1653 Close #1946

- Fix compatibility with changes to `stdlib` tokenizer.
- `pylint` is less eager to consume the whole line for pragmas

Close #2485

- Obtain the correct number of CPUs for virtualized or containerized environments.

Close #2519

- Change `unbalanced-tuple-unpacking` back to a warning.

It used to be a warning until a couple of years ago, after it was promoted to an error. But the check might be suggesting the wrong thing in some cases, for instance when checking against `sys.argv` which cannot be known at static analysis time. Given it might rely on potential unknown data, it's best to have it as a warning.

Close #2522

- Remove `enumerate` usage suggestion when defining `__iter__` (C0200)  
Close #2477
- Emit `too-many-starred-assignment` only when the number of Starred nodes is per assignment elements  
Close #2513
- `try-except-raise` checker now handles multilevel inheritance hierarchy for exceptions correctly.  
Close #2484
- Add a new check, `simplifiable-if-expression` for expressions like `True if cond else False`.  
Close #2487
- `too-few-public-methods` is not reported for `typing.NamedTuple`  
Close #2459
- `too-few-public-methods` is not reported for dataclasses created with options.  
Close #2488
- Remove wrong modules from `'bad-python3-import'`.  
Close #2453
- The `json` reporter prints an empty list when no messages are emitted  
Close #2446
- Add a new check, `duplicate-string-formatting-argument`  
This new check is emitted whenever a duplicate string formatting argument is found.  
Close #497
- `assignment-from-no-return` is not emitted for coroutines.  
Close #1715
- Report format string type mismatches.
- `consider-using-ternary` and `simplified-boolean-expression` no longer emit for sequence based checks  
Close #2473
- Handle `AstroidSyntaxError` when trying to import a module.  
Close #2313
- Allow `__module__` to be redefined at a class level. Close #2451
- `pylint` used to emit a `unused-variable` error if unused import was found in the function. Now instead of `unused-variable`, `unused-import` is emitted.  
Close #2421
- Handle `asyncio.coroutine` when looking for `not-an-iterable` check.  
Close #996
- The `locally-enabled` check is gone.  
Close #2442



- Infer decorated methods when looking for method-hidden  
Close #2369
- Pick the latest value from the inferred values when looking for `raising-non-exception`  
Close #2431
- Extend the `TYPE_CHECKING` guard to `TYPE_CHECKING` name as well, not just the attribute  
Close #2411
- Ignore import `x.y.z` as `z` cases for checker *useless-import-alias*.  
Close #2309
- Fix false positive `undefined-variable` and `used-before-assignment` with `nonlocal` keyword usage.  
Close #2049
- Stop `protected-access` exception for missing class attributes
- Don't emit *assignment-from-no-return* for decorated function nodes  
Close #2385
- *unnecessary-pass* is now also emitted when a function or class contains only docstring and `pass` statement.  

In Python, stubbed functions often have a body that contains just a single *pass* statement, indicating that the function doesn't do anything. However, a stubbed function can also have just a docstring, and function with a docstring and no body also does nothing.

Close #2208
- `duplicate-argument-name` is emitted for more than one duplicate argument per function  
Close #1712
- Allow double indentation levels for more distinguishable indentations  
Close #741
- Consider tuples in exception handler for `try-except-raise`. Close #2389
- Fix `astroid.ClassDef` check in `checkers.utils.is_subclass_of`
- Fix wildcard imports being ignored by the import checker
- Fix external/internal distinction being broken in the import graph
- Fix wildcard import check not skipping `__init__.py`  
Close #2430
- Add new option to logging checker, `logging_format_style`
- Fix `-ignore-imports` to understand multi-line imports  
Close #1422 Close #2019
- Add a new check 'implicit-str-concat-in-sequence' to spot string concatenation inside lists, sets & tuples.
- `literal-comparison` is now emitted for 0 and 1 literals.

### 10.12.17 What's New in Pylint 2.1.1?

Release date: 2018-08-07

- fix pylint crash due to `misplaced-format-function` not correctly handling class attribute. Close #2384
- Do not emit `*-builtin` for Python 3 builtin checks when the builtin is used inside a try-except  
Close PyCQA/pylint#2228
- `simplifiable-if-statement` not emitted when dealing with subscripts

### 10.12.18 What's New in Pylint 2.1?

Release date: 2018-08-01

- *trailing-comma-tuple* gets emitted for `yield` statements as well.  
Close #2363
- Get only the arguments of the scope function for *redefined-argument-from-local*  
Close #2364
- Add a check *misplaced-format-function* which is emitted if format function is used on non str object.  
Close #2200
- *chain.from\_iterable* no longer emits *dict-{}-not-iterating* when dealing with dict values and keys
- Demote the *try-except-raise* message from an error to a warning (E0705 -> W0706)  
Close #2323
- Correctly handle the new name of the Python implementation of the *abc* module.  
Close PyCQA/astroid#2288
  - Modules with `__getattr__` are exempted by default from *no-member*  
There's no easy way to figure out if a module has a particular member when the said module uses `__getattr__`, which is a new addition to Python 3.7. Instead we assume the safe thing to do, in the same way we do for classes, and skip those modules from checking.  
Close #2331
  - Fix a false positive *invalid name* message when method or attribute name is longer then 30 characters.  
Close #2047
  - Include the type of the next branch in *no-else-return*  
Close #2295
  - Fix inconsistent behaviour for bad-continuation on first line of file  
Close #2281
  - Fix not being able to disable certain messages on the last line through the global disable option  
Close #2278

- Don't emit *useless-return* when we have a single statement that is the return itself  
We still want to be explicit when a function is supposed to return an optional value; even though *pass* could still work, it's not explicit enough and the function might look like it's missing an implementation. Close #2300
- Fix false-positive undefined-variable for self referential class name in *lamdbas*  
Close #704
- Don't crash when *pylint* is unable to infer the value of an argument to *next()*  
Close #2316
- Don't emit *not-an-iterable* when dealing with async iterators.  
But do emit it when using the usual iteration protocol against async iterators.  
Close #2311
- Can specify a default docstring type for when the check cannot guess the type  
Close #1169

### 10.12.19 What's New in Pylint 2.0?

**Release date: 2018-07-15**

- *try-except-raise* should not be emitted if there are any parent exception class handlers.  
Close #2284
- *trailing-comma-tuple* can be emitted for *return* statements as well.  
Close #2269
- Fix a false positive *inconsistent-return-statements* message when exception is raised inside an else statement.  
Close #1782
- *ImportFrom* nodes correctly use the full name for the import sorting checks.  
Close #2181
- `[]`.*extend* and similar builtin operations don't emit *dict-\*-not-iterating* with the Python 3 porting checker  
Close #2187
- Add a check *consider-using-dict-comprehension* which is emitted if for dict initialization the old style with list comprehensions is used.
- Add a check *consider-using-set-comprehension* which is emitted if for set initialization the old style with list comprehensions is used.
- *logging-not-lazy* is emitted whenever pylint infers that a string is built with addition  
Close #2193
- Add a check *chained-comparison* which is emitted if a boolean operation can be simplified by chaining some of its operations. e.g "a < b and b < c", can be simplified as "a < b < c".  
Close #2032
- Add a check *consider-using-in* for comparisons of a variable against multiple values with "==" and "or"s instead of checking if the variable is contained "in" a tuple of those values.

- *in* is considered iterating context for some of the Python 3 porting checkers  
Close #2186
- Add *-ignore-none* flag to control if pylint should warn about *no-member* where the owner is None
- Fix a false positive related to *too-many-arguments* and bounded *\_\_get\_\_* methods  
Close #2172
- *mcs* as the first parameter of metaclass's *\_\_new\_\_* method was replaced by *cls*  
Close #2028
- *assignment-from-no-return* considers methods as well.  
Close #2081
- Support typing.TYPE\_CHECKING for *unused-import* errors  
Close #1948
- Inferred classes at a function level no longer emit *invalid-name* when they don't respect the variable regular expression  
Close #1049
- Added basic support for postponed evaluation of function annotations.  
Close #2069
- Fix a bug with *missing-kwoa* and variadics parameters  
Close #1111
- *simplifiable-if-statement* takes in account only when assigning to same targets  
Close #1984
- Make *len-as-condition* test more cases, such as `len() < 1` or `len <= 0`
- Fix false-positive *line-too-long* message emission for commented line at the end of a module  
Close #1950
- Fix false-positive *bad-continuation* for *with* statements  
Close #461
- Don't warn about *stop-iteration-return* when using *next()* over *itertools.count*  
Close #2158
- Add a check *consider-using-get* for unidiomatic usage of value/default-retrieval for a key from a dictionary  
Close #2076
- *invalid-slice-index* is not emitted when the slice is used as index for a complex object.  
We only use a handful of known objects (list, set and friends) to figure out if we should emit *invalid-slice-index* when the slice is used to subscript an object.
- Don't emit *unused-import* anymore for typing imports used in type comments.
- Add a new check 'useless-import-alias'.  
Close #2052
- Add *comparison-with-callable* to warn for comparison with bare callable, without calling it.  
Close #2082

- Don't warn for `missing-type-doc` and/or `missing-return-type-doc`, if type annotations exist on the function signature for a parameter and/or return type. Close #2083
- Add `-exit-zero` option for continuous integration scripts to more easily call Pylint in environments that abort when a program returns a non-zero (error) status code.  
Close #2042
- Warn if the first argument of an instance/ class method gets assigned  
Close #977
- New check `comparison-with-itself` to check comparison between same value.  
Close #2051
- Add a new warning, 'logging-fstring-interpolation', emitted when f-string is used within logging function calls.  
Close #1998
- Don't show 'useless-super-delegation' if the subclass method has different type annotations.  
Close #1923
- Add `unhashable-dict-key` check.  
Closes #586
- Don't warn that a global variable is unused if it is defined by an import  
Close #1453
- Skip wildcard import check for `__init__.py`.  
Close #2026
- The Python 3 porting mode can now run with Python 3 as well.
- `too-few-public-methods` is not emitted for dataclasses.  
Close #1793
- New verbose mode option, enabled with `-verbose` command line flag, to display of extra non-checker-related output. It is disabled by default.  
Close #1863
- `undefined-loop-variable` takes in consideration non-empty iterred objects before emitting  
Close #2039
- Add support for numpydoc optional return value names.  
Close #2030
- `singleton-comparison` accounts for negative checks  
Close #2037
- Add a check `consider-using-in` for comparisons of a variable against multiple values with `"=="` and `"or"`s instead of checking if the variable is contained `"in"` a tuple of those values.  
Close #1977
- `defaultdict` and subclasses of `dict` are now handled for `dict-iter-*` checks  
Close #2005

- *logging-format-interpolation* also emits when f-strings are used instead of % syntax.

Close #1788

- Don't trigger misplaced-bare-raise when the raise is in a finally clause

Close #1924

- Add a new check, *possibly-unused-variable*.

This is similar to *unused-variable*, the only difference is that it is emitted when we detect a `locals()` call in the scope of the unused variable. The `locals()` call could potentially use the said variable, by consuming all values that are present up to the point of the call. This new check allows to disable this error when the user intentionally uses `locals()` to consume everything.

Close #1909.

- *no-else-return* accounts for multiple cases

The check was a bit overrestrictive because we were checking for return nodes in the `.orelse` node. At that point though the if statement can be refactored to not have the `orelse`. This improves the detection of other cases, for instance it now detects `TryExcept` nodes that are part of the `.else` branch.

Close #1852

- Added two new checks, *invalid-envvar-value* and *invalid-envvar-default*.

The former is trigger whenever pylint detects that environment variable manipulation functions uses a different type than strings, while the latter is emitted whenever the said functions are using a default variable of different type than expected.

- Add a check *consider-using-join* for concatenation of strings using `str.join(sequence)`

Close #1952

- Add a check *consider-swap-variables* for swapping variables with tuple unpacking

Close #1922

- Add new checker *try-except-raise* that warns the user if an except handler block has a `raise` statement as its first operator. The warning is shown when there is a bare raise statement, effectively re-raising the exception that was caught or the type of the exception being raised is the same as the one being handled.

- Don't crash on invalid strings when checking for *logging-format-interpolation*

Close #1944

- Exempt `__doc__` from triggering a *redefined-builtin*

`__doc__` can be used to specify a docstring for a module without passing it as a first-statement string.

- Fix false positive bad-whitespace from function arguments with default values and annotations

Close #1831

- Fix stop-iteration-return false positive when next builtin has a default value in a generator

Close #1830

- Fix emission of false positive `no-member` message for class with "private" attributes whose name is mangled.

Close #1643

- Fixed a crash which occurred when *Uninferable* wasn't properly handled in *stop-iteration-return*

Close #1779

- Use the proper node to get the name for redefined functions (#1792)  
Close #1774
- Don't crash when encountering bare raises while checking inconsistent returns  
Close #1773
- Fix a false positive `inconsistent-return-statements` message when if statement is inside try/except.  
Close #1770
- Fix a false positive `inconsistent-return-statements` message when while loop are used.  
Close #1772
- Correct column number for whitespace conventions.  
Previously the column was stuck at 0  
Close #1649
- Fix `unused-argument` false positives with overshadowed variable in dictionary comprehension.  
Close #1731
- Fix false positive `inconsistent-return-statements` message when never returning functions are used (i.e `sys.exit` for example).  
Close #1771
- Fix error when checking if function is exception, as in `bad-exception-context`.
- Fix false positive `inconsistent-return-statements` message when a function is defined under an if statement.  
Close #1794
- New `useless-return` message when function or method ends with a "return" or "return None" statement and this is the only return statement in the body.
- Fix false positive `inconsistent-return-statements` message by avoiding useless exception inference if the exception is not handled.  
Close #1794 (second part)
- Fix bad thread instantiation check when target function is provided in args.  
Close #1840
- Fixed false positive when a numpy Attributes section follows a Parameters section  
Close #1867
- Fix incorrect file path when file absolute path contains multiple `path_strip_prefix` strings.  
Close #1120
- Fix false positive `undefined-variable` for lambda argument in class definitions  
Close #1824
- Add of a new checker that warns the user if some messages are enabled or disabled by id instead of symbol.  
Close #1599
- Suppress false-positive `not-callable` messages from certain `staticmethod` descriptors  
Close #1699

- Fix indentation handling with tabs  
Close #1148
- Fix false-positive `bad-continuation` error  
Close #638
- Fix false positive unused-variable in lambda default arguments  
Close #1921 Close #1552 Close #1099 Close #210
- Updated the default report format to include paths that can be clicked on in some terminals (e.g. iTerm).
- Fix inline def behavior with `too-many-statements` checker  
Close #1978
- Fix `KeyError` raised when using docparams and `NotImplementedError` is documented.  
Close #2102
- Fix 'method-hidden' raised when assigning to a property or data descriptor.
- Fix emitting `useless-super-delegation` when changing the default value of keyword arguments.  
Close #2022
- Expand ignored-argument-names include starred arguments and keyword arguments  
Close #2214
- Fix false-positive undefined-variable in nested lambda  
Close #760
- Fix false-positive `bad-whitespace` message for typing annotations with ellipses in them  
Close 1992
- Broke down "missing-docstrings" between "module", "class" and "function"  
For this to work we had to make multiple messages with the same old name possible.  
Closes #1164

## 10.12.20 What's New in Pylint 1.9?

Release date: 2018-05-15

- Added two new Python 3 porting checks, *exception-escape* and *comprehension-escape*  
These two are emitted whenever pylint detects that a variable defined in the said blocks is used outside of the given block. On Python 3 these values are deleted.
- Added a new *deprecated-sys-function*, emitted when accessing removed sys members.
- Added *xreadlines-attribute*, emitted when the *xreadlines()* attribute is accessed.
- The Python 3 porting mode can now run with Python 3 as well.
- docparams extension allows abstract methods to document what overriding implementations should return, and to raise `NotImplementedError` without documenting it.  
Closes #2044
- Special methods do not count towards *too-few-methods*, and are considered part of the public API.



- Enum classes do not trigger *too-few-methods*  
Close #605
- Added a new Python 2/3 check for accessing *operator.div*, which is removed in Python 3  
Close #1936
- Added a new Python 2/3 check for accessing removed urllib functions  
Close #1997

### 10.12.21 What's New in Pylint 1.8.1?

Release date: 2017-12-15

- Wrong version number in `__pkginfo__`.

### 10.12.22 What's New in Pylint 1.8?

Release date: 2017-12-15

- Respect `disable=...` in config file when running with `-py3k`.
- New warning *shallow-copy-environ* added  
Shallow copy of `os.environ` doesn't work as people may expect. `os.environ` is not a dict object but rather a proxy object, so any changes made on copy may have unexpected effects on `os.environ`  
Instead of `copy.copy(os.environ)` method `os.environ.copy()` should be used.  
See <https://bugs.python.org/issue15373> for details.  
Close #1301
- Do not display no-absolute-import warning multiple times per file.
- ***trailing-comma-tuple* refactor check now extends to assignment with** more than one element (such as lists)  
Close #1713
- Fixing `u''` string in superfluous-parens message  
Close #1420
- *abstract-class-instantiated* is now emitted for all inference paths.  
Close #1673
- Add set of predefined naming style to ease configuration of checking naming conventions.  
Closes #1013
- Added a new check, `keyword-arg-before-vararg`  
This is emitted for function definitions in which keyword arguments are placed before variable positional arguments (`*args`).  
This may lead to `args` list getting modified if keyword argument's value is not provided in the function call assuming it will take default value provided in the definition.
- The *invalid-name* check contains the name of the template that caused the failure  
Close #1176

- Using the `-j` flag won't start more child linters than needed.  
Contributed by Roman Ivanov in #1614
- Fix a false positive with `bad-python3-import` on relative imports  
Close #1608
- Added a new Python 3 check, `non-ascii-bytes-literals`  
Close #1545
- Added a couple of new Python 3 checks for accessing dict methods in non-iterable context
- Protocol checks (`not-a-mapping`, `not-an-iterable` and co.) aren't emitted on classes with dynamic `getattr`
- Added a new warning, `'bad-thread-instantiation'`  
This message is emitted when the `threading.Thread` class does not receive the `target` argument, but receives just one argument, which is by default the `group` parameter.  
Close #1327
- In non-quiet mode, absolute path of used config file is logged to standard error. Close #1519
- Raise meaningful exception for invalid reporter class being selected  
When unknown reporter class will be selected as Pylint reporter, meaningful error message would be raised instead of bare `ImportError` or `AttributeError` related to module or reporter class being not found. Close #1388
- Added a new Python 3 check for accessing removed functions from `itertools` like `izip` or `ifilterfalse`
- Added a new Python 3 check for accessing removed fields from the `types` module like `UnicodeType` or `XRangeType`
- Added a new Python 3 check for declaring a method `next` that would have been treated as an iterator in Python 2 but a normal function in Python 3.
- Added a new key-value pair in json output. The key is `message-id` and the value is the message id. Close #1512
- Added a new Python 3.0 check for raising a `StopIteration` inside a generator. The check about raising a `StopIteration` inside a generator is also valid if the exception raised inherit from `StopIteration`. Close #1385
- Added a new warning, `raising-format-tuple`, to detect multi-argument exception construction instead of message string formatting.
- Added a new check for method of logging module that concatenate string via `+` operator Close #1479
- Added parameter for limiting number of suggestions in spellchecking checkers
- Fix a corner-case in `consider-using-ternary` checker.  
When object `A` used in `X and A or B` was falsy in boolean context, Pylint incorrectly emitted non-equivalent ternary-based suggestion. After a change message is correctly not emitted for this case. Close #1559
- Added `suggestion-mode` configuration flag. When flag is enabled, informational message is emitted instead of cryptic error message for attributes accessed on c-extensions. Close #1466
- Fix a false positive `useless-super-delegation` message when parameters default values are different from those used in the base class. Close #1085

- Disabling `'wrong-import-order'`, `'wrong-import-position'`, or `'ungrouped-imports'` for a single line now prevents that line from triggering violations on subsequent lines.

Close #1336

- Added a new Python check for inconsistent return statements inside method or function. Close #1267
- Fix `superfluous-parens` false positive related to handling logical statements involving `in` operator.

Close #574

- `function-redefined` message is no longer emitted for functions and methods which names matches dummy variable name regular expression. Close #1369
- Fix `missing-param-doc` and `missing-type-doc` false positives when mixing `Args` and `Keyword Args` in Google docstring. Close #1409
- Fix `missing-docstring` false negatives when modules, classes, or methods consist of compound statements that exceed the `docstring-min-length`
- Fix `useless-else-on-loop` false positives when `break` statements are deeply nested inside loop. Close #1661
- Fix no `wrong-import-order` message emitted on ordering of first and third party libraries. With this fix, pylint distinguishes third and first party modules when checking import order. Close #1702
- Fix `pylint disable=fixme` directives ignored for comments following the last statement in a file. Close #1681
- Fix `line-too-long` message deactivated by `wrong disable` directive. The directive `disable=fixme` doesn't deactivate anymore the emission of `line-too-long` message for long commented lines. Close #1741
- If the `rcfile` specified on the command line doesn't exist, then an `IOError` exception is raised. Close #1747
- Fix the wrong scope of the `disable=` directive after a commented line. For example when a `disable=line-too-long` directive is at the end of a long commented line, it no longer disables the emission of `line-too-long` message for lines that follow. Close #1742

### 10.12.23 What's New in Pylint 1.7.1?

Release date: 2017-04-17

- Fix a false positive which occurred when an exception was reraised

Close #1419

- Fix a false positive of `disallow-trailing-tuple`

The check was improved by verifying for non-terminating newlines, which should exempt function calls and function definitions from the check Close #1424

### 10.12.24 What's New in Pylint 1.7?

Release date: 2017-04-13

- Don't emit missing-final-newline or trailing-whitespace for formfeeds (page breaks).

Close #1218 and #1219

- Don't emit by default no-member if we have opaque inference objects in the inference results

This is controlled through the new flag `ignore-on-opaque-inference`, which is by default `True`. The inference can return multiple potential results while evaluating a Python object, but some branches might not be evaluated, which results in partial inference. In that case, it might be useful to still emit `no-member` and other checks for the rest of the inferred objects.

- Added new message *assign-to-new-keyword* to warn about assigning to names which will become a keyword in future Python releases.

Close #1351

- Split the 'missing or differing' in parameter documentation in different error. 'differing-param-doc' covers the differing part of the old 'missing-param-doc', and 'differing-type-doc' covers the differing part of the old 'missing-type-doc'

Close #1342

- Added a new error, 'used-prior-global-declaration', which is emitted when a name is used prior a global declaration in a function. This causes a `SyntaxError` in Python 3.6

Close #1257

- The protocol checks are emitting their messages when a special method is set to `None`.

Close #1263

- Properly detect if imported name is assigned to same name in different scope.

Close #636, #848, #851, and #900

- Require one space for annotations with type hints, as per PEP 8.
- 'trailing-comma-tuple' check was added

This message is emitted when pylint finds an one-element tuple, created by a stray comma. This can suggest a potential problem in the code and it is recommended to use parentheses in order to emphasise the creation of a tuple, rather than relying on the comma itself.

- Don't emit not-callable for instances with unknown bases.

Close #1213

- Treat keyword only arguments the same as positional arguments with regard to unused-argument check
- Don't try to access variables defined in a separate scope when checking for `protected-access`
- Added new check to detect incorrect usage of `len(SEQUENCE)` inside test conditions.
- Added new extension to detect comparisons against empty string constants
- Added new extension to detect comparisons of integers against zero
- Added new error conditions for 'bad-super-call'

Now detects `super(type(self), self)` and `super(self.__class__, self)` which can lead to recursion loop in derived classes.

- `PyLinter.should_analyze_file` has a new optional parameter, called *is\_argument*

Close #1079

- Add attribute hints for missing members  
Closes #1035
- Add a new warning, 'redefined-argument-from-local'  
Closes #649
- Support inline comments for comma separated values in the config file  
Closes #1024
- `epylint.py_run`'s `script` parameter was removed.
- `epylint.py_run` now uses `shell=False` for running the underlying process.  
Closes #441
- Added a new warning, 'useless-super-delegation'  
Close 839.
- Added a new error, 'invalid-metaclass', raised when we can detect that a class is using an improper metaclass.  
Close #579
- Added a new refactoring message, 'literal-comparison'.  
Close #786
- `arguments-differ` takes in consideration `kwonlyargs` and `variadics`  
Close #983
- Removed `--optimized-ast`. Part of #975.
- Removed `--files-output` option. Part of #975.
- Removed `pylint-gui` from the package.
- Removed the HTML reporter. Part of #975.
- `ignored-argument-names` is now used for ignoring arguments for unused-variable check.  
This option was used for ignoring arguments when computing the correct number of arguments a function should have, but for handling the arguments with regard to unused-variable check, `dummy-variables-rgx` was used instead. Now, `ignored-argument-names` is used for its original purpose and also for ignoring the matched arguments for the unused-variable check. This offers a better control of what should be ignored and how. Also, the same option was moved from the design checker to the variables checker, which means that the option now appears under the `[VARIABLES]` section inside the configuration file. Close #862.
- Fix a false positive for keyword variadics with regard to keyword only arguments.  
If a keyword only argument was necessary for a function, but that function was called with keyword variadics (`**kwargs`), then we were emitting a missing-kwoa false positive, which is now fixed.  
Close #934.
- Fix some false positives with unknown sized variadics.  
Close #878
- Added a new extension, `check-docstring`, for checking PEP 257 conventions.  
Closes #868.
- config files with BOM markers can now be read.  
Close #864.

- `pylint.py_run` does not crash on big files, using `.communicate()` instead of `.wait()`  
Close #599
- Disable reports by default and show the evaluation score by default  
As per discussion from issue #746, the reports were disabled by default in order to simplify the interaction between the tool and the users. The score is still shown by default, as a way of closely measuring when it increases or decreases due to changes brought to the code.
- Disable the information category messages by default.  
This is a step towards making pylint more sane, as per the discussion from issue #746.
- Catch more cases as not proper iterables for `__slots__` with regard to invalid-slots pattern. Closes issue #775.
- empty indent strings are rejected.
- Added a new error, 'relative-beyond-top-level', which is emitted when a relative import was attempted beyond the top level package.  
Closes issue #588.
- Added a new warning, 'unsupported-assignment-operation', which is emitted when item assignment is tried on an object which doesn't have this ability. Closes issue #591.
- Added a new warning, 'unsupported-delete-operation', which is emitted when item deletion is tried on an object which doesn't have this ability. Closes issue #592.
- Fix a false positive of 'redundant-returns-doc', occurred when the documented function was using *yield* instead of *return*.  
Closes issue #984.
- Fix false positives of 'missing-[raises|params|type]-doc' due to not recognizing keyword synonyms supported by Sphinx.
- Added a new refactoring message, 'consider-merging-isinstance', which is emitted whenever we can detect that consecutive `isinstance` calls can be merged together.  
Closes issue #968
- Fix a false positive of 'missing-param-doc' and 'missing-type-doc', occurred when a class docstring uses the 'For the parameters, see' magic string but the class `__init__` docstring does not, or vice versa.
- *redefined-outer-name* is now also emitted when a nested loop's target variable is the same as a target variable in an outer loop.  
Closes issue #911.
- Added proper exception type inference for 'missing-raises-doc'.
- Added `InvalidMessageError` exception class to replace asserts in `pylint.utils`.
- More thorough validation in `MessagesStore.register_messages()` to avoid one message accidentally overwriting another.
- `InvalidMessageError`, `UnknownMessage`, and `EmptyReport` exceptions are moved to the new `pylint.exceptions` submodule.
- `UnknownMessage` and `EmptyReport` are renamed to `UnknownMessageError` and `EmptyReportError`.
- Warnings 'missing-returns-type-doc' and 'missing-yields-type-doc' have each been split into two warnings - 'missing-[return|yield]-doc' and 'missing-[return|yield]-type-doc'.

- Added epytext support to docparams extension.  
Closes #1029.
- Support having plugins with the same name and with options defined  
Closes #1018
- Sort configuration options in a section  
Closes #1087
- Added a new Python 3 warning around implementing '`__div__`', '`__idiv__`', or '`__rdiv__`' as those methods are phased out in Python 3.
- Added a new warning, 'overlapping-except', which is emitted when two exceptions in the same except-clause are aliases for each other or one exceptions is an ancestor of another.
- Avoid crashing on ill-formatted strings when checking for string formatting errors.
- Added a new Python 3 warning for calling '`str.encode`' or '`str.decode`' with a non-text encoding.
- Added new coding convention message, 'single-string-used-for-slots'.  
Closes #1166
- Added a new Python 3 check for accessing '`sys.maxint`' which was removed in Python 3 in favor of '`sys.maxsize`'
- Added a new Python 3 check for bad imports.
- Added a new Python 3 check for accessing deprecated string functions.
- Do not warn about unused arguments or function being redefined in singledispatch registered implementations.  
Closes #1032 and #1034
- Added refactoring message 'no-else-return'.
- Improve unused-variable checker to warn about unused variables in module scope.  
Closes #919
- Ignore modules import as `_` when checking for unused imports.  
Closes #1190
- Improve handing of Python 3 classes with metaclasses declared in nested scopes.  
Closes #1177
- Added refactoring message 'consider-using-ternary'.  
Closes #1204
- Bug-fix for false-positive logging-format-interpolation' when format specifications are used in formatted string.  
Fixes #572
- Added a new switch `single-line-class-stmt` to allow single-line declaration of empty class bodies.  
Closes #738
- Protected access in form `type(self)._attribute` are now allowed.  
Fixes #1031
- Let the user modify msg-template when Pylint is called from a Python script  
Fixes #1269

- Imports checker supports new switch `allow-wildcard-with-all` which disables warning on wildcard import when imported module defines `__all__` variable.

Fixes #831

- *too-many-format-args* and *too-few-format-args* are emitted correctly when starred expression are used in RHS tuple.

Fixes #957

- *cyclic-import* checker supports local disable clauses. When one of cycle imports was done in scope where disable clause was active, cycle is not reported as violation.

Fixes #59

### 10.12.25 What's new in Pylint 1.6.3?

Release date: 2016-07-18

- Do not crash when inferring uninferable exception types for docparams extension

Close #998

### 10.12.26 What's new in Pylint 1.6.2?

Release date: TBA

- Do not crash when printing the help of options with default regular expressions

Close #990

- More granular versions for deprecated modules.

Close #991

### 10.12.27 What's new in Pylint 1.6.1?

Release date: 2016-07-07

- Use environment markers for supporting conditional dependencies.

### 10.12.28 What's New in Pylint 1.6.0?

Release date: 2016-07-03

- Added a new extension, *pylint.extensions.mccabe*, for warning about complexity in code.
- Deprecate support for `--optimize-ast`. Part of #975.
- Deprecate support for the HTML output. Part of #975.
- Deprecate support for `--output-files`. Part of #975.
- Fixed a documentation error for the `check_docs` extension. Fixes #735.
- Made the list of property-defining decorators configurable.
- Fix a bug where the top name of a qualified import was detected as unused variable.

Close #923.



- `bad-builtin` is now an extension check.
- `generated-members` support qualified name through regular expressions.  
For instance, one can specify a regular expression as `--generated-members=astroid.node_classes.*` for ignoring every no-member error that is accessed as in `astroid.node_classes.missing.object`.
- Add the ability to ignore files based on regex matching, with the new `--ignore-patterns` option.  
This addresses issue #156 by allowing for multiple ignore patterns to be specified. Rather than clobber the existing ignore option, we introduced a new one called `ignore-patterns`.
- Added a new error, `'trailing-newlines'`, which is emitted when a file has trailing new lines.  
Closes issue #682.
- Add a new option, `'redefining-builtins-modules'`, for controlling the modules which can redefine builtins, such as `six.moves` and `future.builtins`.  
Close #464.
- `'reimported'` is emitted when the same name is imported from different module.  
Close #162.
- Add a new recommendation checker, `'consider-iterating-dictionary'`, which is emitted which is emitted when a dictionary is iterated through `.keys()`.  
Close #699
- Use the `configparser` backport for Python 2  
This fixes a problem we were having with comments inside values, which is fixed in Python 3's `configparser`.  
Close #828
- A new error was added, `'invalid-length-returned'`, when the `__len__` special method returned something else than a non-negative number.  
Close issue #557
- Switch to using `isort` internally for `wrong-import-order`.  
Closes #879.
- `check_docs` extension can find constructor parameters in `__init__`.  
Closes #887.
- Don't warn about `invalid-sequence-index` if the indexed object has unknown base classes.  
Closes #867
- Don't crash when checking, for `super-init-not-called`, a method defined in an `if` block.
- Do not emit `import-error` or `no-name-in-module` for fallback import blocks by default.  
Until now, we warned with these errors when a fallback import block (a `TryExcept` block that contained imports for Python 2 and 3) was found, but this gets cumbersome when trying to write compatible code. As such, we don't check these blocks by default, but the analysis can be enforced by using the new `--analyse-fallback-block` flag.  
Close #769.

### 10.12.29 What's New in Pylint 1.5.5?

Release date: 2016-03-21

- Let visit\_importfrom from Python 3 porting checker be called when everything is disabled  
Because the visit method was filtering the patterns it was expecting to be activated, it didn't run when everything but one pattern was disabled, leading to spurious false positives  
Close #852
- Don't emit unsubscriptable-value for classes with unknown base classes.  
Close #776.
- Use an OrderedDict for storing the configuration elements  
This fixes an issue related to unpredictable order of the disable / enable elements from a config file. In certain cases, the disable was coming before the enable which resulted in classes of errors to be enabled, even though the intention was to disable them. The best example for this was in the context of running multiple processes, each one of it having different enables / disables that affected the output.  
Close #815
- Don't consider bare and broad except handlers as ignoring NameError, AttributeError and similar exceptions, in the context of checkers for these issues.  
Closes issue #826

### 10.12.30 What's New in Pylint 1.5.4?

Release date: 2016-01-15

- Merge StringMethodChecker with StringFormatChecker. This fixes a bug where disabling all the messages and enabling only a handful of messages from the StringFormatChecker would have resulted in no messages at all.
- Don't apply unneeded-not over sets.

### 10.12.31 What's New in Pylint 1.5.3?

Release date: 2016-01-11

- Handle the import fallback idiom with regard to wrong-import-order.  
Closes issue #750.
- Decouple the displaying of reports from the displaying of messages  
Some reporters are aggregating the messages instead of displaying them when they are available. The actual displaying was conflated in the generate\_reports. Unfortunately this behaviour was flaky and in the case of the JSON reporter, the messages weren't shown at all if a file had syntax errors or if it was missing. In order to fix this, the aggregated messages can now be displayed with Reporter.display\_message, while the reports are displayed with display\_reports.  
Closes issues #766 and #765.
- Ignore function calls with variadic arguments without a context.  
Inferring variadic positional arguments and keyword arguments will result into empty Tuples and Dicts, which can lead in some cases to false positives with regard to no-value-for-parameter. In order to avoid this, until we'll have support for call context propagation, we're ignoring such cases if detected. Closes issue #722.

- Treat AsyncFunctionDef just like FunctionDef nodes, by implementing visit\_asyncfunctiondef in terms of visit\_functiondef.  
Closes issue #767.
- Take in account kwonlyargs when verifying that arguments are defined with the check\_docs extension.  
Closes issue #745.
- Suppress reporting 'unneeded-not' inside `__ne__` methods  
Closes issue #749.

### 10.12.32 What's New in Pylint 1.5.2?

Release date: 2015-12-21

- Don't crash if graphviz is not installed, instead emit a warning letting the user to know.  
Closes issue #168.
- Accept only functions and methods for the deprecated-method checker.  
This prevents a crash which can occur when an object doesn't have .qname() method after the inference.
- Don't emit super-on-old-class on classes with unknown bases. Closes issue #721.
- Allow statements in *if* or *try* blocks containing imports.  
Closes issue #714.

### 10.12.33 What's New in Pylint 1.5.1?

Release date: 2015-12-02

- Fix a crash which occurred when old visit methods are encountered in plugin modules. Closes issue #711.
- Add wrong-import-position to check\_messages's decorator arguments for ImportChecker.leave\_module This fixes an esoteric bug which occurs when ungrouped-imports and wrong-import-order are disabled and pylint is executed on multiple files. What happens is that without wrong-import-position in check\_messages, leave\_module will never be called, which means that the first non-import node from other files might leak into the current file, leading to wrong-import-position being emitted by pylint.
- Fix a crash which occurred when old visit methods are encountered in plugin modules. Closes issue #711.
- Don't emit import-self and cyclic-import for relative imports of modules with the same name as the package itself. Closes issues #708 and #706.

### 10.12.34 What's New in Pylint 1.5.0?

Release date: 2015-11-29

- Added multiple warnings related to imports. 'wrong-import-order' is emitted when PEP 8 recommendations regarding imports are not respected (that is, standard imports should be followed by third-party imports and then by local imports). 'ungrouped-imports' is emitted when imports from the same package or module are not placed together, but scattered around in the code. 'wrong-import-position' is emitted when code is mixed with imports, being recommended for the latter to be at the top of the file, in order to figure out easier by a human reader what dependencies a module has. Closes issue #692.

- Added a new refactoring warning, 'unneeded-not', emitted when an expression with the not operator could be simplified. Closes issue #670.
- Added a new refactoring warning, 'simplifiable-if-statement', used when an if statement could be reduced to a boolean evaluation of its test. Closes issue #698.
- Added a new refactoring warning, 'too-many-boolean-expressions', used when an if statement contains too many boolean expressions, which makes the code less maintainable and harder to understand. Closes issue #677.
- Property methods are shown as attributes instead of functions in pyreverse class diagrams. Closes Issue #284
- Add a new refactoring error, 'too-many-nested-blocks', which is emitted when a function or a method has too many nested blocks, which makes the code less readable and harder to understand. Closes issue #668.
- Add a new error, 'unsubscriptable-object', that is emitted when value used in subscription expression doesn't support subscription (i.e. doesn't define `__getitem__` method).
- Don't warn about abstract classes instantiated in their own body. Closes issue #627.
- Obsolete options are not present by default in the generated configuration file. Closes issue #632.
- non-iterator-returned can detect classes with iterator-metaclasses. Closes issue #679.
- Add a new error, 'unsupported-membership-test', emitted when value to the right of the 'in' operator doesn't support membership test protocol (i.e. doesn't define `__contains__`/`__iter__`/`__getitem__`)
- Add new errors, 'not-an-iterable', emitted when non-iterable value is used in an iterating context (starargs, for-statement, comprehensions, etc), and 'not-a-mapping', emitted when non-mapping value is used in a mapping context. Closes issue #563.
- Make 'no-self-use' checker not emit a warning if there is a 'super()' call inside the method. Closes issue #667.
- Add checker to identify multiple imports on one line. Closes issue #598.
- Fix unused-argument false positive when the "+=" operator is used. Closes issue #518.
- Don't emit import-error for ignored modules. PyLint will not emit import errors for any import which is, or is a subpackage of, a module in the ignored-modules list. Closes issue #223.
- Fix unused-import false positive when the import is used in a class assignment. Closes issue #475
- Add a new error, 'not-context-manager', emitted when something that doesn't implement `__enter__` and `__exit__` is used in a with statement.
- Add a new warning, 'confusing-with-statement', emitted by the base checker, when an ambiguous looking with statement is used. For example *with open() as first, second* which looks like a tuple assignment but is actually 2 context managers.
- Add a new warning, 'duplicate-except', emitted when there is an exception handler which handles an exception type that was handled before. Closes issue #485.
- A couple of warnings got promoted to errors, since they could uncover potential bugs in the code. These warnings are: assignment-from-none, unbalanced-tuple-unpacking, unpacking-non-sequence, non-iterator-returned. Closes issue #388.
- Allow ending a pragma control with a semicolon. In this way, users can continue a pragma control with a reason for why it is used, as in `# pylint: disable=old-style-class;reason=...`. Closes issue #449.
- `-jobs` can be used with `-load-plugins` now. Closes issue #456.
- Improve the performance of `-jobs` when dealing only with a package name. Closes issue #479.
- Don't emit an unused-wildcard-import when the imported name comes from another module and it is in fact a `__future__` name.

- The colorized reporter now works on Windows. Closes issue #96.
- Remove pointless-except warning. It was previously disabled by default and it wasn't very useful. Closes issue #506.
- Fix a crash on Python 3 related to the string checker, which crashed when it encountered a bytes string with a `.format` method called.
- Don't warn about no-self-use for builtin properties.
- Fix a false positive for bad-reversed-sequence, when a subclass of a *dict* provides a `__reversed__` method.
- Change the default no-docstring-rgx so missing-docstring isn't emitted for private functions.
- Don't emit redefined-outer-name for `__future__` directives. Closes issue #520.
- Provide some hints for the bad-builtin message. Closes issue #522.
- When checking for invalid arguments to a callable, in `typecheck.py`, look up for the `__init__` in case the found `__new__` comes from builtins.

Since the `__new__` comes from builtins, it will not have attached any information regarding what parameters it expects, so the check will be useless. Retrieving `__init__` in that case will at least detect a couple of false negatives. Closes issue #429.

- Don't emit no-member for classes with unknown bases.

Since we don't know what those bases might add, we simply ignore the error in this case.

- Lookup in the implicit metaclass when checking for no-member, if the class in question has an implicit metaclass, which is `True` for new style classes. Closes issue #438.
- Add two new warnings, `duplicate-bases` and `inconsistent-mro`.  
`duplicate-bases` is emitted when a class has the same bases listed more than once in its bases definition, while `inconsistent-mro` is emitted when no sane mro hierarchy can be determined. Closes issue #526.
- Remove `interface-not-implemented` warning. Closes issue #532.
- Remove the rest of interface checks: `interface-is-not-class`, `missing-interface-method`, `unresolved-interface`. The reason is that its better to start recommending ABCs instead of the old Zope era of interfaces. One side effect of this change is that `ignore-iface-methods` becomes a noop, it's deprecated and it will be removed at some time.
- Emit a proper deprecation warning for `reporters.BaseReporter.add_message`.

The alternative way is to use `handle_message`. `add_message` will be removed in Pylint 1.6.

- Added new module `'extensions'` for optional checkers with the test directory `'test/extensions'` and documentation file `'doc/extensions.rst'`.
- Added new checker `'extensions.check_docs'` that verifies parameter documentation in Sphinx, Google, and Numpy style.
- Detect undefined variable cases, where the "definition" of an undefined variable was in `del` statement. Instead of emitting `used-before-assignment`, which is totally misleading, it now emits `undefined-variable`. Closes issue #528.
- Don't emit `attribute-defined-outside-init` and `access-member-before-definition` for mixin classes. Actual errors can occur in mixin classes, but this is controlled by the `ignore-mixin-members` option. Closes issue #412.
- Improve the detection of undefined variables and variables used before assignment for variables used as default arguments to function, where the variable was first defined in the class scope. Closes issue #342 and issue #404.
- Add a new warning, `'unexpected-special-method-signature'`, which is emitted when a special method (dunder method) doesn't have the expected signature, which can lead to actual errors in the application code. Closes issue #253.

- Remove 'bad-context-manager' due to the inclusion of 'unexpected-special-method-signature'.
- Don't emit no-name-in-module if the import is guarded by an ImportError, Exception or a bare except clause.
- Don't emit no-member if the attribute access node is protected by an except handler, which handles AttributeError, Exception or it is a bare except.
- Don't emit import-error if the import is guarded by an ImportError, Exception or a bare except clause.
- Don't emit undefined-variable if the node is guarded by a NameError, Exception or bare except clause.
- Add a new warning, 'using-constant-test', which is emitted when a conditional statement (If, IfExp) uses a test which is always constant, such as numbers, classes, functions etc. This is most likely an error from the user's part. Closes issue #524.
- Don't emit 'raising-non-exception' when the exception has unknown bases. We don't know what those bases actually are and it's better to assume that the user knows what he is doing rather than emitting a message which can be considered a false positive.
- Look for a .pylintrc configuration file in the current folder, if pylintrc is not found. Dotted pylintrc files will not be searched in the parents of the current folder, as it is done for pylintrc.
- Add a new error, 'invalid-unary-type-operand', emitted when an unary operand is used on something which doesn't support that operation (for instance, using the unary bitwise inversion operator on an instance which doesn't implement \_\_invert\_\_).
- Take in consideration differences between arguments of various type of functions (classmethods, staticmethods, properties) when checking for *arguments-differ*. Closes issue #548.
- astroid.inspector was moved to pylint.pyreverse, since it belongs there and it doesn't need to be in astroid.
- astroid.utils.LocalsVisitor was moved to pylint.pyreverse.LocalsVisitor.
- pylint.checkers.utils.excepts\_import\_error was removed. Use pylint.checkers.utils.error\_of\_type instead.
- Don't emit undefined-all-variables for nodes which can't be inferred (YES nodes).
- yield-outside-func is also emitted for *yield from*.
- Add a new error, 'too-many-star-expressions', emitted when there are more than one starred expression (\*x) in an assignment. The warning is emitted only on Python 3.
- Add a new error, 'invalid-star-assignment-target', emitted when a starred expression (\*x) is used as the lhs side of an assignment, as in `*x = [1, 2]`. This is not a SyntaxError on Python 3 though.
- Detect a couple of objects which can't be base classes (bool, slice, range and memoryview, which weren't detected until now).
- Add a new error for the Python 3 porting checker, *import-star-module-level*, which is used when a star import is detected in another scope than the module level, which is an error on Python 3. Using this will emit a SyntaxWarning on Python 2.
- Add a new error, 'star-needs-assignment-target', emitted on Python 3 when a Starred expression (\*x) is not used in an assignment target. This is not caught when parsing the AST on Python 3, so it needs to be a separate check.
- Add a new error, 'unsupported-binary-operation', emitted when two a binary arithmetic operation is executed between two objects which don't support it (a number plus a string for instance). This is currently disabled, since the it exhibits way too many false positives, but it will be reenabled as soon as possible.
- New imported features from astroid into pyreverse: `pyreverse.inspector.Project`, `pyreverse.inspector.project_from_files` and `pyreverse.inspector.interfaces`.  
These were moved since they didn't belong in astroid.
- Enable misplaced-future for Python 3. Closes issue #580.

- Add a new error, 'nonlocal-and-global', which is emitted when a name is found to be both nonlocal and global in the same scope. Closes issue #581.
- `ignored-classes` option can work with qualified names (`ignored-classes=optparse.Values`) Closes issue #297.
- `ignored-modules` can work with qualified names as well as with Unix pattern matching for recursive ignoring. Closes issues #244.
- Improve detection of relative imports in non-packages, as well as importing missing modules with a relative import from a package.
- Don't emit `no-init` if not all the bases from a class are known. Closes issue #604.
- `--no-space-check` option accepts *empty-line* as a possible option. Closes issue #541.
- `--generate-rcfile` generates by default human readable symbols for the `--disable` option. Closes issue #608.
- Improved the not-in-loop checker to properly detect more cases.
- Add a new error, 'continue-in-finally', which is emitted when the *continue* keyword is found inside a *finally* clause, which is a `SyntaxError`.
- The `--zope` flag is deprecated and it is slated for removal in Pylint 1.6.

The reason behind this removal is the fact that it's a specialized flag and there are solutions for the original problem: use `--generated-members` with the members that causes problems when using Zope or add AST transforms tailored to the zope project.

At the same time, `--include-ids` and `--symbols` will also be removed in Pylint 1.6. Closes issue #570.

- `missing-module-attribute` was removed and the corresponding CLI option, `required-attributes`, which is slated for removal in Pylint 1.6.
- `missing-reversed-argument` was removed.

The reason behind this is that this kind of errors should be detected by the type checker for *all* the builtins and not as a special case for the reversed builtin. This will happen shortly in the future.

- `--comment` flag is obsolete and it will be removed in Pylint 1.6.
- `--profile` flag is obsolete and it will be removed in Pylint 1.6.
- Add a new error, 'misplaced-bare-raise'.

The error is used when a bare raise is not used inside an except clause. This can generate a `RuntimeError` in Python, if there are no active exceptions to be reraised. While it works in Python 2 due to the fact that the exception leaks outside of the except block, it's nevertheless a behaviour that a user shouldn't depend upon, since it's not obvious to the reader of the code what exception will be raised and it will not be compatible with Python 3 anyhow. Closes issue #633.

- Bring logilab-common's ureports into `pylint.reporters`.

With this change, we moved away from depending on logilab-common, having in Pylint all the components that were used from logilab-common. The API should be considered an implementation detail and can change at some point in the future. Closes issue #621.

- *reimported* is emitted for reimported objects on the same line.

Closes issue #639.

- Abbreviations of command line options are not supported anymore.

Using abbreviations for CLI options was never considered to be a feature of pylint, this fact being only a side effect of using `optparse`. As this was the case, using `--load-plugin` or other abbreviation for `--load-plugins` never actually worked, while it also didn't raise an error. Closes issue #424.

- Add a new error, 'nonlocal-without-binding'

The error is emitted on Python 3 when a nonlocal name is not bound to any variable in the parents scopes. Closes issue #582.

- **'deprecated-module' can be shown for modules which aren't** available. Closes issue #362.

- Don't consider a class abstract if its members can't be properly inferred.

This fixes a false positive related to abstract-class-instantiated. Closes issue #648.

- Add a new checker for the async features added by PEP 492.

- Add a new error, 'yield-inside-async-function', emitted on Python 3.5 and upwards when the *yield* statement is found inside a new coroutine function (PEP 492).

- Add a new error, 'not-async-context-manager', emitted when an async context manager block is used with an object which doesn't support this protocol (PEP 492).

- Add a new convention warning, 'singleton-comparison', emitted when comparison to True, False or None is found.

- Don't emit 'assigning-non-slot' for descriptors. Closes issue #652.

- Add a new error, 'repeated-keyword', when a keyword argument is passed multiple times into a function call.

This is similar with redundant-keyword-arg, but it's mildly different that it needs to be a separate error.

- `--enable=all` can now be used. Closes issue #142.

- Add a new convention message, 'misplaced-comparison-constant', emitted when a constant is placed in the left hand side of a comparison, as in `'5 == func()'`. This is also called Yoda condition, since the flow of code reminds of the Star Wars green character, conditions usually encountered in languages with variable assignments in conditional statements.

- Add a new convention message, 'consider-using-enumerate', which is emitted when code that uses *range* and *len* for iterating is encountered. Closes issue #684.

- Added two new refactoring messages, 'no-classmethod-decorator' and 'no-staticmethod-decorator', which are emitted when a static method or a class method is declared without using decorators syntax.

Closes issue #675.

### 10.12.35 What's New in Pylint 1.4.3?

Release date: 2015-03-14

- Remove three warnings: star-args, abstract-class-little-used, abstract-class-not-used. These warnings don't add any real value and they don't imply errors or problems in the code.
- Added a new option for controlling the peephole optimizer in astroid. The option `--optimize-ast` will control the peephole optimizer, which is used to optimize a couple of AST subtrees. The current problem solved by the peephole optimizer is when multiple joined strings, with the addition operator, are encountered. If the numbers of such strings is high enough, Pylint will then fail with a maximum recursion depth exceeded error, due to its visitor architecture. The peephole just transforms such calls, if it can, into the final resulting string and this exhibit a problem, because the `visit_binop` method stops being called (in the optimized AST it will be a `Const` node).

### 10.12.36 What's New in Pylint 1.4.2?

Release date: 2015-03-11



- Don't require a docstring for empty modules. Closes issue #261.
- Fix a false positive with *too-few-format-args* string warning, emitted when the string format contained a normal positional argument ('{0}'), mixed with a positional argument which did an attribute access ('{0.\_\_class\_\_}'). Closes issue #463.
- Take in account all the methods from the ancestors when checking for too-few-public-methods. Closes issue #471.
- Catch enchant errors and emit 'invalid-characters-in-docstring' when checking for spelling errors. Closes issue #469.
- Use all the inferred statements for the super-init-not-called check. Closes issue #389.
- Add a new warning, 'unichr-builtin', emitted by the Python 3 porting checker, when the unichr builtin is found. Closes issue #472.
- Add a new warning, 'intern-builtin', emitted by the Python 3 porting checker, when the intern builtin is found. Closes issue #473.
- Add support for editable installations.
- The HTML output accepts the *-msg-template* option. Patch by Dan Goldsmith.
- Add 'map-builtin-not-iterating' (replacing 'implicit-map-evaluation'), 'zip-builtin-not-iterating', 'range-builtin-not-iterating', and 'filter-builtin-not-iterating' which are emitted by *-py3k* when the appropriate built-in is not used in an iterating context (semantics taken from 2to3).
- Add a new warning, 'unidiomatic-typecheck', emitted when an explicit typecheck uses `type()` instead of `isinstance()`. For example, `type(x) == Y` instead of `isinstance(x, Y)`. Patch by Chris Rebert. Closes issue #299.
- Add support for combining the Python 3 checker mode with the *-jobs* flag (*-py3k* and *-jobs*). Closes issue #467.
- Add a new warning for the Python 3 porting checker, 'using-cmp-argument', emitted when the *cmp* argument for the *list.sort* or *sorted builtin* is encountered.
- Make the *-py3k* flag commutative with the *-E* flag. Also, this patch fixes the leaks of error messages from the Python 3 checker when the errors mode was activated. Closes issue #437.

### 10.12.37 What's New in Pylint 1.4.1?

Release date: 2015-01-16

- Look only in the current function's scope for bad-super-call. Closes issue #403.
- Check the return of properties when checking for not-callable. Closes issue #406.
- Warn about using the `input()` or `round()` built-ins for Python 3. Closes issue #411.
- Proper abstract method lookup while checking for abstract-class-instantiated. Closes issue #401.
- Use a mro traversal for finding abstract methods. Closes issue #415.
- Fix a false positive with catching-non-exception and tuples of exceptions.
- Fix a false negative with raising-non-exception, when the raise used an unferrable exception context.
- Fix a false positive on Python 2 for raising-bad-type, when raising tuples in the form 'raise (ZeroDivisionError, None)'.
- Fix a false positive with invalid-slots-objects, where the slot entry was a unicode string on Python 2. Closes issue #421.

- Add a new warning, 'redundant-unittest-assert', emitted when using unittest's methods assertTrue and assertFalse with constant value as argument. Patch by Vlad Temian.
- Add a new JSON reporter, usable through -f flag.
- Add the method names for the 'signature-differs' and 'argument-differs' warnings. Closes issue #433.
- Don't compile test files when installing.
- Fix a crash which occurred when using multiple jobs and the files given as argument didn't exist at all.

## 10.12.38 What's New in Pylint 1.4.0?

Release date: 2014-11-23

- Added new options for controlling the loading of C extensions. By default, only C extensions from the stdlib will be loaded into the active Python interpreter for inspection, because they can run arbitrary code on import. The option `-extension-pkg-whitelist` can be used to specify modules or packages that are safe to load.
- Change default max-line-length to 100 rather than 80
- Drop BaseRawChecker class which were only there for backward compat for a while now
- Don't try to analyze string formatting with objects coming from function arguments. Closes issue #373.
- Port source code to be Python 2/3 compatible. This drops the need for 2to3, but does drop support for Python 2.5.
- Each message now comes with a confidence level attached, and can be filtered base on this level. This allows to filter out all messages that were emitted even though an inference failure happened during checking.
- Improved presenting unused-import message. Closes issue #293.
- Add new checker for finding spelling errors. New messages: wrong-spelling-in-comment, wrong-spelling-in-docstring. New options: spelling-dict, spelling-ignore-words.
- Add new '-j' option for running checks in sub-processes.
- Added new checks for line endings if they are mixed (LF vs CRLF) or if they are not as expected. New messages: mixed-line-endings, unexpected-line-ending-format. New option: expected-line-ending-format.
- 'dangerous-default-value' no longer evaluates the value of the arguments, which could result in long error messages or sensitive data being leaked. Closes issue #282
- Fix a false positive with string formatting checker, when encountering a string which uses only position-based arguments. Closes issue #285.
- Fix a false positive with string formatting checker, when using keyword argument packing. Closes issue #288.
- Proper handle class level scope for lambdas.
- Handle 'too-few-format-args' or 'too-many-format-args' for format strings with both named and positional fields. Closes issue #286.
- Analyze only strings by the string format checker. Closes issue #287.
- Properly handle nested format string fields. Closes issue #294.
- Don't emit 'attribute-defined-outside-init' if the attribute was set by a function call in a defining method. Closes issue #192.
- Properly handle unicode format strings for Python 2. Closes issue #296.
- Don't emit 'import-error' if an import was protected by a try-except, which excepted ImportError.

- Fix an 'unused-import' false positive, when the error was emitted for all the members imported with 'from import' form. Closes issue #304.
- Don't emit 'invalid-name' when assigning a name in an ImportError handler. Closes issue #302.
- Don't count branches from nested functions.
- Fix a false positive with 'too-few-format-args', when the format strings contains duplicate manual position arguments. Closes issue #310.
- fixme regex handles comments without spaces after the hash. Closes issue #311.
- Don't emit 'unused-import' when a special object is imported (\_\_all\_\_, \_\_doc\_\_ etc.). Closes issue #309.
- Look in the metaclass, if defined, for members not found in the current class. Closes issue #306.
- Don't emit 'protected-access' if the attribute is accessed using a property defined at the class level.
- Detect calls of the parent's \_\_init\_\_, through a binded super() call.
- Check that a class has an explicitly defined metaclass before emitting 'old-style-class' for Python 2.
- Emit 'catching-non-exception' for non-class nodes. Closes issue #303.
- Order of reporting is consistent.
- Add a new warning, 'boolean-datetime', emitted when an instance of 'datetime.time' is used in a boolean context. Closes issue #239.
- Fix a crash which occurred while checking for 'method-hidden', when the parent frame was something different than a function.
- Generate html output for missing files. Closes issue #320.
- Fix a false positive with 'too-many-format-args', when the format string contains mixed attribute access arguments and manual fields. Closes issue #322.
- Extend the cases where 'undefined-variable' and 'used-before-assignment' can be detected. Closes issue #291.
- Add support for customising callback identifiers, by adding a new '-callbacks' command line option. Closes issue #326.
- Add a new warning, 'logging-format-interpolation', emitted when .format() string interpolation is used within logging function calls.
- Don't emit 'unbalanced-tuple-unpacking' when the rhs of the assignment is a variable length argument. Closes issue #329.
- Add a new warning, 'inherit-non-class', emitted when a class inherits from something which is not a class. Closes issue #331.
- Fix another false positives with 'undefined-variable', where the variable can be found as a class assignment and used in a function annotation. Closes issue #342.
- Handle assignment of the string format method to a variable. Closes issue #351.
- Support wheel packaging format for PyPi. Closes issue #334.
- Check that various built-ins that do not exist in Python 3 are not used: apply, basestring, buffer, cmp, coerce, execfile, file, long raw\_input, reduce, StandardError, unicode, reload and xrange.
- Warn for magic methods which are not used in any way in Python 3: \_\_coerce\_\_, \_\_delslice\_\_, \_\_getslice\_\_, \_\_setslice\_\_, \_\_cmp\_\_, \_\_oct\_\_, \_\_nonzero\_\_ and \_\_hex\_\_.
- Don't emit 'assigning-non-slot' when the assignment is for a property. Closes issue #359.
- Fix for regression: '{path}' was no longer accepted in '-msg-template'.

- Report the percentage of all messages, not just for errors and warnings. Closes issue #319.
- 'too-many-public-methods' is reported only for methods defined in a class, not in its ancestors. Closes issue #248.
- 'too-many-lines' disable pragma can be located on any line, not only the first. Closes issue #321.
- Warn in Python 2 when an import statement is found without a corresponding *from \_\_future\_\_ import absolute\_import*.
- Warn in Python 2 when a non-floor division operation is found without a corresponding *from \_\_future\_\_ import division*.
- Add a new option, 'exclude-protected', for excluding members from the protected-access warning. Closes issue #48.
- Warn in Python 2 when using dict.iter\*(), dict.view\*(); none of these methods are available in Python 3.
- Warn in Python 2 when calling an object's next() method; Python 3 uses \_\_next\_\_() instead.
- Warn when assigning to \_\_metaclass\_\_ at a class scope; in Python 3 a metaclass is specified as an argument to the 'class' statement.
- Warn when performing parameter tuple unpacking; it is not supported in Python 3.
- 'abstract-class-instantiated' is also emitted for Python 2. It was previously disabled.
- Add 'long-suffix' error, emitted when encountering the long suffix on numbers.
- Add support for disabling a checker, by specifying an 'enabled' attribute on the checker class.
- Add a new CLI option, -py3k, for enabling Python 3 porting mode. This mode will disable all other checkers and will emit warnings and errors for constructs which are invalid or removed in Python 3.
- Add 'old-octal-literal' to Python 3 porting checker, emitted when encountering octals with the old syntax.
- Add 'implicit-map-evaluation' to Python 3 porting checker, emitted when encountering the use of map builtin, without explicit evaluation.

### 10.12.39 What's New in Pylint 1.3.0?

Release date: 2014-07-26

- Allow hanging continued indentation for implicitly concatenated strings. Closes issue #232.
- Pylint works under Python 2.5 again, and its test suite passes.
- Fix some false positives for the cellvar-from-loop warnings. Closes issue #233.
- Return new astroid class nodes when the inferencer can detect that that result of a function invocation on a type (like *type* or *abc.ABCMeta*) is requested. Closes #205.
- Emit 'undefined-variable' for undefined names when using the Python 3 *metaclass=* argument.
- Checkers respect priority now. Close issue #229.
- Fix a false positive regarding W0511. Closes issue #149.
- Fix unused-import false positive with Python 3 metaclasses (#143).
- Don't warn with 'bad-format-character' when encountering the 'a' format on Python 3.
- Add multiple checks for PEP 3101 advanced string formatting: 'bad-format-string', 'missing-format-argument-key', 'unused-format-string-argument', 'format-combined-specification', 'missing-format-attribute' and 'invalid-format-index'.

- Issue broad-except and bare-except even if the number of except handlers is different than 1. Fixes issue #113.
- Issue attribute-defined-outside-init for all cases, not just for the last assignment. Closes issue #262.
- Emit 'not-callable' when calling properties. Closes issue #268.
- Fix a false positive with unbalanced iterable unpacking, when encountering starred nodes. Closes issue #273.
- Add new checks, 'invalid-slice-index' and 'invalid-sequence-index' for invalid sequence and slice indices.
- Add 'assigning-non-slot' warning, which detects assignments to attributes not defined in slots.
- Don't emit 'no-name-in-module' for ignored modules. Closes issue #223.
- Fix an 'unused-variable' false positive, where the variable is assigned through an import. Closes issue #196.
- Definition order is considered for classes, function arguments and annotations. Closes issue #257.
- Don't emit 'unused-variable' when assigning to a nonlocal. Closes issue #275.
- Do not let ImportError propagate from the import checker, leading to crash in some namespace package related cases. Closes issue #203.
- Don't emit 'pointless-string-statement' for attribute docstrings. Closes issue #193.
- Use the proper mode for pickle when opening and writing the stats file. Closes issue #148.
- Don't emit hidden-method message when the attribute has been monkey-patched, you're on your own when you do that.
- Only emit attribute-defined-outside-init for definition within the same module as the offended class, avoiding to mangle the output in some cases.
- Don't emit 'unnecessary-lambda' if the body of the lambda call contains call chaining. Closes issue #243.
- Don't emit 'missing-docstring' when the actual docstring uses *.format*. Closes issue #281.

#### 10.12.40 What's New in Pylint 1.2.1?

Release date: 2014-04-30

- Restore the ability to specify the init-hook option via the configuration file, which was accidentally broken in 1.2.0.
- Add a new warning [bad-continuation] for badly indentend continued lines.
- Emit [assignment-from-none] when the function contains bare returns. Fixes BitBucket issue #191.
- Added a new warning for closing over variables that are defined in loops. Fixes Bitbucket issue #176.
- Do not warn about u escapes in string literals when Unicode literals are used for Python 2.\*. Fixes BitBucket issue #151.
- Extend the checking for unbalanced-tuple-unpacking and unpacking-non-sequence to instance attribute unpacking as well.
- Fix explicit checking of python script (1.2 regression, #219)
- Restore -init-hook, renamed accidentally into -init-hooks in 1.2.0 (#211)
- Add 'indexing-exception' warning, which detects that indexing an exception occurs in Python 2 (behaviour removed in Python 3).

## 10.12.41 What's New in Pylint 1.2.0?

Release date: 2014-04-18

- Pass the current python paths to pylint process when invoked via epylint. Fixes BitBucket issue #133.
- Add `-i` / `--include-ids` and `-s` / `--symbols` back as completely ignored options. Fixes BitBucket issue #180.
- Extend the number of cases in which logging calls are detected. Fixes bitbucket issue #182.
- Improve pragma handling to not detect `pylint:*` strings in non-comments. Fixes BitBucket issue #79.
- Do not crash with `UnknownMessage` if an unknown message ID/name appears in disable or enable in the configuration. Patch by Cole Robinson. Fixes bitbucket issue #170.
- Add new warning 'eval-used', checking that the builtin function `eval` was used.
- Make it possible to show a naming hint for invalid name by setting `include-naming-hint`. Also make the naming hints configurable. Fixes BitBucket issue #138.
- Added support for enforcing multiple, but consistent name styles for different name types inside a single module; based on a patch written by [morbo@google.com](mailto:morbo@google.com).
- Also warn about empty docstrings on overridden methods; contributed by [sebastianu@google.com](mailto:sebastianu@google.com).
- Also inspect arguments to constructor calls, and emit relevant warnings; contributed by [sebastianu@google.com](mailto:sebastianu@google.com).
- Added a new configuration option `logging-modules` to make the list of module names that can be checked for 'logging-not-lazy' et. al. configurable; contributed by [morbo@google.com](mailto:morbo@google.com).
- ensure `init-hooks` is evaluated before other options, notably `load-plugins` (#166)
- Python 2.5 support restored: fixed small issues preventing pylint to run on python 2.5. Bitbucket issues #50 and #62.
- bitbucket #128: pylint doesn't crash when looking for used-before-assignment in context manager assignments.
- Add new warning, 'bad-reversed-sequence', for checking that the `reversed()` builtin receive a sequence (implements `__getitem__` and `__len__`, without being a dict or a dict subclass) or an instance which implements `__reversed__`.
- Mark `file` as a bad function when using python2 (closes #8).
- Add new warning 'bad-exception-context', checking that `raise ... from ...` uses a proper exception context (None or an exception).
- Enhance the check for 'used-before-assignment' to look for 'nonlocal' uses.
- Emit 'undefined-all-variable' if a package's `__all__` variable contains a missing submodule (closes #126).
- Add a new warning 'abstract-class-instantiated' for checking that abstract classes created with `abc` module and with abstract methods are instantiated.
- Do not warn about 'return-arg-in-generator' in Python 3.3+.
- Do not warn about 'abstract-method' when the abstract method is implemented through assignment (#155).
- Improve cyclic import detection in the case of packages, patch by Buck Golemon
- Add new warnings for checking proper class `__slots__`: *invalid-slots-object* and *invalid-slots*.
- Search for rc file in `~/config/pylintrc` if `~/pylintrc` doesn't exists (#121)
- Don't register the newstyle checker w/ python  $\geq 3$
- Fix unused-import false positive w/ augment assignment (#78)
- Fix access-member-before-definition false negative wrt aug assign (#164)

- Do not attempt to analyze non python file, eg .so file (#122)

### 10.12.42 What's New in Pylint 1.1.0?

Release date: 2013-12-22

- Add new check for use of deprecated pragma directives "pylint:disable-msg" or "pylint:enable-msg" (I0022, deprecated-pragma) which was previously emitted as a regular warn().
- Avoid false used-before-assignment for except handler defined identifier used on the same line (#111).
- Combine 'no-space-after-operator', 'no-space-after-comma' and 'no-space-before-operator' into a new warning 'bad-whitespace'.
- Add a new warning 'superfluous-parens' for unnecessary parentheses after certain keywords.
- Fix a potential crash in the redefine-in-handler warning if the redefined name is a nested getattr node.
- Add a new option for the multi-statement warning to allow single-line if statements.
- Add 'bad-context-manager' error, checking that '\_\_exit\_\_' special method accepts the right number of arguments.
- Run pylint as a python module 'python -m pylint' (anatoly techtonik).
- Check for non-exception classes inside an except clause.
- epylint support options to give to pylint after the file to analyze and have basic input validation (bitbucket #53 and #54), patches provided by felipechoa and Brian Lane.
- Added a new warning, 'non-iterator-returned', for non-iterators returned by '\_\_iter\_\_'.
- Add new checks for unpacking non-sequences in assignments (unpacking-non-sequence) as well as unbalanced tuple unpacking (unbalanced-tuple-unpacking).
- useless-else-on-loop not emitted if there is a break in the else clause of inner loop (#117).
- don't mark *input* as a bad function when using python3 (#110).
- badly-implemented-container caused several problems in its current implementation. Deactivate it until we have something better. See #112 for instance.
- Use attribute regexp for properties in python3, as in python2
- Create the PYLINTHOME directory when needed, it might fail and lead to spurious warnings on import of pylint.config.
- Fix setup.py so that pylint properly install on Windows when using python3
- Various documentation fixes and enhancements
- Fix issue #55 (false-positive trailing-whitespace on Windows)

### 10.12.43 What's New in Pylint 1.0.0?

Release date: 2013-08-06

- Add check for the use of 'exec' function
- New `--msg-template` option to control output, deprecating "msvc" and "parseable" output formats as well as killing `--include-ids` and `--symbols` options
- Do not emit [fixme] for every line if the config value 'notes' is empty, but [fixme] is enabled.

- Emit warnings about lines exceeding the column limit when those lines are inside multiline docstrings.
- Do not double-check parameter names with the regex for parameters and inline variables.
- Added a new warning missing-final-newline (C0304) for files missing the final newline.
- Methods that are decorated as properties are now treated as attributes for the purposes of name checking.
- Names of derived instance class member are not checked any more.
- Names in global statements are now checked against the regular expression for constants.
- For toplevel name assignment, the class name regex will be used if pylint can detect that value on the right-hand side is a class (like `collections.namedtuple()`).
- Simplified invalid-name message
- Added a new warning invalid-encoded-data (W0512) for files that contain data that cannot be decoded with the specified or default encoding.
- New warning bad-open-mode (W1501) for calls to open (or file) that specify invalid open modes (Original implementation by Sasha Issayev).
- New warning old-style-class (C1001) for classes that do not have any base class.
- Add new name type 'class\_attribute' for attributes defined in class scope. By default, allow both const and variable names.
- New warning trailing-whitespace (C0303) that warns about trailing whitespace.
- Added a new warning unpacking-in-except (W0712) about unpacking exceptions in handlers, which is unsupported in Python 3.
- Add a configuration option for missing-docstring to optionally exempt short functions/methods/classes from the check.
- Add the type of the offending node to missing-docstring and empty-docstring.
- New utility classes for per-checker unittests in testutils.py
- Do not warn about redefinitions of variables that match the dummy regex.
- Do not treat all variables starting with `_` as dummy variables, only `_` itself.
- Make the line-too-long warning configurable by adding a regex for lines for which the length limit should not be enforced
- Do not warn about a long line if a pylint disable option brings it above the length limit
- Do not flag names in nested with statements as undefined.
- Added a new warning 'old-raise-syntax' for the deprecated syntax `raise Exception, args`
- Support for PEP 3102 and new missing-kwoa (E1125) message for missing mandatory keyword argument (logilab.org's #107788)
- Fix spelling of max-branches option, now max-branches
- Added a new base class and interface for checkers that work on the tokens rather than the syntax, and only tokenize the input file once.
- Follow astng renaming to astroid
- bitbucket #37: check for unbalanced unpacking in assignments
- bitbucket #25: fix incomplete-protocol false positive for read-only containers like tuple
- bitbucket #16: fix False positive E1003 on Python 3 for argument-less `super()`



- bitbucket #6: put back documentation in source distribution
- bitbucket #15: epylint shouldn't hang anymore when there is a large output on pylint's stderr
- bitbucket #7: fix epylint w/ python3
- bitbucket #3: remove string module from the default list of deprecated modules

### 10.12.44 What's New in Pylint 0.28.0?

Release date: 2013-04-25

- bitbucket #1: fix "dictionary changed size during iteration" crash
- #74013: new E1310[bad-str-strip-call] message warning when a call to a {l,r,}strip method contains duplicate characters (patch by Torsten Marek)
- #123233: new E0108[duplicate-argument-name] message reporting duplicate argument names
- #81378: emit W0120[useless-else-on-loop] for loops without break
- #124660: internal dependencies should not appear in external dependencies report
- #124662: fix name error causing crash when symbols are included in output messages
- #123285: apply pragmas for warnings attached to lines to physical source code lines
- #123259: do not emit E0105 for yield expressions inside lambdas
- #123892: don't crash when attempting to show source code line that can't be encoded with the current locale settings
- Simplify checks for dangerous default values by unifying tests for all different mutable compound literals.
- Improve the description for E1124[redundant-keyword-arg]

### 10.12.45 What's New in Pylint 0.27.0?

Release date: 2013-02-26

- #20693: replace pylint.el by Ian Eure version (patch by J.Kotta)
- #105327: add support for --disable=all option and deprecate the 'disable-all' inline directive in favour of 'skip-file' (patch by A.Fayolle)
- #110840: add messages I0020 and I0021 for reporting of suppressed messages and useless suppression pragmas. (patch by Torsten Marek)
- #112728: add warning E0604 for non-string objects in \_\_all\_\_ (patch by Torsten Marek)
- #120657: add warning W0110/deprecated-lambda when a map/filter of a lambda could be a comprehension (patch by Martin Pool)
- #113231: logging checker now looks at instances of Logger classes in addition to the base logging module. (patch by Mike Bryant)
- #111799: don't warn about octal escape sequence, but warn about o which is not octal in Python (patch by Martin Pool)
- #110839: bind <F5> to Run button in pylint-gui
- #115580: fix erroneous W0212 (access to protected member) on super call (patch by Martin Pool)

- #110853: fix a crash when an `__init__` method in a base class has been created by assignment rather than direct function definition (patch by Torsten Marek)
- #110838: fix pylint-gui crash when include-ids is activated (patch by Omega Weapon)
- #112667: fix emission of reimport warnings for mixed imports and extend the testcase (patch by Torsten Marek)
- #112698: fix crash related to non-inferable `__all__` attributes and invalid `__all__` contents (patch by Torsten Marek)
- Python 3 related fixes:
  - **#110213: fix import of checkers broken with python 3.3, causing "No such message id W0704" breakage**
  - #120635: redefine `cmp` function used in `pylint.reporters`
- Include full warning id for I0020 and I0021 and make sure to flush warnings after each module, not at the end of the pylint run. (patch by Torsten Marek)
- Changed the regular expression for inline options so that it must be preceded by a `#` (patch by Torsten Marek)
- Make dot output for import graph predictable and not depend on ordering of strings in hashes. (patch by Torsten Marek)
- Add hooks for import path setup and move pylint's `sys.path` modifications into them. (patch by Torsten Marek)

## 10.12.46 What's New in Pylint 0.26.0?

Release date: 2012-10-05

- #106534: add `--ignore-imports` option to code similarity checking and 'symilar' command line tool (patch by Ry4an Brase)
- #104571: check for anomalous backslash escape, introducing new W1401 and W1402 messages (patch by Martin Pool)
- #100707: check for `boolop` being used as exception class, introducing new W0711 message (patch by Tim Hatch)
- #4014: improve checking of metaclass methods first args, introducing new C0204 message (patch by [lothiraldan@gmail.com](mailto:lothiraldan@gmail.com) finalized by sthenault)
- #4685: check for consistency of a module's `__all__` variable, introducing new E0603 message
- #105337: allow custom reporter in `output-format` (patch by Kevin Jing Qiu)
- #104420: check for protocol completeness and avoid false R0903 (patch by Peter Hammond)
- #100654: fix grammatical error for W0332 message (using 'l' as long int identifier)
- #103656: fix W0231 false positive for missing call to `object.__init__` (patch by [lothiraldan@gmail.com](mailto:lothiraldan@gmail.com))
- #63424: fix similarity report disabling by properly renaming it to RP0801
- #103949: create a `console_scripts` entry point to be used by `easy_install`, `buildout` and `pip`
- fix cross-interpreter issue (non compatible access to `__builtins__`)
- stop including tests files in distribution, they causes crash when installed with python3 (#72022, #82417, #76910)

### 10.12.47 What's New in Pylint 0.25.2?

Release date: 2012-07-17

- #93591: Correctly emit warnings about clobbered variable names when an except handler contains a tuple of names instead of a single name. (patch by [tmarek@google.com](mailto:tmarek@google.com))
- #7394: W0212 (access to protected member) not emitted on assignments (patch by [lothiraldan@gmail.com](mailto:lothiraldan@gmail.com))
- #18772; no prototype consistency check for mangled methods (patch by [lothiraldan@gmail.com](mailto:lothiraldan@gmail.com))
- #92911: emit W0102 when sets are used as default arguments in functions (patch by [tmarek@google.com](mailto:tmarek@google.com))
- #77982: do not emit E0602 for loop variables of comprehensions used as argument values inside a decorator (patch by [tmarek@google.com](mailto:tmarek@google.com))
- #89092: don't emit E0202 (attribute hiding a method) on @property methods
- #92584: fix pylint-gui crash due to internal API change
- #87192: fix crash when decorators are accessed through more than one dot (for instance @a.b is fine, @a.b.c crash)
- #88914: fix parsing of --generated-members options, leading to crash when using a regexp value set
- fix potential crashes with utils.safe\_infer raising InferenceError

### 10.12.48 What's New in Pylint 0.25.1?

Release date: 2011-12-08

- #81078: Warn if names in exception handlers clobber overwrite existing names (patch by [tmarek@google.com](mailto:tmarek@google.com))
- #81113: Fix W0702 messages appearing with the wrong line number. (patch by [tmarek@google.com](mailto:tmarek@google.com))
- #50461, #52020, #51222: Do not issue warnings when using 2.6's property.setter/deleter functionality (patch by [dneil@google.com](mailto:dneil@google.com))
- #9188, #4024: Do not trigger W0631 if a loop variable is assigned in the else branch of a for loop.

### 10.12.49 What's New in Pylint 0.25.0?

Release date: 2011-10-7

- #74742: make allowed name for first argument of class method configurable (patch by Google)
- #74087: handle case where inference of a module return YES; this avoid some cases of "TypeError: '\_Yes' object does not support indexing" (patch by Google)
- #74745: make "too general" exception names configurable (patch by Google)
- #74747: crash occurs when lookup up a special attribute in class scope (patch by google)
- #76920: crash if on eg "pylint -rcfile" (patch by Torsten Marek)
- #77237: warning for E0202 may be very misleading
- #73941: HTML report messages table is badly rendered

### **10.12.50 What's New in Pylint 0.24.0?**

Release date: 2011-07-18

- #69738: add regular expressions support for "generated-members"
- ids of logging and string\_format checkers have been changed: logging: 65 -> 12, string\_format: 99 -> 13 Also add documentation to say that ids of range 1-50 shall be reserved to pylint internal checkers
- #69993: Additional string format checks for logging module: check for missing arguments, too many arguments, or invalid string formats in the logging checker module. Contributed by Daniel Arena
- #69220: add column offset to the reports. If you've a custom reporter, this change may break it has now location gain a new item giving the column offset.
- #60828: Fix false positive in reimport check
- #70495: absolute imports fail depending on module path (patch by Jacek Konieczny)
- #22273: Fix -ignore option documentation to match reality

### **10.12.51 What's New in Pylint 0.23.0?**

Release date: 2011-01-11

- documentation update, add manpages
- several performance improvements
- finalize python3 support
- new W0106 warning 'Expression "%s" is assigned to nothing'
- drop E0501 and E0502 messages about wrong source encoding: not anymore interesting since it's a syntax error for python >= 2.5 and we now only support this python version and above.
- don't emit W0221 or W0222 when methods as variable arguments (eg \*arg and/or \*\*args). Patch submitted by Charles Duffy.

### **10.12.52 What's New in Pylint 0.22.0?**

Release date: 2010-11-15

- python versions: minimal python3.x support; drop python < 2.5 support

### **10.12.53 What's New in Pylint 0.21.4?**

Release date: 2010-10-27

- fix #48066: pylint crashes when redirecting output containing non-ascii characters
- fix #19799: "pylint -blah" exit with status 2
- update documentation

### 10.12.54 What's New in Pylint 0.21.3?

Release date: 2010-09-28

- restored python 2.3 compatibility. Along with logilab-astng 0.21.3 and logilab-common 0.52, this will much probably be the latest release supporting python < 2.5.

### 10.12.55 What's New in Pylint 0.21.2?

Release date: 2010-08-26

- fix #36193: import checker raise exception on cyclic import
- fix #28796: regression in `--generated-members` introduced pylint 0.20
- some documentation cleanups

### 10.12.56 What's New in Pylint 0.21.1?

Release date: 2010-06-04

- fix #28962: pylint crash with new options, due to missing stats data while writing the Statistics by types report
- updated man page to 0.21 or greater command line usage (fix debian #582494)

### 10.12.57 What's New in Pylint 0.21.0?

Release date: 2010-05-11

- command line updated (closes #9774, #9787, #9992, #22962):
- all `enable-*` / `disable-*` options have been merged into `--enable` / `--disable`
- BACKWARD INCOMPATIBLE CHANGE: short name of `--errors-only` becomes `-E`, `-e` being affected to `--enable`
- `pylint --help` output much simplified, with `--long-help` available to get the complete one
- revisited gui, thanks to students from Toronto university (they are great contributors to this release!)
- fix #21591: html reporter produces no output if `reports` is set to `'no'`
- fix #4581: not Missing docstring (C0111) warning if a method is overridden
- fix #4683: Non-ASCII characters count double if utf8 encode
- fix #9018: when using `defining-attr-method`, method order matters
- fix #4595: Comma not followed by a space should not occurs on trailing comma in list/tuple/dict definition
- fix #22585: [Patch] fix man warnings for `pyreverse.1` manpage
- fix #20067: `AttributeError: 'NoneType' object has no attribute 'name'` with `with`

### 10.12.58 What's New in Pylint 0.20.0?

Release date: 2010-03-01

- fix #19498: fix windows batch file

- fix #19339: pylint.el : non existing py-mod-map (closes Debian Bug report logs - #475939)
- implement #18860, new W0199 message on assert (a, b)
- implement #9776, 'W0150' break or return statement in finally block may swallow exception.
- fix #9263, `__init__` and `__new__` are checked for unused arguments
- fix #20991, class scope definitions ignored in a genexpr
- fix #5975, Abstract intermediate class not recognized as such
- fix #5977, yield and return statement have their own counters, no more R0911 (Too many return statements) when a function have many yield statements
- implement #5564, function / method arguments with leading "\_" are ignored in arguments / local variables count.
- implement #9982, E0711 specific error message when raising NotImplemented
- remove `--cache-size` option

## 10.12.59 What's New in Pylint 0.19.0?

Release date: 2009-12-18

- implement #18947, #5561: checker for function arguments
- include James Lingard string format checker
- include simple message (ids) listing by Vincent Ferotin (#9791)
- `--errors-only` does not hide fatal error anymore
- include James Lingard patches for `++/-` and duplicate key in dicts
- include James Lingard patches for function call arguments checker
- improved flymake code and doc provided by Derek Harland
- refactor and fix the imports checker
- fix #18862: E0601 false positive with lambda functions
- fix #8764: More than one statement on a single line false positive with try/except/finally
- fix #9215: false undefined variable error in lambda function
- fix for w0108 false positive (Nathaniel)
- fix test/fulltest.sh
- #5821 added a utility function to run pylint in another process (patch provide by Vincent Ferotin)

## 10.12.60 What's New in Pylint 0.18.0?

Release date: 2009-03-25

- tests ok with python 2.4, 2.5, 2.6. 2.3 not tested
- fix #8687, W0613 false positive on inner function
- fix #8350, C0322 false positive on multi-line string
- fix #8332: set E0501 line no to the first line where non ascii character has been found

- avoid some E0203 / E0602 false negatives by detecting respectively AttributeError / NameError
- implements #4037: don't issue W0142 (\* or \*\* magic) when they are barely passed from /\* arguments
- complete #5573: more complete list of special methods, also skip W0613 for python internal method
- don't show information messages by default
- integration of Yuen Ho Wong's patches on emacs lisp files

### 10.12.61 What's New in Pylint 0.17.0?

Release date: 2009-03-19

- semicolon check : move W0601 to W0301
- remove rpython : remove all rpython checker, modules and tests
- astng 0.18 compatibility: support for \_ast module modifies interfaces

### 10.12.62 What's New in Pylint 0.16.0?

Release date: 2009-01-28

- change [en]disable-msg-cat options: only accept message categories identified by their first letter (eg IRCWEF) without the need for comma as separator
- add epylint.bat script to fix Windows installation
- setuptools/easy\_install support
- include a modified version of Maarten ter Huurne patch to avoid W0613 warning on arguments from overridden method
- implement #5575 drop dumb W0704 message) by adding W0704 to ignored messages by default
- new W0108 message, checking for suspicious lambda (provided by Nathaniel Manista)
- fix W0631, false positive reported by Paul Hachmann
- fix #6951: false positive with W0104
- fix #6949
- patches by Mads Kiilerich:
- implement #4691, make pylint exits with a non zero return status if any messages other then Information are issued
- fix #3711, #5626 (name resolution bug w/ decorator and class members)
- fix #6954

### 10.12.63 What's New in Pylint 0.15.2?

Release date: 2008-10-13

- fix #5672: W0706 weirdness ( W0706 removed )
- fix #5998: documentation points to wrong url for mailing list
- fix #6022: no error message on wrong module names

- fix #6040: pytest doesn't run test/func\_test.py

### **10.12.64 What's New in Pylint 0.15.1?**

Release date: 2008-09-15

- fix #4910: default values are missing in manpage
- fix #5991: missing files in 0.15.0 tarball
- fix #5993: epylint should work with python 2.3

### **10.12.65 What's New in Pylint 0.15.0?**

Release date: 2008-09-10

- include pyreverse package and class diagram generation
- included Stefan Rank's patch to deal with 2.4 relative import
- included Robert Kirkpatrick's tutorial and typos fixes
- fix bug in reenabling message
- fix #2473: invoking pylint on `__init__.py` (hopefully)
- typecheck: acquired-members option has been dropped in favor of the more generic generated-members option. If the zope option is set, the behaviour is now to add some default values to generated-members.
- flymake integration: added bin/epylint and elisp/pylint-flymake.el

### **10.12.66 What's New in Pylint 0.14.0?**

Release date: 2008-01-14

- fix #3733: Messages (dis)appear depending on order of file names
- fix #4026: pylint.el should require compile
- fix a bug in colorized reporter, spotted by Dave Borowitz
- applied patch from Stefan Rank to avoid W0410 false positive when multiple "from `__future__`" import statements
- implement #4012: flag back tick as deprecated (new W0333 message)
- new ignored-class option on typecheck checker allowing to skip members checking based on class name (patch provided by Thomas W Barr)

### **10.12.67 What's New in Pylint 0.13.2?**

Release date: 2007-06-07

- fix disable-checker option so that it won't accidentally enable the rpython checker which is disabled by default
- added note about the gedit plugin into documentation



### 10.12.68 What's New in Pylint 0.13.1?

Release date: 2007-03-02

- fix some unexplained 0.13.0 packaging issue which led to a bunch of files missing from the distribution

### 10.12.69 What's New in Pylint 0.13.0?

Release date: 2007-02-28

- new RPython (Restricted Python) checker for PyPy fellow or people wanting to get a compiled version of their python program using the translator of the PyPy project. For more information about PyPy or RPython, visit <http://codespeak.net/pypy/>
- new E0104 and E0105 messages introduced to respectively warn about "return" and "yield" outside function or method
- new E0106 message when "yield" and "return something" are mixed in a function or method
- new W0107 message for unnecessary pass statement
- new W0614 message to differentiate between unused *import X* and unused *from X import \** (#3209, patch submitted by Daniel Drake)
- included Daniel Drake's patch to have a different message E1003 instead of E1001 when a missing member is found but an inference failure has been detected
- msvs reporter for Visual Studio line number reporting (#3285)
- allow disable-all option inline (#3218, patch submitted by Daniel Drake)
- `-init-hook` option to call arbitrary code necessary to set environment (eg `sys.path`) (#3156)
- One more Daniel's patch fixing a command line option parsing problem, this'll definitely be the DDrake release :)
- fix #3184: crashes on "return" outside function
- fix #3205: W0704 false positive
- fix #3123: W0212 false positive on static method
- fix #2485: W0222 false positive
- fix #3259: when a message is explicitly enabled, check the checker emitting it is enabled

### 10.12.70 What's New in Pylint 0.12.2?

Release date: 2006-11-23

- fix #3143: W0233 bug w/ YES objects
- fix #3119: Off-by-one error counting lines in a file
- fix #3117: ease `sys.stdout` overriding for reporters
- fix #2508: E0601 false positive with lambda
- fix #3125: E1101 false positive and a message duplication. Only the last part is actually fixed since the initial false positive is due to dynamic setting of attributes on the `decimal.Context` class.
- fix #3149: E0101 false positives and introduced E0100 for generator `__init__` methods
- fixed some format checker false positives

### **10.12.71 What's New in Pylint 0.12.1?**

Release date: 2006-09-25

- fixed python >= 2.4 format false positive with multiple lines statement
- fixed some 2.5 issues
- fixed generator expression scope bug (depends on astng 0.16.1)
- stop requiring `__revision__`

### **10.12.72 What's New in Pylint 0.12.0?**

Release date: 2006-08-10

- usability changes:
  - parseable, html and color options are now handled by a single output-format option
  - enable-`<checkerid>` and disable-all options are now handled by two (exclusive) enable-checker and disable-checker options taking a comma separated list of checker names as value
  - renamed debug-mode option to errors-only
- started a reference user manual
- new W0212 message for access to protected member from client code (close #14081)
- new W0105 and W0106 messages extracted from W0104 (statement seems to have no effect) respectively when the statement is actually string (that's sometimes used instead of comments for documentation) or an empty statement generated by a useless semicolon
- reclassified W0302 to C0302
- fix so that global messages are not anymore connected to the last analyzed module (close #10106)
- fix some bugs related to local disabling of messages
- fix `cr/lf` pb when generating the rc file on windows platforms

### **10.12.73 What's New in Pylint 0.11.0?**

Release date: 2006-04-19

- fix crash caused by the exceptions checker in some case
- fix some E1101 false positive with abstract method or classes defining `__getattr__`
- dirty fix to avoid `"_socketobject"` has not `"connect"` member. The actual problem is that astng isn't able to understand the code used to create `socket.socket` object with `exec`
- added an option in the similarity checker to ignore docstrings, enabled by default
- included patch from Benjamin Niemann to allow block level enabling/disabling of messages

### **10.12.74 What's New in Pylint 0.10.0?**

Release date: 2006-03-06

- WARNING, this release include some configuration changes (see below), so you may have to check and update your own configuration file(s) if you use one

- this release require the 0.15 version of astng or superior (it will save you a lot of pylint crashes...)
- W0705 has been reclassified to E0701, and is now detecting more inheriting problem, and a false positive when empty except clause is following an Exception catch has been fixed (close #10422)
- E0212 and E0214 (metaclass/class method should have mcs/cls as first argument have been reclassified to C0202 and C0203 since this not as well established as "self" for instance method (E0213)
- W0224 has been reclassified into F0220 (failed to resolve interfaces implemented by a class)
- a new typecheck checker, introducing the following checks:
  - E1101, access to unexistent member (implements #10430), remove the need of E0201 and so some options has been moved from the classes checker to this one
  - E1102, calling a non callable object
  - E1111 and W1111 when an assignment is done on a function call but the inferred function returns None (implements #10431)
- change in the base checker:
  - checks module level and instance attribute names (new const-rgx and attr-rgx configuration option) (implements #10209 and #10440)
  - list comprehension and generator expression variables have their own regular expression (the inlinevar-rgx option) (implements #9146)
  - the C0101 check with its min-name-length option has been removed (this can be specified in the regexp after all...)
  - W0103 and W0121 are now handled by the variables checker (W0103 is now W0603 and W0604 has been splitted into different messages)
  - W0131 and W0132 messages have been reclassified to C0111 and C0112 respectively
  - new W0104 message on statement without effect
- regexp support for dummy-variables (dummy-variables-rgx option replace dummy-variables) (implements #10027)
- better global statement handling, see W0602, W0603, W0604 messages (implements #10344 and #10236)
- –debug-mode option, disabling all checkers without error message and filtering others to only display error
- fixed some R0201 (method could be a function) false positive

### 10.12.75 What's New in Pylint 0.9.0?

Release date: 2006-01-10

- a lot of updates to follow astng 0.14 API changes, so install logilab-astng 0.14 or greater before using this version of pylint
- checker number 10 ! newstyle will search for problems regarding old style / new style classes usage problems (rely on astng 0.14 new style detection feature)
- new 'load-plugins' options to load additional pylint plugins (usable from the command line or from a configuration file) (implements #10031)
- check if a "pylintrc" file exists in the current working directory before using the one specified in the PYLINTRC environment variable or the default ~/.pylintrc or /etc/pylintrc
- fixed W0706 (Identifier used to raise an exception is assigned...) false positive and reraising a caught exception instance

- fixed E0611 (No name get in module blabla) false positive when accessing to a class' `__dict__`
- fixed some E0203 ("access to member before its definition") false positive
- fixed E0214 ("metaclass method first argument should be mcs) false positive with staticmethod used on a meta-class
- fixed packaging which was missing the test/regtest\_data directory
- W0212 (method could be a function) has been reclassified in the REFACTOR category as R0201, and is no more considerer when a method overrides an abstract method from an ancestor class
- include module name in W0401 (wildcard import), as suggested by Amaury
- when using the `'-parseable'`, path are written relative to the current working directory if in a sub-directory of it (#9789)
- `'pylint -version'` shows logilab-astng and logilab-common versions
- fixed pylint.el to handle space in file names
- misc lint style fixes

### 10.12.76 What's New in Pylint 0.8.1?

Release date: 2005-11-07

- fix "deprecated module" false positive when the code imports a module whose name starts with a deprecated module's name (close #10061)
- fix "module has no name `__dict__`" false positive (close #10039)
- fix "access to undefined variable `__path__`" false positive (close #10065)
- fix "explicit return in `__init__`" false positive when return is actually in an inner function (close #10075)

### 10.12.77 What's New in Pylint 0.8.0?

Release date: 2005-10-21

- check names imported from a module exists in the module (E0611), patch contributed by Amaury Forgeot d'Arc
- print a warning (W0212) for methods that could be a function (implements #9100)
- new `-defining-attr-methods` option on classes checker
- new `-acquired-members` option on the classes checker, used when `-zope=yes` to avoid false positive on acquired attributes (listed using this new option) (close #8616)
- generate one E0602 for each use of an undefined variable (previously, only one for the first use but not for the following) (implements #1000)
- make profile option saveable
- fix Windows .bat file, patch contributed by Amaury Forgeot d'Arc
- fix one more false positive for E0601 (access before definition) with for loop such as `"for i in range(10): print i"` (test `func_noerror_defined_and_used_on_same_line`)
- fix false positive for E0201 (undefined member) when accessing to `__name__` on a class object
- fix astng checkers traversal order
- fix bug in format checker when parsing a file from a platform using different new line characters (close #9239)

- fix encoding detection regexp
- fix `-rcfile` handling (support for `-rcfile=file`, close #9590)

### 10.12.78 What's New in Pylint 0.7.0?

Release date: 2005-05-27

- **WARNING:** pylint is no longer a logilab subpackage. Users may have to manually remove the old logilab/pylint directory.
- introduce a new `--additional-builtins` option to handle user defined builtins
- `--reports` option has now `-r` as short alias, and `-i` for `--include-ids`
- fix a bug in the variables checker which may causing some false positives when variables are defined and used within the same statement (test `func_noerror_defined_and_used_on_same_line`)
- this time, real fix of the "disable-msg in the config file" problem, test added to `unittest_lint`
- fix bug with `--list-messages` and `python -OO`
- fix possible false positive for W0201

### 10.12.79 What's New in Pylint 0.6.4?

Release date: 2005-04-14

- allow to parse files without extension when a path is given on the command line (test `noext`)
- don't fail if we are unable to read an inline option (e.g. inside a module), just produce an information message (test `func_i0010`)
- new message E0103 for break or continue outside loop (close #8883, test `func_continue_not_in_loop`)
- fix bug in the variables checker, causing non detection of some actual name error (close #8884, test `func_nameerror_on_string_substitution`)
- fix bug in the classes checker which was making pylint crash if "object" is assigned in a class inheriting from it (test `func_noerror_object_as_class_attribute`)
- fix problem with the similar checker when related options are defined in a configuration file
- new `--generate-man` option to generate pylint's man page (require the latest logilab.common ( $\geq 0.9.3$ ))
- packaged (generated...) man page

### 10.12.80 What's New in Pylint 0.6.3?

Release date: 2005-02-24

- fix scope problem which may cause false positive and true negative on E0602
- fix problem with some options such as `disable-msg` causing error when they are coming from the configuration file

### **10.12.81 What's New in Pylint 0.6.2?**

Release date: 2005-02-16

- fix false positive on E0201 ("access to undefined member") with metaclasses
- fix false positive on E0203 ("access to member before its definition") when attributes are defined in a parent class
- fix false positive on W0706 ("identifier used to raise an exception assigned to...")
- fix interpretation of "t" as value for the indent-string configuration variable
- fix `-rcfile` so that `-rcfile=pylintrc` (only `-rcfile pylintrc` was working in earlier release)
- new raw checker example in the `examples/` directory

### **10.12.82 What's New in Pylint 0.6.1?**

Release date: 2005-02-04

- new `-rcfile` option to specify the configuration file without the `PYLINTRC` environment variable
- added an example module for a custom pylint checker (see the `example/` directory)
- some fixes to handle fixes in common 0.9.1 (should however still working with common 0.9.0, even if upgrade is recommended)

### **10.12.83 What's New in Pylint 0.6.0?**

Release date: 2005-01-20

- refix pylint emacs mode
- no more traceback when just typing "pylint"
- fix a bug which may cause crashes on resolving parent classes
- fix problems with the format checker: don't choke on files containing multiple CR, avoid C0322, C0323, C0324 false positives with triple quoted string with quote inside
- correctly detect access to member defined latter in `__init__` method
- now depends on common 0.8.1 to fix problem with interface resolution (close #8606)
- new `-list-msgs` option describing available checkers and their messages
- added windows specific documentation to the README file, contributed by Brian van den Broek
- updated `doc/features.txt` (actually this file is now generated using the `-list-msgs` option), more entries into the FAQ
- improved tests coverage

### **10.12.84 What's New in Pylint 0.5.0?**

Release date: 2004-10-19

- avoid importing analyzed modules !
- new Refactor and Convention message categories. Some Warnings have been remaped into those new categories

- added "similar", a tool to find copied and pasted lines of code, both using a specific command line tool and integrated as a pylint's checker
- imports checker may report import dependencies as a dot graph
- new checker regrouping most Refactor detection (with some new metrics)
- more command line options storable in the configuration file
- fix bug with total / undocumented number of methods

### 10.12.85 What's New in Pylint 0.4.2?

Release date: 2004-07-08

- fix pylint emacs mode
- fix classes checkers to handler twisted interfaces

### 10.12.86 What's New in Pylint 0.4.1?

Release date: 2004-05-14

- fix the setup.py script to allow bdist\_winst (well, the generated installer has not been tested...) with the necessary logilab/\_\_init\_\_.py file
- fix file naming convention as suggested by Andreas Amoroso
- fix stupid crash bug with bad method names

### 10.12.87 What's New in Pylint 0.4.0?

Release date: 2004-05-10

- fix file path with `-parsable`
- `-parsable` option has been renamed to `-parseable`
- added patch from Andreas Amoroso to output message to files instead of standard output
- added Run to the list of correct variable names
- fix variable names regexp and checking of local classes names
- some basic handling of metaclasses
- no-docstring-rgx apply now on classes too
- new option to specify a different regexp for methods than for functions
- do not display the evaluation report when no statements has been analysed
- fixed crash with a class nested in a method
- fixed format checker to deals with triple quoted string and lines with code and comment mixed
- use logilab.common.ureports to layout reports

### **10.12.88 What's New in Pylint 0.3.3?**

Release date: 2004-02-17

- added a parsable text output, used when the `--parsable` option is provided
- added an emacs mode using this output, available in the distrib's elisp directory
- fixed some typos in messages
- change include-ids options to yn, and allow it to be in the configuration file
- do not chock on corrupted stats files
- fixed bug in the format checker which may stop pylint execution
- provide scripts for unix and windows to wrap the minimal pylint tk gui

### **10.12.89 What's New in Pylint 0.3.2?**

Release date: 2003-12-23

- html-escape messages in the HTML reporter (bug reported by Juergen Hermann)
- added "TODO" to the list of default note tags
- added "rexec" to the list of default deprecated modules
- fixed typos in some messages

### **10.12.90 What's New in Pylint 0.3.1?**

Release date: 2003-12-05

- bug fix in format and classes checkers
- remove print statement from imports checkers
- provide a simple tk gui, essentially useful for windows users

### **10.12.91 What's New in Pylint 0.3.0?**

Release date: 2003-11-20

- new exceptions checker, checking for string exception and empty except clauses.
- imports checker checks for reimport of modules
- classes checker checks for calls to ancestor's `__init__` and abstract method not overridden. It doesn't complain anymore for unused import in `__init__` files, and provides a new option `ignore-interface-methods`, useful when you're using zope Interface implementation in your project
- base checker checks for black listed builtins call (controlled by the `bad-functions` option) and for use of `*` and `**`
- format checker checks for use of `<>` and `"l"` as long int marker
- major internal API changes
- use the rewrite of `astng`, based on `compiler.ast`
- added unique id for messages, as suggested by Wolfgang Grafen



- added unique id for reports
- can take multiple modules or files as argument
- new options command line options : `--disable-msg`, `--enable-msg`, `--help-msg`, `--include-ids`, `--reports`, `--disable-report`, `--cache-size`
- `--version` shows the version of the python interpreter
- removed some options which are now replaced by `[en]disable-msg`, or `disable-report`
- read `disable-msg` and `enable-msg` options in source files (should be in comments on the top of the file, in the form `"# pylint: disable-msg=W0402"`)
- new message for modules importing themselves instead of the "cyclic import" message
- fix bug with relative and cyclic imports
- fix bug in imports checker (cycle was not always detected)
- still fixes in format checker : don't check comment and docstring, check first line after an indent
- black and white list now apply to all identifiers, not only variables, so changed the configuration option from `(good)bad-variable-names` to `(good)bad-names`
- added `string`, `rexec` and `Bastion` to the default list of deprecated modules
- do not print redefinition warning for function/class/method defined in mutually exclusive branches

### 10.12.92 What's New in Pylint 0.2.1?

Release date: 2003-10-10

- added some documentation, fixed some typos
- set environment variable `PYLINT_IMPORT` to 1 during pylint execution.
- check that variables "imported" using the global statement exist
- indentation problems are now warning instead of errors
- fix `checkers.initialize` to try to load all files with a known python extension (patch from wrobell)
- fix a bunch of messages
- fix sample configuration file
- fix the `bad-construction` option
- fix encoding checker
- fix format checker

### 10.12.93 What's New in Pylint 0.2.0?

Release date: 2003-09-12

- new source encoding / `FIXME` checker (pep 263)
- new `--zope` option which trigger Zope import. Useful to check Zope products code.
- new `--comment` option which enable the evaluation note comment (disabled by default).
- a ton of bug fixes
- easy functional test infrastructure

### **10.12.94 What's New in Pylint 0.1.2?**

Release date: 2003-06-18

- bug fix release
- remove dependency to pyreverse

### **10.12.95 What's New in Pylint 0.1.1?**

Release date: 2003-06-01

- much more functionalities !

### **10.12.96 What's New in Pylint 0.1?**

Release date: 2003-05-19

- initial release

## Symbols

```
-argument-naming-style=<style>
    command line option, 20
-argument-rgx=<regex>
    command line option, 20
-attr-naming-style=<style>
    command line option, 20
-attr-rgx=<regex>
    command line option, 20
-class-attribute-naming-style=<style>
    command line option, 20
-class-attribute-rgx=<regex>
    command line option, 20
-class-naming-style=<style>
    command line option, 20
-class-rgx=<regex>
    command line option, 20
-const-naming-style=<style>
    command line option, 20
-const-rgx=<regex>
    command line option, 20
-function-naming-style=<style>
    command line option, 20
-function-rgx=<regex>
    command line option, 20
-include-naming-hint=y|n
    command line option, 21
-inlinevar-naming-style=<style>
    command line option, 20
-inlinevar-rgx=<regex>
    command line option, 20
-method-naming-style=<style>
    command line option, 20
-method-rgx=<regex>
    command line option, 20
-module-naming-style=<style>
    command line option, 20
-module-rgx=<regex>
    command line option, 20
```

```
-name-group=<name1:name2:...,...>
    command line option, 21
-variable-naming-style=<style>
    command line option, 20
-variable-rgx=<regex>
    command line option, 20
```

## C

```
command line option
    -argument-naming-style=<style>, 20
    -argument-rgx=<regex>, 20
    -attr-naming-style=<style>, 20
    -attr-rgx=<regex>, 20
    -class-attribute-naming-style=<style>,
        20
    -class-attribute-rgx=<regex>, 20
    -class-naming-style=<style>, 20
    -class-rgx=<regex>, 20
    -const-naming-style=<style>, 20
    -const-rgx=<regex>, 20
    -function-naming-style=<style>, 20
    -function-rgx=<regex>, 20
    -include-naming-hint=y|n, 21
    -inlinevar-naming-style=<style>, 20
    -inlinevar-rgx=<regex>, 20
    -method-naming-style=<style>, 20
    -method-rgx=<regex>, 20
    -module-naming-style=<style>, 20
    -module-rgx=<regex>, 20
    -name-group=<name1:name2:...,...>,
        21
    -variable-naming-style=<style>, 20
    -variable-rgx=<regex>, 20
```