

:mod:`py_compile` --- Compile Python source files

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\library\cpython-main) (Doc) (library)py_compile.rst, line 1); [backlink](#)

Unknown interpreted text role "mod".

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\library\cpython-main) (Doc) (library)py_compile.rst, line 4)

Unknown directive type "module".

```
.. module:: py_compile
   :synopsis: Generate byte-code files from Python source files.
```

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Unknown directive type "sectionauthor".

```
.. sectionauthor:: Fred L. Drake, Jr. <fdrake@acm.org>
```

Source code: `source: Lib/py_compile.py`

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Unknown interpreted text role "source".

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Unknown directive type "index".

```
.. index:: pair: file; byte-code
```

The `mod:py_compile` module provides a function to generate a byte-code file from a source file, and another function used when the module source file is invoked as a script.

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Unknown interpreted text role "mod".

Though not often needed, this function can be useful when installing modules for shared use, especially if some of the users may not have permission to write the byte-code cache files in the directory containing the source code.

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Unknown directive type "exception".

```
.. exception:: PyCompileError

   Exception raised when an error occurs while attempting to compile the file.
```

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Unknown directive type "function".

```
.. function:: compile(file, cfile=None, dfile=None, doraise=False, optimize=-1, invalidation_mode=PycInvalidationMode
```

```
Compile a source file to byte-code and write out the byte-code cache file.
The source code is loaded from the file named *file*. The byte-code is
written to *cfile*, which defaults to the :pep:3147/:pep:488` path, ending
in ``.pyc``.
For example, if *file* is ``foo/bar/baz.py`` *cfile* will default to
``foo/bar/_pycache_/baz.cpython-32.pyc`` for Python 3.2. If *dfile* is
specified, it is used as the name of the source file in error messages
instead of *file*. If *doraise* is true, a :exc:`PyCompileError` is raised
when an error is encountered while compiling *file*. If *doraise* is false
(the default), an error string is written to ``sys.stderr``, but no exception
is raised. This function returns the path to byte-compiled file, i.e.
whatever *cfile* value was used.
```

```
The *doraise* and *quiet* arguments determine how errors are handled while
compiling file. If *quiet* is 0 or 1, and *doraise* is false, the default
behaviour is enabled: an error string is written to ``sys.stderr``, and the
function returns ``None`` instead of a path. If *doraise* is true,
a :exc:`PyCompileError` is raised instead. However if *quiet* is 2,
no message is written, and *doraise* has no effect.
```

```
If the path that *cfile* becomes (either explicitly specified or computed)
is a symlink or non-regular file, :exc:`FileExistsError` will be raised.
This is to act as a warning that import will turn those paths into regular
files if it is allowed to write byte-compiled files to those paths. This is
a side-effect of import using file renaming to place the final byte-compiled
file into place to prevent concurrent file writing issues.
```

```
*optimize* controls the optimization level and is passed to the built-in
:func:`compile` function. The default of ``-1`` selects the optimization
```

level of the current interpreter.

```
*invalidation_mode* should be a member of the :class:`PycInvalidationMode`
enum and controls how the generated bytecode cache is invalidated at
runtime. The default is :attr:`PycInvalidationMode.CHECKED_HASH` if
the :envvar:`SOURCE_DATE_EPOCH` environment variable is set, otherwise
the default is :attr:`PycInvalidationMode.TIMESTAMP`.

.. versionchanged:: 3.2
    Changed default value of *cfile* to be :PEP:`3147`-compliant. Previous
    default was *file* + ``'c'`` (``'o'`` if optimization was enabled).
    Also added the *optimize* parameter.

.. versionchanged:: 3.4
    Changed code to use :mod:`importlib` for the byte-code cache file writing.
    This means file creation/writing semantics now match what :mod:`importlib`
    does, e.g. permissions, write-and-move semantics, etc. Also added the
    caveat that :exc:`FileExistsError` is raised if *cfile* is a symlink or
    non-regular file.

.. versionchanged:: 3.7
    The *invalidation_mode* parameter was added as specified in :pep:`552`.
    If the :envvar:`SOURCE_DATE_EPOCH` environment variable is set,
    *invalidation_mode* will be forced to
    :attr:`PycInvalidationMode.CHECKED_HASH`.

.. versionchanged:: 3.7.2
    The :envvar:`SOURCE_DATE_EPOCH` environment variable no longer
    overrides the value of the *invalidation_mode* argument, and determines
    its default value instead.

.. versionchanged:: 3.8
    The *quiet* parameter was added.
```

An enumeration of possible methods the interpreter can use to determine whether a bytecode file is up to date with a source file. The .pyc file indicates the desired invalidation mode in its header. See [ref:pyc-invalidation](#) for more information on how Python invalidates .pyc files at runtime.

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Unknown interpreted text role "ref".

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Unknown directive type "versionadded".

```
.. versionadded:: 3.7
```

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Unknown directive type "attribute".

```
.. attribute:: TIMESTAMP
```

The ``.pyc`` file includes the timestamp and size of the source file, which Python will compare against the metadata of the source file at runtime to determine if the ``.pyc`` file needs to be regenerated.

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Unknown directive type "attribute".

```
.. attribute:: CHECKED_HASH
```

The ``.pyc`` file includes a hash of the source file content, which Python will compare against the source at runtime to determine if the ``.pyc`` file needs to be regenerated.

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Unknown directive type "attribute".

```
.. attribute:: UNCHECKED_HASH
```

Like :attr:`CHECKED_HASH`, the ``.pyc`` file includes a hash of the source file content. However, Python will at runtime assume the ``.pyc`` file is up to date and not validate the ``.pyc`` against the source file at all.

This option is useful when the ``.pycs`` are kept up to date by some system external to Python like a build system.

Command-Line Interface

This module can be invoked as a script to compile several source files. The files named in *filenames* are compiled and the resulting bytecode is cached in the normal manner. This program does not search a directory structure to locate source files; it only compiles files named explicitly. The exit status is nonzero if one of the files could not be compiled.

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Unknown directive type "program".

```
.. program:: python -m py_compile
```

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Unknown directive type "cmdoption".

```
.. cmdoption:: <file> ... <fileN>
    _
```

Positional arguments are files to compile. If ``-`` is the only parameter, the list of files is taken from standard input.

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Unknown directive type "cmdoption".

```
.. cmdoption:: -q, --quiet
```

Suppress errors output.

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Unknown directive type "versionchanged".

```
.. versionchanged:: 3.2
    Added support for ``-``.
```

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Unknown directive type "versionchanged".

```
.. versionchanged:: 3.10
    Added support for :option:`-q`.
```

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Unknown directive type "seealso".

```
.. seealso::
```

```
    Module :mod:`compileall`
        Utilities to compile all Python source files in a directory tree.
```