: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.
```

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\library\[cpython-main][Doc][library]py_compile.rst, line 7)

Unknown directive type "sectionauthor".

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

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

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\library\[cpython-main][Doc][library]py_compile.rst, line 10); *backlink*

Unknown interpreted text role "source".

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\library\[cpython-main][Doc][library]py_compile.rst, line 12)

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.

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\library\[cpython-main][Doc][library]py_compile.rst, line 16); *backlink*

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.

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\library\[cpython-main][Doc][library]py_compile.rst, line 25)

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.
```

A 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.
```