

## :mod:`compileall` --- Byte-compile Python libraries

**System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\library\cpython-main) (Doc) (library) compileall.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) compileall.rst, line 4)**  
Unknown directive type "module".  
  
.. module:: compileall  
    :synopsis: Tools for byte-compiling all Python source files in a directory tree.

Source code: `source: 'Lib/compileall.py'`

**System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\library\cpython-main) (Doc) (library) compileall.rst, line 7); [backlink](#)**  
Unknown interpreted text role "source".

This module provides some utility functions to support installing Python libraries. These functions compile Python source files in a directory tree. This module can be used to create the cached byte-code files at library installation time, which makes them available for use even by users who don't have write permission to the library directories.

### Command-line use

This module can work as a script (using `program`python -m compileall``) to compile Python sources.

**System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\library\cpython-main) (Doc) (library) compileall.rst, line 21); [backlink](#)**  
Unknown interpreted text role "program".

**System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\library\cpython-main) (Doc) (library) compileall.rst, line 24)**  
Unknown directive type "program".  
  
.. program:: compileall

**System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\library\cpython-main) (Doc) (library) compileall.rst, line 26)**  
Unknown directive type "cmdoption".  
  
.. cmdoption:: directory ...  
                  file ...  
  
Positional arguments are files to compile or directories that contain source files, traversed recursively. If no argument is given, behave as if the command line was ``-l <directories from sys.path>``.

**System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\library\cpython-main) (Doc) (library) compileall.rst, line 33)**  
Unknown directive type "cmdoption".  
  
.. cmdoption:: -l  
  
Do not recurse into subdirectories, only compile source code files directly contained in the named or implied directories.

**System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\library\cpython-main) (Doc) (library) compileall.rst, line 38)**  
Unknown directive type "cmdoption".  
  
.. cmdoption:: -f  
  
Force rebuild even if timestamps are up-to-date.

**System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\library\cpython-main) (Doc) (library) compileall.rst, line 42)**  
Unknown directive type "cmdoption".  
  
.. cmdoption:: -q  
  
Do not print the list of files compiled. If passed once, error messages will still be printed. If passed twice (``-qq``), all output is suppressed.

**System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\library\cpython-main) (Doc) (library) compileall.rst, line 47)**  
Unknown directive type "cmdoption".  
  
.. cmdoption:: -d destdir  
  
Directory prepended to the path to each file being compiled. This will appear in compilation time tracebacks, and is also compiled in to the byte-code file, where it will be used in tracebacks and other messages in cases where the source file does not exist at the time the byte-code file is executed.

**System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\library\cpython-main) (Doc) (library) compileall.rst, line 55)**  
Unknown directive type "cmdoption".  
  
.. cmdoption:: -s strip\_prefix

**System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\library\ (cpython-main) (Doc) (library) compileall.rst, line 56)**

Unknown directive type "cmdoption".

```
.. cmdoption:: -p prepend_prefix

Remove (''-s'') or append (''-p'') the given prefix of paths
recorded in the ``.pyc`` files.
Cannot be combined with ``-d``.
```

**System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\library\ (cpython-main) (Doc) (library) compileall.rst, line 62)**

Unknown directive type "cmdoption".

```
.. cmdoption:: -x regex

regex is used to search the full path to each file considered for
compilation, and if the regex produces a match, the file is skipped.
```

**System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\library\ (cpython-main) (Doc) (library) compileall.rst, line 67)**

Unknown directive type "cmdoption".

```
.. cmdoption:: -i list

Read the file ``list`` and add each line that it contains to the list of
files and directories to compile. If ``list`` is ``-``, read lines from
``stdin``.
```

**System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\library\ (cpython-main) (Doc) (library) compileall.rst, line 73)**

Unknown directive type "cmdoption".

```
.. cmdoption:: -b

Write the byte-code files to their legacy locations and names, which may
overwrite byte-code files created by another version of Python. The default
is to write files to their :pep:`3147` locations and names, which allows
byte-code files from multiple versions of Python to coexist.
```

**System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\library\ (cpython-main) (Doc) (library) compileall.rst, line 80)**

Unknown directive type "cmdoption".

```
.. cmdoption:: -r

Control the maximum recursion level for subdirectories.
If this is given, then ``-l`` option will not be taken into account.
:program:`python -m compileall <directory> -r 0` is equivalent to
:program:`python -m compileall <directory> -l`.
```

**System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\library\ (cpython-main) (Doc) (library) compileall.rst, line 87)**

Unknown directive type "cmdoption".

```
.. cmdoption:: -j N

Use *N* workers to compile the files within the given directory.
If ``0`` is used, then the result of :func:`os.cpu_count()`
will be used.
```

**System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\library\ (cpython-main) (Doc) (library) compileall.rst, line 93)**

Unknown directive type "cmdoption".

```
.. cmdoption:: --invalidation-mode [timestamp|checked-hash|unchecked-hash]

Control how the generated byte-code files are invalidated at runtime.
The ``timestamp`` value, means that ``.pyc`` files with the source timestamp
and size embedded will be generated. The ``checked-hash`` and
``unchecked-hash`` values cause hash-based pycs to be generated. Hash-based
pycs embed a hash of the source file contents rather than a timestamp. See
:ref:`pyc-invalidation` for more information on how Python validates
bytecode cache files at runtime.
The default is ``timestamp`` if the :envvar:`SOURCE_DATE_EPOCH` environment
variable is not set, and ``checked-hash`` if the ``SOURCE_DATE_EPOCH``
environment variable is set.
```

**System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\library\ (cpython-main) (Doc) (library) compileall.rst, line 106)**

Unknown directive type "cmdoption".

```
.. cmdoption:: -o level

Compile with the given optimization level. May be used multiple times
to compile for multiple levels at a time (for example,
``compileall -o 1 -o 2``).
```

**System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\library\ (cpython-main) (Doc) (library) compileall.rst, line 112)**

Unknown directive type "cmdoption".

```
.. cmdoption:: -e dir

Ignore symlinks pointing outside the given directory.
```

**System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\library\ (cpython-main) (Doc) (library) compileall.rst, line 116)**

Unknown directive type "cmdoption".

```
.. cmdoption:: --hardlink-dupes
```

If two ``.pyc`` files with different optimization level have the same content, use hard links to consolidate duplicate files.

**System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\library\cpython-main) (Doc) (library) compileall.rst, line 121)**

Unknown directive type "versionchanged".

```
.. versionchanged:: 3.2
   Added the ``-i``, ``-b`` and ``-h`` options.
```

**System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\library\cpython-main) (Doc) (library) compileall.rst, line 124)**

Unknown directive type "versionchanged".

```
.. versionchanged:: 3.5
   Added the ``-j``, ``-r``, and ``-qq`` options. ``-q`` option
   was changed to a multilevel value. ``-b`` will always produce a
   byte-code file ending in ``.pyc``, never ``.pyo``.
```

**System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\library\cpython-main) (Doc) (library) compileall.rst, line 129)**

Unknown directive type "versionchanged".

```
.. versionchanged:: 3.7
   Added the ``--invalidation-mode`` option.
```

**System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\library\cpython-main) (Doc) (library) compileall.rst, line 132)**

Unknown directive type "versionchanged".

```
.. versionchanged:: 3.9
   Added the ``-s``, ``-p``, ``-e`` and ``--hardlink-dupes`` options.
   Raised the default recursion limit from 10 to
   :py:func:`sys.getrecursionlimit()`.
   Added the possibility to specify the ``-o`` option multiple times.
```

There is no command-line option to control the optimization level used by the `:func:`compile`` function, because the Python interpreter itself already provides the option: `python -O -m compileall`.

**System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\library\cpython-main) (Doc) (library) compileall.rst, line 139); [backlink](#)**

Unknown interpreted text role "func".

**System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\library\cpython-main) (Doc) (library) compileall.rst, line 139); [backlink](#)**

Unknown interpreted text role "program".

Similarly, the `:func:`compile`` function respects the `:attr:`sys.pycache_prefix`` setting. The generated bytecode cache will only be useful if `:func:`compile`` is run with the same `:attr:`sys.pycache_prefix`` (if any) that will be used at runtime.

**System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\library\cpython-main) (Doc) (library) compileall.rst, line 143); [backlink](#)**

Unknown interpreted text role "func".

**System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\library\cpython-main) (Doc) (library) compileall.rst, line 143); [backlink](#)**

Unknown interpreted text role "attr".

**System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\library\cpython-main) (Doc) (library) compileall.rst, line 143); [backlink](#)**

Unknown interpreted text role "func".

**System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\library\cpython-main) (Doc) (library) compileall.rst, line 143); [backlink](#)**

Unknown interpreted text role "attr".

Public functions

**System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\library\cpython-main) (Doc) (library) compileall.rst, line 151)**

Unknown directive type "function".

```
.. function:: compile_dir(dir, maxlevels=sys.getrecursionlimit(), ddir=None, force=False, rx=None, quiet=0, legacy=False, optimize=0)

   Recursively descend the directory tree named by *dir*, compiling all :file:`.py`
   files along the way. Return a true value if all the files compiled successfully,
   and a false value otherwise.

   The *maxlevels* parameter is used to limit the depth of the recursion; it
   defaults to ``sys.getrecursionlimit()``.

   If *ddir* is given, it is prepended to the path to each file being compiled
   for use in compilation time tracebacks, and is also compiled in to the
   byte-code file, where it will be used in tracebacks and other messages in
   cases where the source file does not exist at the time the byte-code file is
   executed.

   If *force* is true, modules are re-compiled even if the timestamps are up to
   date.

   If *rx* is given, its ``search`` method is called on the complete path to each
   file considered for compilation, and if it returns a true value, the file
   is skipped. This can be used to exclude files matching a regular expression,
   given as a :ref:`re.Pattern <re-objects>` object.

   If *quiet* is ``False`` or ``0`` (the default), the filenames and other
   information are printed to standard out. Set to ``1``, only errors are
   printed. Set to ``2``, all output is suppressed.
```

force=False, rx=None, quiet=0, legacy=False, optimize=0)

If `*legacy*` is true, byte-code files are written to their legacy locations and names, which may overwrite byte-code files created by another version of Python. The default is to write files to their `:pep:3147` locations and names, which allows byte-code files from multiple versions of Python to coexist.

`*optimize*` specifies the optimization level for the compiler. It is passed to the built-in `:func:'compile'` function. Accepts also a sequence of optimization levels which lead to multiple compilations of one `:file:'.py'` file in one call.

The argument `*workers*` specifies how many workers are used to compile files in parallel. The default is to not use multiple workers. If the platform can't use multiple workers and `*workers*` argument is given, then sequential compilation will be used as a fallback. If `*workers*` is 0, the number of cores in the system is used. If `*workers*` is lower than `0`, a `:exc:'ValueError'` will be raised.

`*invalidation_mode*` should be a member of the `:class:'py_compile.PycInvalidationMode'` enum and controls how the generated pycs are invalidated at runtime.

The `*stripdir*`, `*prependdir*` and `*limit_sl_dest*` arguments correspond to the `--s`, `--p` and `--e` options described above. They may be specified as `'str'`, `'bytes'` or `:py:class:'os.PathLike'`.

If `*hardlink_dupes*` is true and two `'.pyc'` files with different optimization level have the same content, use hard links to consolidate duplicate files.

```
.. versionchanged:: 3.2
    Added the *legacy* and *optimize* parameter.

.. versionchanged:: 3.5
    Added the *workers* parameter.

.. versionchanged:: 3.5
    *quiet* parameter was changed to a multilevel value.

.. versionchanged:: 3.5
    The *legacy* parameter only writes out '.pyc' files, not '.pyo' files
    no matter what the value of *optimize* is.

.. versionchanged:: 3.6
    Accepts a :term:'path-like object'.

.. versionchanged:: 3.7
    The *invalidation_mode* parameter was added.

.. versionchanged:: 3.7.2
    The *invalidation_mode* parameter's default value is updated to None.

.. versionchanged:: 3.8
    Setting *workers* to 0 now chooses the optimal number of cores.

.. versionchanged:: 3.9
    Added *stripdir*, *prependdir*, *limit_sl_dest* and *hardlink_dupes* arguments.
    Default value of *maxlevels* was changed from 10 to 'sys.getrecursionlimit()'
```

**System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\library\cpython-main) (Doc) (Library) compileall.rst, line 235)**

Unknown directive type "function".

```
.. function:: compile_file(fullname, ddir=None, force=False, rx=None, quiet=0, legacy=False, optimize=-1, invalidation_mode=None,
```

Compile the file with path `*fullname*`. Return a true value if the file compiled successfully, and a false value otherwise.

If `*ddir*` is given, it is prepended to the path to the file being compiled for use in compilation time tracebacks, and is also compiled in to the byte-code file, where it will be used in tracebacks and other messages in cases where the source file does not exist at the time the byte-code file is executed.

If `*rx*` is given, its `'search'` method is passed the full path name to the file being compiled, and if it returns a true value, the file is not compiled and `'True'` is returned. This can be used to exclude files matching a regular expression, given as a `:ref:'re.Pattern <re-objects>'` object.

If `*quiet*` is `'False'` or `0` (the default), the filenames and other information are printed to standard out. Set to `'1'`, only errors are printed. Set to `'2'`, all output is suppressed.

If `*legacy*` is true, byte-code files are written to their legacy locations and names, which may overwrite byte-code files created by another version of Python. The default is to write files to their `:pep:3147` locations and names, which allows byte-code files from multiple versions of Python to coexist.

`*optimize*` specifies the optimization level for the compiler. It is passed to the built-in `:func:'compile'` function. Accepts also a sequence of optimization levels which lead to multiple compilations of one `:file:'.py'` file in one call.

`*invalidation_mode*` should be a member of the `:class:'py_compile.PycInvalidationMode'` enum and controls how the generated pycs are invalidated at runtime.

The `*stripdir*`, `*prependdir*` and `*limit_sl_dest*` arguments correspond to the `--s`, `--p` and `--e` options described above. They may be specified as `'str'`, `'bytes'` or `:py:class:'os.PathLike'`.

If `*hardlink_dupes*` is true and two `'.pyc'` files with different optimization level have the same content, use hard links to consolidate duplicate files.

```
.. versionadded:: 3.2

.. versionchanged:: 3.5
    *quiet* parameter was changed to a multilevel value.

.. versionchanged:: 3.5
    The *legacy* parameter only writes out '.pyc' files, not '.pyo' files
    no matter what the value of *optimize* is.

.. versionchanged:: 3.7
    The *invalidation_mode* parameter was added.

.. versionchanged:: 3.7.2
    The *invalidation_mode* parameter's default value is updated to None.

.. versionchanged:: 3.9
    Added *stripdir*, *prependdir*, *limit_sl_dest* and *hardlink_dupes* arguments.
```

**System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\library\cpython-main) (Doc) (Library) compileall.rst, line 294)**

Unknown directive type "function".

```

.. function:: compile_path(skip_curdir=True, maxlevels=0, force=False, quiet=0, legacy=False, optimize=-1, invalidation_mode=None)

    Byte-compile all the :file:`.py` files found along ``sys.path``. Return a
    true value if all the files compiled successfully, and a false value otherwise.

    If *skip_curdir* is true (the default), the current directory is not included
    in the search. All other parameters are passed to the :func:`compile_dir`
    function. Note that unlike the other compile functions, ``maxlevels``
    defaults to ``0``.

.. versionchanged:: 3.2
    Added the *legacy* and *optimize* parameter.

.. versionchanged:: 3.5
    *quiet* parameter was changed to a multilevel value.

.. versionchanged:: 3.5
    The *legacy* parameter only writes out ``.pyc`` files, not ``.pyo`` files
    no matter what the value of *optimize* is.

.. versionchanged:: 3.7
    The *invalidation_mode* parameter was added.

.. versionchanged:: 3.7.2
    The *invalidation_mode* parameter's default value is updated to None.

```

To force a recompile of all the :file:`.py` files in the :file:`Lib/` subdirectory and all its subdirectories:

**System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\library\ (cpython-main) (Doc) (library) compileall.rst, line 320); [backlink](#)**

Unknown interpreted text role "file".

**System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\library\ (cpython-main) (Doc) (library) compileall.rst, line 320); [backlink](#)**

Unknown interpreted text role "file".

```

import compileall

compileall.compile_dir('Lib/', force=True)

# Perform same compilation, excluding files in .svn directories.
import re
compileall.compile_dir('Lib/', rx=re.compile(r'[/\\][.]svn'), force=True)

# pathlib.Path objects can also be used.
import pathlib
compileall.compile_dir(pathlib.Path('Lib/'), force=True)

```

**System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\library\ (cpython-main) (Doc) (library) compileall.rst, line 335)**

Unknown directive type "seealso".

```

.. seealso::

    Module :mod:`py_compile`
        Byte-compile a single source file.

```