

What's New In Python 3.5

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This article explains the new features in Python 3.5, compared to 3.4. Python 3.5 was released on September 13, 2015. See the [changelog](#) for a full list of changes.

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\whatsnew\ (cpython-main) (Doc) (whatsnew) 3.5.rst, line 52)

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```
.. seealso::  
  
   :pep:`478` - Python 3.5 Release Schedule
```

Summary -- Release highlights

New syntax features:

- [:ref:`PEP 492 <whatsnew-pep-492>`](#), coroutines with `async` and `await` syntax.

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- [:ref:`PEP 465 <whatsnew-pep-465>`](#), a new matrix multiplication operator: `a @ b`.

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- [:ref:`PEP 448 <whatsnew-pep-448>`](#), additional unpacking generalizations.

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New library modules:

- `:mod:`typing``: [:ref:`PEP 484 -- Type Hints <whatsnew-pep-484>`](#).

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\whatsnew\ (cpython-main) (Doc) (whatsnew) 3.5.rst, line 69); [backlink](#)

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- `:mod:`zipapp``: [:ref:`PEP 441 Improving Python ZIP Application Support <whatsnew-zipapp>`](#).

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New built-in features:

- `bytes % args, bytearray % args`: [ref: PEP 461 <whatsnew-pep-461>](#) -- Adding % formatting to bytes and bytearray.

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- New `:meth:'bytes.hex'`, `:meth:'bytearray.hex'` and `:meth:'memoryview.hex'` methods. (Contributed by Arnon Yaari in [issue: 9951](#).)

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- `:class:'memoryview'` now supports tuple indexing (including multi-dimensional). (Contributed by Antoine Pitrou in [issue: 23632](#).)

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- Generators have a new `gi_yieldfrom` attribute, which returns the object being iterated by `yield from` expressions. (Contributed by Benno Leslie and Yuri Selivanov in [issue: 24450](#).)

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- A new `:exc:`RecursionError`` exception is now raised when maximum recursion depth is reached. (Contributed by Georg Brandl in [issue: `19235`](#).)

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CPython implementation improvements:

- When the `LC_TYPE` locale is the POSIX locale (C locale), `:py:data:`sys.stdin`` and `:py:data:`sys.stdout`` now use the `surrogateescape` error handler, instead of the `strict` error handler. (Contributed by Victor Stinner in [issue: `19977`](#).)

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- `.pyo` files are no longer used and have been replaced by a more flexible scheme that includes the optimization level explicitly in `.pyc` name. (See [ref: PEP 488 overview <whatsnew-pep-488>](#).)

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- Builtin and extension modules are now initialized in a multi-phase process, which is similar to how Python modules are loaded. (See [ref: PEP 489 overview <whatsnew-pep-489>](#).)

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Significant improvements in the standard library:

- `:class:`collections.OrderedDict`` is now [ref: implemented in C <whatsnew-ordereddict>](#), which makes it 4 to 100 times faster.

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- The `:mod:`ssl`` module gained `:ref:`` support for Memory BIO `<whatsnew-sslmemorybio>`, which decouples SSL protocol handling from network IO.

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- The new `:func:`os.scandir`` function provides a `:ref:`` better and significantly faster way `<whatsnew-pep-471>` of directory traversal.

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- `:func:`functools.lru_cache`` has been mostly `:ref:`` reimplemented in C `<whatsnew-lrucache>`, yielding much better performance.

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- The new `:func:`subprocess.run`` function provides a `:ref:`` streamlined way to run subprocesses `<whatsnew-subprocess>`.

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- The `mod:'traceback'` module has been significantly `ref:'enhanced <whatsnew-traceback>'` for improved performance and developer convenience.

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[backlink](#)

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Security improvements:

- SSLv3 is now disabled throughout the standard library. It can still be enabled by instantiating a `class:'ssl.SSLContext'` manually. (See `issue:'22638'` for more details; this change was backported to CPython 3.4 and 2.7.)

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- HTTP cookie parsing is now stricter, in order to protect against potential injection attacks. (Contributed by Antoine Pitrou in `issue:'22796'`.)

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Windows improvements:

- A new installer for Windows has replaced the old MSI. See `ref:'using-on-windows'` for more information.

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- Windows builds now use Microsoft Visual C++ 14.0, and extension modules should use the same.

Please read on for a comprehensive list of user-facing changes, including many other smaller improvements, CPython optimizations, deprecations, and potential porting issues.

New Features

PEP 492 - Coroutines with `async` and `await` syntax

[PEP 492](#) greatly improves support for asynchronous programming in Python by adding `term:'awaitable objects <awaitable>'`,

:term:`coroutine functions` <coroutine function>', :term:`asynchronous iteration` <asynchronous iterable>', and :term:`asynchronous context managers` <asynchronous context manager>'.

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Coroutine functions are declared using the new `keyword: 'async def'` syntax:

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```
>>> async def coro():
...     return 'spam'
```

Inside a coroutine function, the new `keyword: 'await'` expression can be used to suspend coroutine execution until the result is available. Any object can be *awaited*, as long as it implements the `term: 'awaitable'` protocol by defining the `meth: '__await__'` method.

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PEP 492 also adds `keyword: 'async for'` statement for convenient iteration over asynchronous iterables.

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An example of a rudimentary HTTP client written using the new syntax:

```
import asyncio

async def http_get(domain):
    reader, writer = await asyncio.open_connection(domain, 80)

    writer.write(b'\r\n'.join([
```

```

        b'GET / HTTP/1.1',
        b'Host: %b' % domain.encode('latin-1'),
        b'Connection: close',
        b'', b''
    )))

    async for line in reader:
        print('>>>', line)

    writer.close()

loop = asyncio.get_event_loop()
try:
    loop.run_until_complete(http_get('example.com'))
finally:
    loop.close()

```

Similarly to asynchronous iteration, there is a new syntax for asynchronous context managers. The following script:

```

import asyncio

async def coro(name, lock):
    print('coro {}: waiting for lock'.format(name))
    async with lock:
        print('coro {}: holding the lock'.format(name))
        await asyncio.sleep(1)
        print('coro {}: releasing the lock'.format(name))

loop = asyncio.get_event_loop()
lock = asyncio.Lock()
coros = asyncio.gather(coro(1, lock), coro(2, lock))
try:
    loop.run_until_complete(coros)
finally:
    loop.close()

```

will output:

```

coro 2: waiting for lock
coro 2: holding the lock
coro 1: waiting for lock
coro 2: releasing the lock
coro 1: holding the lock
coro 1: releasing the lock

```

Note that both `keyword: 'async for'` and `keyword: 'async with'` can only be used inside a coroutine function declared with `keyword: 'async def'`.

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Coroutine functions are intended to be run inside a compatible event loop, such as the `ref: 'asyncio loop <asyncio-event-loop>'`.

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Note

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line 253)

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```
.. versionchanged:: 3.5.2
   Starting with CPython 3.5.2, ``__aiter__`` can directly return
   :term:`asynchronous iterators <asynchronous iterator>`. Returning
   an :term:`awaitable` object will result in a
   :exc:`PendingDeprecationWarning`.
```

See more details in the :ref:`async-iterators` documentation section.

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```
.. seealso::

   :pep:492` -- Coroutines with async and await syntax
   PEP written and implemented by Yury Selivanov.
```

PEP 465 - A dedicated infix operator for matrix multiplication

PEP 465 adds the @ infix operator for matrix multiplication. Currently, no builtin Python types implement the new operator, however, it can be implemented by defining :meth:`__matmul__`, :meth:`__rmatmul__`, and :meth:`__imatmul__` for regular, reflected, and in-place matrix multiplication. The semantics of these methods is similar to that of methods defining other infix arithmetic operators.

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Matrix multiplication is a notably common operation in many fields of mathematics, science, engineering, and the addition of @ allows writing cleaner code:

```
S = (H @ beta - r).T @ inv(H @ V @ H.T) @ (H @ beta - r)
```

instead of:

```
S = dot((dot(H, beta) - r).T,
        dot(inv(dot(dot(H, V), H.T)), dot(H, beta) - r))
```

NumPy 1.10 has support for the new operator:

```
>>> import numpy

>>> x = numpy.ones(3)
>>> x
array([ 1.,  1.,  1.])

>>> m = numpy.eye(3)
>>> m
array([[ 1.,  0.,  0.],
       [ 0.,  1.,  0.],
       [ 0.,  0.,  1.]])

>>> x @ m
array([ 1.,  1.,  1.]])
```


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Unknown directive type "seealso".

.. seealso::

:pep:`465` -- A dedicated infix operator for matrix multiplication
PEP written by Nathaniel J. Smith; implemented by Benjamin Peterson.

PEP 448 - Additional Unpacking Generalizations

PEP 448 extends the allowed uses of the `*` iterable unpacking operator and `**` dictionary unpacking operator. It is now possible to use an arbitrary number of unpackings in `ref`function calls <calls>``:

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```
>>> print(*[1], *[2], 3, *[4, 5])
1 2 3 4 5

>>> def fn(a, b, c, d):
...     print(a, b, c, d)
...

>>> fn(**{'a': 1, 'c': 3}, **{'b': 2, 'd': 4})
1 2 3 4
```

Similarly, tuple, list, set, and dictionary displays allow multiple unpackings (see `ref`exprlists`` and `ref`dict``):

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```
>>> *range(4), 4
(0, 1, 2, 3, 4)

>>> [*range(4), 4]
[0, 1, 2, 3, 4]

>>> {*range(4), 4, *(5, 6, 7)}
{0, 1, 2, 3, 4, 5, 6, 7}

>>> {'x': 1, **{'y': 2}}
{'x': 1, 'y': 2}
```

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.. seealso::

:pep:`448` -- Additional Unpacking Generalizations
PEP written by Joshua Landau; implemented by Neil Girdhar,
Thomas Wouters, and Joshua Landau.

PEP 461 - percent formatting support for bytes and bytearray

PEP 461 adds support for the `%` `ref`interpolation operator <bytes-formatting>`` to `:class:`bytes`` and `:class:`bytearray``.

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While interpolation is usually thought of as a string operation, there are cases where interpolation on `bytes` or `bytearrays` makes sense, and the work needed to make up for this missing functionality detracts from the overall readability of the code. This issue is particularly important when dealing with wire format protocols, which are often a mixture of binary and ASCII compatible text.

Examples:

```
>>> b'Hello %b!' % b'World'
b'Hello World!'
```

```
>>> b'x=%i y=%f' % (1, 2.5)
b'x=1 y=2.500000'
```

Unicode is not allowed for `%b`, but it is accepted by `%a` (equivalent of `repr(obj).encode('ascii', 'backslashreplace')`):

```
>>> b'Hello %b!' % 'World'
Traceback (most recent call last):
  File "<stdin>", line 1, in <module>
TypeError: %b requires bytes, or an object that implements __bytes__, not 'str'
```

```
>>> b'price: %a' % '10€'
b'price: '10\u20ac''
```

Note that `%s` and `%r` conversion types, although supported, should only be used in codebases that need compatibility with Python 2.

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\whatsnew\ (cpython-main) (Doc) (whatsnew) 3.5.rst, line 395)

Unknown directive type "seealso".

```
.. seealso::
```

```
:pep:461` -- Adding % formatting to bytes and bytearray
PEP written by Ethan Furman; implemented by Neil Schemenauer and
Ethan Furman.
```

PEP 484 - Type Hints

Function annotation syntax has been a Python feature since version 3.0 ([PEP 3107](#)), however the semantics of annotations has been left undefined.

Experience has shown that the majority of function annotation uses were to provide type hints to function parameters and return values. It became evident that it would be beneficial for Python users, if the standard library included the base definitions and tools for type annotations.

[PEP 484](#) introduces a `term` provisional module `<provisional API>` to provide these standard definitions and tools, along with some conventions for situations where annotations are not available.

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\whatsnew\ (cpython-main) (Doc) (whatsnew) 3.5.rst, line 415); [backlink](#)

Unknown interpreted text role "term".

For example, here is a simple function whose argument and return type are declared in the annotations:

```
def greeting(name: str) -> str:
    return 'Hello ' + name
```

While these annotations are available at runtime through the usual `:attr:`__annotations__`` attribute, *no automatic type checking happens at runtime*. Instead, it is assumed that a separate off-line type checker (e.g. `mypy`) will be used for on-demand source code analysis.

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\whatsnew\ (cpython-main) (Doc) (whatsnew) 3.5.rst, line 425); [backlink](#)

Unknown interpreted text role "attr".

The type system supports unions, generic types, and a special type named `:class:`~typing.Any`` which is consistent with (i.e. assignable to and from) all types.

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\whatsnew\ (cpython-main) (Doc) (whatsnew) 3.5.rst, line 431); [backlink](#)

Unknown interpreted text role "class".

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\whatsnew\ (cpython-main) (Doc) (whatsnew) 3.5.rst, line 435)

Unknown directive type "seealso".

```
.. seealso::

* :mod:`typing` module documentation
* :pep:`484` -- Type Hints
    PEP written by Guido van Rossum, Jukka Lehtosalo, and Łukasz Langa;
    implemented by Guido van Rossum.
* :pep:`483` -- The Theory of Type Hints
    PEP written by Guido van Rossum
```

PEP 471 - `os.scandir()` function -- a better and faster directory iterator

PEP 471 adds a new directory iteration function, `:func:`os.scandir``, to the standard library. Additionally, `:func:`os.walk`` is now implemented using `scandir`, which makes it 3 to 5 times faster on POSIX systems and 7 to 20 times faster on Windows systems. This is largely achieved by greatly reducing the number of calls to `:func:`os.stat`` required to walk a directory tree.

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\whatsnew\ (cpython-main) (Doc) (whatsnew) 3.5.rst, line 450); [backlink](#)

Unknown interpreted text role "func".

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\whatsnew\ (cpython-main) (Doc) (whatsnew) 3.5.rst, line 450); [backlink](#)

Unknown interpreted text role "func".

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\whatsnew\ (cpython-main) (Doc) (whatsnew) 3.5.rst, line 450); [backlink](#)

Unknown interpreted text role "func".

Additionally, `scandir` returns an iterator, as opposed to returning a list of file names, which improves memory efficiency when iterating over very large directories.

The following example shows a simple use of `:func:`os.scandir`` to display all the files (excluding directories) in the given *path* that don't start with `.'.`. The `:meth:`entry.is_file() <os.DirEntry.is_file>` call will generally not make an additional system call:

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\whatsnew\ (cpython-main) (Doc) (whatsnew) 3.5.rst, line 461); [backlink](#)

Unknown interpreted text role "func".

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\whatsnew\ (cpython-main) (Doc) (whatsnew) 3.5.rst, line 461); [backlink](#)

Unknown interpreted text role "meth".

```
for entry in os.scandir(path):
    if not entry.name.startswith('.') and entry.is_file():
        print(entry.name)
```

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\whatsnew\ (cpython-main) (Doc) (whatsnew) 3.5.rst, line 470)

Unknown directive type "seealso".

```
.. seealso::

:pep:`471` -- os.scandir() function -- a better and faster directory iterator
PEP written and implemented by Ben Hoyt with the help of Victor Stinner.
```

PEP 475: Retry system calls failing with EINTR

An `py:data:`errno.EINTR`` error code is returned whenever a system call, that is waiting for I/O, is interrupted by a signal. Previously, Python would raise `exc:InterruptedError` in such cases. This meant that, when writing a Python application, the developer had two choices:

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\whatsnew\ (cpython-main) (Doc) (whatsnew) 3.5.rst, line 481); [backlink](#)

Unknown interpreted text role "py:data".

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\whatsnew\ (cpython-main) (Doc) (whatsnew) 3.5.rst, line 481); [backlink](#)

Unknown interpreted text role "exc".

1. Ignore the `InterruptedError`.
2. Handle the `InterruptedError` and attempt to restart the interrupted system call at every call site.

The first option makes an application fail intermittently. The second option adds a large amount of boilerplate that makes the code nearly unreadable. Compare:

```
print("Hello World")
```

and:

```
while True:
    try:
        print("Hello World")
        break
    except InterruptedError:
        continue
```

PEP 475 implements automatic retry of system calls on `EINTR`. This removes the burden of dealing with `EINTR` or `exc:InterruptedError` in user code in most situations and makes Python programs, including the standard library, more robust. Note that the system call is only retried if the signal handler does not raise an exception.

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\whatsnew\ (cpython-main) (Doc) (whatsnew) 3.5.rst, line 505); [backlink](#)

Unknown interpreted text role "exc".

Below is a list of functions which are now retried when interrupted by a signal:

- `func:open` and `func:io.open`;

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\whatsnew\ (cpython-main) (Doc) (whatsnew) 3.5.rst, line 515); [backlink](#)

Unknown interpreted text role "func".

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\whatsnew\ (cpython-main) (Doc) (whatsnew) 3.5.rst, line 515);

[backlink](#)

Unknown interpreted text role "func".

- functions of the `:mod:`faulthandler`` module;

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\whatsnew\ (cpython-main) (Doc) (whatsnew) 3.5.rst, line 517);

[backlink](#)

Unknown interpreted text role "mod".

- `:mod:`os`` functions: `:func:`~os.fchdir``, `:func:`~os.fchmod``, `:func:`~os.fchown``, `:func:`~os.fdatasync``, `:func:`~os.fstat``, `:func:`~os.fstatvfs``, `:func:`~os.fsync``, `:func:`~os.ftruncate``, `:func:`~os.mkfifo``, `:func:`~os.mknod``, `:func:`~os.open``, `:func:`~os.posix_fadvise``, `:func:`~os.posix_fallocate``, `:func:`~os.pread``, `:func:`~os.pwrite``, `:func:`~os.read``, `:func:`~os.readv``, `:func:`~os.sendfile``, `:func:`~os.wait3``, `:func::~os.wait4``, `:func::~os.wait``, `:func::~os.waitid``, `:func::~os.waitpid``, `:func::~os.write``, `:func::~os.writev``;

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\whatsnew\ (cpython-main) (Doc) (whatsnew) 3.5.rst, line 519);

[backlink](#)

Unknown interpreted text role "mod".

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\whatsnew\ (cpython-main) (Doc) (whatsnew) 3.5.rst, line 519);

[backlink](#)

Unknown interpreted text role "func".

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\whatsnew\ (cpython-main) (Doc) (whatsnew) 3.5.rst, line 519);

[backlink](#)

Unknown interpreted text role "func".

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\whatsnew\ (cpython-main) (Doc) (whatsnew) 3.5.rst, line 519);

[backlink](#)

Unknown interpreted text role "func".

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\whatsnew\ (cpython-main) (Doc) (whatsnew) 3.5.rst, line 519);

[backlink](#)

Unknown interpreted text role "func".

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\whatsnew\ (cpython-main) (Doc) (whatsnew) 3.5.rst, line 519);

[backlink](#)

Unknown interpreted text role "func".

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\whatsnew\ (cpython-main) (Doc) (whatsnew) 3.5.rst, line 519);

[backlink](#)

Unknown interpreted text role "func".

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\whatsnew\ (cpython-main) (Doc) (whatsnew) 3.5.rst, line 519);

[backlink](#)

Unknown interpreted text role "func".

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\whatsnew\ (cpython-main) (Doc) (whatsnew) 3.5.rst, line 519);
[backlink](#)

Unknown interpreted text role "func".

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\whatsnew\ (cpython-main) (Doc) (whatsnew) 3.5.rst, line 519);
[backlink](#)

Unknown interpreted text role "func".

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\whatsnew\ (cpython-main) (Doc) (whatsnew) 3.5.rst, line 519);
[backlink](#)

Unknown interpreted text role "func".

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\whatsnew\ (cpython-main) (Doc) (whatsnew) 3.5.rst, line 519);
[backlink](#)

Unknown interpreted text role "func".

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\whatsnew\ (cpython-main) (Doc) (whatsnew) 3.5.rst, line 519);
[backlink](#)

Unknown interpreted text role "func".

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\whatsnew\ (cpython-main) (Doc) (whatsnew) 3.5.rst, line 519);
[backlink](#)

Unknown interpreted text role "func".

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\whatsnew\ (cpython-main) (Doc) (whatsnew) 3.5.rst, line 519);
[backlink](#)

Unknown interpreted text role "func".

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\whatsnew\ (cpython-main) (Doc) (whatsnew) 3.5.rst, line 519);
[backlink](#)

Unknown interpreted text role "func".

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\whatsnew\ (cpython-main) (Doc) (whatsnew) 3.5.rst, line 519);
[backlink](#)

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System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\whatsnew\ (cpython-main) (Doc) (whatsnew) 3.5.rst, line 519);
[backlink](#)

Unknown interpreted text role "func".

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\whatsnew\ (cpython-main) (Doc) (whatsnew) 3.5.rst, line 519);
[backlink](#)

Unknown interpreted text role "func".

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\whatsnew\ (cpython-main) (Doc) (whatsnew) 3.5.rst, line 519); [backlink](#)

Unknown interpreted text role "func".

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\whatsnew\ (cpython-main) (Doc) (whatsnew) 3.5.rst, line 519); [backlink](#)

Unknown interpreted text role "func".

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\whatsnew\ (cpython-main) (Doc) (whatsnew) 3.5.rst, line 519); [backlink](#)

Unknown interpreted text role "func".

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\whatsnew\ (cpython-main) (Doc) (whatsnew) 3.5.rst, line 519); [backlink](#)

Unknown interpreted text role "func".

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\whatsnew\ (cpython-main) (Doc) (whatsnew) 3.5.rst, line 519); [backlink](#)

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System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\whatsnew\ (cpython-main) (Doc) (whatsnew) 3.5.rst, line 519); [backlink](#)

Unknown interpreted text role "func".

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\whatsnew\ (cpython-main) (Doc) (whatsnew) 3.5.rst, line 519); [backlink](#)

Unknown interpreted text role "func".

- special cases: `:func:`os.close`` and `:func:`os.dup2`` now ignore `pydata:~errno.EINTR` errors; the syscall is not retried (see the PEP for the rationale);

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\whatsnew\ (cpython-main) (Doc) (whatsnew) 3.5.rst, line 529); [backlink](#)

Unknown interpreted text role "func".

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\whatsnew\ (cpython-main) (Doc) (whatsnew) 3.5.rst, line 529); [backlink](#)

Unknown interpreted text role "func".

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\whatsnew\ (cpython-main) (Doc) (whatsnew) 3.5.rst, line 529); [backlink](#)

Unknown interpreted text role "py:data".

- `mod:` 'select' functions: `.func:` `devpoll.poll()` <select.devpoll.poll>', `.func:` `epoll.poll()` <select.epoll.poll>', `.func:` `kqueue.control()` <select.kqueue.control>', `.func:` `poll.poll()` <select.poll.poll>', `.func:` `~select.select`;

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\whatsnew\ (cpython-main) (Doc) (whatsnew) 3.5.rst, line 533); [backlink](#)

Unknown interpreted text role "mod".

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\whatsnew\ (cpython-main) (Doc) (whatsnew) 3.5.rst, line 533); [backlink](#)

Unknown interpreted text role "func".

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\whatsnew\ (cpython-main) (Doc) (whatsnew) 3.5.rst, line 533); [backlink](#)

Unknown interpreted text role "func".

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\whatsnew\ (cpython-main) (Doc) (whatsnew) 3.5.rst, line 533); [backlink](#)

Unknown interpreted text role "func".

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\whatsnew\ (cpython-main) (Doc) (whatsnew) 3.5.rst, line 533); [backlink](#)

Unknown interpreted text role "func".

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\whatsnew\ (cpython-main) (Doc) (whatsnew) 3.5.rst, line 533); [backlink](#)

Unknown interpreted text role "func".

- methods of the `:class:` `~socket.socket` class: `.meth:` `~socket.socket.accept`', `.meth:` `~socket.socket.connect`' (except for non-blocking sockets), `.meth:` `~socket.socket.recv`', `.meth:` `~socket.socket.recvfrom`', `.meth:` `~socket.socket.recvmsg`', `.meth:` `~socket.socket.send`', `.meth:` `~socket.socket.sendall`', `.meth:` `~socket.socket.sendmsg`', `.meth:` `~socket.socket.sendto`';

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\whatsnew\ (cpython-main) (Doc) (whatsnew) 3.5.rst, line 538); [backlink](#)

Unknown interpreted text role "class".

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\whatsnew\ (cpython-main) (Doc) (whatsnew) 3.5.rst, line 538); [backlink](#)

Unknown interpreted text role "meth".

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\whatsnew\ (cpython-main) (Doc) (whatsnew) 3.5.rst, line 538); [backlink](#)

Unknown interpreted text role "meth".

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\whatsnew\ (cpython-main) (Doc) (whatsnew) 3.5.rst, line 538); [backlink](#)

Unknown interpreted text role "meth".

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\whatsnew\ (cpython-main) (Doc) (whatsnew) 3.5.rst, line 538);
[backlink](#)

Unknown interpreted text role "meth".

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\whatsnew\ (cpython-main) (Doc) (whatsnew) 3.5.rst, line 538);
[backlink](#)

Unknown interpreted text role "meth".

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\whatsnew\ (cpython-main) (Doc) (whatsnew) 3.5.rst, line 538);
[backlink](#)

Unknown interpreted text role "meth".

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\whatsnew\ (cpython-main) (Doc) (whatsnew) 3.5.rst, line 538);
[backlink](#)

Unknown interpreted text role "meth".

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\whatsnew\ (cpython-main) (Doc) (whatsnew) 3.5.rst, line 538);
[backlink](#)

Unknown interpreted text role "meth".

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\whatsnew\ (cpython-main) (Doc) (whatsnew) 3.5.rst, line 538);
[backlink](#)

Unknown interpreted text role "meth".

- `:func:`signal.sigtimedwait`` and `:func:`signal.sigwaitinfo``;

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\whatsnew\ (cpython-main) (Doc) (whatsnew) 3.5.rst, line 545);
[backlink](#)

Unknown interpreted text role "func".

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\whatsnew\ (cpython-main) (Doc) (whatsnew) 3.5.rst, line 545);
[backlink](#)

Unknown interpreted text role "func".

- `:func:`time.sleep``.

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\whatsnew\ (cpython-main) (Doc) (whatsnew) 3.5.rst, line 547);
[backlink](#)

Unknown interpreted text role "func".

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\whatsnew\ (cpython-main) (Doc) (whatsnew) 3.5.rst, line 549)

Unknown directive type "seealso".

```
.. seealso::
```

```
:pep:`475` -- Retry system calls failing with EINTR  
PEP and implementation written by Charles-François Natali and  
Victor Stinner, with the help of Antoine Pitrou (the French connection).
```

PEP 479: Change StopIteration handling inside generators

The interaction of generators and `:exc:'StopIteration'` in Python 3.4 and earlier was sometimes surprising, and could conceal obscure bugs. Previously, `StopIteration` raised accidentally inside a generator function was interpreted as the end of the iteration by the loop construct driving the generator.

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\whatsnew\ (cpython-main) (Doc) (whatsnew) 3.5.rst, line 561); [backlink](#)

Unknown interpreted text role "exc".

PEP 479 changes the behavior of generators: when a `StopIteration` exception is raised inside a generator, it is replaced with a `:exc:'RuntimeError'` before it exits the generator frame. The main goal of this change is to ease debugging in the situation where an unguarded `:func:'next'` call raises `StopIteration` and causes the iteration controlled by the generator to terminate silently. This is particularly pernicious in combination with the `yield from` construct.

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\whatsnew\ (cpython-main) (Doc) (whatsnew) 3.5.rst, line 567); [backlink](#)

Unknown interpreted text role "exc".

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\whatsnew\ (cpython-main) (Doc) (whatsnew) 3.5.rst, line 567); [backlink](#)

Unknown interpreted text role "func".

This is a backwards incompatible change, so to enable the new behavior, a `:term:'__future__'` import is necessary:

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\whatsnew\ (cpython-main) (Doc) (whatsnew) 3.5.rst, line 575); [backlink](#)

Unknown interpreted text role "term".

```
>>> from __future__ import generator_stop
```

```
>>> def gen():  
...     next(iter([]))  
...     yield  
...  
>>> next(gen())  
Traceback (most recent call last):  
  File "<stdin>", line 2, in gen  
StopIteration
```

The above exception was the direct cause of the following exception:

```
Traceback (most recent call last):  
  File "<stdin>", line 1, in <module>  
RuntimeError: generator raised StopIteration
```

Without a `__future__` import, a `:exc:'PendingDeprecationWarning'` will be raised whenever a `:exc:'StopIteration'` exception is raised inside a generator.

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\whatsnew\ (cpython-main) (Doc) (whatsnew) 3.5.rst, line 595); [backlink](#)

Unknown interpreted text role "exc".

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\whatsnew\ (cpython-main) (Doc) (whatsnew) 3.5.rst, line 595); [backlink](#)

Unknown interpreted text role "exc".

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\whatsnew\ (cpython-main) (Doc) (whatsnew) 3.5.rst, line 598)

Unknown directive type "seealso".

.. seealso::

:pep:`479` -- Change StopIteration handling inside generators
PEP written by Chris Angelico and Guido van Rossum. Implemented by
Chris Angelico, Yury Selivanov and Nick Coghlan.

PEP 485: A function for testing approximate equality

PEP 485 adds the `func:math.isclose` and `func:cmath.isclose` functions which tell whether two values are approximately equal or "close" to each other. Whether or not two values are considered close is determined according to given absolute and relative tolerances. Relative tolerance is the maximum allowed difference between `isclose` arguments, relative to the larger absolute value:

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\whatsnew\ (cpython-main) (Doc) (whatsnew) 3.5.rst, line 610); [backlink](#)

Unknown interpreted text role "func".

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\whatsnew\ (cpython-main) (Doc) (whatsnew) 3.5.rst, line 610); [backlink](#)

Unknown interpreted text role "func".

```
>>> import math
>>> a = 5.0
>>> b = 4.99998
>>> math.isclose(a, b, rel_tol=1e-5)
True
>>> math.isclose(a, b, rel_tol=1e-6)
False
```

It is also possible to compare two values using absolute tolerance, which must be a non-negative value:

```
>>> import math
>>> a = 5.0
>>> b = 4.99998
>>> math.isclose(a, b, abs_tol=0.00003)
True
>>> math.isclose(a, b, abs_tol=0.00001)
False
```

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\whatsnew\ (cpython-main) (Doc) (whatsnew) 3.5.rst, line 636)

Unknown directive type "seealso".

.. seealso::

:pep:`485` -- A function for testing approximate equality
PEP written by Christopher Barker; implemented by Chris Barker and
Tal Einat.

PEP 486: Make the Python Launcher aware of virtual environments

PEP 486 makes the Windows launcher (see [PEP 397](#)) aware of an active virtual environment. When the default interpreter would be used and the `VIRTUAL_ENV` environment variable is set, the interpreter in the virtual environment will be used.

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\whatsnew\ (cpython-main) (Doc) (whatsnew) 3.5.rst, line 653)

Unknown directive type "seealso".

.. seealso::

:pep:`486` -- Make the Python Launcher aware of virtual environments
PEP written and implemented by Paul Moore.

PEP 488: Elimination of PYO files

PEP 488 does away with the concept of .pyo files. This means that .pyc files represent both unoptimized and optimized bytecode. To prevent the need to constantly regenerate bytecode files, .pyc files now have an optional `opt-` tag in their name when the bytecode is optimized. This has the side-effect of no more bytecode file name clashes when running under either `:option:`-O`` or `:option:`-OO``. Consequently, bytecode files generated from `:option:`-O``, and `:option:`-OO`` may now exist simultaneously. `:func:`importlib.util.cache_from_source`` has an updated API to help with this change.

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\whatsnew\ (cpython-main) (Doc) (whatsnew) 3.5.rst, line 664); [backlink](#)

Unknown interpreted text role "option".

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\whatsnew\ (cpython-main) (Doc) (whatsnew) 3.5.rst, line 664); [backlink](#)

Unknown interpreted text role "option".

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\whatsnew\ (cpython-main) (Doc) (whatsnew) 3.5.rst, line 664); [backlink](#)

Unknown interpreted text role "option".

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\whatsnew\ (cpython-main) (Doc) (whatsnew) 3.5.rst, line 664); [backlink](#)

Unknown interpreted text role "option".

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\whatsnew\ (cpython-main) (Doc) (whatsnew) 3.5.rst, line 664); [backlink](#)

Unknown interpreted text role "func".

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\whatsnew\ (cpython-main) (Doc) (whatsnew) 3.5.rst, line 674)

Unknown directive type "seealso".

```
.. seealso::

   :pep:`488` -- Elimination of PYO files
      PEP written and implemented by Brett Cannon.
```

PEP 489: Multi-phase extension module initialization

PEP 489 updates extension module initialization to take advantage of the two step module loading mechanism introduced by PEP 451 in Python 3.4.

This change brings the import semantics of extension modules that opt-in to using the new mechanism much closer to those of Python source and bytecode modules, including the ability to use any valid identifier as a module name, rather than being restricted to ASCII.

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\whatsnew\ (cpython-main) (Doc) (whatsnew) 3.5.rst, line 693)

Unknown directive type "seealso".

```
.. seealso::

   :pep:`489` -- Multi-phase extension module initialization
      PEP written by Petr Viktorin, Stefan Behnel, and Nick Coghlan;
      implemented by Petr Viktorin.
```

Other Language Changes

Some smaller changes made to the core Python language are:

- Added the "namereplace" error handlers. The "backslashreplace" error handlers now work with decoding and translating. (Contributed by Serhiy Storchaka in [:issue:`19676`](#) and [:issue:`22286`](#).)

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\whatsnew\ (cpython-main) (Doc) (whatsnew) 3.5.rst, line 705);
[backlink](#)

Unknown interpreted text role "issue".

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\whatsnew\ (cpython-main) (Doc) (whatsnew) 3.5.rst, line 705);
[backlink](#)

Unknown interpreted text role "issue".

- The `:option:`-b`` option now affects comparisons of `:class:`bytes`` with `:class:`int``. (Contributed by Serhiy Storchaka in [:issue:`23681`](#).)

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\whatsnew\ (cpython-main) (Doc) (whatsnew) 3.5.rst, line 709);
[backlink](#)

Unknown interpreted text role "option".

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\whatsnew\ (cpython-main) (Doc) (whatsnew) 3.5.rst, line 709);
[backlink](#)

Unknown interpreted text role "class".

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\whatsnew\ (cpython-main) (Doc) (whatsnew) 3.5.rst, line 709);
[backlink](#)

Unknown interpreted text role "class".

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\whatsnew\ (cpython-main) (Doc) (whatsnew) 3.5.rst, line 709);
[backlink](#)

Unknown interpreted text role "issue".

- New Kazakh `kz1048` and Tajik `koi8_t` `ref` codecs `<standard-encodings>`. (Contributed by Serhiy Storchaka in [:issue:`22682`](#) and [:issue:`22681`](#).)

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\whatsnew\ (cpython-main) (Doc) (whatsnew) 3.5.rst, line 712);
[backlink](#)

Unknown interpreted text role "ref".

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\whatsnew\ (cpython-main) (Doc) (whatsnew) 3.5.rst, line 712);
[backlink](#)

Unknown interpreted text role "issue".

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\whatsnew\ (cpython-main) (Doc) (whatsnew) 3.5.rst, line 712);
[backlink](#)

Unknown interpreted text role "issue".

- Property docstrings are now writable. This is especially useful for `:func:`collections.namedtuple`` docstrings. (Contributed by Berker Peksag in [:issue:`24064`](#).)

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\whatsnew\ (cpython-main) (Doc) (whatsnew) 3.5.rst, line 715); [backlink](#)

Unknown interpreted text role "func".

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\whatsnew\ (cpython-main) (Doc) (whatsnew) 3.5.rst, line 715); [backlink](#)

Unknown interpreted text role "issue".

- Circular imports involving relative imports are now supported. (Contributed by Brett Cannon and Antoine Pitrou in [:issue:`17636`](#).)

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\whatsnew\ (cpython-main) (Doc) (whatsnew) 3.5.rst, line 719); [backlink](#)

Unknown interpreted text role "issue".

New Modules

typing

The new `:mod:`typing`` `:term:`provisional <provisional API>`` module provides standard definitions and tools for function type annotations. See `:ref:`Type Hints <whatsnew-pep-484>`` for more information.

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\whatsnew\ (cpython-main) (Doc) (whatsnew) 3.5.rst, line 729); [backlink](#)

Unknown interpreted text role "mod".

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\whatsnew\ (cpython-main) (Doc) (whatsnew) 3.5.rst, line 729); [backlink](#)

Unknown interpreted text role "term".

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\whatsnew\ (cpython-main) (Doc) (whatsnew) 3.5.rst, line 729); [backlink](#)

Unknown interpreted text role "ref".

zipapp

The new `:mod:`zipapp`` module (specified in [PEP 441](#)) provides an API and command line tool for creating executable Python Zip Applications, which were introduced in Python 2.6 in [:issue:`1739468`](#), but which were not well publicized, either at the time or since.

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\whatsnew\ (cpython-main) (Doc) (whatsnew) 3.5.rst, line 738); [backlink](#)

Unknown interpreted text role "mod".

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\whatsnew\ (cpython-main) (Doc) (whatsnew) 3.5.rst, line 738); [backlink](#)

Unknown interpreted text role "issue".

With the new module, bundling your application is as simple as putting all the files, including a `__main__.py` file, into a directory `myapp` and running:

```
$ python -m zipapp myapp
$ python myapp.pyz
```

The module implementation has been contributed by Paul Moore in [:issue:`23491`](#).

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\whatsnew\ (cpython-main) (Doc) (whatsnew) 3.5.rst, line 752); [backlink](#)

Unknown interpreted text role "issue".

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\whatsnew\ (cpython-main) (Doc) (whatsnew) 3.5.rst, line 755)

Unknown directive type "seealso".

```
.. seealso::

   :pep:`441` -- Improving Python ZIP Application Support
```

Improved Modules

argparse

The `:class:`~argparse.ArgumentParser`` class now allows disabling `ref`abbreviated usage <prefix-matching>`` of long options by setting `ref`allow_abbrev`` to `False`. (Contributed by Jonathan Paugh, Steven Bethard, paulj3 and Daniel Eriksson in [:issue:`14910`](#).)

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\whatsnew\ (cpython-main) (Doc) (whatsnew) 3.5.rst, line 766); [backlink](#)

Unknown interpreted text role "class".

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\whatsnew\ (cpython-main) (Doc) (whatsnew) 3.5.rst, line 766); [backlink](#)

Unknown interpreted text role "ref".

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\whatsnew\ (cpython-main) (Doc) (whatsnew) 3.5.rst, line 766); [backlink](#)

Unknown interpreted text role "ref".

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\whatsnew\ (cpython-main) (Doc) (whatsnew) 3.5.rst, line 766); [backlink](#)

Unknown interpreted text role "issue".

asyncio

Since the `:mod:`asyncio`` module is `:term`provisional <provisional API>``, all changes introduced in Python 3.5 have also been backported to Python 3.4.x.

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\whatsnew\ (cpython-main) (Doc) (whatsnew) 3.5.rst, line 775); [backlink](#)

Unknown interpreted text role "mod".

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\whatsnew\ (cpython-main) (Doc) (whatsnew) 3.5.rst, line 775); [backlink](#)

Unknown interpreted text role "term".

Notable changes in the `:mod:`asyncio`` module since Python 3.4.0:

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-

`main\Doc\whatsnew\ (cpython-main) (Doc) (whatsnew) 3.5.rst, line 778); backlink`

Unknown interpreted text role "mod".

- New debugging APIs: `.meth:'loop.set_debug() <asyncio.loop.set_debug>'` and `.meth:'loop.get_debug() <asyncio.loop.get_debug>'` methods. (Contributed by Victor Stinner.)

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\whatsnew\ (cpython-main) (Doc) (whatsnew) 3.5.rst, line 780); [backlink](#)

Unknown interpreted text role "meth".

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\whatsnew\ (cpython-main) (Doc) (whatsnew) 3.5.rst, line 780); [backlink](#)

Unknown interpreted text role "meth".

- The proactor event loop now supports SSL. (Contributed by Antoine Pitrou and Victor Stinner in `:issue:'22560'`.)

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\whatsnew\ (cpython-main) (Doc) (whatsnew) 3.5.rst, line 784); [backlink](#)

Unknown interpreted text role "issue".

- A new `.meth:'loop.is_closed() <asyncio.loop.is_closed>'` method to check if the event loop is closed. (Contributed by Victor Stinner in `:issue:'21326'`.)

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\whatsnew\ (cpython-main) (Doc) (whatsnew) 3.5.rst, line 787); [backlink](#)

Unknown interpreted text role "meth".

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\whatsnew\ (cpython-main) (Doc) (whatsnew) 3.5.rst, line 787); [backlink](#)

Unknown interpreted text role "issue".

- A new `.meth:'loop.create_task() <asyncio.loop.create_task>'` to conveniently create and schedule a new `:class:'~asyncio.Task'` for a coroutine. The `create_task` method is also used by all asyncio functions that wrap coroutines into tasks, such as `:func:'asyncio.wait'`, `:func:'asyncio.gather'`, etc. (Contributed by Victor Stinner.)

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\whatsnew\ (cpython-main) (Doc) (whatsnew) 3.5.rst, line 791); [backlink](#)

Unknown interpreted text role "meth".

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\whatsnew\ (cpython-main) (Doc) (whatsnew) 3.5.rst, line 791); [backlink](#)

Unknown interpreted text role "class".

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\whatsnew\ (cpython-main) (Doc) (whatsnew) 3.5.rst, line 791); [backlink](#)

Unknown interpreted text role "func".

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-

resources\cpython-main\Doc\whatsnew\ (cpython-main) (Doc) (whatsnew) 3.5.rst, line 791);
[backlink](#)

Unknown interpreted text role "func".

- A new `.meth:transport.get_write_buffer_limits()` `<asyncio.WriteTransport.get_write_buffer_limits>` method to inquire for *high-* and *low-* water limits of the flow control. (Contributed by Victor Stinner.)

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\whatsnew\ (cpython-main) (Doc) (whatsnew) 3.5.rst, line 798);
[backlink](#)

Unknown interpreted text role "meth".

- The `.func:~asyncio.async` function is deprecated in favor of `.func:~asyncio.ensure_future`. (Contributed by Yury Selivanov.)

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\whatsnew\ (cpython-main) (Doc) (whatsnew) 3.5.rst, line 803);
[backlink](#)

Unknown interpreted text role "func".

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\whatsnew\ (cpython-main) (Doc) (whatsnew) 3.5.rst, line 803);
[backlink](#)

Unknown interpreted text role "func".

- New `.meth:loop.set_task_factory()` `<asyncio.loop.set_task_factory>` and `.meth:loop.get_task_factory()` `<asyncio.loop.get_task_factory>` methods to customize the task factory that `.meth:loop.create_task()` `<asyncio.loop.create_task>` method uses. (Contributed by Yury Selivanov.)

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\whatsnew\ (cpython-main) (Doc) (whatsnew) 3.5.rst, line 807);
[backlink](#)

Unknown interpreted text role "meth".

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\whatsnew\ (cpython-main) (Doc) (whatsnew) 3.5.rst, line 807);
[backlink](#)

Unknown interpreted text role "meth".

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\whatsnew\ (cpython-main) (Doc) (whatsnew) 3.5.rst, line 807);
[backlink](#)

Unknown interpreted text role "meth".

- New `.meth:Queue.join()` `<asyncio.Queue.join>` and `.meth:Queue.task_done()` `<asyncio.Queue.task_done>` queue methods. (Contributed by Victor Stinner.)

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\whatsnew\ (cpython-main) (Doc) (whatsnew) 3.5.rst, line 814);
[backlink](#)

Unknown interpreted text role "meth".

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\whatsnew\ (cpython-main) (Doc) (whatsnew) 3.5.rst, line 814);
[backlink](#)

Unknown interpreted text role "meth".

- The `JoinableQueue` class was removed, in favor of the `class:'asyncio.Queue'` class. (Contributed by Victor Stinner.)

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\whatsnew\ (cpython-main) (Doc) (whatsnew) 3.5.rst, line 818); [backlink](#)

Unknown interpreted text role "class".

Updates in 3.5.1:

- The `func:~asyncio.ensure_future'` function and all functions that use it, such as `meth:'loop.run_until_complete()' <asyncio.loop.run_until_complete>'`, now accept all kinds of `term:'awaitable objects <awaitable>'`. (Contributed by Yuri Selivanov.)

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\whatsnew\ (cpython-main) (Doc) (whatsnew) 3.5.rst, line 824); [backlink](#)

Unknown interpreted text role "func".

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\whatsnew\ (cpython-main) (Doc) (whatsnew) 3.5.rst, line 824); [backlink](#)

Unknown interpreted text role "meth".

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\whatsnew\ (cpython-main) (Doc) (whatsnew) 3.5.rst, line 824); [backlink](#)

Unknown interpreted text role "term".

- New `func:~asyncio.run_coroutine_threadsafe'` function to submit coroutines to event loops from other threads. (Contributed by Vincent Michel.)

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\whatsnew\ (cpython-main) (Doc) (whatsnew) 3.5.rst, line 829); [backlink](#)

Unknown interpreted text role "func".

- New `meth:'Transport.is_closing() <asyncio.BaseTransport.is_closing>'` method to check if the transport is closing or closed. (Contributed by Yuri Selivanov.)

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\whatsnew\ (cpython-main) (Doc) (whatsnew) 3.5.rst, line 833); [backlink](#)

Unknown interpreted text role "meth".

- The `meth:'loop.create_server() <asyncio.loop.create_server>'` method can now accept a list of hosts. (Contributed by Yann Sionneau.)

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\whatsnew\ (cpython-main) (Doc) (whatsnew) 3.5.rst, line 837); [backlink](#)

Unknown interpreted text role "meth".

Updates in 3.5.2:

- New `meth:'loop.create_future() <asyncio.loop.create_future>'` method to create Future objects. This allows alternative event loop implementations, such as `uvloop`, to provide a faster `class:'asyncio.Future'` implementation. (Contributed by Yuri Selivanov.)

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-

resources\cpython-main\Doc\whatsnew\ (cpython-main) (Doc) (whatsnew) 3.5.rst, line 843);
[backlink](#)

Unknown interpreted text role "meth".

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\whatsnew\ (cpython-main) (Doc) (whatsnew) 3.5.rst, line 843);
[backlink](#)

Unknown interpreted text role "class".

- New `meth:loop.get_exception_handler()` `<asyncio.loop.get_exception_handler>` method to get the current exception handler. (Contributed by Yury Selivanov.)

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\whatsnew\ (cpython-main) (Doc) (whatsnew) 3.5.rst, line 850);
[backlink](#)

Unknown interpreted text role "meth".

- New `meth:StreamReader.readuntil()` `<asyncio.StreamReader.readuntil>` method to read data from the stream until a separator bytes sequence appears. (Contributed by Mark Korenberg.)

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\whatsnew\ (cpython-main) (Doc) (whatsnew) 3.5.rst, line 854);
[backlink](#)

Unknown interpreted text role "meth".

- The `meth:loop.create_connection()` `<asyncio.loop.create_connection>` and `meth:loop.create_server()` `<asyncio.loop.create_server>` methods are optimized to avoid calling the system `getaddrinfo` function if the address is already resolved. (Contributed by A. Jesse Jiryu Davis.)

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\whatsnew\ (cpython-main) (Doc) (whatsnew) 3.5.rst, line 859);
[backlink](#)

Unknown interpreted text role "meth".

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\whatsnew\ (cpython-main) (Doc) (whatsnew) 3.5.rst, line 859);
[backlink](#)

Unknown interpreted text role "meth".

- The `meth:loop.sock_connect(sock, address)` `<asyncio.loop.sock_connect>` no longer requires the *address* to be resolved prior to the call. (Contributed by A. Jesse Jiryu Davis.)

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\whatsnew\ (cpython-main) (Doc) (whatsnew) 3.5.rst, line 865);
[backlink](#)

Unknown interpreted text role "meth".

bz2

The `meth:BZ2Decompressor.decompress` `<bz2.BZ2Decompressor.decompress>` method now accepts an optional *max_length* argument to limit the maximum size of decompressed data. (Contributed by Nikolaus Rath in `issue:15955`.)

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\whatsnew\ (cpython-main) (Doc) (whatsnew) 3.5.rst, line 873); [backlink](#)

Unknown interpreted text role "meth".

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-

main\Doc\whatsnew\ (cpython-main) (Doc) (whatsnew) 3.5.rst, line 873); [backlink](#)

Unknown interpreted text role "issue".

cgi

The `:class:`~cgi.FieldStorage`` class now supports the `:term`context manager`` protocol. (Contributed by Berker Peksag in [issue`20289`](#).)

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\whatsnew\ (cpython-main) (Doc) (whatsnew) 3.5.rst, line 881); [backlink](#)

Unknown interpreted text role "class".

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\whatsnew\ (cpython-main) (Doc) (whatsnew) 3.5.rst, line 881); [backlink](#)

Unknown interpreted text role "term".

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\whatsnew\ (cpython-main) (Doc) (whatsnew) 3.5.rst, line 881); [backlink](#)

Unknown interpreted text role "issue".

cmath

A new function `:func:`~cmath.isclose`` provides a way to test for approximate equality. (Contributed by Chris Barker and Tal Einat in [issue`24270`](#).)

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\whatsnew\ (cpython-main) (Doc) (whatsnew) 3.5.rst, line 888); [backlink](#)

Unknown interpreted text role "func".

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\whatsnew\ (cpython-main) (Doc) (whatsnew) 3.5.rst, line 888); [backlink](#)

Unknown interpreted text role "issue".

code

The `:func:`~InteractiveInterpreter.showtraceback()`` `<code.InteractiveInterpreter.showtraceback>` method now prints the full chained traceback, just like the interactive interpreter. (Contributed by Claudiu Popa in [issue`17442`](#).)

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\whatsnew\ (cpython-main) (Doc) (whatsnew) 3.5.rst, line 895); [backlink](#)

Unknown interpreted text role "func".

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\whatsnew\ (cpython-main) (Doc) (whatsnew) 3.5.rst, line 895); [backlink](#)

Unknown interpreted text role "issue".

collections

The `:class:`~collections.OrderedDict`` class is now implemented in C, which makes it 4 to 100 times faster. (Contributed by Eric Snow in [issue`16991`](#).)

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\whatsnew\ (cpython-main) (Doc) (whatsnew) 3.5.rst, line 905); [backlink](#)

Unknown interpreted text role "class".

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\whatsnew\ (cpython-main) (Doc) (whatsnew) 3.5.rst, line 905); [backlink](#)

Unknown interpreted text role "issue".

`:meth:~collections.OrderedDict.items() <collections.OrderedDict.items>`, `:meth:~collections.OrderedDict.keys() <collections.OrderedDict.keys>`, `:meth:~collections.OrderedDict.values() <collections.OrderedDict.values>` views now support `:func:~reversed` iteration. (Contributed by Serhiy Storchaka in `:issue:~19505`.)

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\whatsnew\ (cpython-main) (Doc) (whatsnew) 3.5.rst, line 908); [backlink](#)

Unknown interpreted text role "meth".

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\whatsnew\ (cpython-main) (Doc) (whatsnew) 3.5.rst, line 908); [backlink](#)

Unknown interpreted text role "meth".

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\whatsnew\ (cpython-main) (Doc) (whatsnew) 3.5.rst, line 908); [backlink](#)

Unknown interpreted text role "meth".

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\whatsnew\ (cpython-main) (Doc) (whatsnew) 3.5.rst, line 908); [backlink](#)

Unknown interpreted text role "func".

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\whatsnew\ (cpython-main) (Doc) (whatsnew) 3.5.rst, line 908); [backlink](#)

Unknown interpreted text role "issue".

The `:class:~collections.deque` class now defines `:meth:~collections.deque.index`, `:meth:~collections.deque.insert`, and `:meth:~collections.deque.copy`, and supports the `+` and `*` operators. This allows deques to be recognized as a `:class:~collections.abc.MutableSequence` and improves their substitutability for lists. (Contributed by Raymond Hettinger in `:issue:~23704`.)

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\whatsnew\ (cpython-main) (Doc) (whatsnew) 3.5.rst, line 914); [backlink](#)

Unknown interpreted text role "class".

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\whatsnew\ (cpython-main) (Doc) (whatsnew) 3.5.rst, line 914); [backlink](#)

Unknown interpreted text role "meth".

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\whatsnew\ (cpython-main) (Doc) (whatsnew) 3.5.rst, line 914); [backlink](#)

Unknown interpreted text role "meth".

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\whatsnew\ (cpython-main) (Doc) (whatsnew) 3.5.rst, line 914); [backlink](#)

Unknown interpreted text role "meth".

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\whatsnew\ (cpython-main) (Doc) (whatsnew) 3.5.rst, line 914); [backlink](#)

Unknown interpreted text role "class".

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\whatsnew\ (cpython-main) (Doc) (whatsnew) 3.5.rst, line 914); [backlink](#)

Unknown interpreted text role "issue".

Docstrings produced by `:func:`~collections.namedtuple`` can now be updated:

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\whatsnew\ (cpython-main) (Doc) (whatsnew) 3.5.rst, line 921); [backlink](#)

Unknown interpreted text role "func".

```
Point = namedtuple('Point', ['x', 'y'])
Point.__doc__ += ': Cartesian coordinate'
Point.x.__doc__ = 'abscissa'
Point.y.__doc__ = 'ordinate'
```

(Contributed by Berker Peksag in `:issue:`24064``.)

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\whatsnew\ (cpython-main) (Doc) (whatsnew) 3.5.rst, line 928); [backlink](#)

Unknown interpreted text role "issue".

The `:class:`~collections.UserString`` class now implements the `:meth:`__getnewargs__``, `:meth:`__rmod__``, `:meth:`~str.casefold``, `:meth:`~str.format_map``, `:meth:`~str.isprintable``, and `:meth:`~str.maketrans`` methods to match the corresponding methods of `:class:`str``. (Contributed by Joe Jevnik in `:issue:`22189``.)

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\whatsnew\ (cpython-main) (Doc) (whatsnew) 3.5.rst, line 930); [backlink](#)

Unknown interpreted text role "class".

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\whatsnew\ (cpython-main) (Doc) (whatsnew) 3.5.rst, line 930); [backlink](#)

Unknown interpreted text role "meth".

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\whatsnew\ (cpython-main) (Doc) (whatsnew) 3.5.rst, line 930); [backlink](#)

Unknown interpreted text role "meth".

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\whatsnew\ (cpython-main) (Doc) (whatsnew) 3.5.rst, line 930); [backlink](#)

Unknown interpreted text role "meth".

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\whatsnew\ (cpython-main) (Doc) (whatsnew) 3.5.rst, line 930); [backlink](#)

Unknown interpreted text role "meth".

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\whatsnew\ (cpython-main) (Doc) (whatsnew) 3.5.rst, line 930); [backlink](#)

Unknown interpreted text role "meth".

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\whatsnew\ (cpython-main) (Doc) (whatsnew) 3.5.rst, line 930); [backlink](#)

Unknown interpreted text role "meth".

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\whatsnew\ (cpython-main) (Doc) (whatsnew) 3.5.rst, line 930); [backlink](#)

Unknown interpreted text role "class".

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\whatsnew\ (cpython-main) (Doc) (whatsnew) 3.5.rst, line 930); [backlink](#)

Unknown interpreted text role "issue".

collections.abc

The `meth:Sequence.index()` `<collections.abc.Sequence.index>` method now accepts *start* and *stop* arguments to match the corresponding methods of `class:tuple`, `class:list`, etc. (Contributed by Devin Jeanpierre in [issue:23086](#).)

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\whatsnew\ (cpython-main) (Doc) (whatsnew) 3.5.rst, line 940); [backlink](#)

Unknown interpreted text role "meth".

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\whatsnew\ (cpython-main) (Doc) (whatsnew) 3.5.rst, line 940); [backlink](#)

Unknown interpreted text role "class".

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\whatsnew\ (cpython-main) (Doc) (whatsnew) 3.5.rst, line 940); [backlink](#)

Unknown interpreted text role "class".

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\whatsnew\ (cpython-main) (Doc) (whatsnew) 3.5.rst, line 940); [backlink](#)

Unknown interpreted text role "issue".

A new `class:~collections.abc.Generator` abstract base class. (Contributed by Stefan Behnel in [issue:24018](#).)

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\whatsnew\ (cpython-main) (Doc) (whatsnew) 3.5.rst, line 945); [backlink](#)

Unknown interpreted text role "class".

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\whatsnew\ (cpython-main) (Doc) (whatsnew) 3.5.rst, line 945); [backlink](#)

Unknown interpreted text role "issue".

New `class:~collections.abc.Awaitable`, `class:~collections.abc.Coroutine`, `class:~collections.abc.AsyncIterator`, and `class:~collections.abc.AsyncIterable` abstract base classes. (Contributed by Yury Selivanov in [issue:24184](#).)

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\whatsnew\ (cpython-main) (Doc) (whatsnew) 3.5.rst, line 948); [backlink](#)

Unknown interpreted text role "class".

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\whatsnew\ (cpython-main) (Doc) (whatsnew) 3.5.rst, line 948); [backlink](#)

Unknown interpreted text role "class".

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\whatsnew\ (cpython-main) (Doc) (whatsnew) 3.5.rst, line 948); [backlink](#)

Unknown interpreted text role "class".

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\whatsnew\ (cpython-main) (Doc) (whatsnew) 3.5.rst, line 948); [backlink](#)

Unknown interpreted text role "class".

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\whatsnew\ (cpython-main) (Doc) (whatsnew) 3.5.rst, line 948); [backlink](#)

Unknown interpreted text role "issue".

For earlier Python versions, a backport of the new ABCs is available in an external [PyPI package](#).

compileall

A new `:mod:compileall` option, `:samp:-j {N}`, allows running *N* workers simultaneously to perform parallel bytecode compilation. The `:func:~compileall.compile_dir` function has a corresponding `workers` parameter. (Contributed by Claudiu Popa in [issue:16104](#).)

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\whatsnew\ (cpython-main) (Doc) (whatsnew) 3.5.rst, line 960); [backlink](#)

Unknown interpreted text role "mod".

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\whatsnew\ (cpython-main) (Doc) (whatsnew) 3.5.rst, line 960); [backlink](#)

Unknown interpreted text role "samp".

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\whatsnew\ (cpython-main) (Doc) (whatsnew) 3.5.rst, line 960); [backlink](#)

Unknown interpreted text role "func".

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\whatsnew\ (cpython-main) (Doc) (whatsnew) 3.5.rst, line 960); [backlink](#)

Unknown interpreted text role "issue".

Another new option, `-r`, allows controlling the maximum recursion level for subdirectories. (Contributed by Claudiu Popa in [issue:19628](#).)

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\whatsnew\ (cpython-main) (Doc) (whatsnew) 3.5.rst, line 965); [backlink](#)

Unknown interpreted text role "issue".

The `-q` command line option can now be specified more than once, in which case all output, including errors, will be suppressed. The corresponding `quiet` parameter in `:func:~compileall.compile_dir`, `:func:~compileall.compile_file`, and `:func:~compileall.compile_path` can now accept an integer value indicating the level of output suppression. (Contributed by Thomas Kluyver in [issue:21338](#).)

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\whatsnew\ (cpython-main) (Doc) (whatsnew) 3.5.rst, line 968); [backlink](#)

Unknown interpreted text role "func".

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\whatsnew\ (cpython-main) (Doc) (whatsnew) 3.5.rst, line 968); [backlink](#)

Unknown interpreted text role "func".

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\whatsnew\ (cpython-main) (Doc) (whatsnew) 3.5.rst, line 968); [backlink](#)

Unknown interpreted text role "func".

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\whatsnew\ (cpython-main) (Doc) (whatsnew) 3.5.rst, line 968); [backlink](#)

Unknown interpreted text role "issue".

concurrent.futures

The `meth:~concurrent.futures.Executor.map()` method now accepts a *chunksize* argument to allow batching of tasks to improve performance when `meth:~concurrent.futures.ProcessPoolExecutor` is used. (Contributed by Dan O'Reilly in [issue:~11271](#).)

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\whatsnew\ (cpython-main) (Doc) (whatsnew) 3.5.rst, line 979); [backlink](#)

Unknown interpreted text role "meth".

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\whatsnew\ (cpython-main) (Doc) (whatsnew) 3.5.rst, line 979); [backlink](#)

Unknown interpreted text role "meth".

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\whatsnew\ (cpython-main) (Doc) (whatsnew) 3.5.rst, line 979); [backlink](#)

Unknown interpreted text role "issue".

The number of workers in the `~concurrent.futures.ThreadPoolExecutor` constructor is optional now. The default value is 5 times the number of CPUs. (Contributed by Claudiu Popa in [issue:~21527](#).)

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\whatsnew\ (cpython-main) (Doc) (whatsnew) 3.5.rst, line 984); [backlink](#)

Unknown interpreted text role "class".

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\whatsnew\ (cpython-main) (Doc) (whatsnew) 3.5.rst, line 984); [backlink](#)

Unknown interpreted text role "issue".

configparser

`mod:~configparser` now provides a way to customize the conversion of values by specifying a dictionary of converters in the `~configparser.ConfigParser` constructor, or by defining them as methods in `ConfigParser` subclasses. Converters defined in a parser instance are inherited by its section proxies.

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\whatsnew\ (cpython-main) (Doc) (whatsnew) 3.5.rst, line 992); [backlink](#)

Unknown interpreted text role "mod".

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\whatsnew\ (cpython-main) (Doc) (whatsnew) 3.5.rst, line 992); [backlink](#)

Unknown interpreted text role "class".

Example:

```
>>> import configparser
>>> conv = {}
>>> conv['list'] = lambda v: [e.strip() for e in v.split() if e.strip()]
>>> cfg = configparser.ConfigParser(converters=conv)
>>> cfg.read_string("""
... [s]
... list = a b c d e f g
... """)
>>> cfg.get('s', 'list')
'a b c d e f g'
>>> cfg.getlist('s', 'list')
['a', 'b', 'c', 'd', 'e', 'f', 'g']
>>> section = cfg['s']
>>> section.getlist('list')
['a', 'b', 'c', 'd', 'e', 'f', 'g']
```

(Contributed by Łukasz Langa in [issue:~18159](#).)

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\whatsnew\ (cpython-main) (Doc) (whatsnew) 3.5.rst, line 1016); [backlink](#)

Unknown interpreted text role "issue".

contextlib

The new `:func:`~contextlib.redirect_stderr`` 'term' context manager (similar to `:func:`~contextlib.redirect_stdout``) makes it easier for utility scripts to handle inflexible APIs that write their output to `:data:`sys.stderr`` and don't provide any options to redirect it:

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\whatsnew\ (cpython-main) (Doc) (whatsnew) 3.5.rst, line 1022); [backlink](#)

Unknown interpreted text role "func".

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\whatsnew\ (cpython-main) (Doc) (whatsnew) 3.5.rst, line 1022); [backlink](#)

Unknown interpreted text role "term".

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\whatsnew\ (cpython-main) (Doc) (whatsnew) 3.5.rst, line 1022); [backlink](#)

Unknown interpreted text role "func".

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\whatsnew\ (cpython-main) (Doc) (whatsnew) 3.5.rst, line 1022); [backlink](#)

Unknown interpreted text role "data".

```
>>> import contextlib, io, logging
>>> f = io.StringIO()
>>> with contextlib.redirect_stderr(f):
...     logging.warning('warning')
...
>>> f.getvalue()
'WARNING:root:warning\n'
```

(Contributed by Berker Peksag in [:issue:`22389`](#).)

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\whatsnew\ (cpython-main) (Doc) (whatsnew) 3.5.rst, line 1035); [backlink](#)

Unknown interpreted text role "issue".

csv

The `:meth:`~csv.csvwriter.writerow`` method now supports arbitrary iterables, not just sequences. (Contributed by Serhiy Storchaka in [:issue:`23171`](#).)

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\whatsnew\ (cpython-main) (Doc) (whatsnew) 3.5.rst, line 1041); [backlink](#)

Unknown interpreted text role "meth".

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\whatsnew\ (cpython-main) (Doc) (whatsnew) 3.5.rst, line 1041); [backlink](#)

Unknown interpreted text role "issue".

curses

The new `:func:`~curses.update_lines_cols`` function updates the `:envvar:`LINES`` and `:envvar:`COLS`` environment variables. This is useful for detecting manual screen resizing. (Contributed by Arnon Yaari in [:issue:`4254`](#).)

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\whatsnew\ (cpython-main) (Doc) (whatsnew) 3.5.rst, line 1048); [backlink](#)

Unknown interpreted text role "func".

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\whatsnew\ (cpython-main) (Doc) (whatsnew) 3.5.rst, line 1048); [backlink](#)

Unknown interpreted text role "envvar".

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\whatsnew\ (cpython-main) (Doc) (whatsnew) 3.5.rst, line 1048); [backlink](#)

Unknown interpreted text role "envvar".

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\whatsnew\ (cpython-main) (Doc) (whatsnew) 3.5.rst, line 1048); [backlink](#)

Unknown interpreted text role "issue".

dbm

`:func:`dumb.open <dbm.dumb.open>`` always creates a new database when the flag has the value `"n"`. (Contributed by Claudiu Popa in [issue:18039](#).)

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\whatsnew\ (cpython-main) (Doc) (whatsnew) 3.5.rst, line 1056); [backlink](#)

Unknown interpreted text role "func".

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\whatsnew\ (cpython-main) (Doc) (whatsnew) 3.5.rst, line 1056); [backlink](#)

Unknown interpreted text role "issue".

difflib

The charset of HTML documents generated by `:meth:`HtmlDiff.make_file() <difflib.HtmlDiff.make_file>`` can now be customized by using a new `charset` keyword-only argument. The default charset of HTML document changed from `"ISO-8859-1"` to `"utf-8"`. (Contributed by Berker Peksag in [issue:2052](#).)

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\whatsnew\ (cpython-main) (Doc) (whatsnew) 3.5.rst, line 1063); [backlink](#)

Unknown interpreted text role "meth".

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\whatsnew\ (cpython-main) (Doc) (whatsnew) 3.5.rst, line 1063); [backlink](#)

Unknown interpreted text role "issue".

The `:func:`~difflib.diff_bytes`` function can now compare lists of byte strings. This fixes a regression from Python 2. (Contributed by Terry J. Reedy and Greg Ward in [issue:17445](#).)

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\whatsnew\ (cpython-main) (Doc) (whatsnew) 3.5.rst, line 1070); [backlink](#)

Unknown interpreted text role "func".

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\whatsnew\ (cpython-main) (Doc) (whatsnew) 3.5.rst, line 1070); [backlink](#)

Unknown interpreted text role "issue".

distutils

Both the `build` and `build_ext` commands now accept a `-j` option to enable parallel building of extension modules. (Contributed by Antoine Pitrou in [issue:5309](#).)

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\whatsnew\ (cpython-main) (Doc) (whatsnew) 3.5.rst, line 1078); [backlink](#)

Unknown interpreted text role "issue".

The `:mod:`distutils`` module now supports `xz` compression, and can be enabled by passing `xztar` as an argument to `bdist --format`. (Contributed by Serhiy Storchaka in [issue`16314`](#).)

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\whatsnew\ (cpython-main) (Doc) (whatsnew) 3.5.rst, line 1082); [backlink](#)

Unknown interpreted text role "mod".

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\whatsnew\ (cpython-main) (Doc) (whatsnew) 3.5.rst, line 1082); [backlink](#)

Unknown interpreted text role "issue".

doctest

The `:func:`~doctest.DocTestSuite`` function returns an empty `:class:`unittest.TestSuite`` if *module* contains no docstrings, instead of raising `:exc:`ValueError``. (Contributed by Glenn Jones in [issue`15916`](#).)

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\whatsnew\ (cpython-main) (Doc) (whatsnew) 3.5.rst, line 1090); [backlink](#)

Unknown interpreted text role "func".

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\whatsnew\ (cpython-main) (Doc) (whatsnew) 3.5.rst, line 1090); [backlink](#)

Unknown interpreted text role "class".

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\whatsnew\ (cpython-main) (Doc) (whatsnew) 3.5.rst, line 1090); [backlink](#)

Unknown interpreted text role "exc".

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\whatsnew\ (cpython-main) (Doc) (whatsnew) 3.5.rst, line 1090); [backlink](#)

Unknown interpreted text role "issue".

email

A new policy option `:attr:`Policy.mangle_from`` `<email.policy.Policy.mangle_from>` controls whether or not lines that start with "From " in email bodies are prefixed with a ">" character by generators. The default is `True` for `:attr:`~email.policy.compat32`` and `False` for all other policies. (Contributed by Milan Oberkirch in [issue`20098`](#).)

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\whatsnew\ (cpython-main) (Doc) (whatsnew) 3.5.rst, line 1098); [backlink](#)

Unknown interpreted text role "attr".

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\whatsnew\ (cpython-main) (Doc) (whatsnew) 3.5.rst, line 1098); [backlink](#)

Unknown interpreted text role "attr".

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\whatsnew\ (cpython-main) (Doc) (whatsnew) 3.5.rst, line 1098); [backlink](#)

Unknown interpreted text role "issue".

A new `:meth:`Message.get_content_disposition()` `<email.message.Message.get_content_disposition>` method provides easy access

to a canonical value for the `:mailheader:'Content-Disposition'` header. (Contributed by Abhilash Raj in [:issue:'21083'](#).)

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\whatsnew\ (cpython-main) (Doc) (whatsnew) 3.5.rst, line 1104); [backlink](#)

Unknown interpreted text role "meth".

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\whatsnew\ (cpython-main) (Doc) (whatsnew) 3.5.rst, line 1104); [backlink](#)

Unknown interpreted text role "mailheader".

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\whatsnew\ (cpython-main) (Doc) (whatsnew) 3.5.rst, line 1104); [backlink](#)

Unknown interpreted text role "issue".

A new policy option `:attr:'EmailPolicy.utf8 <email.policy.EmailPolicy.utf8>'` can be set to `True` to encode email headers using the UTF-8 charset instead of using encoded words. This allows `Messages` to be formatted according to [RFC 6532](#) and used with an SMTP server that supports the [RFC 6531](#) `SMTPUTF8` extension. (Contributed by R. David Murray in [:issue:'24211'](#).)

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\whatsnew\ (cpython-main) (Doc) (whatsnew) 3.5.rst, line 1110); [backlink](#)

Unknown interpreted text role "attr".

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\whatsnew\ (cpython-main) (Doc) (whatsnew) 3.5.rst, line 1110); [backlink](#)

Unknown interpreted text role "issue".

The `:class:'mime.text.MIMEText <email.mime.text.MIMEText>'` constructor now accepts a `:class:'charset.Charset <email.charset.Charset>'` instance. (Contributed by Claude Paroz and Berker Peksag in [:issue:'16324'](#).)

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\whatsnew\ (cpython-main) (Doc) (whatsnew) 3.5.rst, line 1117); [backlink](#)

Unknown interpreted text role "class".

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\whatsnew\ (cpython-main) (Doc) (whatsnew) 3.5.rst, line 1117); [backlink](#)

Unknown interpreted text role "class".

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\whatsnew\ (cpython-main) (Doc) (whatsnew) 3.5.rst, line 1117); [backlink](#)

Unknown interpreted text role "issue".

enum

The `:class:'~enum.Enum'` callable has a new parameter `start` to specify the initial number of enum values if only `names` are provided:

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\whatsnew\ (cpython-main) (Doc) (whatsnew) 3.5.rst, line 1125); [backlink](#)

Unknown interpreted text role "class".

```
>>> Animal = enum.Enum('Animal', 'cat dog', start=10)
>>> Animal.cat
<Animal.cat: 10>
>>> Animal.dog
<Animal.dog: 11>
```

(Contributed by Ethan Furman in [:issue:'21706'](#).)

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\whatsnew\ (cpython-main) (Doc) (whatsnew) 3.5.rst, line 1134); [backlink](#)

Unknown interpreted text role "issue".

faulthandler

The `:func:~faulthandler.enable`, `:func:~faulthandler.register`, `:func:~faulthandler.dump_traceback` and `:func:~faulthandler.dump_traceback_later` functions now accept file descriptors in addition to file-like objects. (Contributed by Wei Wu in [issue:23566](#).)

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\whatsnew\ (cpython-main) (Doc) (whatsnew) 3.5.rst, line 1140); [backlink](#)

Unknown interpreted text role "func".

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\whatsnew\ (cpython-main) (Doc) (whatsnew) 3.5.rst, line 1140); [backlink](#)

Unknown interpreted text role "func".

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\whatsnew\ (cpython-main) (Doc) (whatsnew) 3.5.rst, line 1140); [backlink](#)

Unknown interpreted text role "func".

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\whatsnew\ (cpython-main) (Doc) (whatsnew) 3.5.rst, line 1140); [backlink](#)

Unknown interpreted text role "func".

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\whatsnew\ (cpython-main) (Doc) (whatsnew) 3.5.rst, line 1140); [backlink](#)

Unknown interpreted text role "issue".

functools

Most of the `:func:~functools.lru_cache` machinery is now implemented in C, making it significantly faster. (Contributed by Matt Joiner, Alexey Kachayev, and Serhiy Storchaka in [issue:14373](#).)

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\whatsnew\ (cpython-main) (Doc) (whatsnew) 3.5.rst, line 1152); [backlink](#)

Unknown interpreted text role "func".

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\whatsnew\ (cpython-main) (Doc) (whatsnew) 3.5.rst, line 1152); [backlink](#)

Unknown interpreted text role "issue".

glob

The `:func:~glob.iglob` and `:func:~glob.glob` functions now support recursive search in subdirectories, using the `"**"` pattern. (Contributed by Serhiy Storchaka in [issue:13968](#).)

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\whatsnew\ (cpython-main) (Doc) (whatsnew) 3.5.rst, line 1160); [backlink](#)

Unknown interpreted text role "func".

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\whatsnew\ (cpython-main) (Doc) (whatsnew) 3.5.rst, line 1160); [backlink](#)

Unknown interpreted text role "func".

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\whatsnew\ (cpython-main) (Doc) (whatsnew) 3.5.rst, line 1160); [backlink](#)

Unknown interpreted text role "issue".

gzip

The *mode* argument of the `:class:`~gzip.GzipFile`` constructor now accepts "x" to request exclusive creation. (Contributed by Tim Heaney in [:issue:`19222`](#).)

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\whatsnew\ (cpython-main) (Doc) (whatsnew) 3.5.rst, line 1168); [backlink](#)

Unknown interpreted text role "class".

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\whatsnew\ (cpython-main) (Doc) (whatsnew) 3.5.rst, line 1168); [backlink](#)

Unknown interpreted text role "issue".

heapq

Element comparison in `:func:`~heapq.merge`` can now be customized by passing a `:term:`key function`` in a new optional *key* keyword argument, and a new optional *reverse* keyword argument can be used to reverse element comparison:

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\whatsnew\ (cpython-main) (Doc) (whatsnew) 3.5.rst, line 1176); [backlink](#)

Unknown interpreted text role "func".

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\whatsnew\ (cpython-main) (Doc) (whatsnew) 3.5.rst, line 1176); [backlink](#)

Unknown interpreted text role "term".

```
>>> import heapq
>>> a = ['9', '777', '55555']
>>> b = ['88', '6666']
>>> list(heapq.merge(a, b, key=len))
['9', '88', '777', '6666', '55555']
>>> list(heapq.merge(reversed(a), reversed(b), key=len, reverse=True))
['55555', '6666', '777', '88', '9']
```

(Contributed by Raymond Hettinger in [:issue:`13742`](#).)

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\whatsnew\ (cpython-main) (Doc) (whatsnew) 3.5.rst, line 1189); [backlink](#)

Unknown interpreted text role "issue".

http

A new `:class:`HTTPStatus`` `<http.HTTPStatus>` enum that defines a set of HTTP status codes, reason phrases and long descriptions written in English. (Contributed by Demian Brecht in [:issue:`21793`](#).)

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\whatsnew\ (cpython-main) (Doc) (whatsnew) 3.5.rst, line 1195); [backlink](#)

Unknown interpreted text role "class".

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\whatsnew\ (cpython-main) (Doc) (whatsnew) 3.5.rst, line 1195); [backlink](#)

Unknown interpreted text role "issue".

http.client

`:meth:`HTTPConnection.getresponse()`` `<http.client.HTTPConnection.getresponse>` now raises a

`:exc:`~http.client.RemoteDisconnected`` exception when a remote server connection is closed unexpectedly. Additionally, if a `:exc:`~ConnectionError`` (of which `RemoteDisconnected` is a subclass) is raised, the client socket is now closed automatically, and will reconnect on the next request:

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\whatsnew\ (cpython-main) (Doc) (whatsnew) 3.5.rst, line 1203); [backlink](#)

Unknown interpreted text role "meth".

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\whatsnew\ (cpython-main) (Doc) (whatsnew) 3.5.rst, line 1203); [backlink](#)

Unknown interpreted text role "exc".

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\whatsnew\ (cpython-main) (Doc) (whatsnew) 3.5.rst, line 1203); [backlink](#)

Unknown interpreted text role "exc".

```
import http.client
conn = http.client.HTTPConnection('www.python.org')
for retries in range(3):
    try:
        conn.request('GET', '/')
        resp = conn.getresponse()
    except http.client.RemoteDisconnected:
        pass
```

(Contributed by Martin Panter in [:issue:3566`](#).)

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\whatsnew\ (cpython-main) (Doc) (whatsnew) 3.5.rst, line 1219); [backlink](#)

Unknown interpreted text role "issue".

idlelib and IDLE

Since `idlelib` implements the IDLE shell and editor and is not intended for import by other programs, it gets improvements with every release. See [:file:Lib/idlelib/NEWS.txt`](#) for a cumulative list of changes since 3.4.0, as well as changes made in future 3.5.x releases. This file is also available from the IDLE `menuselection:Help --> About IDLE`` dialog.

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\whatsnew\ (cpython-main) (Doc) (whatsnew) 3.5.rst, line 1225); [backlink](#)

Unknown interpreted text role "file".

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\whatsnew\ (cpython-main) (Doc) (whatsnew) 3.5.rst, line 1225); [backlink](#)

Unknown interpreted text role "menuselection".

imaplib

The `:class:`~imaplib.IMAP4`` class now supports the `:term`context manager`` protocol. When used in a `:keyword:`with`` statement, the IMAP4 `LOGOUT` command will be called automatically at the end of the block. (Contributed by Tarek Ziadé and Serhiy Storchaka in [:issue:4972`](#).)

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\whatsnew\ (cpython-main) (Doc) (whatsnew) 3.5.rst, line 1235); [backlink](#)

Unknown interpreted text role "class".

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\whatsnew\ (cpython-main) (Doc) (whatsnew) 3.5.rst, line 1235); [backlink](#)

Unknown interpreted text role "term".

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\whatsnew\ (cpython-main) (Doc) (whatsnew) 3.5.rst, line 1235); [backlink](#)

Unknown interpreted text role "keyword".

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\whatsnew\ (cpython-main) (Doc) (whatsnew) 3.5.rst, line 1235); [backlink](#)

Unknown interpreted text role "issue".

The `mod:imaplib` module now supports [RFC 5161](#) (ENABLE Extension) and [RFC 6855](#) (UTF-8 Support) via the `meth:IMAP4.enable()` `<imaplib.IMAP4.enable>` method. A new `attr:IMAP4.utf8_enabled` `<imaplib.IMAP4.utf8_enabled>` attribute tracks whether or not [RFC 6855](#) support is enabled. (Contributed by Milan Oberkirch, R. David Murray, and Maciej Szulik in [:issue:21800](#).)

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\whatsnew\ (cpython-main) (Doc) (whatsnew) 3.5.rst, line 1240); [backlink](#)

Unknown interpreted text role "mod".

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\whatsnew\ (cpython-main) (Doc) (whatsnew) 3.5.rst, line 1240); [backlink](#)

Unknown interpreted text role "meth".

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\whatsnew\ (cpython-main) (Doc) (whatsnew) 3.5.rst, line 1240); [backlink](#)

Unknown interpreted text role "attr".

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\whatsnew\ (cpython-main) (Doc) (whatsnew) 3.5.rst, line 1240); [backlink](#)

Unknown interpreted text role "issue".

The `mod:imaplib` module now automatically encodes non-ASCII string usernames and passwords using UTF-8, as recommended by the RFCs. (Contributed by Milan Oberkirch in [:issue:21800](#).)

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\whatsnew\ (cpython-main) (Doc) (whatsnew) 3.5.rst, line 1247); [backlink](#)

Unknown interpreted text role "mod".

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\whatsnew\ (cpython-main) (Doc) (whatsnew) 3.5.rst, line 1247); [backlink](#)

Unknown interpreted text role "issue".

imghdr

The `func:~imghdr.what` function now recognizes the [OpenEXR](#) format (contributed by Martin Vignali and Claudiu Popa in [:issue:20295](#)), and the [WebP](#) format (contributed by Fabrice Anecche and Claudiu Popa in [:issue:20197](#).)

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\whatsnew\ (cpython-main) (Doc) (whatsnew) 3.5.rst, line 1255); [backlink](#)

Unknown interpreted text role "func".

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\whatsnew\ (cpython-main) (Doc) (whatsnew) 3.5.rst, line 1255); [backlink](#)

Unknown interpreted text role "issue".

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-

main\Doc\whatsnew\ (cpython-main) (Doc) (whatsnew) 3.5.rst, line 1255); [backlink](#)

Unknown interpreted text role "issue".

importlib

The `:class:`util.LazyLoader`` `<importlib.util.LazyLoader>` class allows for lazy loading of modules in applications where startup time is important. (Contributed by Brett Cannon in [issue:17621](#).)

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\whatsnew\ (cpython-main) (Doc) (whatsnew) 3.5.rst, line 1265); [backlink](#)

Unknown interpreted text role "class".

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\whatsnew\ (cpython-main) (Doc) (whatsnew) 3.5.rst, line 1265); [backlink](#)

Unknown interpreted text role "issue".

The `:func:`abc.InspectLoader.source_to_code`` `<importlib.abc.InspectLoader.source_to_code>` method is now a static method. This makes it easier to initialize a module object with code compiled from a string by running `exec(code, module.__dict__)`. (Contributed by Brett Cannon in [issue:21156](#).)

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\whatsnew\ (cpython-main) (Doc) (whatsnew) 3.5.rst, line 1269); [backlink](#)

Unknown interpreted text role "func".

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\whatsnew\ (cpython-main) (Doc) (whatsnew) 3.5.rst, line 1269); [backlink](#)

Unknown interpreted text role "issue".

The new `:func:`util.module_from_spec`` `<importlib.util.module_from_spec>` function is now the preferred way to create a new module. As opposed to creating a `:class:`types.ModuleType`` instance directly, this new function will set the various import-controlled attributes based on the passed-in spec object. (Contributed by Brett Cannon in [issue:20383](#).)

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\whatsnew\ (cpython-main) (Doc) (whatsnew) 3.5.rst, line 1275); [backlink](#)

Unknown interpreted text role "func".

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\whatsnew\ (cpython-main) (Doc) (whatsnew) 3.5.rst, line 1275); [backlink](#)

Unknown interpreted text role "class".

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\whatsnew\ (cpython-main) (Doc) (whatsnew) 3.5.rst, line 1275); [backlink](#)

Unknown interpreted text role "issue".

inspect

Both the `:class:`~inspect.Signature`` and `:class:`~inspect.Parameter`` classes are now picklable and hashable. (Contributed by Yury Selivanov in [issue:20726](#) and [issue:20334](#).)

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\whatsnew\ (cpython-main) (Doc) (whatsnew) 3.5.rst, line 1285); [backlink](#)

Unknown interpreted text role "class".

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\whatsnew\ (cpython-main) (Doc) (whatsnew) 3.5.rst, line 1285); [backlink](#)

Unknown interpreted text role "class".

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\whatsnew\ (cpython-main) (Doc) (whatsnew) 3.5.rst, line 1285); [backlink](#)

Unknown interpreted text role "issue".

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\whatsnew\ (cpython-main) (Doc) (whatsnew) 3.5.rst, line 1285); [backlink](#)

Unknown interpreted text role "issue".

A new `meth: BoundArguments.apply_defaults()` `<inspect.BoundArguments.apply_defaults>` method provides a way to set default values for missing arguments:

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\whatsnew\ (cpython-main) (Doc) (whatsnew) 3.5.rst, line 1289); [backlink](#)

Unknown interpreted text role "meth".

```
>>> def foo(a, b='ham', *args): pass
>>> ba = inspect.signature(foo).bind('spam')
>>> ba.apply_defaults()
>>> ba.arguments
OrderedDict([('a', 'spam'), ('b', 'ham'), ('args', ())])
```

(Contributed by Yuri Selivanov in [issue:24190](#).)

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\whatsnew\ (cpython-main) (Doc) (whatsnew) 3.5.rst, line 1299); [backlink](#)

Unknown interpreted text role "issue".

A new class method `meth: Signature.from_callable()` `<inspect.Signature.from_callable>` makes subclassing of `class: ~inspect.Signature` easier. (Contributed by Yuri Selivanov and Eric Snow in [issue:17373](#).)

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\whatsnew\ (cpython-main) (Doc) (whatsnew) 3.5.rst, line 1301); [backlink](#)

Unknown interpreted text role "meth".

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\whatsnew\ (cpython-main) (Doc) (whatsnew) 3.5.rst, line 1301); [backlink](#)

Unknown interpreted text role "class".

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\whatsnew\ (cpython-main) (Doc) (whatsnew) 3.5.rst, line 1301); [backlink](#)

Unknown interpreted text role "issue".

The `func: ~inspect.signature` function now accepts a `follow_wrapped` optional keyword argument, which, when set to `False`, disables automatic following of `__wrapped__` links. (Contributed by Yuri Selivanov in [issue:20691](#).)

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\whatsnew\ (cpython-main) (Doc) (whatsnew) 3.5.rst, line 1306); [backlink](#)

Unknown interpreted text role "func".

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\whatsnew\ (cpython-main) (Doc) (whatsnew) 3.5.rst, line 1306); [backlink](#)

Unknown interpreted text role "issue".

A set of new functions to inspect `term: coroutine functions <coroutine function>` and `term: coroutine objects <coroutine>` has been added: `func: ~inspect.iscoroutine`, `func: ~inspect.iscoroutinefunction`, `func: ~inspect.isawaitable`, `func: ~inspect.getcoroutinelocals`, and `func: ~inspect.getcoroutinestate`. (Contributed by Yuri Selivanov in [issue:24017](#) and

:issue:`24400`.)

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\whatsnew\ (cpython-main) (Doc) (whatsnew) 3.5.rst, line 1311); [backlink](#)

Unknown interpreted text role "term".

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\whatsnew\ (cpython-main) (Doc) (whatsnew) 3.5.rst, line 1311); [backlink](#)

Unknown interpreted text role "term".

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\whatsnew\ (cpython-main) (Doc) (whatsnew) 3.5.rst, line 1311); [backlink](#)

Unknown interpreted text role "func".

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\whatsnew\ (cpython-main) (Doc) (whatsnew) 3.5.rst, line 1311); [backlink](#)

Unknown interpreted text role "func".

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\whatsnew\ (cpython-main) (Doc) (whatsnew) 3.5.rst, line 1311); [backlink](#)

Unknown interpreted text role "func".

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\whatsnew\ (cpython-main) (Doc) (whatsnew) 3.5.rst, line 1311); [backlink](#)

Unknown interpreted text role "func".

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\whatsnew\ (cpython-main) (Doc) (whatsnew) 3.5.rst, line 1311); [backlink](#)

Unknown interpreted text role "func".

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\whatsnew\ (cpython-main) (Doc) (whatsnew) 3.5.rst, line 1311); [backlink](#)

Unknown interpreted text role "issue".

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\whatsnew\ (cpython-main) (Doc) (whatsnew) 3.5.rst, line 1311); [backlink](#)

Unknown interpreted text role "issue".

The `:func:`~inspect.stack``, `:func:`~inspect.trace``, `:func:`~inspect.getouterframes``, and `:func:`~inspect.getinnerframes`` functions now return a list of named tuples. (Contributed by Daniel Shahaf in :issue:`16808`.)

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\whatsnew\ (cpython-main) (Doc) (whatsnew) 3.5.rst, line 1319); [backlink](#)

Unknown interpreted text role "func".

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\whatsnew\ (cpython-main) (Doc) (whatsnew) 3.5.rst, line 1319); [backlink](#)

Unknown interpreted text role "func".

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\whatsnew\ (cpython-main) (Doc) (whatsnew) 3.5.rst, line 1319); [backlink](#)

Unknown interpreted text role "func".

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\whatsnew\ (cpython-main) (Doc) (whatsnew) 3.5.rst, line 1319); [backlink](#)

Unknown interpreted text role "func".

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\whatsnew\ (cpython-main) (Doc) (whatsnew) 3.5.rst, line 1319); [backlink](#)

Unknown interpreted text role "issue".

io

A new `.meth: 'BufferedIOBase.readinto1() <io.BufferedIOBase.readinto1>'` method, that uses at most one call to the underlying raw stream's `.meth: 'RawIOBase.read() <io.RawIOBase.read>'` or `.meth: 'RawIOBase.readinto() <io.RawIOBase.readinto>'` methods. (Contributed by Nikolaus Rath in [issue: '20578'](#).)

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\whatsnew\ (cpython-main) (Doc) (whatsnew) 3.5.rst, line 1328); [backlink](#)

Unknown interpreted text role "meth".

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\whatsnew\ (cpython-main) (Doc) (whatsnew) 3.5.rst, line 1328); [backlink](#)

Unknown interpreted text role "meth".

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\whatsnew\ (cpython-main) (Doc) (whatsnew) 3.5.rst, line 1328); [backlink](#)

Unknown interpreted text role "meth".

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\whatsnew\ (cpython-main) (Doc) (whatsnew) 3.5.rst, line 1328); [backlink](#)

Unknown interpreted text role "issue".

ipaddress

Both the `.class: '~ipaddress.IPv4Network'` and `.class: '~ipaddress.IPv6Network'` classes now accept an `(address, netmask)` tuple argument, so as to easily construct network objects from existing addresses:

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\whatsnew\ (cpython-main) (Doc) (whatsnew) 3.5.rst, line 1338); [backlink](#)

Unknown interpreted text role "class".

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\whatsnew\ (cpython-main) (Doc) (whatsnew) 3.5.rst, line 1338); [backlink](#)

Unknown interpreted text role "class".

```
>>> import ipaddress
>>> ipaddress.IPv4Network(('127.0.0.0', 8))
IPv4Network('127.0.0.0/8')
>>> ipaddress.IPv4Network(('127.0.0.0', '255.0.0.0'))
IPv4Network('127.0.0.0/8')
```

(Contributed by Peter Moody and Antoine Pitrou in [issue: '16531'](#).)

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\whatsnew\ (cpython-main) (Doc) (whatsnew) 3.5.rst, line 1348); [backlink](#)

Unknown interpreted text role "issue".

A new `.attr: '~ipaddress.IPv4Network.reverse_pointer'` attribute for the `.class: '~ipaddress.IPv4Network'` and `.class: '~ipaddress.IPv6Network'` classes returns the name of the reverse DNS PTR record:

Unknown interpreted text role "attr".

Unknown interpreted text role "class".

Unknown interpreted text role "class".

(Contributed by Leon Weber in :issue:'20480'.)

Unknown interpreted text role "issue".

The `mod:json.tool` command line interface now preserves the order of keys in JSON objects passed in input. The new `--sort-keys` option can be used to sort the keys alphabetically. (Contributed by Berker Peksag in [issue:21650](#).)

Unknown interpreted text role "mod".

Unknown interpreted text role "issue".

Unknown interpreted text role "exc".

Unknown interpreted text role "exc".

Unknown interpreted text role "issue".

A new `func:~linecache.lazyget` function can be used to capture information about a non-file-based module to permit getting its lines later via `func:~linecache.getline`. This avoids doing I/O until a line is actually needed, without having to carry the module globals

around indefinitely. (Contributed by Robert Collins in [:issue:17911](#).)

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\whatsnew\ (cpython-main) (Doc) (whatsnew) 3.5.rst, line 1381); [backlink](#)

Unknown interpreted text role "func".

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\whatsnew\ (cpython-main) (Doc) (whatsnew) 3.5.rst, line 1381); [backlink](#)

Unknown interpreted text role "func".

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\whatsnew\ (cpython-main) (Doc) (whatsnew) 3.5.rst, line 1381); [backlink](#)

Unknown interpreted text role "issue".

locale

A new `:func:`~locale.delocalize`` function can be used to convert a string into a normalized number string, taking the `LC_NUMERIC` settings into account:

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\whatsnew\ (cpython-main) (Doc) (whatsnew) 3.5.rst, line 1391); [backlink](#)

Unknown interpreted text role "func".

```
>>> import locale
>>> locale.setlocale(locale.LC_NUMERIC, 'de_DE.UTF-8')
'de_DE.UTF-8'
>>> locale.delocalize('1.234,56')
'1234.56'
>>> locale.setlocale(locale.LC_NUMERIC, 'en_US.UTF-8')
'en_US.UTF-8'
>>> locale.delocalize('1,234.56')
'1234.56'
```

(Contributed by Cédric Krier in [:issue:13918](#).)

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\whatsnew\ (cpython-main) (Doc) (whatsnew) 3.5.rst, line 1404); [backlink](#)

Unknown interpreted text role "issue".

logging

All logging methods (`:class:`~logging.Logger``, `:meth:`~logging.Logger.log``, `:meth:`~logging.Logger.exception``, `:meth:`~logging.Logger.critical``, `:meth:`~logging.Logger.debug``, etc.), now accept exception instances as an `exc_info` argument, in addition to boolean values and exception tuples:

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\whatsnew\ (cpython-main) (Doc) (whatsnew) 3.5.rst, line 1410); [backlink](#)

Unknown interpreted text role "class".

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\whatsnew\ (cpython-main) (Doc) (whatsnew) 3.5.rst, line 1410); [backlink](#)

Unknown interpreted text role "meth".

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\whatsnew\ (cpython-main) (Doc) (whatsnew) 3.5.rst, line 1410); [backlink](#)

Unknown interpreted text role "meth".

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\whatsnew\ (cpython-main) (Doc) (whatsnew) 3.5.rst, line 1410); [backlink](#)

Unknown interpreted text role "meth".

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\whatsnew\ (cpython-main) (Doc) (whatsnew) 3.5.rst, line 1410); [backlink](#)

Unknown interpreted text role "meth".

```
>>> import logging
>>> try:
...     1/0
... except ZeroDivisionError as ex:
...     logging.error('exception', exc_info=ex)
ERROR:root:exception
```

(Contributed by Yuri Selivanov in [issue:20537](#).)

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\whatsnew\ (cpython-main) (Doc) (whatsnew) 3.5.rst, line 1423); [backlink](#)

Unknown interpreted text role "issue".

The `:class:'handlers.HTTPHandler <logging.handlers.HTTPHandler>'` class now accepts an optional `:class:'ssl.SSLContext'` instance to configure SSL settings used in an HTTP connection. (Contributed by Alex Gaynor in [issue:22788](#).)

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\whatsnew\ (cpython-main) (Doc) (whatsnew) 3.5.rst, line 1425); [backlink](#)

Unknown interpreted text role "class".

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\whatsnew\ (cpython-main) (Doc) (whatsnew) 3.5.rst, line 1425); [backlink](#)

Unknown interpreted text role "class".

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\whatsnew\ (cpython-main) (Doc) (whatsnew) 3.5.rst, line 1425); [backlink](#)

Unknown interpreted text role "issue".

The `:class:'handlers.QueueListener <logging.handlers.QueueListener>'` class now takes a *respect_handler_level* keyword argument which, if set to `True`, will pass messages to handlers taking handler levels into account. (Contributed by Vinay Sajip.)

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\whatsnew\ (cpython-main) (Doc) (whatsnew) 3.5.rst, line 1430); [backlink](#)

Unknown interpreted text role "class".

lzma

The `:meth:'LZMADecompressor.decompress() <lzma.LZMADecompressor.decompress>'` method now accepts an optional `max_length` argument to limit the maximum size of decompressed data. (Contributed by Martin Panter in [issue:15955](#).)

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\whatsnew\ (cpython-main) (Doc) (whatsnew) 3.5.rst, line 1439); [backlink](#)

Unknown interpreted text role "meth".

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\whatsnew\ (cpython-main) (Doc) (whatsnew) 3.5.rst, line 1439); [backlink](#)

Unknown interpreted text role "issue".

math

Two new constants have been added to the `:mod:'math'` module: `:data:'~math.inf'` and `:data:'~math.nan'`. (Contributed by Mark Dickinson in [issue:23185](#).)

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\whatsnew\ (cpython-main) (Doc) (whatsnew) 3.5.rst, line 1448); [backlink](#)

Unknown interpreted text role "mod".

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\whatsnew\ (cpython-main) (Doc) (whatsnew) 3.5.rst, line 1448); [backlink](#)

Unknown interpreted text role "data".

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\whatsnew\ (cpython-main) (Doc) (whatsnew) 3.5.rst, line 1448); [backlink](#)

Unknown interpreted text role "data".

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\whatsnew\ (cpython-main) (Doc) (whatsnew) 3.5.rst, line 1448); [backlink](#)

Unknown interpreted text role "issue".

A new function `:func:`~math.isclose`` provides a way to test for approximate equality. (Contributed by Chris Barker and Tal Einat in [:issue:`24270`](#).)

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\whatsnew\ (cpython-main) (Doc) (whatsnew) 3.5.rst, line 1451); [backlink](#)

Unknown interpreted text role "func".

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\whatsnew\ (cpython-main) (Doc) (whatsnew) 3.5.rst, line 1451); [backlink](#)

Unknown interpreted text role "issue".

A new `:func:`~math.gcd`` function has been added. The `:func:`fractions.gcd`` function is now deprecated. (Contributed by Mark Dickinson and Serhiy Storchaka in [:issue:`22486`](#).)

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\whatsnew\ (cpython-main) (Doc) (whatsnew) 3.5.rst, line 1454); [backlink](#)

Unknown interpreted text role "func".

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\whatsnew\ (cpython-main) (Doc) (whatsnew) 3.5.rst, line 1454); [backlink](#)

Unknown interpreted text role "func".

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\whatsnew\ (cpython-main) (Doc) (whatsnew) 3.5.rst, line 1454); [backlink](#)

Unknown interpreted text role "issue".

multiprocessing

`:func:`sharedtypes.synchronized`` (<`multiprocessing.sharedtypes.synchronized`>) objects now support the `:term:`context manager`` protocol. (Contributed by Charles-François Natali in [:issue:`21565`](#).)

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\whatsnew\ (cpython-main) (Doc) (whatsnew) 3.5.rst, line 1462); [backlink](#)

Unknown interpreted text role "func".

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\whatsnew\ (cpython-main) (Doc) (whatsnew) 3.5.rst, line 1462); [backlink](#)

Unknown interpreted text role "term".

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\whatsnew\ (cpython-main) (Doc) (whatsnew) 3.5.rst, line 1462); [backlink](#)

Unknown interpreted text role "issue".

operator

New `:func:~operator.attrgetter`, `:func:~operator.itemgetter`, and `:func:~operator.methodcaller` objects now support pickling. (Contributed by Josh Rosenberg and Serhiy Storchaka in [issue:~22955](#).)

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\whatsnew\ (cpython-main) (Doc) (whatsnew) 3.5.rst, line 1470); [backlink](#)

Unknown interpreted text role "func".

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\whatsnew\ (cpython-main) (Doc) (whatsnew) 3.5.rst, line 1470); [backlink](#)

Unknown interpreted text role "func".

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\whatsnew\ (cpython-main) (Doc) (whatsnew) 3.5.rst, line 1470); [backlink](#)

Unknown interpreted text role "func".

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\whatsnew\ (cpython-main) (Doc) (whatsnew) 3.5.rst, line 1470); [backlink](#)

Unknown interpreted text role "issue".

New `:func:~operator.matmul` and `:func:~operator.imatmul` functions to perform matrix multiplication. (Contributed by Benjamin Peterson in [issue:~21176](#).)

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\whatsnew\ (cpython-main) (Doc) (whatsnew) 3.5.rst, line 1474); [backlink](#)

Unknown interpreted text role "func".

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\whatsnew\ (cpython-main) (Doc) (whatsnew) 3.5.rst, line 1474); [backlink](#)

Unknown interpreted text role "func".

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\whatsnew\ (cpython-main) (Doc) (whatsnew) 3.5.rst, line 1474); [backlink](#)

Unknown interpreted text role "issue".

os

The new `:func:~os.scandir` function returning an iterator of `:class:~os.DirEntry` objects has been added. If possible, `:func:~os.scandir` extracts file attributes while scanning a directory, removing the need to perform subsequent system calls to determine file type or attributes, which may significantly improve performance. (Contributed by Ben Hoyt with the help of Victor Stinner in [issue:~22524](#).)

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\whatsnew\ (cpython-main) (Doc) (whatsnew) 3.5.rst, line 1482); [backlink](#)

Unknown interpreted text role "func".

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\whatsnew\ (cpython-main) (Doc) (whatsnew) 3.5.rst, line 1482); [backlink](#)

Unknown interpreted text role "class".

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\whatsnew\ (cpython-main) (Doc) (whatsnew) 3.5.rst, line 1482); [backlink](#)

Unknown interpreted text role "func".

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\whatsnew\ (cpython-main) (Doc) (whatsnew) 3.5.rst, line 1482); [backlink](#)

Unknown interpreted text role "issue".

On Windows, a new `:attr:stat_result.st_file_attributes <os.stat_result.st_file_attributes>` attribute is now available. It corresponds to the `dwFileAttributes` member of the `BY_HANDLE_FILE_INFORMATION` structure returned by `GetFileInformationByHandle()`. (Contributed by Ben Hoyt in [issue:21719](#).)

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\whatsnew\ (cpython-main) (Doc) (whatsnew) 3.5.rst, line 1489); [backlink](#)

Unknown interpreted text role "attr".

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\whatsnew\ (cpython-main) (Doc) (whatsnew) 3.5.rst, line 1489); [backlink](#)

Unknown interpreted text role "issue".

The `:func:~os.urandom` function now uses the `getrandom()` syscall on Linux 3.17 or newer, and `getentropy()` on OpenBSD 5.6 and newer, removing the need to use `/dev/urandom` and avoiding failures due to potential file descriptor exhaustion. (Contributed by Victor Stinner in [issue:22181](#).)

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\whatsnew\ (cpython-main) (Doc) (whatsnew) 3.5.rst, line 1495); [backlink](#)

Unknown interpreted text role "func".

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\whatsnew\ (cpython-main) (Doc) (whatsnew) 3.5.rst, line 1495); [backlink](#)

Unknown interpreted text role "issue".

New `:func:~os.get_blocking` and `:func:~os.set_blocking` functions allow getting and setting a file descriptor's blocking mode (`:data:~os.O_NONBLOCK`). (Contributed by Victor Stinner in [issue:22054](#).)

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\whatsnew\ (cpython-main) (Doc) (whatsnew) 3.5.rst, line 1500); [backlink](#)

Unknown interpreted text role "func".

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\whatsnew\ (cpython-main) (Doc) (whatsnew) 3.5.rst, line 1500); [backlink](#)

Unknown interpreted text role "func".

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\whatsnew\ (cpython-main) (Doc) (whatsnew) 3.5.rst, line 1500); [backlink](#)

Unknown interpreted text role "data".

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\whatsnew\ (cpython-main) (Doc) (whatsnew) 3.5.rst, line 1500); [backlink](#)

Unknown interpreted text role "issue".

The `:func:~os.truncate` and `:func:~os.ftruncate` functions are now supported on Windows. (Contributed by Steve Dower in [issue:23668](#).)

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\whatsnew\ (cpython-main) (Doc) (whatsnew) 3.5.rst, line 1504); [backlink](#)

Unknown interpreted text role "func".

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\whatsnew\ (cpython-main) (Doc) (whatsnew) 3.5.rst, line 1504); [backlink](#)

Unknown interpreted text role "func".

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\whatsnew\ (cpython-main) (Doc) (whatsnew) 3.5.rst, line 1504); [backlink](#)

Unknown interpreted text role "issue".

There is a new `func:os.path.commonpath` function returning the longest common sub-path of each passed pathname. Unlike the `func:os.path.commonprefix` function, it always returns a valid path:

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\whatsnew\ (cpython-main) (Doc) (whatsnew) 3.5.rst, line 1507); [backlink](#)

Unknown interpreted text role "func".

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\whatsnew\ (cpython-main) (Doc) (whatsnew) 3.5.rst, line 1507); [backlink](#)

Unknown interpreted text role "func".

```
>>> os.path.commonprefix(['/usr/lib', '/usr/local/lib'])
'/usr/l'
```

```
>>> os.path.commonpath(['/usr/lib', '/usr/local/lib'])
'/usr'
```

(Contributed by Rafik Draoui and Serhiy Storchaka in `issue:10395`.)

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\whatsnew\ (cpython-main) (Doc) (whatsnew) 3.5.rst, line 1518); [backlink](#)

Unknown interpreted text role "issue".

pathlib

The new `meth:Path.samefile()` `<pathlib.Path.samefile>` method can be used to check whether the path points to the same file as another path, which can be either another `class:~pathlib.Path` object, or a string:

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\whatsnew\ (cpython-main) (Doc) (whatsnew) 3.5.rst, line 1524); [backlink](#)

Unknown interpreted text role "meth".

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\whatsnew\ (cpython-main) (Doc) (whatsnew) 3.5.rst, line 1524); [backlink](#)

Unknown interpreted text role "class".

```
>>> import pathlib
>>> p1 = pathlib.Path('/etc/hosts')
>>> p2 = pathlib.Path('/etc/../etc/hosts')
>>> p1.samefile(p2)
True
```

(Contributed by Vajrasky Kok and Antoine Pitrou in `issue:19775`.)

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\whatsnew\ (cpython-main) (Doc) (whatsnew) 3.5.rst, line 1534); [backlink](#)

Unknown interpreted text role "issue".

The `meth:Path.mkdir()` `<pathlib.Path.mkdir>` method now accepts a new optional `exist_ok` argument to match `mkdir -p` and `func:os.makedirs` functionality. (Contributed by Berker Peksag in [issue:21539](#).)

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\whatsnew\ (cpython-main) (Doc) (whatsnew) 3.5.rst, line 1536); [backlink](#)

Unknown interpreted text role "meth".

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\whatsnew\ (cpython-main) (Doc) (whatsnew) 3.5.rst, line 1536); [backlink](#)

Unknown interpreted text role "func".

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\whatsnew\ (cpython-main) (Doc) (whatsnew) 3.5.rst, line 1536); [backlink](#)

Unknown interpreted text role "issue".

There is a new `meth:Path.expanduser()` `<pathlib.Path.expanduser>` method to expand `~` and `~user` prefixes. (Contributed by Serhiy Storchaka and Claudiu Popa in [issue:19776](#).)

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\whatsnew\ (cpython-main) (Doc) (whatsnew) 3.5.rst, line 1540); [backlink](#)

Unknown interpreted text role "meth".

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\whatsnew\ (cpython-main) (Doc) (whatsnew) 3.5.rst, line 1540); [backlink](#)

Unknown interpreted text role "issue".

A new `meth:Path.home()` `<pathlib.Path.home>` class method can be used to get a `class:~pathlib.Path` instance representing the user's home directory. (Contributed by Victor Salgado and Mayank Tripathi in [issue:19777](#).)

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\whatsnew\ (cpython-main) (Doc) (whatsnew) 3.5.rst, line 1544); [backlink](#)

Unknown interpreted text role "meth".

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\whatsnew\ (cpython-main) (Doc) (whatsnew) 3.5.rst, line 1544); [backlink](#)

Unknown interpreted text role "class".

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\whatsnew\ (cpython-main) (Doc) (whatsnew) 3.5.rst, line 1544); [backlink](#)

Unknown interpreted text role "issue".

New `meth:Path.write_text()` `<pathlib.Path.write_text>`, `meth:Path.read_text()` `<pathlib.Path.read_text>`, `meth:Path.write_bytes()` `<pathlib.Path.write_bytes>`, `meth:Path.read_bytes()` `<pathlib.Path.read_bytes>` methods to simplify read/write operations on files.

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\whatsnew\ (cpython-main) (Doc) (whatsnew) 3.5.rst, line 1549); [backlink](#)

Unknown interpreted text role "meth".

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\whatsnew\ (cpython-main) (Doc) (whatsnew) 3.5.rst, line 1549); [backlink](#)

Unknown interpreted text role "meth".

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-

main\Doc\whatsnew\ (cpython-main) (Doc) (whatsnew) 3.5.rst, line 1549); [backlink](#)

Unknown interpreted text role "meth".

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\whatsnew\ (cpython-main) (Doc) (whatsnew) 3.5.rst, line 1549); [backlink](#)

Unknown interpreted text role "meth".

The following code snippet will create or rewrite existing file ~/spam42:

```
>>> import pathlib
>>> p = pathlib.Path('~/spam42')
>>> p.expanduser().write_text('ham')
3
```

(Contributed by Christopher Welborn in [:issue:20218](#).)

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\whatsnew\ (cpython-main) (Doc) (whatsnew) 3.5.rst, line 1563); [backlink](#)

Unknown interpreted text role "issue".

pickle

Nested objects, such as unbound methods or nested classes, can now be pickled using [ref: pickle protocols <pickle-protocols>](#) older than protocol version 4. Protocol version 4 already supports these cases. (Contributed by Serhiy Storchaka in [:issue:23611](#).)

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\whatsnew\ (cpython-main) (Doc) (whatsnew) 3.5.rst, line 1569); [backlink](#)

Unknown interpreted text role "ref".

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\whatsnew\ (cpython-main) (Doc) (whatsnew) 3.5.rst, line 1569); [backlink](#)

Unknown interpreted text role "issue".

poplib

A new [meth: POP3.utf8\(\)](#) [<poplib.POP3.utf8>](#) command enables [RFC 6856](#) (Internationalized Email) support, if a POP server supports it. (Contributed by Milan OberKirch in [:issue:21804](#).)

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\whatsnew\ (cpython-main) (Doc) (whatsnew) 3.5.rst, line 1578); [backlink](#)

Unknown interpreted text role "meth".

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\whatsnew\ (cpython-main) (Doc) (whatsnew) 3.5.rst, line 1578); [backlink](#)

Unknown interpreted text role "issue".

re

References and conditional references to groups with fixed length are now allowed in lookbehind assertions:

```
>>> import re
>>> pat = re.compile(r'(a|b).(?!<=\\1)c')
>>> pat.match('aac')
<_sre.SRE_Match object; span=(0, 3), match='aac'>
>>> pat.match('bbc')
<_sre.SRE_Match object; span=(0, 3), match='bbc'>
```

(Contributed by Serhiy Storchaka in [:issue:9179](#).)

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\whatsnew\ (cpython-main) (Doc) (whatsnew) 3.5.rst, line 1596); [backlink](#)

Unknown interpreted text role "issue".

The number of capturing groups in regular expressions is no longer limited to 100. (Contributed by Serhiy Storchaka in [:issue:`22437`](#).)

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\whatsnew\ (cpython-main) (Doc) (whatsnew) 3.5.rst, line 1598); [backlink](#)

Unknown interpreted text role "issue".

The `:func:`~re.sub`` and `:func:`~re.subn`` functions now replace unmatched groups with empty strings instead of raising an exception. (Contributed by Serhiy Storchaka in [:issue:`1519638`](#).)

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\whatsnew\ (cpython-main) (Doc) (whatsnew) 3.5.rst, line 1601); [backlink](#)

Unknown interpreted text role "func".

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\whatsnew\ (cpython-main) (Doc) (whatsnew) 3.5.rst, line 1601); [backlink](#)

Unknown interpreted text role "func".

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\whatsnew\ (cpython-main) (Doc) (whatsnew) 3.5.rst, line 1601); [backlink](#)

Unknown interpreted text role "issue".

The `:class:`re.error`` exceptions have new attributes, `:attr:`~re.error.msg``, `:attr:`~re.error.pattern``, `:attr:`~re.error.pos``, `:attr:`~re.error.lineno``, and `:attr:`~re.error.colno``, that provide better context information about the error:

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\whatsnew\ (cpython-main) (Doc) (whatsnew) 3.5.rst, line 1605); [backlink](#)

Unknown interpreted text role "class".

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\whatsnew\ (cpython-main) (Doc) (whatsnew) 3.5.rst, line 1605); [backlink](#)

Unknown interpreted text role "attr".

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\whatsnew\ (cpython-main) (Doc) (whatsnew) 3.5.rst, line 1605); [backlink](#)

Unknown interpreted text role "attr".

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\whatsnew\ (cpython-main) (Doc) (whatsnew) 3.5.rst, line 1605); [backlink](#)

Unknown interpreted text role "attr".

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\whatsnew\ (cpython-main) (Doc) (whatsnew) 3.5.rst, line 1605); [backlink](#)

Unknown interpreted text role "attr".

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\whatsnew\ (cpython-main) (Doc) (whatsnew) 3.5.rst, line 1605); [backlink](#)

Unknown interpreted text role "attr".

```
>>> re.compile("""
...     (?x)
...     .++
... """)
Traceback (most recent call last):
... 
```


sre_constants.error: multiple repeat at position 16 (line 3, column 7)

(Contributed by Serhiy Storchaka in [:issue:'22578'](#).)

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\whatsnew\ (cpython-main) (Doc) (whatsnew) 3.5.rst, line 1619); [backlink](#)

Unknown interpreted text role "issue".

readline

A new `:func:`~readline.append_history_file`` function can be used to append the specified number of trailing elements in history to the given file. (Contributed by Bruno Caulet in [:issue:'22940'](#).)

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\whatsnew\ (cpython-main) (Doc) (whatsnew) 3.5.rst, line 1625); [backlink](#)

Unknown interpreted text role "func".

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\whatsnew\ (cpython-main) (Doc) (whatsnew) 3.5.rst, line 1625); [backlink](#)

Unknown interpreted text role "issue".

selectors

The new `:class:`~selectors.DevpollSelector`` supports efficient `/dev/poll` polling on Solaris. (Contributed by Giampaolo Rodola' in [:issue:'18931'](#).)

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\whatsnew\ (cpython-main) (Doc) (whatsnew) 3.5.rst, line 1633); [backlink](#)

Unknown interpreted text role "class".

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\whatsnew\ (cpython-main) (Doc) (whatsnew) 3.5.rst, line 1633); [backlink](#)

Unknown interpreted text role "issue".

shutil

The `:func:`~shutil.move`` function now accepts a `copy_function` argument, allowing, for example, the `:func:`~shutil.copy`` function to be used instead of the default `:func:`~shutil.copy2`` if there is a need to ignore file metadata when moving. (Contributed by Claudiu Popa in [:issue:'19840'](#).)

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\whatsnew\ (cpython-main) (Doc) (whatsnew) 3.5.rst, line 1641); [backlink](#)

Unknown interpreted text role "func".

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\whatsnew\ (cpython-main) (Doc) (whatsnew) 3.5.rst, line 1641); [backlink](#)

Unknown interpreted text role "func".

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\whatsnew\ (cpython-main) (Doc) (whatsnew) 3.5.rst, line 1641); [backlink](#)

Unknown interpreted text role "func".

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\whatsnew\ (cpython-main) (Doc) (whatsnew) 3.5.rst, line 1641); [backlink](#)

Unknown interpreted text role "issue".

The `:func:`~shutil.make_archive`` function now supports the `xztar` format. (Contributed by Serhiy Storchaka in [:issue:'5411'](#).)

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\whatsnew\ (cpython-main) (Doc) (whatsnew) 3.5.rst, line 1647); [backlink](#)

Unknown interpreted text role "func".

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\whatsnew\ (cpython-main) (Doc) (whatsnew) 3.5.rst, line 1647); [backlink](#)

Unknown interpreted text role "issue".

signal

On Windows, the `:func:`~signal.set_wakeup_fd`` function now also supports socket handles. (Contributed by Victor Stinner in [:issue:`22018`](#).)

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\whatsnew\ (cpython-main) (Doc) (whatsnew) 3.5.rst, line 1654); [backlink](#)

Unknown interpreted text role "func".

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\whatsnew\ (cpython-main) (Doc) (whatsnew) 3.5.rst, line 1654); [backlink](#)

Unknown interpreted text role "issue".

Various `SIG*` constants in the `:mod:`signal`` module have been converted into `:mod:`Enums <enum>``. This allows meaningful names to be printed during debugging, instead of integer "magic numbers". (Contributed by Gianpaolo Rodola' in [:issue:`21076`](#).)

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\whatsnew\ (cpython-main) (Doc) (whatsnew) 3.5.rst, line 1657); [backlink](#)

Unknown interpreted text role "mod".

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\whatsnew\ (cpython-main) (Doc) (whatsnew) 3.5.rst, line 1657); [backlink](#)

Unknown interpreted text role "mod".

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\whatsnew\ (cpython-main) (Doc) (whatsnew) 3.5.rst, line 1657); [backlink](#)

Unknown interpreted text role "issue".

smtpd

Both the `:class:`~smtpd.SMTPServer`` and `:class:`~smtpd.SMTPChannel`` classes now accept a `decode_data` keyword argument to determine if the DATA portion of the SMTP transaction is decoded using the "utf-8" codec or is instead provided to the `:meth:`SMTPServer.process_message() <smtpd.SMTPServer.process_message>`` method as a byte string. The default is `True` for backward compatibility reasons, but will change to `False` in Python 3.6. If `decode_data` is set to `False`, the `process_message` method must be prepared to accept keyword arguments. (Contributed by Maciej Szulik in [:issue:`19662`](#).)

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\whatsnew\ (cpython-main) (Doc) (whatsnew) 3.5.rst, line 1666); [backlink](#)

Unknown interpreted text role "class".

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\whatsnew\ (cpython-main) (Doc) (whatsnew) 3.5.rst, line 1666); [backlink](#)

Unknown interpreted text role "class".

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\whatsnew\ (cpython-main) (Doc) (whatsnew) 3.5.rst, line 1666); [backlink](#)

Unknown interpreted text role "meth".

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\whatsnew\ (cpython-main) (Doc) (whatsnew) 3.5.rst, line 1666); [backlink](#)

Unknown interpreted text role "issue".

The `:class:`~smtpd.SMTPServer`` class now advertises the 8BITMIME extension (RFC 6152) if `decode_data` has been set `True`. If the client specifies `BODY=8BITMIME` on the `MAIL` command, it is passed to `:meth:`~smtpd.SMTPServer.process_message`()` `<smtpd.SMTPServer.process_message>` via the `mail_options` keyword. (Contributed by Milan Oberkirch and R. David Murray in [:issue:`21795`](#).)

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\whatsnew\ (cpython-main) (Doc) (whatsnew) 3.5.rst, line 1677); [backlink](#)

Unknown interpreted text role "class".

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\whatsnew\ (cpython-main) (Doc) (whatsnew) 3.5.rst, line 1677); [backlink](#)

Unknown interpreted text role "meth".

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\whatsnew\ (cpython-main) (Doc) (whatsnew) 3.5.rst, line 1677); [backlink](#)

Unknown interpreted text role "issue".

The `:class:`~smtpd.SMTPServer`` class now also supports the SMTPUTF8 extension (RFC 6531: Internationalized Email). If the client specified `SMTPUTF8 BODY=8BITMIME` on the `MAIL` command, they are passed to `:meth:`~smtpd.SMTPServer.process_message`()` `<smtpd.SMTPServer.process_message>` via the `mail_options` keyword. It is the responsibility of the `process_message` method to correctly handle the SMTPUTF8 data. (Contributed by Milan Oberkirch in [:issue:`21725`](#).)

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\whatsnew\ (cpython-main) (Doc) (whatsnew) 3.5.rst, line 1684); [backlink](#)

Unknown interpreted text role "class".

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\whatsnew\ (cpython-main) (Doc) (whatsnew) 3.5.rst, line 1684); [backlink](#)

Unknown interpreted text role "meth".

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\whatsnew\ (cpython-main) (Doc) (whatsnew) 3.5.rst, line 1684); [backlink](#)

Unknown interpreted text role "issue".

It is now possible to provide, directly or via name resolution, IPv6 addresses in the `:class:`~smtpd.SMTPServer`` constructor, and have it successfully connect. (Contributed by Milan Oberkirch in [:issue:`14758`](#).)

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\whatsnew\ (cpython-main) (Doc) (whatsnew) 3.5.rst, line 1692); [backlink](#)

Unknown interpreted text role "class".

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\whatsnew\ (cpython-main) (Doc) (whatsnew) 3.5.rst, line 1692); [backlink](#)

Unknown interpreted text role "issue".

smtplib

A new `:meth:`~SMTP.auth`()` `<smtplib.SMTP.auth>` method provides a convenient way to implement custom authentication mechanisms. (Contributed by Milan Oberkirch in [:issue:`15014`](#).)

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\whatsnew\ (cpython-main) (Doc) (whatsnew) 3.5.rst, line 1700); [backlink](#)

Unknown interpreted text role "meth".

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\whatsnew\ (cpython-main) (Doc) (whatsnew) 3.5.rst, line 1700); [backlink](#)

Unknown interpreted text role "issue".

The `:meth:`SMTP.set_debuglevel() <smtpplib.SMTP.set_debuglevel>`` method now accepts an additional `debuglevel (2)`, which enables timestamps in debug messages. (Contributed by Gavin Chappell and Maciej Szulik in [issue:`16914`](#).)

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\whatsnew\ (cpython-main) (Doc) (whatsnew) 3.5.rst, line 1704); [backlink](#)

Unknown interpreted text role "meth".

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\whatsnew\ (cpython-main) (Doc) (whatsnew) 3.5.rst, line 1704); [backlink](#)

Unknown interpreted text role "issue".

Both the `:meth:`SMTP.sendmail() <smtpplib.SMTP.sendmail>`` and `:meth:`SMTP.send_message() <smtpplib.SMTP.send_message>`` methods now support [RFC 6531](#) (SMTPUTF8). (Contributed by Milan Oberkirch and R. David Murray in [issue:`22027`](#).)

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\whatsnew\ (cpython-main) (Doc) (whatsnew) 3.5.rst, line 1708); [backlink](#)

Unknown interpreted text role "meth".

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\whatsnew\ (cpython-main) (Doc) (whatsnew) 3.5.rst, line 1708); [backlink](#)

Unknown interpreted text role "meth".

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\whatsnew\ (cpython-main) (Doc) (whatsnew) 3.5.rst, line 1708); [backlink](#)

Unknown interpreted text role "issue".

sndhdr

The `:func:`~sndhdr.what`` and `:func:`~sndhdr.whathdr`` functions now return a `:func:`~collections.namedtuple``. (Contributed by Claudiu Popa in [issue:`18615`](#).)

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\whatsnew\ (cpython-main) (Doc) (whatsnew) 3.5.rst, line 1717); [backlink](#)

Unknown interpreted text role "func".

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\whatsnew\ (cpython-main) (Doc) (whatsnew) 3.5.rst, line 1717); [backlink](#)

Unknown interpreted text role "func".

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\whatsnew\ (cpython-main) (Doc) (whatsnew) 3.5.rst, line 1717); [backlink](#)

Unknown interpreted text role "func".

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\whatsnew\ (cpython-main) (Doc) (whatsnew) 3.5.rst, line 1717); [backlink](#)

Unknown interpreted text role "issue".

socket

Functions with timeouts now use a monotonic clock, instead of a system clock. (Contributed by Victor Stinner in [:issue:22043](#).)

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\whatsnew\ (cpython-main) (Doc) (whatsnew) 3.5.rst, line 1725); [backlink](#)

Unknown interpreted text role "issue".

A new `meth:socket.sendfile()` `<socket.socket.sendfile>` method allows sending a file over a socket by using the high-performance `func:os.sendfile` function on UNIX, resulting in uploads being from 2 to 3 times faster than when using plain `meth:socket.send()` `<socket.socket.send>`. (Contributed by Giampaolo Rodola' in [:issue:17552](#).)

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\whatsnew\ (cpython-main) (Doc) (whatsnew) 3.5.rst, line 1728); [backlink](#)

Unknown interpreted text role "meth".

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\whatsnew\ (cpython-main) (Doc) (whatsnew) 3.5.rst, line 1728); [backlink](#)

Unknown interpreted text role "func".

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\whatsnew\ (cpython-main) (Doc) (whatsnew) 3.5.rst, line 1728); [backlink](#)

Unknown interpreted text role "meth".

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\whatsnew\ (cpython-main) (Doc) (whatsnew) 3.5.rst, line 1728); [backlink](#)

Unknown interpreted text role "issue".

The `meth:socket.sendall()` `<socket.socket.sendall>` method no longer resets the socket timeout every time bytes are received or sent. The socket timeout is now the maximum total duration to send all data. (Contributed by Victor Stinner in [:issue:23853](#).)

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\whatsnew\ (cpython-main) (Doc) (whatsnew) 3.5.rst, line 1734); [backlink](#)

Unknown interpreted text role "meth".

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\whatsnew\ (cpython-main) (Doc) (whatsnew) 3.5.rst, line 1734); [backlink](#)

Unknown interpreted text role "issue".

The `backlog` argument of the `meth:socket.listen()` `<socket.socket.listen>` method is now optional. By default it is set to `data:SOMAXCONN` `<socket.SOMAXCONN>` or to 128, whichever is less. (Contributed by Charles-François Natali in [:issue:21455](#).)

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\whatsnew\ (cpython-main) (Doc) (whatsnew) 3.5.rst, line 1739); [backlink](#)

Unknown interpreted text role "meth".

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\whatsnew\ (cpython-main) (Doc) (whatsnew) 3.5.rst, line 1739); [backlink](#)

Unknown interpreted text role "data".

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\whatsnew\ (cpython-main) (Doc) (whatsnew) 3.5.rst, line 1739); [backlink](#)

Unknown interpreted text role "issue".

Memory BIO Support

(Contributed by Geert Jansen in [:issue:'21965'](#).)

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\whatsnew\ (cpython-main) (Doc) (whatsnew) 3.5.rst, line 1753); [backlink](#)

Unknown interpreted text role "issue".

The new `:class:'~ssl.SSLObjct'` class has been added to provide SSL protocol support for cases when the network I/O capabilities of `:class:'~ssl.SSLSocket'` are not necessary or are suboptimal. `SSLObjct` represents an SSL protocol instance, but does not implement any network I/O methods, and instead provides a memory buffer interface. The new `:class:'~ssl.MemoryBIO'` class can be used to pass data between Python and an SSL protocol instance.

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\whatsnew\ (cpython-main) (Doc) (whatsnew) 3.5.rst, line 1755); [backlink](#)

Unknown interpreted text role "class".

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\whatsnew\ (cpython-main) (Doc) (whatsnew) 3.5.rst, line 1755); [backlink](#)

Unknown interpreted text role "class".

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\whatsnew\ (cpython-main) (Doc) (whatsnew) 3.5.rst, line 1755); [backlink](#)

Unknown interpreted text role "class".

The memory BIO SSL support is primarily intended to be used in frameworks implementing asynchronous I/O for which `:class:'~ssl.SSLSocket'`'s readiness model ("select/poll") is inefficient.

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\whatsnew\ (cpython-main) (Doc) (whatsnew) 3.5.rst, line 1762); [backlink](#)

Unknown interpreted text role "class".

A new `:meth:'SSLContext.wrap_bio() <ssl.SSLContext.wrap_bio>'` method can be used to create a new `SSLObjct` instance.

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\whatsnew\ (cpython-main) (Doc) (whatsnew) 3.5.rst, line 1766); [backlink](#)

Unknown interpreted text role "meth".

Application-Layer Protocol Negotiation Support

(Contributed by Benjamin Peterson in [:issue:'20188'](#).)

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\whatsnew\ (cpython-main) (Doc) (whatsnew) 3.5.rst, line 1773); [backlink](#)

Unknown interpreted text role "issue".

Where OpenSSL support is present, the `:mod:'ssl'` module now implements the *Application-Layer Protocol Negotiation* TLS extension as described in [RFC 7301](#).

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\whatsnew\ (cpython-main) (Doc) (whatsnew) 3.5.rst, line 1775); [backlink](#)

Unknown interpreted text role "mod".

The new `:meth:'SSLContext.set_alpn_protocols() <ssl.SSLContext.set_alpn_protocols>'` can be used to specify which protocols a socket should advertise during the TLS handshake.

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\whatsnew\ (cpython-main) (Doc) (whatsnew) 3.5.rst, line 1779); [backlink](#)

Unknown interpreted text role "meth".

The new `meth:'SSLSocket.selected_alpn_protocol() <ssl.SSLSocket.selected_alpn_protocol>'` returns the protocol that was selected during the TLS handshake. The `:data:'~ssl.HAS_ALPN'` flag indicates whether ALPN support is present.

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\whatsnew\ (cpython-main) (Doc) (whatsnew) 3.5.rst, line 1783); [backlink](#)

Unknown interpreted text role "meth".

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\whatsnew\ (cpython-main) (Doc) (whatsnew) 3.5.rst, line 1783); [backlink](#)

Unknown interpreted text role "data".

Other Changes

There is a new `meth:'SSLSocket.version() <ssl.SSLSocket.version>'` method to query the actual protocol version in use. (Contributed by Antoine Pitrou in [:issue:'20421'](#).)

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\whatsnew\ (cpython-main) (Doc) (whatsnew) 3.5.rst, line 1792); [backlink](#)

Unknown interpreted text role "meth".

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\whatsnew\ (cpython-main) (Doc) (whatsnew) 3.5.rst, line 1792); [backlink](#)

Unknown interpreted text role "issue".

The `:class:'~ssl.SSLSocket'` class now implements a `meth:'SSLSocket.sendfile() <ssl.SSLSocket.sendfile>'` method. (Contributed by Giampaolo Rodola' in [:issue:'17552'](#).)

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\whatsnew\ (cpython-main) (Doc) (whatsnew) 3.5.rst, line 1796); [backlink](#)

Unknown interpreted text role "class".

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\whatsnew\ (cpython-main) (Doc) (whatsnew) 3.5.rst, line 1796); [backlink](#)

Unknown interpreted text role "meth".

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\whatsnew\ (cpython-main) (Doc) (whatsnew) 3.5.rst, line 1796); [backlink](#)

Unknown interpreted text role "issue".

The `meth:'SSLSocket.send() <ssl.SSLSocket.send>'` method now raises either the `:exc:'ssl.SSLWantReadError'` or `:exc:'ssl.SSLWantWriteError'` exception on a non-blocking socket if the operation would block. Previously, it would return 0. (Contributed by Nikolaus Rath in [:issue:'20951'](#).)

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\whatsnew\ (cpython-main) (Doc) (whatsnew) 3.5.rst, line 1800); [backlink](#)

Unknown interpreted text role "meth".

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\whatsnew\ (cpython-main) (Doc) (whatsnew) 3.5.rst, line 1800); [backlink](#)

Unknown interpreted text role "exc".

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\whatsnew\ (cpython-main) (Doc) (whatsnew) 3.5.rst, line 1800); [backlink](#)

Unknown interpreted text role "exc".

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\whatsnew\ (cpython-main) (Doc) (whatsnew) 3.5.rst, line 1800); [backlink](#)

Unknown interpreted text role "issue".

The `:func:`~ssl.cert_time_to_seconds`` function now interprets the input time as UTC and not as local time, per [RFC 5280](#). Additionally, the return value is always an `:class:`int``. (Contributed by Akira Li in [issue:`19940`](#).)

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\whatsnew\ (cpython-main) (Doc) (whatsnew) 3.5.rst, line 1805); [backlink](#)

Unknown interpreted text role "func".

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\whatsnew\ (cpython-main) (Doc) (whatsnew) 3.5.rst, line 1805); [backlink](#)

Unknown interpreted text role "class".

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\whatsnew\ (cpython-main) (Doc) (whatsnew) 3.5.rst, line 1805); [backlink](#)

Unknown interpreted text role "issue".

New `:meth:`SSLObject.shared_ciphers() <ssl.SSLObject.shared_ciphers>`` and `:meth:`SSLSocket.shared_ciphers() <ssl.SSLSocket.shared_ciphers>`` methods return the list of ciphers sent by the client during the handshake. (Contributed by Benjamin Peterson in [issue:`23186`](#).)

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\whatsnew\ (cpython-main) (Doc) (whatsnew) 3.5.rst, line 1809); [backlink](#)

Unknown interpreted text role "meth".

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\whatsnew\ (cpython-main) (Doc) (whatsnew) 3.5.rst, line 1809); [backlink](#)

Unknown interpreted text role "meth".

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\whatsnew\ (cpython-main) (Doc) (whatsnew) 3.5.rst, line 1809); [backlink](#)

Unknown interpreted text role "issue".

The `:meth:`SSLSocket.do_handshake() <ssl.SSLSocket.do_handshake>``, `:meth:`SSLSocket.read() <ssl.SSLSocket.read>``, `:meth:`SSLSocket.shutdown() <ssl.SSLSocket.shutdown>``, and `:meth:`SSLSocket.write() <ssl.SSLSocket.write>`` methods of the `:class:`~ssl.SSLSocket`` class no longer reset the socket timeout every time bytes are received or sent. The socket timeout is now the maximum total duration of the method. (Contributed by Victor Stinner in [issue:`23853`](#).)

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\whatsnew\ (cpython-main) (Doc) (whatsnew) 3.5.rst, line 1814); [backlink](#)

Unknown interpreted text role "meth".

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\whatsnew\ (cpython-main) (Doc) (whatsnew) 3.5.rst, line 1814); [backlink](#)

Unknown interpreted text role "meth".

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\whatsnew\ (cpython-main) (Doc) (whatsnew) 3.5.rst, line 1814); [backlink](#)

Unknown interpreted text role "meth".

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\whatsnew\ (cpython-main) (Doc) (whatsnew) 3.5.rst, line 1814); [backlink](#)

Unknown interpreted text role "meth".

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\whatsnew\ (cpython-main) (Doc) (whatsnew) 3.5.rst, line 1814); [backlink](#)

Unknown interpreted text role "class".

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\whatsnew\ (cpython-main) (Doc) (whatsnew) 3.5.rst, line 1814); [backlink](#)

Unknown interpreted text role "issue".

The `:func:~ssl.match_hostname` function now supports matching of IP addresses. (Contributed by Antoine Pitrou in [issue:~23239](#).)

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\whatsnew\ (cpython-main) (Doc) (whatsnew) 3.5.rst, line 1822); [backlink](#)

Unknown interpreted text role "func".

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\whatsnew\ (cpython-main) (Doc) (whatsnew) 3.5.rst, line 1822); [backlink](#)

Unknown interpreted text role "issue".

sqlite3

The `:class:~sqlite3.Row` class now fully supports the sequence protocol, in particular `:func:~reversed` iteration and slice indexing (Contributed by Claudiu Popa in [issue:~10203](#); by Lucas Sinclair, Jessica McKellar, and Serhiy Storchaka in [issue:~13583](#).)

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\whatsnew\ (cpython-main) (Doc) (whatsnew) 3.5.rst, line 1829); [backlink](#)

Unknown interpreted text role "class".

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\whatsnew\ (cpython-main) (Doc) (whatsnew) 3.5.rst, line 1829); [backlink](#)

Unknown interpreted text role "func".

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\whatsnew\ (cpython-main) (Doc) (whatsnew) 3.5.rst, line 1829); [backlink](#)

Unknown interpreted text role "issue".

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\whatsnew\ (cpython-main) (Doc) (whatsnew) 3.5.rst, line 1829); [backlink](#)

Unknown interpreted text role "issue".

subprocess

The new `:func:~subprocess.run` function has been added. It runs the specified command and returns a `:class:~subprocess.CompletedProcess` object, which describes a finished process. The new API is more consistent and is the recommended approach to invoking subprocesses in Python code that does not need to maintain compatibility with earlier Python versions. (Contributed by Thomas Kluyver in [issue:~23342](#).)

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\whatsnew\ (cpython-main) (Doc) (whatsnew) 3.5.rst, line 1840); [backlink](#)

Unknown interpreted text role "func".

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-

main\Doc\whatsnew\ (cpython-main) (Doc) (whatsnew) 3.5.rst, line 1840); [backlink](#)

Unknown interpreted text role "class".

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\whatsnew\ (cpython-main) (Doc) (whatsnew) 3.5.rst, line 1840); [backlink](#)

Unknown interpreted text role "issue".

Examples:

```
>>> subprocess.run(["ls", "-l"]) # doesn't capture output
CompletedProcess(args=['ls', '-l'], returncode=0)

>>> subprocess.run("exit 1", shell=True, check=True)
Traceback (most recent call last):
...
subprocess.CalledProcessError: Command 'exit 1' returned non-zero exit status 1

>>> subprocess.run(["ls", "-l", "/dev/null"], stdout=subprocess.PIPE)
CompletedProcess(args=['ls', '-l', '/dev/null'], returncode=0,
stdout=b'crw-rw-rw- 1 root root 1, 3 Jan 23 16:23 /dev/null\n')
```

sys

A new `:func:`~sys.set_coroutine_wrapper`` function allows setting a global hook that will be called whenever a `:term:`coroutine object`` `<coroutine>` is created by an `:keyword:`async def`` function. A corresponding `:func:`~sys.get_coroutine_wrapper`` can be used to obtain a currently set wrapper. Both functions are `:term:`provisional`` `<provisional API>`, and are intended for debugging purposes only. (Contributed by Yury Selivanov in `:issue:`24017``.)

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\whatsnew\ (cpython-main) (Doc) (whatsnew) 3.5.rst, line 1866); [backlink](#)

Unknown interpreted text role "func".

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\whatsnew\ (cpython-main) (Doc) (whatsnew) 3.5.rst, line 1866); [backlink](#)

Unknown interpreted text role "term".

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\whatsnew\ (cpython-main) (Doc) (whatsnew) 3.5.rst, line 1866); [backlink](#)

Unknown interpreted text role "keyword".

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\whatsnew\ (cpython-main) (Doc) (whatsnew) 3.5.rst, line 1866); [backlink](#)

Unknown interpreted text role "func".

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\whatsnew\ (cpython-main) (Doc) (whatsnew) 3.5.rst, line 1866); [backlink](#)

Unknown interpreted text role "term".

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\whatsnew\ (cpython-main) (Doc) (whatsnew) 3.5.rst, line 1866); [backlink](#)

Unknown interpreted text role "issue".

A new `:func:`~sys.is_finalizing`` function can be used to check if the Python interpreter is `:term:`shutting down`` `<interpreter shutdown>`. (Contributed by Antoine Pitrou in `:issue:`22696``.)

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\whatsnew\ (cpython-main) (Doc) (whatsnew) 3.5.rst, line 1874); [backlink](#)

Unknown interpreted text role "func".

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\whatsnew\ (cpython-main) (Doc) (whatsnew) 3.5.rst, line 1874); [backlink](#)

Unknown interpreted text role "term".

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\whatsnew\ (cpython-main) (Doc) (whatsnew) 3.5.rst, line 1874); [backlink](#)

Unknown interpreted text role "issue".

sysconfig

The name of the user scripts directory on Windows now includes the first two components of the Python version. (Contributed by Paul Moore in [issue:23437](#).)

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\whatsnew\ (cpython-main) (Doc) (whatsnew) 3.5.rst, line 1882); [backlink](#)

Unknown interpreted text role "issue".

tarfile

The *mode* argument of the `func:~tarfile.open` function now accepts "x" to request exclusive creation. (Contributed by Berker Peksag in [issue:21717](#).)

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\whatsnew\ (cpython-main) (Doc) (whatsnew) 3.5.rst, line 1890); [backlink](#)

Unknown interpreted text role "func".

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\whatsnew\ (cpython-main) (Doc) (whatsnew) 3.5.rst, line 1890); [backlink](#)

Unknown interpreted text role "issue".

The `meth:TarFile.extractall()` `<tarfile.TarFile.extractall>` and `meth:TarFile.extract()` `<tarfile.TarFile.extract>` methods now take a keyword argument *numeric_owner*. If set to `True`, the extracted files and directories will be owned by the numeric `uid` and `gid` from the tarfile. If set to `False` (the default, and the behavior in versions prior to 3.5), they will be owned by the named user and group in the tarfile. (Contributed by Michael Vogt and Eric Smith in [issue:23193](#).)

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\whatsnew\ (cpython-main) (Doc) (whatsnew) 3.5.rst, line 1893); [backlink](#)

Unknown interpreted text role "meth".

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\whatsnew\ (cpython-main) (Doc) (whatsnew) 3.5.rst, line 1893); [backlink](#)

Unknown interpreted text role "meth".

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\whatsnew\ (cpython-main) (Doc) (whatsnew) 3.5.rst, line 1893); [backlink](#)

Unknown interpreted text role "issue".

The `meth:TarFile.list()` `<tarfile.TarFile.list>` now accepts an optional *members* keyword argument that can be set to a subset of the list returned by `meth:TarFile.getmembers()` `<tarfile.TarFile.getmembers>`. (Contributed by Serhiy Storchaka in [issue:21549](#).)

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\whatsnew\ (cpython-main) (Doc) (whatsnew) 3.5.rst, line 1901); [backlink](#)

Unknown interpreted text role "meth".

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\whatsnew\ (cpython-main) (Doc) (whatsnew) 3.5.rst, line 1901); [backlink](#)

Unknown interpreted text role "meth".

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\whatsnew\ (cpython-main) (Doc) (whatsnew) 3.5.rst, line 1901); [backlink](#)

Unknown interpreted text role "issue".

threading

Both the `meth: Lock.acquire()` `<threading.Lock.acquire>` and `meth: RLock.acquire()` `<threading.RLock.acquire>` methods now use a monotonic clock for timeout management. (Contributed by Victor Stinner in `issue: 22043`.)

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\whatsnew\ (cpython-main) (Doc) (whatsnew) 3.5.rst, line 1910); [backlink](#)

Unknown interpreted text role "meth".

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\whatsnew\ (cpython-main) (Doc) (whatsnew) 3.5.rst, line 1910); [backlink](#)

Unknown interpreted text role "meth".

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\whatsnew\ (cpython-main) (Doc) (whatsnew) 3.5.rst, line 1910); [backlink](#)

Unknown interpreted text role "issue".

time

The `func: ~time.monotonic` function is now always available. (Contributed by Victor Stinner in `issue: 22043`.)

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\whatsnew\ (cpython-main) (Doc) (whatsnew) 3.5.rst, line 1919); [backlink](#)

Unknown interpreted text role "func".

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\whatsnew\ (cpython-main) (Doc) (whatsnew) 3.5.rst, line 1919); [backlink](#)

Unknown interpreted text role "issue".

timeit

A new command line option `-u` or `samp: --unit={U}` can be used to specify the time unit for the timer output. Supported options are `usec`, `msec`, or `sec`. (Contributed by Julian Gindi in `issue: 18983`.)

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\whatsnew\ (cpython-main) (Doc) (whatsnew) 3.5.rst, line 1926); [backlink](#)

Unknown interpreted text role "samp".

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\whatsnew\ (cpython-main) (Doc) (whatsnew) 3.5.rst, line 1926); [backlink](#)

Unknown interpreted text role "issue".

The `func: ~timeit.timeit` function has a new `globals` parameter for specifying the namespace in which the code will be running. (Contributed by Ben Roberts in `issue: 2527`.)

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\whatsnew\ (cpython-main) (Doc) (whatsnew) 3.5.rst, line 1930); [backlink](#)

Unknown interpreted text role "func".

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-

main\Doc\whatsnew\ (cpython-main) (Doc) (whatsnew) 3.5.rst, line 1930); [backlink](#)

Unknown interpreted text role "issue".

tkinter

The `:mod:`tkinter._fix`` module used for setting up the Tcl/Tk environment on Windows has been replaced by a private function in the `:mod:`_tkinter`` module which makes no permanent changes to environment variables. (Contributed by Zachary Ware in [issue:`20035`](#).)

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\whatsnew\ (cpython-main) (Doc) (whatsnew) 3.5.rst, line 1938); [backlink](#)

Unknown interpreted text role "mod".

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\whatsnew\ (cpython-main) (Doc) (whatsnew) 3.5.rst, line 1938); [backlink](#)

Unknown interpreted text role "mod".

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\whatsnew\ (cpython-main) (Doc) (whatsnew) 3.5.rst, line 1938); [backlink](#)

Unknown interpreted text role "issue".

traceback

New `:func:`~traceback.walk_stack`` and `:func:`~traceback.walk_tb`` functions to conveniently traverse frame and traceback objects. (Contributed by Robert Collins in [issue:`17911`](#).)

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\whatsnew\ (cpython-main) (Doc) (whatsnew) 3.5.rst, line 1949); [backlink](#)

Unknown interpreted text role "func".

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\whatsnew\ (cpython-main) (Doc) (whatsnew) 3.5.rst, line 1949); [backlink](#)

Unknown interpreted text role "func".

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\whatsnew\ (cpython-main) (Doc) (whatsnew) 3.5.rst, line 1949); [backlink](#)

Unknown interpreted text role "issue".

New lightweight classes: `:class:`~traceback.TracebackException``, `:class:`~traceback.StackSummary``, and `:class:`~traceback.FrameSummary``. (Contributed by Robert Collins in [issue:`17911`](#).)

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\whatsnew\ (cpython-main) (Doc) (whatsnew) 3.5.rst, line 1953); [backlink](#)

Unknown interpreted text role "class".

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\whatsnew\ (cpython-main) (Doc) (whatsnew) 3.5.rst, line 1953); [backlink](#)

Unknown interpreted text role "class".

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\whatsnew\ (cpython-main) (Doc) (whatsnew) 3.5.rst, line 1953); [backlink](#)

Unknown interpreted text role "class".

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\whatsnew\ (cpython-main) (Doc) (whatsnew) 3.5.rst, line 1953); [backlink](#)

Unknown interpreted text role "issue".

Both the `:func:~traceback.print_tb` and `:func:~traceback.print_stack` functions now support negative values for the *limit* argument. (Contributed by Dmitry Kazakov in [issue:22619](#).)

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\whatsnew\ (cpython-main) (Doc) (whatsnew) 3.5.rst, line 1957); [backlink](#)

Unknown interpreted text role "func".

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\whatsnew\ (cpython-main) (Doc) (whatsnew) 3.5.rst, line 1957); [backlink](#)

Unknown interpreted text role "func".

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\whatsnew\ (cpython-main) (Doc) (whatsnew) 3.5.rst, line 1957); [backlink](#)

Unknown interpreted text role "issue".

types

A new `:func:~types.coroutine` function to transform `:term:generator <generator iterator>` and `:class:generator-like <collections.abc.Generator>` objects into `:term:awaitables <awaitable>`. (Contributed by Yuri Selivanov in [issue:24017](#).)

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\whatsnew\ (cpython-main) (Doc) (whatsnew) 3.5.rst, line 1965); [backlink](#)

Unknown interpreted text role "func".

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\whatsnew\ (cpython-main) (Doc) (whatsnew) 3.5.rst, line 1965); [backlink](#)

Unknown interpreted text role "term".

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\whatsnew\ (cpython-main) (Doc) (whatsnew) 3.5.rst, line 1965); [backlink](#)

Unknown interpreted text role "class".

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\whatsnew\ (cpython-main) (Doc) (whatsnew) 3.5.rst, line 1965); [backlink](#)

Unknown interpreted text role "term".

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\whatsnew\ (cpython-main) (Doc) (whatsnew) 3.5.rst, line 1965); [backlink](#)

Unknown interpreted text role "issue".

A new type called `:class:~types.CoroutineType`, which is used for `:term:coroutine` objects created by `:keyword:async def` functions. (Contributed by Yuri Selivanov in [issue:24400](#).)

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\whatsnew\ (cpython-main) (Doc) (whatsnew) 3.5.rst, line 1971); [backlink](#)

Unknown interpreted text role "class".

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\whatsnew\ (cpython-main) (Doc) (whatsnew) 3.5.rst, line 1971); [backlink](#)

Unknown interpreted text role "term".

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-

main\Doc\whatsnew\ (cpython-main) (Doc) (whatsnew) 3.5.rst, line 1971); [backlink](#)

Unknown interpreted text role "keyword".

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\whatsnew\ (cpython-main) (Doc) (whatsnew) 3.5.rst, line 1971); [backlink](#)

Unknown interpreted text role "issue".

unicodedata

The `mod:unicodedata` module now uses data from [Unicode 8.0.0](#).

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\whatsnew\ (cpython-main) (Doc) (whatsnew) 3.5.rst, line 1979); [backlink](#)

Unknown interpreted text role "mod".

unittest

The `meth:TestLoader.loadTestsFromModule()` `<unittest.TestLoader.loadTestsFromModule>` method now accepts a keyword-only argument *pattern* which is passed to `load_tests` as the third argument. Found packages are now checked for `load_tests` regardless of whether their path matches *pattern*, because it is impossible for a package name to match the default pattern. (Contributed by Robert Collins and Barry A. Warsaw in [:issue:16662](#).)

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\whatsnew\ (cpython-main) (Doc) (whatsnew) 3.5.rst, line 1986); [backlink](#)

Unknown interpreted text role "meth".

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\whatsnew\ (cpython-main) (Doc) (whatsnew) 3.5.rst, line 1986); [backlink](#)

Unknown interpreted text role "issue".

Unittest discovery errors now are exposed in the `data:TestLoader.errors` `<unittest.TestLoader.errors>` attribute of the `class:~unittest.TestLoader` instance. (Contributed by Robert Collins in [:issue:19746](#).)

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\whatsnew\ (cpython-main) (Doc) (whatsnew) 3.5.rst, line 1993); [backlink](#)

Unknown interpreted text role "data".

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\whatsnew\ (cpython-main) (Doc) (whatsnew) 3.5.rst, line 1993); [backlink](#)

Unknown interpreted text role "class".

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\whatsnew\ (cpython-main) (Doc) (whatsnew) 3.5.rst, line 1993); [backlink](#)

Unknown interpreted text role "issue".

A new command line option `--locals` to show local variables in tracebacks. (Contributed by Robert Collins in [:issue:22936](#).)

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\whatsnew\ (cpython-main) (Doc) (whatsnew) 3.5.rst, line 1998); [backlink](#)

Unknown interpreted text role "issue".

unittest.mock

The `class:~unittest.mock.Mock` class has the following improvements:

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\whatsnew\ (cpython-main) (Doc) (whatsnew) 3.5.rst, line 2005); [backlink](#)

Unknown interpreted text role "class".

- The class constructor has a new `unsafe` parameter, which causes mock objects to raise `:exc:AttributeError` on attribute names starting with "assert". (Contributed by Kushal Das in [:issue:21238](#).)

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\whatsnew\ (cpython-main) (Doc) (whatsnew) 3.5.rst, line 2007); [backlink](#)

Unknown interpreted text role "exc".

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\whatsnew\ (cpython-main) (Doc) (whatsnew) 3.5.rst, line 2007); [backlink](#)

Unknown interpreted text role "issue".

- A new `:meth:Mock.assert_not_called()` `<unittest.mock.Mock.assert_not_called>` method to check if the mock object was called. (Contributed by Kushal Das in [:issue:21262](#).)

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\whatsnew\ (cpython-main) (Doc) (whatsnew) 3.5.rst, line 2012); [backlink](#)

Unknown interpreted text role "meth".

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\whatsnew\ (cpython-main) (Doc) (whatsnew) 3.5.rst, line 2012); [backlink](#)

Unknown interpreted text role "issue".

The `:class:~unittest.mock.MagicMock` class now supports `:meth:__truediv__`, `:meth:__divmod__` and `:meth:__matmul__` operators. (Contributed by Johannes Baiter in [:issue:20968](#), and Håkan Lövdahl in [:issue:23581](#) and [:issue:23568](#).)

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\whatsnew\ (cpython-main) (Doc) (whatsnew) 3.5.rst, line 2016); [backlink](#)

Unknown interpreted text role "class".

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\whatsnew\ (cpython-main) (Doc) (whatsnew) 3.5.rst, line 2016); [backlink](#)

Unknown interpreted text role "meth".

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\whatsnew\ (cpython-main) (Doc) (whatsnew) 3.5.rst, line 2016); [backlink](#)

Unknown interpreted text role "meth".

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\whatsnew\ (cpython-main) (Doc) (whatsnew) 3.5.rst, line 2016); [backlink](#)

Unknown interpreted text role "meth".

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\whatsnew\ (cpython-main) (Doc) (whatsnew) 3.5.rst, line 2016); [backlink](#)

Unknown interpreted text role "issue".

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\whatsnew\ (cpython-main) (Doc) (whatsnew) 3.5.rst, line 2016); [backlink](#)

Unknown interpreted text role "issue".

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\whatsnew\ (cpython-main) (Doc) (whatsnew) 3.5.rst, line 2016); [backlink](#)

Unknown interpreted text role "issue".

It is no longer necessary to explicitly pass `create=True` to the `:func:`~unittest.mock.patch`` function when patching builtin names. (Contributed by Kushal Das in [issue:`17660`](#).)

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\whatsnew\ (cpython-main) (Doc) (whatsnew) 3.5.rst, line 2021); [backlink](#)

Unknown interpreted text role "func".

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\whatsnew\ (cpython-main) (Doc) (whatsnew) 3.5.rst, line 2021); [backlink](#)

Unknown interpreted text role "issue".

urllib

A new `:class:`request.HTTPPasswordMgrWithPriorAuth`` `<urllib.request.HTTPPasswordMgrWithPriorAuth>` class allows HTTP Basic Authentication credentials to be managed so as to eliminate unnecessary 401 response handling, or to unconditionally send credentials on the first request in order to communicate with servers that return a 404 response instead of a 401 if the `Authorization` header is not sent. (Contributed by Matej Cepl in [issue:`19494`](#) and Akshit Khurana in [issue:`7159`](#).)

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\whatsnew\ (cpython-main) (Doc) (whatsnew) 3.5.rst, line 2029); [backlink](#)

Unknown interpreted text role "class".

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\whatsnew\ (cpython-main) (Doc) (whatsnew) 3.5.rst, line 2029); [backlink](#)

Unknown interpreted text role "issue".

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\whatsnew\ (cpython-main) (Doc) (whatsnew) 3.5.rst, line 2029); [backlink](#)

Unknown interpreted text role "issue".

A new `quote_via` argument for the `:func:`parse.urlencode()`` `<urllib.parse.urlencode>` function provides a way to control the encoding of query parts if needed. (Contributed by Samwyse and Arnon Yaari in [issue:`13866`](#).)

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\whatsnew\ (cpython-main) (Doc) (whatsnew) 3.5.rst, line 2038); [backlink](#)

Unknown interpreted text role "func".

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\whatsnew\ (cpython-main) (Doc) (whatsnew) 3.5.rst, line 2038); [backlink](#)

Unknown interpreted text role "issue".

The `:func:`request.urlopen()`` `<urllib.request.urlopen>` function accepts an `:class:`ssl.SSLContext`` object as a `context` argument, which will be used for the HTTPS connection. (Contributed by Alex Gaynor in [issue:`22366`](#).)

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\whatsnew\ (cpython-main) (Doc) (whatsnew) 3.5.rst, line 2043); [backlink](#)

Unknown interpreted text role "func".

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\whatsnew\ (cpython-main) (Doc) (whatsnew) 3.5.rst, line 2043); [backlink](#)

Unknown interpreted text role "class".

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\whatsnew\ (cpython-main) (Doc) (whatsnew) 3.5.rst, line 2043); [backlink](#)

Unknown interpreted text role "issue".

The `.func:'.parse.urljoin()' <urllib.parse.urljoin>` was updated to use the [RFC 3986](#) semantics for the resolution of relative URLs, rather than [RFC 1808](#) and [RFC 2396](#). (Contributed by Demian Brecht and Senthil Kumaran in [:issue:'22118'](#).)

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\whatsnew\ (cpython-main) (Doc) (whatsnew) 3.5.rst, line 2047); [backlink](#)

Unknown interpreted text role "func".

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\whatsnew\ (cpython-main) (Doc) (whatsnew) 3.5.rst, line 2047); [backlink](#)

Unknown interpreted text role "issue".

wsgiref

The `headers` argument of the `.class:'headers.Headers <wsgiref.headers.Headers>` class constructor is now optional. (Contributed by Pablo Torres Navarrete and SilentGhost in [:issue:'5800'](#).)

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\whatsnew\ (cpython-main) (Doc) (whatsnew) 3.5.rst, line 2056); [backlink](#)

Unknown interpreted text role "class".

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\whatsnew\ (cpython-main) (Doc) (whatsnew) 3.5.rst, line 2056); [backlink](#)

Unknown interpreted text role "issue".

xmlrpc

The `.class:'client.ServerProxy <xmlrpc.client.ServerProxy>` class now supports the `.term:'context manager'` protocol. (Contributed by Claudiu Popa in [:issue:'20627'](#).)

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\whatsnew\ (cpython-main) (Doc) (whatsnew) 3.5.rst, line 2064); [backlink](#)

Unknown interpreted text role "class".

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\whatsnew\ (cpython-main) (Doc) (whatsnew) 3.5.rst, line 2064); [backlink](#)

Unknown interpreted text role "term".

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\whatsnew\ (cpython-main) (Doc) (whatsnew) 3.5.rst, line 2064); [backlink](#)

Unknown interpreted text role "issue".

The `.class:'client.ServerProxy <xmlrpc.client.ServerProxy>` constructor now accepts an optional `.class:'ssl.SSLContext'` instance. (Contributed by Alex Gaynor in [:issue:'22960'](#).)

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\whatsnew\ (cpython-main) (Doc) (whatsnew) 3.5.rst, line 2068); [backlink](#)

Unknown interpreted text role "class".

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\whatsnew\ (cpython-main) (Doc) (whatsnew) 3.5.rst, line 2068); [backlink](#)

Unknown interpreted text role "class".

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\whatsnew\ (cpython-main) (Doc) (whatsnew) 3.5.rst, line 2068); [backlink](#)

Unknown interpreted text role "issue".

xml.sax

SAX parsers now support a character stream of the `:class:'xmlreader.InputSource <xml.sax.xmlreader.InputSource>'` object. (Contributed by Serhiy Storchaka in [:issue:'2175'](#).)

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\whatsnew\ (cpython-main) (Doc) (whatsnew) 3.5.rst, line 2076); [backlink](#)

Unknown interpreted text role "class".

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\whatsnew\ (cpython-main) (Doc) (whatsnew) 3.5.rst, line 2076); [backlink](#)

Unknown interpreted text role "issue".

`:func:'~xml.sax.parseString'` now accepts a `:class:'str'` instance. (Contributed by Serhiy Storchaka in [:issue:'10590'](#).)

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\whatsnew\ (cpython-main) (Doc) (whatsnew) 3.5.rst, line 2080); [backlink](#)

Unknown interpreted text role "func".

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\whatsnew\ (cpython-main) (Doc) (whatsnew) 3.5.rst, line 2080); [backlink](#)

Unknown interpreted text role "class".

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\whatsnew\ (cpython-main) (Doc) (whatsnew) 3.5.rst, line 2080); [backlink](#)

Unknown interpreted text role "issue".

zipfile

ZIP output can now be written to unseekable streams. (Contributed by Serhiy Storchaka in [:issue:'23252'](#).)

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\whatsnew\ (cpython-main) (Doc) (whatsnew) 3.5.rst, line 2087); [backlink](#)

Unknown interpreted text role "issue".

The `mode` argument of `:meth:'ZipFile.open()' <zipfile.ZipFile.open>'` method now accepts `"x"` to request exclusive creation. (Contributed by Serhiy Storchaka in [:issue:'21717'](#).)

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\whatsnew\ (cpython-main) (Doc) (whatsnew) 3.5.rst, line 2090); [backlink](#)

Unknown interpreted text role "meth".

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\whatsnew\ (cpython-main) (Doc) (whatsnew) 3.5.rst, line 2090); [backlink](#)

Unknown interpreted text role "issue".

Other module-level changes

Many functions in the `:mod:'mmap'`, `:mod:'ossaudiodev'`, `:mod:'socket'`, `:mod:'ssl'`, and `:mod:'codecs'` modules now accept writable `:term:'bytes-like objects <bytes-like object>'`. (Contributed by Serhiy Storchaka in [:issue:'23001'](#).)

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-

main\Doc\whatsnew\ (cpython-main) (Doc) (whatsnew) 3.5.rst, line 2098); [backlink](#)

Unknown interpreted text role "mod".

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\whatsnew\ (cpython-main) (Doc) (whatsnew) 3.5.rst, line 2098); [backlink](#)

Unknown interpreted text role "mod".

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\whatsnew\ (cpython-main) (Doc) (whatsnew) 3.5.rst, line 2098); [backlink](#)

Unknown interpreted text role "mod".

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\whatsnew\ (cpython-main) (Doc) (whatsnew) 3.5.rst, line 2098); [backlink](#)

Unknown interpreted text role "mod".

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\whatsnew\ (cpython-main) (Doc) (whatsnew) 3.5.rst, line 2098); [backlink](#)

Unknown interpreted text role "mod".

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\whatsnew\ (cpython-main) (Doc) (whatsnew) 3.5.rst, line 2098); [backlink](#)

Unknown interpreted text role "term".

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\whatsnew\ (cpython-main) (Doc) (whatsnew) 3.5.rst, line 2098); [backlink](#)

Unknown interpreted text role "issue".

Optimizations

The `:func:'os.walk'` function has been sped up by 3 to 5 times on POSIX systems, and by 7 to 20 times on Windows. This was done using the new `:func:'os.scandir'` function, which exposes file information from the underlying `readdir` or `FindFirstFile/FindNextFile` system calls. (Contributed by Ben Hoyt with help from Victor Stinner in [:issue:'23605'](#).)

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\whatsnew\ (cpython-main) (Doc) (whatsnew) 3.5.rst, line 2107); [backlink](#)

Unknown interpreted text role "func".

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\whatsnew\ (cpython-main) (Doc) (whatsnew) 3.5.rst, line 2107); [backlink](#)

Unknown interpreted text role "func".

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\whatsnew\ (cpython-main) (Doc) (whatsnew) 3.5.rst, line 2107); [backlink](#)

Unknown interpreted text role "issue".

Construction of `bytes(int)` (filled by zero bytes) is faster and uses less memory for large objects. `calloc()` is used instead of `malloc()` to allocate memory for these objects. (Contributed by Victor Stinner in [:issue:'21233'](#).)

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\whatsnew\ (cpython-main) (Doc) (whatsnew) 3.5.rst, line 2113); [backlink](#)

Unknown interpreted text role "issue".

Some operations on `:mod:'ipaddress'` `:class:'~ipaddress.IPv4Network'` and `:class:'~ipaddress.IPv6Network'` have been massively

speed up, such as `.meth:~ipaddress.IPv4Network.subnets'`, `.meth:~ipaddress.IPv4Network.supernet'`, `.func:~ipaddress.summarize_address_range'`, `.func:~ipaddress.collapse_addresses'`. The speed up can range from 3 to 15 times. (Contributed by Antoine Pitrou, Michel Albert, and Markus in [issue:21486](#), [issue:21487](#), [issue:20826](#), [issue:23266](#).)

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\whatsnew\ (cpython-main) (Doc) (whatsnew) 3.5.rst, line 2118); [backlink](#)

Unknown interpreted text role "mod".

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\whatsnew\ (cpython-main) (Doc) (whatsnew) 3.5.rst, line 2118); [backlink](#)

Unknown interpreted text role "class".

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\whatsnew\ (cpython-main) (Doc) (whatsnew) 3.5.rst, line 2118); [backlink](#)

Unknown interpreted text role "class".

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\whatsnew\ (cpython-main) (Doc) (whatsnew) 3.5.rst, line 2118); [backlink](#)

Unknown interpreted text role "meth".

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\whatsnew\ (cpython-main) (Doc) (whatsnew) 3.5.rst, line 2118); [backlink](#)

Unknown interpreted text role "meth".

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\whatsnew\ (cpython-main) (Doc) (whatsnew) 3.5.rst, line 2118); [backlink](#)

Unknown interpreted text role "func".

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\whatsnew\ (cpython-main) (Doc) (whatsnew) 3.5.rst, line 2118); [backlink](#)

Unknown interpreted text role "func".

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\whatsnew\ (cpython-main) (Doc) (whatsnew) 3.5.rst, line 2118); [backlink](#)

Unknown interpreted text role "issue".

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\whatsnew\ (cpython-main) (Doc) (whatsnew) 3.5.rst, line 2118); [backlink](#)

Unknown interpreted text role "issue".

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\whatsnew\ (cpython-main) (Doc) (whatsnew) 3.5.rst, line 2118); [backlink](#)

Unknown interpreted text role "issue".

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\whatsnew\ (cpython-main) (Doc) (whatsnew) 3.5.rst, line 2118); [backlink](#)

Unknown interpreted text role "issue".

Pickling of `mod:ipaddress` objects was optimized to produce significantly smaller output. (Contributed by Serhiy Storchaka in [issue:23133](#).)

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\whatsnew\ (cpython-main) (Doc) (whatsnew) 3.5.rst, line 2126); [backlink](#)

Unknown interpreted text role "mod".

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\whatsnew\ (cpython-main) (Doc) (whatsnew) 3.5.rst, line 2126); [backlink](#)

Unknown interpreted text role "issue".

Many operations on `:class:'io.BytesIO'` are now 50% to 100% faster. (Contributed by Serhiy Storchaka in [issue:'15381'](#) and David Wilson in [issue:'22003'](#).)

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\whatsnew\ (cpython-main) (Doc) (whatsnew) 3.5.rst, line 2129); [backlink](#)

Unknown interpreted text role "class".

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\whatsnew\ (cpython-main) (Doc) (whatsnew) 3.5.rst, line 2129); [backlink](#)

Unknown interpreted text role "issue".

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\whatsnew\ (cpython-main) (Doc) (whatsnew) 3.5.rst, line 2129); [backlink](#)

Unknown interpreted text role "issue".

The `:func:'marshal.dumps'` function is now faster: 65--85% with versions 3 and 4, 20--25% with versions 0 to 2 on typical data, and up to 5 times in best cases. (Contributed by Serhiy Storchaka in [issue:'20416'](#) and [issue:'23344'](#).)

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\whatsnew\ (cpython-main) (Doc) (whatsnew) 3.5.rst, line 2133); [backlink](#)

Unknown interpreted text role "func".

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\whatsnew\ (cpython-main) (Doc) (whatsnew) 3.5.rst, line 2133); [backlink](#)

Unknown interpreted text role "issue".

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\whatsnew\ (cpython-main) (Doc) (whatsnew) 3.5.rst, line 2133); [backlink](#)

Unknown interpreted text role "issue".

The UTF-32 encoder is now 3 to 7 times faster. (Contributed by Serhiy Storchaka in [issue:'15027'](#).)

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\whatsnew\ (cpython-main) (Doc) (whatsnew) 3.5.rst, line 2138); [backlink](#)

Unknown interpreted text role "issue".

Regular expressions are now parsed up to 10% faster. (Contributed by Serhiy Storchaka in [issue:'19380'](#).)

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\whatsnew\ (cpython-main) (Doc) (whatsnew) 3.5.rst, line 2141); [backlink](#)

Unknown interpreted text role "issue".

The `:func:'json.dumps'` function was optimized to run with `ensure_ascii=False` as fast as with `ensure_ascii=True`. (Contributed by Naoki Inada in [issue:'23206'](#).)

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\whatsnew\ (cpython-main) (Doc) (whatsnew) 3.5.rst, line 2144); [backlink](#)

Unknown interpreted text role "func".

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\whatsnew\ (cpython-main) (Doc) (whatsnew) 3.5.rst, line 2144); [backlink](#)

Unknown interpreted text role "issue".

The `:func:PyObject_IsInstance` and `:func:PyObject_IsSubclass` functions have been sped up in the common case that the second argument has `:class:type` as its metaclass. (Contributed Georg Brandl by in [issue:22540](#).)

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\whatsnew\ (cpython-main) (Doc) (whatsnew) 3.5.rst, line 2148); [backlink](#)

Unknown interpreted text role "c:func".

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\whatsnew\ (cpython-main) (Doc) (whatsnew) 3.5.rst, line 2148); [backlink](#)

Unknown interpreted text role "c:func".

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\whatsnew\ (cpython-main) (Doc) (whatsnew) 3.5.rst, line 2148); [backlink](#)

Unknown interpreted text role "class".

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\whatsnew\ (cpython-main) (Doc) (whatsnew) 3.5.rst, line 2148); [backlink](#)

Unknown interpreted text role "issue".

Method caching was slightly improved, yielding up to 5% performance improvement in some benchmarks. (Contributed by Antoine Pitrou in [issue:22847](#).)

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\whatsnew\ (cpython-main) (Doc) (whatsnew) 3.5.rst, line 2153); [backlink](#)

Unknown interpreted text role "issue".

Objects from the `:mod:random` module now use 50% less memory on 64-bit builds. (Contributed by Serhiy Storchaka in [issue:23488](#).)

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\whatsnew\ (cpython-main) (Doc) (whatsnew) 3.5.rst, line 2157); [backlink](#)

Unknown interpreted text role "mod".

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\whatsnew\ (cpython-main) (Doc) (whatsnew) 3.5.rst, line 2157); [backlink](#)

Unknown interpreted text role "issue".

The `:func:property` getter calls are up to 25% faster. (Contributed by Joe Jevnik in [issue:23910](#).)

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\whatsnew\ (cpython-main) (Doc) (whatsnew) 3.5.rst, line 2160); [backlink](#)

Unknown interpreted text role "func".

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\whatsnew\ (cpython-main) (Doc) (whatsnew) 3.5.rst, line 2160); [backlink](#)

Unknown interpreted text role "issue".

Instantiation of `:class:fractions.Fraction` is now up to 30% faster. (Contributed by Stefan Behnel in [issue:22464](#).)

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\whatsnew\ (cpython-main) (Doc) (whatsnew) 3.5.rst, line 2163); [backlink](#)

Unknown interpreted text role "class".

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\whatsnew\ (cpython-main) (Doc) (whatsnew) 3.5.rst, line 2163); [backlink](#)

Unknown interpreted text role "issue".

String methods `.meth:~str.find`, `.meth:~str.rfind`, `.meth:~str.split`, `.meth:~str.partition` and the `keyword:'in'` string operator are now significantly faster for searching 1-character substrings. (Contributed by Serhiy Storchaka in [issue:'23573'](#).)

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\whatsnew\ (cpython-main) (Doc) (whatsnew) 3.5.rst, line 2166); [backlink](#)

Unknown interpreted text role "meth".

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\whatsnew\ (cpython-main) (Doc) (whatsnew) 3.5.rst, line 2166); [backlink](#)

Unknown interpreted text role "meth".

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\whatsnew\ (cpython-main) (Doc) (whatsnew) 3.5.rst, line 2166); [backlink](#)

Unknown interpreted text role "meth".

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\whatsnew\ (cpython-main) (Doc) (whatsnew) 3.5.rst, line 2166); [backlink](#)

Unknown interpreted text role "meth".

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\whatsnew\ (cpython-main) (Doc) (whatsnew) 3.5.rst, line 2166); [backlink](#)

Unknown interpreted text role "keyword".

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\whatsnew\ (cpython-main) (Doc) (whatsnew) 3.5.rst, line 2166); [backlink](#)

Unknown interpreted text role "issue".

Build and C API Changes

New `calloc` functions were added:

- `c:func:'PyMem_RawCalloc'`,

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\whatsnew\ (cpython-main) (Doc) (whatsnew) 3.5.rst, line 2177); [backlink](#)

Unknown interpreted text role "c:func".

- `c:func:'PyMem_Calloc'`,

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\whatsnew\ (cpython-main) (Doc) (whatsnew) 3.5.rst, line 2178); [backlink](#)

Unknown interpreted text role "c:func".

- `c:func:'PyObject_Calloc'`.

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\whatsnew\ (cpython-main) (Doc) (whatsnew) 3.5.rst, line 2179);

[backlink](#)

Unknown interpreted text role "c:func".

(Contributed by Victor Stinner in [:issue:'21233'](#).)

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\whatsnew\ (cpython-main) (Doc) (whatsnew) 3.5.rst, line 2181); [backlink](#)

Unknown interpreted text role "issue".

New encoding/decoding helper functions:

- `:c:func:'Py_DecodeLocale'` (replaced `_Py_char2wchar()`),

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\whatsnew\ (cpython-main) (Doc) (whatsnew) 3.5.rst, line 2185); [backlink](#)

Unknown interpreted text role "c:func".

- `:c:func:'Py_EncodeLocale'` (replaced `_Py_wchar2char()`).

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\whatsnew\ (cpython-main) (Doc) (whatsnew) 3.5.rst, line 2186); [backlink](#)

Unknown interpreted text role "c:func".

(Contributed by Victor Stinner in [:issue:'18395'](#).)

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\whatsnew\ (cpython-main) (Doc) (whatsnew) 3.5.rst, line 2188); [backlink](#)

Unknown interpreted text role "issue".

A new `:c:func:'PyCodec_NameReplaceErrors'` function to replace the unicode encode error with `\N{...}` escapes. (Contributed by Serhiy Storchaka in [:issue:'19676'](#).)

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\whatsnew\ (cpython-main) (Doc) (whatsnew) 3.5.rst, line 2190); [backlink](#)

Unknown interpreted text role "c:func".

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\whatsnew\ (cpython-main) (Doc) (whatsnew) 3.5.rst, line 2190); [backlink](#)

Unknown interpreted text role "issue".

A new `:c:func:'PyErr_FormatV'` function similar to `:c:func:'PyErr_Format'`, but accepts a `va_list` argument. (Contributed by Antoine Pitrou in [:issue:'18711'](#).)

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\whatsnew\ (cpython-main) (Doc) (whatsnew) 3.5.rst, line 2194); [backlink](#)

Unknown interpreted text role "c:func".

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\whatsnew\ (cpython-main) (Doc) (whatsnew) 3.5.rst, line 2194); [backlink](#)

Unknown interpreted text role "c:func".

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\whatsnew\ (cpython-main) (Doc) (whatsnew) 3.5.rst, line 2194); [backlink](#)

Unknown interpreted text role "issue".

A new `:c:data:PyExc_RecursionError` exception. (Contributed by Georg Brandl in [:issue:19235](#).)

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\whatsnew\ (cpython-main) (Doc) (whatsnew) 3.5.rst, line 2198); [backlink](#)

Unknown interpreted text role "c:data".

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\whatsnew\ (cpython-main) (Doc) (whatsnew) 3.5.rst, line 2198); [backlink](#)

Unknown interpreted text role "issue".

New `:c:func:PyModule_FromDefAndSpec`, `:c:func:PyModule_FromDefAndSpec2`, and `:c:func:PyModule_ExecDef` functions introduced by [PEP 489](#) -- multi-phase extension module initialization. (Contributed by Petr Viktorin in [:issue:24268](#).)

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\whatsnew\ (cpython-main) (Doc) (whatsnew) 3.5.rst, line 2201); [backlink](#)

Unknown interpreted text role "c:func".

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\whatsnew\ (cpython-main) (Doc) (whatsnew) 3.5.rst, line 2201); [backlink](#)

Unknown interpreted text role "c:func".

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\whatsnew\ (cpython-main) (Doc) (whatsnew) 3.5.rst, line 2201); [backlink](#)

Unknown interpreted text role "c:func".

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\whatsnew\ (cpython-main) (Doc) (whatsnew) 3.5.rst, line 2201); [backlink](#)

Unknown interpreted text role "issue".

New `:c:func:PyNumber_MatrixMultiply` and `:c:func:PyNumber_InPlaceMatrixMultiply` functions to perform matrix multiplication. (Contributed by Benjamin Peterson in [:issue:21176](#). See also [PEP 465](#) for details.)

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\whatsnew\ (cpython-main) (Doc) (whatsnew) 3.5.rst, line 2206); [backlink](#)

Unknown interpreted text role "c:func".

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\whatsnew\ (cpython-main) (Doc) (whatsnew) 3.5.rst, line 2206); [backlink](#)

Unknown interpreted text role "c:func".

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\whatsnew\ (cpython-main) (Doc) (whatsnew) 3.5.rst, line 2206); [backlink](#)

Unknown interpreted text role "issue".

The `:c:member:PyTypeObject.tp_finalize` slot is now part of the stable ABI.

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\whatsnew\ (cpython-main) (Doc) (whatsnew) 3.5.rst, line 2212); [backlink](#)

Unknown interpreted text role "c:member".

Windows builds now require Microsoft Visual C++ 14.0, which is available as part of [Visual Studio 2015](#).

Extension modules now include a platform information tag in their filename on some platforms (the tag is optional, and CPython will import extensions without it, although if the tag is present and mismatched, the extension won't be loaded):

- On Linux, extension module filenames end with `.cpython-<major><minor>m-<architecture>-<os>.pyd`:

- `<major>` is the major number of the Python version; for Python 3.5 this is 3.
- `<minor>` is the minor number of the Python version; for Python 3.5 this is 5.
- `<architecture>` is the hardware architecture the extension module was built to run on. It's most commonly either `i386` for 32-bit Intel platforms or `x86_64` for 64-bit Intel (and AMD) platforms.
- `<os>` is always `linux-gnu`, except for extensions built to talk to the 32-bit ABI on 64-bit platforms, in which case it is `linux-gnu32` (and `<architecture>` will be `x86_64`).
- On Windows, extension module filenames end with `<debug>.cp<major><minor>-<platform>.pyd`:
 - `<major>` is the major number of the Python version; for Python 3.5 this is 3.
 - `<minor>` is the minor number of the Python version; for Python 3.5 this is 5.
 - `<platform>` is the platform the extension module was built for, either `win32` for Win32, `win_amd64` for Win64, `win_i64` for Windows Itanium 64, and `win_arm` for Windows on ARM.
 - If built in debug mode, `<debug>` will be `_d`, otherwise it will be blank.
- On OS X platforms, extension module filenames now end with `-darwin.so`.
- On all other platforms, extension module filenames are the same as they were with Python 3.4.

Deprecated

New Keywords

`async` and `await` are not recommended to be used as variable, class, function or module names. Introduced by [PEP 492](#) in Python 3.5, they will become proper keywords in Python 3.7.

Deprecated Python Behavior

Raising the `:exc:'StopIteration'` exception inside a generator will now generate a silent `:exc:'PendingDeprecationWarning'`, which will become a non-silent deprecation warning in Python 3.6 and will trigger a `:exc:'RuntimeError'` in Python 3.7. See [ref:'PEP 479: Change StopIteration handling inside generators <whatsnew-pep-479>'](#) for details.

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\whatsnew\ (cpython-main) (Doc) (whatsnew) 3.5.rst, line 2275); [backlink](#)

Unknown interpreted text role "exc".

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\whatsnew\ (cpython-main) (Doc) (whatsnew) 3.5.rst, line 2275); [backlink](#)

Unknown interpreted text role "exc".

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\whatsnew\ (cpython-main) (Doc) (whatsnew) 3.5.rst, line 2275); [backlink](#)

Unknown interpreted text role "exc".

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\whatsnew\ (cpython-main) (Doc) (whatsnew) 3.5.rst, line 2275); [backlink](#)

Unknown interpreted text role "ref".

Unsupported Operating Systems

Windows XP is no longer supported by Microsoft, thus, per [PEP 11](#), CPython 3.5 is no longer officially supported on this OS.

Deprecated Python modules, functions and methods

The `:mod:'formatter'` module has now graduated to full deprecation and is still slated for removal in Python 3.6.

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\whatsnew\ (cpython-main) (Doc) (whatsnew) 3.5.rst, line 2292); [backlink](#)

Unknown interpreted text role "mod".

The `:func:'asyncio.async'` function is deprecated in favor of `:func:'~asyncio.ensure_future'`.

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\whatsnew\ (cpython-main) (Doc) (whatsnew) 3.5.rst, line 2295); [backlink](#)

Unknown interpreted text role "func".

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\whatsnew\ (cpython-main) (Doc) (whatsnew) 3.5.rst, line 2295); [backlink](#)

Unknown interpreted text role "func".

The `mod:~smtpd` module has in the past always decoded the DATA portion of email messages using the `utf-8` codec. This can now be controlled by the new `decode_data` keyword to `:class:~smtpd.SMTPServer`. The default value is `True`, but this default is deprecated. Specify the `decode_data` keyword with an appropriate value to avoid the deprecation warning.

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\whatsnew\ (cpython-main) (Doc) (whatsnew) 3.5.rst, line 2298); [backlink](#)

Unknown interpreted text role "mod".

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\whatsnew\ (cpython-main) (Doc) (whatsnew) 3.5.rst, line 2298); [backlink](#)

Unknown interpreted text role "class".

Directly assigning values to the `:attr:~http.cookies.Morsel.key`, `:attr:~http.cookies.Morsel.value` and `:attr:~http.cookies.Morsel.coded_value` of `:class:~http.cookies.Morsel` objects is deprecated. Use the `:meth:~http.cookies.Morsel.set` method instead. In addition, the undocumented `LegalChars` parameter of `:meth:~http.cookies.Morsel.set` is deprecated, and is now ignored.

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\whatsnew\ (cpython-main) (Doc) (whatsnew) 3.5.rst, line 2304); [backlink](#)

Unknown interpreted text role "attr".

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\whatsnew\ (cpython-main) (Doc) (whatsnew) 3.5.rst, line 2304); [backlink](#)

Unknown interpreted text role "attr".

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\whatsnew\ (cpython-main) (Doc) (whatsnew) 3.5.rst, line 2304); [backlink](#)

Unknown interpreted text role "attr".

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\whatsnew\ (cpython-main) (Doc) (whatsnew) 3.5.rst, line 2304); [backlink](#)

Unknown interpreted text role "class".

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\whatsnew\ (cpython-main) (Doc) (whatsnew) 3.5.rst, line 2304); [backlink](#)

Unknown interpreted text role "meth".

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\whatsnew\ (cpython-main) (Doc) (whatsnew) 3.5.rst, line 2304); [backlink](#)

Unknown interpreted text role "meth".

Passing a format string as keyword argument `format_string` to the `:meth:~string.Formatter.format` method of the `:class:~string.Formatter` class has been deprecated. (Contributed by Serhiy Storchaka in `:issue:~23671`.)

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\whatsnew\ (cpython-main) (Doc) (whatsnew) 3.5.rst, line 2311); [backlink](#)

Unknown interpreted text role "meth".

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\whatsnew\ (cpython-main) (Doc) (whatsnew) 3.5.rst, line 2311); [backlink](#)

Unknown interpreted text role "class".

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\whatsnew\ (cpython-main) (Doc) (whatsnew) 3.5.rst, line 2311); [backlink](#)

Unknown interpreted text role "issue".

The `:func:`platform.dist`` and `:func:`platform.linux_distribution`` functions are now deprecated. Linux distributions use too many different ways of describing themselves, so the functionality is left to a package. (Contributed by Vajrasky Kok and Berker Peksag in [issue:1322](#).)

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\whatsnew\ (cpython-main) (Doc) (whatsnew) 3.5.rst, line 2316); [backlink](#)

Unknown interpreted text role "func".

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\whatsnew\ (cpython-main) (Doc) (whatsnew) 3.5.rst, line 2316); [backlink](#)

Unknown interpreted text role "func".

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\whatsnew\ (cpython-main) (Doc) (whatsnew) 3.5.rst, line 2316); [backlink](#)

Unknown interpreted text role "issue".

The previously undocumented `from_function` and `from_builtin` methods of `:class:`inspect.Signature`` are deprecated. Use the new `:meth:`Signature.from_callable() <inspect.Signature.from_callable>` method instead. (Contributed by Yury Selivanov in [issue:24248](#).)

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\whatsnew\ (cpython-main) (Doc) (whatsnew) 3.5.rst, line 2321); [backlink](#)

Unknown interpreted text role "class".

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\whatsnew\ (cpython-main) (Doc) (whatsnew) 3.5.rst, line 2321); [backlink](#)

Unknown interpreted text role "meth".

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\whatsnew\ (cpython-main) (Doc) (whatsnew) 3.5.rst, line 2321); [backlink](#)

Unknown interpreted text role "issue".

The `:func:`inspect.getargspec`` function is deprecated and scheduled to be removed in Python 3.6. (See [issue:20438](#) for details.)

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\whatsnew\ (cpython-main) (Doc) (whatsnew) 3.5.rst, line 2326); [backlink](#)

Unknown interpreted text role "func".

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\whatsnew\ (cpython-main) (Doc) (whatsnew) 3.5.rst, line 2326); [backlink](#)

Unknown interpreted text role "issue".

The `:mod:`inspect`` `:func:`~inspect.getfullargspec``, `:func:`~inspect.getcallargs``, and `:func:`~inspect.formatargspec`` functions are deprecated in favor of the `:func:`inspect.signature`` API. (Contributed by Yury Selivanov in [issue:20438](#).)

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-

main\Doc\whatsnew\ (cpython-main) (Doc) (whatsnew) 3.5.rst, line 2329); [backlink](#)

Unknown interpreted text role "mod".

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\whatsnew\ (cpython-main) (Doc) (whatsnew) 3.5.rst, line 2329); [backlink](#)

Unknown interpreted text role "func".

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\whatsnew\ (cpython-main) (Doc) (whatsnew) 3.5.rst, line 2329); [backlink](#)

Unknown interpreted text role "func".

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\whatsnew\ (cpython-main) (Doc) (whatsnew) 3.5.rst, line 2329); [backlink](#)

Unknown interpreted text role "func".

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\whatsnew\ (cpython-main) (Doc) (whatsnew) 3.5.rst, line 2329); [backlink](#)

Unknown interpreted text role "func".

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\whatsnew\ (cpython-main) (Doc) (whatsnew) 3.5.rst, line 2329); [backlink](#)

Unknown interpreted text role "issue".

:func:`~inspect.getargvalues` and :func:`~inspect.formatargvalues` functions were inadvertently marked as deprecated with the release of Python 3.5.0.

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\whatsnew\ (cpython-main) (Doc) (whatsnew) 3.5.rst, line 2334); [backlink](#)

Unknown interpreted text role "func".

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\whatsnew\ (cpython-main) (Doc) (whatsnew) 3.5.rst, line 2334); [backlink](#)

Unknown interpreted text role "func".

Use of :const:`re.LOCALE` flag with str patterns or :const:`re.ASCII` is now deprecated. (Contributed by Serhiy Storchaka in :issue:`22407`.)

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\whatsnew\ (cpython-main) (Doc) (whatsnew) 3.5.rst, line 2337); [backlink](#)

Unknown interpreted text role "const".

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\whatsnew\ (cpython-main) (Doc) (whatsnew) 3.5.rst, line 2337); [backlink](#)

Unknown interpreted text role "const".

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\whatsnew\ (cpython-main) (Doc) (whatsnew) 3.5.rst, line 2337); [backlink](#)

Unknown interpreted text role "issue".

Use of unrecognized special sequences consisting of '\ ' and an ASCII letter in regular expression patterns and replacement patterns now raises a deprecation warning and will be forbidden in Python 3.6. (Contributed by Serhiy Storchaka in :issue:`23622`.)

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-

main\Doc\whatsnew\ (cpython-main) (Doc) (whatsnew) 3.5.rst, line 2340); [backlink](#)

Unknown interpreted text role "issue".

The undocumented and unofficial `use_load_tests` default argument of the `meth:`unittest.TestLoader.loadTestsFromModule`` method now is deprecated and ignored. (Contributed by Robert Collins and Barry A. Warsaw in [issue:`16662`](#).)

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\whatsnew\ (cpython-main) (Doc) (whatsnew) 3.5.rst, line 2345); [backlink](#)

Unknown interpreted text role "meth".

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\whatsnew\ (cpython-main) (Doc) (whatsnew) 3.5.rst, line 2345); [backlink](#)

Unknown interpreted text role "issue".

Removed

API and Feature Removals

The following obsolete and previously deprecated APIs and features have been removed:

- The `__version__` attribute has been dropped from the email package. The email code hasn't been shipped separately from the stdlib for a long time, and the `__version__` string was not updated in the last few releases.
- The internal `Netrc` class in the `mod:`ftplib`` module was deprecated in 3.4, and has now been removed. (Contributed by Matt Chaput in [issue:`6623`](#).)

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\whatsnew\ (cpython-main) (Doc) (whatsnew) 3.5.rst, line 2364); [backlink](#)

Unknown interpreted text role "mod".

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\whatsnew\ (cpython-main) (Doc) (whatsnew) 3.5.rst, line 2364); [backlink](#)

Unknown interpreted text role "issue".

- The concept of `.pyo` files has been removed.
- The `JoinableQueue` class in the provisional `mod:`asyncio`` module was deprecated in 3.4.4 and is now removed. (Contributed by A. Jesse Jiryu Davis in [issue:`23464`](#).)

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\whatsnew\ (cpython-main) (Doc) (whatsnew) 3.5.rst, line 2370); [backlink](#)

Unknown interpreted text role "mod".

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\whatsnew\ (cpython-main) (Doc) (whatsnew) 3.5.rst, line 2370); [backlink](#)

Unknown interpreted text role "issue".

Porting to Python 3.5

This section lists previously described changes and other bugfixes that may require changes to your code.

Changes in Python behavior

- Due to an oversight, earlier Python versions erroneously accepted the following syntax:

```
f(1 for x in [1], *args)
f(1 for x in [1], **kwargs)
```

Python 3.5 now correctly raises a `:exc:'SyntaxError'`, as generator expressions must be put in parentheses if not a sole argument to a function.

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\whatsnew\ (cpython-main) (Doc) (whatsnew) 3.5.rst, line 2391); [backlink](#)

Unknown interpreted text role "exc".

Changes in the Python API

- [PEP 475](#): System calls are now retried when interrupted by a signal instead of raising `:exc:'InterruptedError'` if the Python signal handler does not raise an exception.

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\whatsnew\ (cpython-main) (Doc) (whatsnew) 3.5.rst, line 2398); [backlink](#)

Unknown interpreted text role "exc".

- Before Python 3.5, a `:class:'datetime.time'` object was considered to be false if it represented midnight in UTC. This behavior was considered obscure and error-prone and has been removed in Python 3.5. See [:issue:'13936'](#) for full details.

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\whatsnew\ (cpython-main) (Doc) (whatsnew) 3.5.rst, line 2402); [backlink](#)

Unknown interpreted text role "class".

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\whatsnew\ (cpython-main) (Doc) (whatsnew) 3.5.rst, line 2402); [backlink](#)

Unknown interpreted text role "issue".

- The `:meth:'ssl.SSLSocket.send()'` method now raises either `:exc:'ssl.SSLWantReadError'` or `:exc:'ssl.SSLWantWriteError'` on a non-blocking socket if the operation would block. Previously, it would return 0. (Contributed by Nikolaus Rath in [:issue:'20951'](#).)

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\whatsnew\ (cpython-main) (Doc) (whatsnew) 3.5.rst, line 2407); [backlink](#)

Unknown interpreted text role "meth".

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\whatsnew\ (cpython-main) (Doc) (whatsnew) 3.5.rst, line 2407); [backlink](#)

Unknown interpreted text role "exc".

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\whatsnew\ (cpython-main) (Doc) (whatsnew) 3.5.rst, line 2407); [backlink](#)

Unknown interpreted text role "exc".

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\whatsnew\ (cpython-main) (Doc) (whatsnew) 3.5.rst, line 2407); [backlink](#)

Unknown interpreted text role "issue".

- The `__name__` attribute of generators is now set from the function name, instead of being set from the code name. Use `gen.gi_code.co_name` to retrieve the code name. Generators also have a new `__qualname__` attribute, the qualified name,

which is now used for the representation of a generator (`repr(gen)`). (Contributed by Victor Stinner in [issue:21205](#).)

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\whatsnew\ (cpython-main) (Doc) (whatsnew) 3.5.rst, line 2412); [backlink](#)

Unknown interpreted text role "issue".

- The deprecated "strict" mode and argument of `:class:`~html.parser.HTMLParser``, `.meth:`HTMLParser.error``, and the `:exc:`HTMLParserError`` exception have been removed. (Contributed by Ezio Melotti in [issue:15114](#).) The `convert_charrefs` argument of `:class:`~html.parser.HTMLParser`` is now `True` by default. (Contributed by Berker Peksag in [issue:21047](#).)

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\whatsnew\ (cpython-main) (Doc) (whatsnew) 3.5.rst, line 2419); [backlink](#)

Unknown interpreted text role "class".

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\whatsnew\ (cpython-main) (Doc) (whatsnew) 3.5.rst, line 2419); [backlink](#)

Unknown interpreted text role "meth".

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\whatsnew\ (cpython-main) (Doc) (whatsnew) 3.5.rst, line 2419); [backlink](#)

Unknown interpreted text role "exc".

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\whatsnew\ (cpython-main) (Doc) (whatsnew) 3.5.rst, line 2419); [backlink](#)

Unknown interpreted text role "issue".

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\whatsnew\ (cpython-main) (Doc) (whatsnew) 3.5.rst, line 2419); [backlink](#)

Unknown interpreted text role "class".

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\whatsnew\ (cpython-main) (Doc) (whatsnew) 3.5.rst, line 2419); [backlink](#)

Unknown interpreted text role "issue".

- Although it is not formally part of the API, it is worth noting for porting purposes (ie: fixing tests) that error messages that were previously of the form "sometype" does not support the buffer protocol" are now of the form "a `term`bytes-like object`` is required, not 'sometype'". (Contributed by Ezio Melotti in [issue:16518](#).)

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\whatsnew\ (cpython-main) (Doc) (whatsnew) 3.5.rst, line 2425); [backlink](#)

Unknown interpreted text role "term".

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\whatsnew\ (cpython-main) (Doc) (whatsnew) 3.5.rst, line 2425); [backlink](#)

Unknown interpreted text role "issue".

- If the current directory is set to a directory that no longer exists then `:exc:'FileNotFoundError'` will no longer be raised and instead `:meth:`~importlib.machinery.FileFinder.find_spec`` will return `None` **without** caching `None` in `:data:'sys.path_importer_cache'`, which is different than the typical case (`:issue:'22834'`).

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\whatsnew\ (cpython-main) (Doc) (whatsnew) 3.5.rst, line 2431); [backlink](#)

Unknown interpreted text role "exc".

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\whatsnew\ (cpython-main) (Doc) (whatsnew) 3.5.rst, line 2431); [backlink](#)

Unknown interpreted text role "meth".

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\whatsnew\ (cpython-main) (Doc) (whatsnew) 3.5.rst, line 2431); [backlink](#)

Unknown interpreted text role "data".

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\whatsnew\ (cpython-main) (Doc) (whatsnew) 3.5.rst, line 2431); [backlink](#)

Unknown interpreted text role "issue".

- HTTP status code and messages from `:mod:'http.client'` and `:mod:'http.server'` were refactored into a common `:class:`~http.HTTPStatus`` enum. The values in `:mod:'http.client'` and `:mod:'http.server'` remain available for backwards compatibility. (Contributed by Demian Brecht in `:issue:'21793'`.)

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\whatsnew\ (cpython-main) (Doc) (whatsnew) 3.5.rst, line 2437); [backlink](#)

Unknown interpreted text role "mod".

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\whatsnew\ (cpython-main) (Doc) (whatsnew) 3.5.rst, line 2437); [backlink](#)

Unknown interpreted text role "mod".

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\whatsnew\ (cpython-main) (Doc) (whatsnew) 3.5.rst, line 2437); [backlink](#)

Unknown interpreted text role "class".

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\whatsnew\ (cpython-main) (Doc) (whatsnew) 3.5.rst, line 2437); [backlink](#)

Unknown interpreted text role "mod".

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\whatsnew\ (cpython-main) (Doc) (whatsnew) 3.5.rst, line 2437); [backlink](#)

Unknown interpreted text role "mod".

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\whatsnew\ (cpython-main) (Doc) (whatsnew) 3.5.rst, line 2437);

[backlink](#)

Unknown interpreted text role "issue".

- When an import loader defines `.meth:'importlib.machinery.Loader.exec_module'` it is now expected to also define `.meth:'~importlib.machinery.Loader.create_module'` (raises a `.exc:'DeprecationWarning'` now, will be an error in Python 3.6). If the loader inherits from `.class:'importlib.abc.Loader'` then there is nothing to do, else simply define `.meth:'~importlib.machinery.Loader.create_module'` to return `None`. (Contributed by Brett Cannon in [.issue:'23014'](#).)

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\whatsnew\ (cpython-main) (Doc) (whatsnew) 3.5.rst, line 2442);

[backlink](#)

Unknown interpreted text role "meth".

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\whatsnew\ (cpython-main) (Doc) (whatsnew) 3.5.rst, line 2442);

[backlink](#)

Unknown interpreted text role "meth".

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\whatsnew\ (cpython-main) (Doc) (whatsnew) 3.5.rst, line 2442);

[backlink](#)

Unknown interpreted text role "exc".

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\whatsnew\ (cpython-main) (Doc) (whatsnew) 3.5.rst, line 2442);

[backlink](#)

Unknown interpreted text role "class".

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\whatsnew\ (cpython-main) (Doc) (whatsnew) 3.5.rst, line 2442);

[backlink](#)

Unknown interpreted text role "meth".

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\whatsnew\ (cpython-main) (Doc) (whatsnew) 3.5.rst, line 2442);

[backlink](#)

Unknown interpreted text role "issue".

- The `.func:'re.split'` function always ignored empty pattern matches, so the `"x*"` pattern worked the same as `"x+"`, and the `"\b"` pattern never worked. Now `.func:'re.split'` raises a warning if the pattern could match an empty string. For compatibility, use patterns that never match an empty string (e.g. `"x+"` instead of `"x*"`). Patterns that could only match an empty string (such as `"\b"`) now raise an error. (Contributed by Serhiy Storchaka in [.issue:'22818'](#).)

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\whatsnew\ (cpython-main) (Doc) (whatsnew) 3.5.rst, line 2450);

[backlink](#)

Unknown interpreted text role "func".

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\whatsnew\ (cpython-main) (Doc) (whatsnew) 3.5.rst, line 2450);

[backlink](#)

Unknown interpreted text role "func".

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\whatsnew\ (cpython-main) (Doc) (whatsnew) 3.5.rst, line 2450);

[backlink](#)

Unknown interpreted text role "issue".

- The `:class:~http.cookies.Morsel` dict-like interface has been made self consistent: `morsel` comparison now takes the `:attr:~http.cookies.Morsel.key` and `:attr:~http.cookies.Morsel.value` into account, `:meth:~http.cookies.Morsel.copy` now results in a `:class:~http.cookies.Morsel` instance rather than a `:class:'dict'`, and `:meth:~http.cookies.Morsel.update` will now raise an exception if any of the keys in the update dictionary are invalid. In addition, the undocumented `LegalChars` parameter of `:func:~http.cookies.Morsel.set` is deprecated and is now ignored. (Contributed by Demian Brecht in `:issue:'2211'`.)

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\whatsnew\ (cpython-main) (Doc) (whatsnew) 3.5.rst, line 2458);
[backlink](#)

Unknown interpreted text role "class".

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\whatsnew\ (cpython-main) (Doc) (whatsnew) 3.5.rst, line 2458);
[backlink](#)

Unknown interpreted text role "attr".

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\whatsnew\ (cpython-main) (Doc) (whatsnew) 3.5.rst, line 2458);
[backlink](#)

Unknown interpreted text role "attr".

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\whatsnew\ (cpython-main) (Doc) (whatsnew) 3.5.rst, line 2458);
[backlink](#)

Unknown interpreted text role "meth".

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\whatsnew\ (cpython-main) (Doc) (whatsnew) 3.5.rst, line 2458);
[backlink](#)

Unknown interpreted text role "class".

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\whatsnew\ (cpython-main) (Doc) (whatsnew) 3.5.rst, line 2458);
[backlink](#)

Unknown interpreted text role "class".

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\whatsnew\ (cpython-main) (Doc) (whatsnew) 3.5.rst, line 2458);
[backlink](#)

Unknown interpreted text role "meth".

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\whatsnew\ (cpython-main) (Doc) (whatsnew) 3.5.rst, line 2458);
[backlink](#)

Unknown interpreted text role "func".

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\whatsnew\ (cpython-main) (Doc) (whatsnew) 3.5.rst, line 2458);
[backlink](#)

Unknown interpreted text role "issue".

- PEP 488 has removed `.pyo` files from Python and introduced the optional `opt-` tag in `.pyc` file names. The

`:func:'importlib.util.cache_from_source'` has gained an *optimization* parameter to help control the `opt-` tag. Because of this, the *debug_override* parameter of the function is now deprecated. *.pyo* files are also no longer supported as a file argument to the Python interpreter and thus serve no purpose when distributed on their own (i.e. sourceless code distribution). Due to the fact that the magic number for bytecode has changed in Python 3.5, all old *.pyo* files from previous versions of Python are invalid regardless of this PEP.

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\whatsnew\ (cpython-main) (Doc) (whatsnew) 3.5.rst, line 2468);
[backlink](#)

Unknown interpreted text role "func".

- The `:mod:'socket'` module now exports the `:data:'~socket.CAN_RAW_FD_FRAMES'` constant on linux 3.6 and greater.

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\whatsnew\ (cpython-main) (Doc) (whatsnew) 3.5.rst, line 2479);
[backlink](#)

Unknown interpreted text role "mod".

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\whatsnew\ (cpython-main) (Doc) (whatsnew) 3.5.rst, line 2479);
[backlink](#)

Unknown interpreted text role "data".

- The `:func:'ssl.cert_time_to_seconds'` function now interprets the input time as UTC and not as local time, per RFC 5280. Additionally, the return value is always an `:class:'int'`. (Contributed by Akira Li in `:issue:'19940'`.)

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\whatsnew\ (cpython-main) (Doc) (whatsnew) 3.5.rst, line 2482);
[backlink](#)

Unknown interpreted text role "func".

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\whatsnew\ (cpython-main) (Doc) (whatsnew) 3.5.rst, line 2482);
[backlink](#)

Unknown interpreted text role "class".

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\whatsnew\ (cpython-main) (Doc) (whatsnew) 3.5.rst, line 2482);
[backlink](#)

Unknown interpreted text role "issue".

- The `pygettext.py` Tool now uses the standard +NNNN format for timezones in the POT-Creation-Date header.
- The `:mod:'smtplib'` module now uses `:data:'sys.stderr'` instead of the previous module-level `:data:'stderr'` variable for debug output. If your (test) program depends on patching the module-level variable to capture the debug output, you will need to update it to capture `sys.stderr` instead.

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\whatsnew\ (cpython-main) (Doc) (whatsnew) 3.5.rst, line 2489);
[backlink](#)

Unknown interpreted text role "mod".

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\whatsnew\ (cpython-main) (Doc) (whatsnew) 3.5.rst, line 2489);
[backlink](#)

Unknown interpreted text role "data".

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\whatsnew\ (cpython-main) (Doc) (whatsnew) 3.5.rst, line 2489); [backlink](#)

Unknown interpreted text role "data".

- The `meth: 'str.startswith'` and `meth: 'str.endswith'` methods no longer return `True` when finding the empty string and the indexes are completely out of range. (Contributed by Serhiy Storchaka in [issue: '24284'](#).)

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\whatsnew\ (cpython-main) (Doc) (whatsnew) 3.5.rst, line 2494); [backlink](#)

Unknown interpreted text role "meth".

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\whatsnew\ (cpython-main) (Doc) (whatsnew) 3.5.rst, line 2494); [backlink](#)

Unknown interpreted text role "meth".

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\whatsnew\ (cpython-main) (Doc) (whatsnew) 3.5.rst, line 2494); [backlink](#)

Unknown interpreted text role "issue".

- The `:func: 'inspect.getdoc'` function now returns documentation strings inherited from base classes. Documentation strings no longer need to be duplicated if the inherited documentation is appropriate. To suppress an inherited string, an empty string must be specified (or the documentation may be filled in). This change affects the output of the `:mod: 'pydoc'` module and the `:func: 'help'` function. (Contributed by Serhiy Storchaka in [issue: '15582'](#).)

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\whatsnew\ (cpython-main) (Doc) (whatsnew) 3.5.rst, line 2498); [backlink](#)

Unknown interpreted text role "func".

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\whatsnew\ (cpython-main) (Doc) (whatsnew) 3.5.rst, line 2498); [backlink](#)

Unknown interpreted text role "mod".

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\whatsnew\ (cpython-main) (Doc) (whatsnew) 3.5.rst, line 2498); [backlink](#)

Unknown interpreted text role "func".

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\whatsnew\ (cpython-main) (Doc) (whatsnew) 3.5.rst, line 2498); [backlink](#)

Unknown interpreted text role "issue".

- Nested `:func: 'functools.partial'` calls are now flattened. If you were relying on the previous behavior, you can now either add an attribute to a `:func: 'functools.partial'` object or you can create a subclass of `:func: 'functools.partial'`. (Contributed by Alexander Belopolsky in [issue: '7830'](#).)

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\whatsnew\ (cpython-main) (Doc) (whatsnew) 3.5.rst, line 2506); [backlink](#)

Unknown interpreted text role "func".

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\whatsnew\ (cpython-main) (Doc) (whatsnew) 3.5.rst, line 2506); [backlink](#)

Unknown interpreted text role "func".

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\whatsnew\ (cpython-main) (Doc) (whatsnew) 3.5.rst, line 2506); [backlink](#)

Unknown interpreted text role "func".

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\whatsnew\ (cpython-main) (Doc) (whatsnew) 3.5.rst, line 2506); [backlink](#)

Unknown interpreted text role "issue".

Changes in the C API

- The undocumented `:cmember:~PyMemoryViewObject.format` member of the (non-public) `:ctype:~PyMemoryViewObject` structure has been removed. All extensions relying on the relevant parts in `memoryobject.h` must be rebuilt.

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\whatsnew\ (cpython-main) (Doc) (whatsnew) 3.5.rst, line 2515); [backlink](#)

Unknown interpreted text role "c:member".

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\whatsnew\ (cpython-main) (Doc) (whatsnew) 3.5.rst, line 2515); [backlink](#)

Unknown interpreted text role "c:type".

- The `:ctype:~PyMemAllocator` structure was renamed to `:ctype:~PyMemAllocatorEx` and a new `calloc` field was added.

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\whatsnew\ (cpython-main) (Doc) (whatsnew) 3.5.rst, line 2520); [backlink](#)

Unknown interpreted text role "c:type".

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\whatsnew\ (cpython-main) (Doc) (whatsnew) 3.5.rst, line 2520); [backlink](#)

Unknown interpreted text role "c:type".

- Removed non-documented macro `:c:macro:~PyObject_REPR` which leaked references. Use format character `%R` in `:c:func:~PyUnicode_FromFormat`-like functions to format the `:func:~repr` of the object. (Contributed by Serhiy Storchaka in [issue:~22453](#).)

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\whatsnew\ (cpython-main) (Doc) (whatsnew) 3.5.rst, line 2523); [backlink](#)

Unknown interpreted text role "c:macro".

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\whatsnew\ (cpython-main) (Doc) (whatsnew) 3.5.rst, line 2523); [backlink](#)

Unknown interpreted text role "c:func".

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\whatsnew\ (cpython-main) (Doc) (whatsnew) 3.5.rst, line 2523); [backlink](#)

Unknown interpreted text role "func".

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\whatsnew\ (cpython-main) (Doc) (whatsnew) 3.5.rst, line 2523); [backlink](#)

Unknown interpreted text role "issue".

- Because the lack of the `:attr: __module__` attribute breaks pickling and introspection, a deprecation warning is now raised for builtin types without the `:attr: __module__` attribute. This would be an `AttributeError` in the future. (Contributed by Serhiy Storchaka in [:issue:20204](#).)

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\whatsnew\ (cpython-main) (Doc) (whatsnew) 3.5.rst, line 2528); [backlink](#)

Unknown interpreted text role "attr".

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\whatsnew\ (cpython-main) (Doc) (whatsnew) 3.5.rst, line 2528); [backlink](#)

Unknown interpreted text role "attr".

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\whatsnew\ (cpython-main) (Doc) (whatsnew) 3.5.rst, line 2528); [backlink](#)

Unknown interpreted text role "issue".

- As part of the [PEP 492](#) implementation, the `tp_reserved` slot of `:c:type: PyTypeObject` was replaced with a `:c:member: tp_as_async` slot. Refer to [:ref: coro-objects](#) for new types, structures and functions.

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\whatsnew\ (cpython-main) (Doc) (whatsnew) 3.5.rst, line 2534); [backlink](#)

Unknown interpreted text role "c:type".

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\whatsnew\ (cpython-main) (Doc) (whatsnew) 3.5.rst, line 2534); [backlink](#)

Unknown interpreted text role "c:member".

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\whatsnew\ (cpython-main) (Doc) (whatsnew) 3.5.rst, line 2534); [backlink](#)

Unknown interpreted text role "ref".

Notable changes in Python 3.5.4

New `make regen-all` build target

To simplify cross-compilation, and to ensure that CPython can reliably be compiled without requiring an existing version of Python to already be available, the autotools-based build system no longer attempts to implicitly recompile generated files based on file modification times.

Instead, a new `make regen-all` command has been added to force regeneration of these files when desired (e.g. after an initial version of Python has already been built based on the pregenerated versions).

More selective regeneration targets are also defined - see `:source:'Makefile.pre.in'` for details.

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\whatsnew\ (cpython-main) (Doc) (whatsnew) 3.5.rst, line 2555); [backlink](#)

Unknown interpreted text role "source".

(Contributed by Victor Stinner in `:issue:'23404'`.)

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\whatsnew\ (cpython-main) (Doc) (whatsnew) 3.5.rst, line 2558); [backlink](#)

Unknown interpreted text role "issue".

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\whatsnew\ (cpython-main) (Doc) (whatsnew) 3.5.rst, line 2560)

Unknown directive type "versionadded".

```
.. versionadded:: 3.5.4
```

Removal of `make touch build` target

The `make touch build` target previously used to request implicit regeneration of generated files by updating their modification times has been removed.

It has been replaced by the new `make regen-all` target.

(Contributed by Victor Stinner in `:issue:'23404'`.)

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\whatsnew\ (cpython-main) (Doc) (whatsnew) 3.5.rst, line 2571); [backlink](#)

Unknown interpreted text role "issue".

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\whatsnew\ (cpython-main) (Doc) (whatsnew) 3.5.rst, line 2573)

Unknown directive type "versionchanged".

```
.. versionchanged:: 3.5.4
```