

Document all possibilities for the `-x` options in the command line help section. Patch by Pablo Galindo.

Fix possible crashes when operating with the functions in the `mod:'heapq'` module and custom comparison operators.

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Misc\NEWS.d\ [cpython-main] [Misc] [NEWS.d] 3.9.0a3.rst, line 17); [backlink](#)

Unknown interpreted text role "mod".

Prevent double awaiting of async iterator.

Add `:class:'functools.TopologicalSorter'` to the `mod:'functools'` module to offers functionality to perform topological sorting of graphs. Patch by Pablo Galindo, Tim Peters and Larry Hastings.

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Misc\NEWS.d\ [cpython-main] [Misc] [NEWS.d] 3.9.0a3.rst, line 36); [backlink](#)

Unknown interpreted text role "class".

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Misc\NEWS.d\ [cpython-main] [Misc] [NEWS.d] 3.9.0a3.rst, line 36); [backlink](#)

Unknown interpreted text role "mod".

Replace four complex bytecodes for building sequences with three simpler ones.

The following four bytecodes have been removed:

- BUILD_LIST_UNPACK
- BUILD_TUPLE_UNPACK
- BUILD_SET_UNPACK
- BUILD_TUPLE_UNPACK_WITH_CALL

The following three bytecodes have been added:

- LIST_TO_TUPLE
- LIST_EXTEND
- SET_UPDATE

Import loaders which publish immutable module objects can now publish immutable packages in addition to individual modules.

Added a new function `:func:'gc.is_finalized'` to check if an object has been finalized by the garbage collector. Patch by Pablo Galindo.

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Misc\NEWS.d\ [cpython-main] [Misc] [NEWS.d] 3.9.0a3.rst, line 80); [backlink](#)

Unknown interpreted text role "func".

Improve the displayed error message when incorrect types are passed to `async with` statements by looking up the `meth:'__aenter__'` special method before the `meth:'__aexit__'` special method when entering an asynchronous context manager. Patch by GÃCry Ogam.

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Misc\NEWS.d\ [cpython-main] [Misc] [NEWS.d] 3.9.0a3.rst, line 90); [backlink](#)

Unknown interpreted text role "meth".

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Misc\NEWS.d\ [cpython-main] [Misc] [NEWS.d] 3.9.0a3.rst, line 90); [backlink](#)

Unknown interpreted text role "meth".

Fix AST end location for lone generator expression in function call, e.g. `f(i for i in a)`.

Correctly handle multi-line tokens in interactive mode. Patch by Pablo Galindo.

Port `_json` extension module to multiphase initialization (PEP 489).

Fix constant folding optimization for positional only arguments - by Anthony Sottile.

Fix `SystemError` when nested function has annotation on positional-only argument - by Anthony Sottile.

Correct the error message when calling the `:func:`min`` or `:func:`max`` with no arguments. Patch by Dong-hee Na.

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Misc\NEWS.d\ [cpython-main] [Misc] [NEWS.d] 3.9.0a3.rst, line 151); [backlink](#)

Unknown interpreted text role "func".

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Misc\NEWS.d\ [cpython-main] [Misc] [NEWS.d] 3.9.0a3.rst, line 151); [backlink](#)

Unknown interpreted text role "func".

Correct the error message when trying to construct `:class:`range`` objects with no arguments. Patch by Pablo Galindo.

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Misc\NEWS.d\ [cpython-main] [Misc] [NEWS.d] 3.9.0a3.rst, line 161); [backlink](#)

Unknown interpreted text role "class".

Fix incorrect line execution reporting in trace functions when tracing the last iteration of asynchronous for loops. Patch by Pablo Galindo.

Fix incorrect line execution reporting in trace functions when tracing exception handlers with name binding. Patch by Pablo Galindo.

Split the COMPARE_OP bytecode instruction into four distinct instructions.

- COMPARE_OP for rich comparisons
- IS_OP for 'is' and 'is not' tests
- CONTAINS_OP for 'in' and 'is not' tests
- JUMP_IF_NOT_EXC_MATCH for checking exceptions in 'try-except' statements.

This improves the clarity of the interpreter and should provide a modest speedup.

Fix possible crashes in dict and list when calling `:func:`PyObject_RichCompareBool``.

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Misc\NEWS.d\ [cpython-main] [Misc] [NEWS.d] 3.9.0a3.rst, line 208); [backlink](#)

Unknown interpreted text role "c:func".

By default, `sys.stderr` is line-buffered now, even if `stderr` is redirected to a file. You can still make `sys.stderr` unbuffered by passing the `:option:`-u`` command-line option or setting the `:envvar:`PYTHONUNBUFFERED`` environment variable.

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Misc\NEWS.d\ [cpython-main] [Misc] [NEWS.d] 3.9.0a3.rst, line 218); [backlink](#)

Unknown interpreted text role "option".

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Misc\NEWS.d\ [cpython-main] [Misc] [NEWS.d] 3.9.0a3.rst, line 218); [backlink](#)

Unknown interpreted text role "envvar".

(Contributed by Jendrik Seipp in bpo-13601.)

Fix possible crashes in several list methods by holding strong references to list elements when calling `:func:`PyObject_RichCompareBool``.

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Misc\NEWS.d\ [cpython-main] [Misc] [NEWS.d] 3.9.0a3.rst, line 232); [backlink](#)

Unknown interpreted text role "c:func".

Include brotli .br encoding in mimetypes encodings_map

Fixed race condition in lazy imports in `:mod:`tarfile``.

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Misc\NEWS.d\ [cpython-main] [Misc] [NEWS.d] 3.9.0a3.rst, line 251); [backlink](#)

Unknown interpreted text role "mod".

The `:func:`os.unsetenv`` function is now also available on Windows.

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Misc\NEWS.d\ [cpython-main] [Misc] [NEWS.d] 3.9.0a3.rst, line 260); [backlink](#)

Unknown interpreted text role "func".

Fixed a regression with the `ignore` callback of `:func:`shutil.copytree``. The argument types are now `str` and `List[str]` again.

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Misc\NEWS.d\ [cpython-main] [Misc] [NEWS.d] 3.9.0a3.rst, line 269); [backlink](#)

Unknown interpreted text role "func".

The `:func:`os.putenv`` and `:func:`os.unsetenv`` functions are now always available.

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Misc\NEWS.d\ [cpython-main] [Misc] [NEWS.d] 3.9.0a3.rst, line 279); [backlink](#)

Unknown interpreted text role "func".

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Misc\NEWS.d\ [cpython-main] [Misc] [NEWS.d] 3.9.0a3.rst, line 279); [backlink](#)

Unknown interpreted text role "func".

If `setenv()` C function is available, `:func:`os.putenv`` is now implemented with `setenv()` instead of `putenv()`, so Python doesn't have to handle the environment variable memory.

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Misc\NEWS.d\ [cpython-main] [Misc] [NEWS.d] 3.9.0a3.rst, line 289); [backlink](#)

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Fix `math.nextafter(-0.0, +0.0)` on AIX 7.1.

Allow `:func:`tarfile.is_tarfile`` to be used with file and file-like objects, like `:func:`zipfile.is_zipfile``. Patch by William Woodruff.

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Misc\NEWS.d\ [cpython-main] [Misc] [NEWS.d] 3.9.0a3.rst, line 309); [backlink](#)

Unknown interpreted text role "func".

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Misc\NEWS.d\ [cpython-main] [Misc] [NEWS.d] 3.9.0a3.rst, line 309); [backlink](#)

Unknown interpreted text role "func".

Removed `encoding` option from `:func:`json.loads``. It has been deprecated since Python 3.1.

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Misc\NEWS.d\ [cpython-main] [Misc] [NEWS.d] 3.9.0a3.rst, line 319); [backlink](#)

Unknown interpreted text role "func".

Write accurate compression level metadata in `:mod:`gzip`` archives, rather than always signaling maximum compression.

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Misc\NEWS.d\ [cpython-main] [Misc] [NEWS.d] 3.9.0a3.rst, line 329); [backlink](#)

Unknown interpreted text role "mod".

The previously deprecated `xpath()` and `xgtitle()` methods of `:class:`nntplib.NNTP`` have been removed.

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Misc\NEWS.d\ [cpython-main] [Misc] [NEWS.d] 3.9.0a3.rst, line 339); [backlink](#)

Unknown interpreted text role "class".

Remove the *buffering* parameter of `:class:'bz2.BZ2File'`. Since Python 3.0, it was ignored and using it was emitting `:exc:'DeprecationWarning'`. Pass an open file object, to control how the file is opened. The *compresslevel* parameter becomes keyword-only.

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Misc\NEWS.d\ [cpython-main] [Misc] [NEWS.d] 3.9.0a3.rst, line 349); [backlink](#)

Unknown interpreted text role "class".

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Misc\NEWS.d\ [cpython-main] [Misc] [NEWS.d] 3.9.0a3.rst, line 349); [backlink](#)

Unknown interpreted text role "exc".

Deprecate binhex4 and hexbin4 standards. Deprecate the `:mod:'binhex'` module and the following `:mod:'binascii'` functions: `:func:'~binascii.b2a_hqx'`, `:func:'~binascii.a2b_hqx'`, `:func:'~binascii.rlecode_hqx'`, `:func:'~binascii.rledecode_hqx'`, `:func:'~binascii.crc_hqx'`.

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Misc\NEWS.d\ [cpython-main] [Misc] [NEWS.d] 3.9.0a3.rst, line 361); [backlink](#)

Unknown interpreted text role "mod".

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Misc\NEWS.d\ [cpython-main] [Misc] [NEWS.d] 3.9.0a3.rst, line 361); [backlink](#)

Unknown interpreted text role "mod".

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Misc\NEWS.d\ [cpython-main] [Misc] [NEWS.d] 3.9.0a3.rst, line 361); [backlink](#)

Unknown interpreted text role "func".

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Misc\NEWS.d\ [cpython-main] [Misc] [NEWS.d] 3.9.0a3.rst, line 361); [backlink](#)

Unknown interpreted text role "func".

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Misc\NEWS.d\ [cpython-main] [Misc] [NEWS.d] 3.9.0a3.rst, line 361); [backlink](#)

Unknown interpreted text role "func".

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Misc\NEWS.d\ [cpython-main] [Misc] [NEWS.d] 3.9.0a3.rst, line 361); [backlink](#)

Unknown interpreted text role "func".

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Misc\NEWS.d\ [cpython-main] [Misc] [NEWS.d] 3.9.0a3.rst, line 361); [backlink](#)

Unknown interpreted text role "func".

Remove `base64.encodestring()` and `base64.decodestring()`, aliases deprecated since Python 3.1: use `:func:'base64.encodebytes'` and `:func:'base64.decodebytes'` instead.

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Misc\NEWS.d\ [cpython-main] [Misc] [NEWS.d] 3.9.0a3.rst, line 373); [backlink](#)

Unknown interpreted text role "func".

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Misc\NEWS.d\ [cpython-main] [Misc] [NEWS.d] 3.9.0a3.rst, line 373); [backlink](#)

Unknown interpreted text role "func".

Remove `fractions.gcd()` function, deprecated since Python 3.5 ([issue: 22486](#)); use `func: math.gcd` instead.

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Misc\NEWS.d\ [cpython-main] [Misc] [NEWS.d] 3.9.0a3.rst, line 384); [backlink](#)

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System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Misc\NEWS.d\ [cpython-main] [Misc] [NEWS.d] 3.9.0a3.rst, line 384); [backlink](#)

Unknown interpreted text role "func".

`:class:~smtplib.LMTP` constructor now has an optional *timeout* parameter. Patch by Dong-hee Na.

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Misc\NEWS.d\ [cpython-main] [Misc] [NEWS.d] 3.9.0a3.rst, line 394); [backlink](#)

Unknown interpreted text role "class".

Add a new `exec_function` option (`--exec-function` in the CLI) to `RefactoringTool` for making `exec` a function. Patch by Batuhan Taskaya.

`:class:~ftplib.FTP_TLS` and `:class:~ftplib.FTP_TLS` now raise a `:class: ValueError` if the given timeout for their constructor is zero to prevent the creation of a non-blocking socket. Patch by Dong-hee Na.

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Misc\NEWS.d\ [cpython-main] [Misc] [NEWS.d] 3.9.0a3.rst, line 415); [backlink](#)

Unknown interpreted text role "class".

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Misc\NEWS.d\ [cpython-main] [Misc] [NEWS.d] 3.9.0a3.rst, line 415); [backlink](#)

Unknown interpreted text role "class".

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Misc\NEWS.d\ [cpython-main] [Misc] [NEWS.d] 3.9.0a3.rst, line 415); [backlink](#)

Unknown interpreted text role "class".

`:class:~smtplib.SMTP` and `:class:~smtplib.SMTP_SSL` now raise a `:class: ValueError` if the given timeout for their constructor is zero to prevent the creation of a non-blocking socket. Patch by Dong-hee Na.

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Misc\NEWS.d\ [cpython-main] [Misc] [NEWS.d] 3.9.0a3.rst, line 426); [backlink](#)

Unknown interpreted text role "class".

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Misc\NEWS.d\ [cpython-main] [Misc] [NEWS.d] 3.9.0a3.rst, line 426); [backlink](#)

Unknown interpreted text role "class".

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Misc\NEWS.d\ [cpython-main] [Misc] [NEWS.d] 3.9.0a3.rst, line 426); [backlink](#)

Unknown interpreted text role "class".

Add `:func: math.ulp`: return the value of the least significant bit of a float.

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Misc\NEWS.d\ [cpython-main] [Misc] [NEWS.d] 3.9.0a3.rst, line 437); [backlink](#)

Unknown interpreted text role "func".

Improved performance of importlib.metadata distribution discovery and resilient to inaccessible sys.path entries (importlib_metadata v1.4.0).

`:class:`~nntplib.NNTP`` and `:class:`~nntplib.NNTP_SSL`` now raise a `:class:`ValueError`` if the given timeout for their constructor is zero to prevent the creation of a non-blocking socket. Patch by Dong-hee Na.

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Misc\NEWS.d\ [cpython-main] [Misc] [NEWS.d] 3.9.0a3.rst, line 457); [backlink](#)

Unknown interpreted text role "class".

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Misc\NEWS.d\ [cpython-main] [Misc] [NEWS.d] 3.9.0a3.rst, line 457); [backlink](#)

Unknown interpreted text role "class".

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Misc\NEWS.d\ [cpython-main] [Misc] [NEWS.d] 3.9.0a3.rst, line 457); [backlink](#)

Unknown interpreted text role "class".

When you specify `prompt='.'` or equivalently `python -m venv --prompt .` ... the basename of the current directory is used to set the created venv's prompt when it's activated.

Add `:func:`math.nextafter``: return the next floating-point value after x towards y .

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Misc\NEWS.d\ [cpython-main] [Misc] [NEWS.d] 3.9.0a3.rst, line 479); [backlink](#)

Unknown interpreted text role "func".

`:class:`~poplib.POP3`` and `:class:`~poplib.POP3_SSL`` now raise a `:class:`ValueError`` if the given timeout for their constructor is zero to prevent the creation of a non-blocking socket. Patch by Dong-hee Na.

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Misc\NEWS.d\ [cpython-main] [Misc] [NEWS.d] 3.9.0a3.rst, line 489); [backlink](#)

Unknown interpreted text role "class".

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Misc\NEWS.d\ [cpython-main] [Misc] [NEWS.d] 3.9.0a3.rst, line 489); [backlink](#)

Unknown interpreted text role "class".

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Misc\NEWS.d\ [cpython-main] [Misc] [NEWS.d] 3.9.0a3.rst, line 489); [backlink](#)

Unknown interpreted text role "class".

Updated the Gmane domain from news.gmane.org to news.gmane.io which is used for examples of `:class:`~nntplib.NNTP`` news reader server and nntplib tests.

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Misc\NEWS.d\ [cpython-main] [Misc] [NEWS.d] 3.9.0a3.rst, line 500); [backlink](#)

Unknown interpreted text role "class".

Proxy the `SimpleHTTPRequestHandler.guess_type` to `mimetypes.guess_type` so the `mimetypes.init` is called lazily to avoid unnecessary costs when `:mod:`http.server`` module is imported.

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

main\Misc\NEWS.d\ [cpython-main] [Misc] [NEWS.d] 3.9.0a3.rst, line 510); [backlink](#)

Unknown interpreted text role "mod".

The `meth:select.epoll.unregister` method no longer ignores the `:data::~errno.EBADF` error.

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Misc\NEWS.d\ [cpython-main] [Misc] [NEWS.d] 3.9.0a3.rst, line 521); [backlink](#)

Unknown interpreted text role "meth".

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Misc\NEWS.d\ [cpython-main] [Misc] [NEWS.d] 3.9.0a3.rst, line 521); [backlink](#)

Unknown interpreted text role "data".

In `http.server` script, restore binding to IPv4 on Windows.

Fix `ttk.Scale.configure([name])` to return configuration tuple for name or all options. Giovanni Lombardo contributed part of the patch.

If an exception were to be thrown in `Logger.isEnabledFor` (say, by `asyncio` timeouts or `stopit`), the `logging` global lock may not be released appropriately, resulting in deadlock. This change wraps that block of code with `try...finally` to ensure the lock is released.

Perform a check for running loop before starting a new task in `loop.run_until_complete()` to fail fast; it prevents the side effect of new task spawning before exception raising.

Correctly parenthesize filter-based statements that contain lambda expressions in `mod:lib2to3`. Patch by Dong-hee Na.

A change was made to `logging.config.dictConfig` to avoid converting instances of named tuples to `ConvertingTuple`. It's assumed that named tuples are too specialised to be treated like ordinary tuples; if a user of named tuples requires `ConvertingTuple` functionality, they will have to implement that themselves in their named tuple class.

`ast.literal_eval()` now supports empty sets.

Fix import path for `asyncio.TimeoutError`

`:func:urlib.request.proxy_bypass_environment` now ignores leading dots and no longer ignores a trailing newline.

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Misc\NEWS.d\ [cpython-main] [Misc] [NEWS.d] 3.9.0a3.rst, line 614); [backlink](#)

Unknown interpreted text role "func".

Fixed handling invalid warning category in the `-W` option. No longer import the `re` module if it is not needed.

`:func:base64.b64decode` with `validate=True` raises now a `binascii.Error` if the input ends with a single `\n`.

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Misc\NEWS.d\ [cpython-main] [Misc] [NEWS.d] 3.9.0a3.rst, line 634); [backlink](#)

Unknown interpreted text role "func".

Fix `:func:mock.patch.stopall` to stop active patches that were created with `:func:mock.patch.dict`.

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Misc\NEWS.d\ [cpython-main] [Misc] [NEWS.d] 3.9.0a3.rst, line 644); [backlink](#)

Unknown interpreted text role "func".

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Misc\NEWS.d\ [cpython-main] [Misc] [NEWS.d] 3.9.0a3.rst, line 644); [backlink](#)

Unknown interpreted text role "func".

Implement dummy `__class_getitem__` for `:class:tempfile.SpooledTemporaryFile`.

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Misc\NEWS.d\ [cpython-main] [Misc] [NEWS.d] 3.9.0a3.rst, line 654); [backlink](#)

Unknown interpreted text role "class".

Implement dummy `__class_getitem__` for `subprocess.Popen`, `subprocess.CompletedProcess`

Adjusted the wording of the warning issued by `distutils` check command when the `author` and `maintainer` fields are supplied but no corresponding e-mail field (`author_email` or `maintainer_email`) is found. The wording now reflects the fact that these fields are suggested, but not required. Patch by Juergen Gnach.

Fixed `__subclasshook__` of `:class:'os.PathLike'` to return a correct result upon inheritance. Patch by Bar Harel.

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Misc\NEWS.d\ [cpython-main] [Misc] [NEWS.d] 3.9.0a3.rst, line 687); [backlink](#)

Unknown interpreted text role "class".

`:class:'imaplib.IMAP4'` and `:class:'imaplib.IMAP4_SSL'` now have an optional `timeout` parameter for their constructors. Also, the `:meth:'imaplib.IMAP4.open'` method now has an optional `timeout` parameter with this change. The overridden methods of `:class:'imaplib.IMAP4_SSL'` and `:class:'imaplib.IMAP4_stream'` were applied to this change. Patch by Dong-hee Na.

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Misc\NEWS.d\ [cpython-main] [Misc] [NEWS.d] 3.9.0a3.rst, line 697); [backlink](#)

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System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Misc\NEWS.d\ [cpython-main] [Misc] [NEWS.d] 3.9.0a3.rst, line 697); [backlink](#)

Unknown interpreted text role "class".

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Misc\NEWS.d\ [cpython-main] [Misc] [NEWS.d] 3.9.0a3.rst, line 697); [backlink](#)

Unknown interpreted text role "meth".

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Misc\NEWS.d\ [cpython-main] [Misc] [NEWS.d] 3.9.0a3.rst, line 697); [backlink](#)

Unknown interpreted text role "class".

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Misc\NEWS.d\ [cpython-main] [Misc] [NEWS.d] 3.9.0a3.rst, line 697); [backlink](#)

Unknown interpreted text role "class".

Fixed `:func:'Popen.communicate'` subsequent call crash when the child process has already closed any piped standard stream, but still continues to be running. Patch by Andriy Maletsky.

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Misc\NEWS.d\ [cpython-main] [Misc] [NEWS.d] 3.9.0a3.rst, line 711); [backlink](#)

Unknown interpreted text role "func".

On Unix, `:meth:'subprocess.Popen.send_signal'` now polls the process status. Polling reduces the risk of sending a signal to the wrong process if the process completed, the `:attr:'subprocess.Popen.returncode'` attribute is still `None`, and the pid has been reassigned (recycled) to a new different process.

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Misc\NEWS.d\ [cpython-main] [Misc] [NEWS.d] 3.9.0a3.rst, line 722); [backlink](#)

Unknown interpreted text role "meth".

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Misc\NEWS.d\ [cpython-main] [Misc] [NEWS.d] 3.9.0a3.rst, line 722); [backlink](#)

Unknown interpreted text role "attr".

Removes trailing space in formatted currency with `international=True` and a locale with symbol following value. E.g. `locale.currency(12.34, international=True)` returned `'12,34 EUR '` instead of `'12,34 EUR'`.

Use signature from inner mock for autospecced methods attached with `:func:`unittest.mock.attach_mock``. Patch by Karthikeyan Singaravelan.

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Misc\NEWS.d\ [cpython-main] [Misc] [NEWS.d] 3.9.0a3.rst, line 746); [backlink](#)

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Fixed an issue where `ident` could include a leading path separator when `:func:`syslog.openlog`` was called without arguments.

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Misc\NEWS.d\ [cpython-main] [Misc] [NEWS.d] 3.9.0a3.rst, line 756); [backlink](#)

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Add `:func:`copy.copy`` and `:func:`copy.deepcopy`` support to `:func:`property`` objects.

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Misc\NEWS.d\ [cpython-main] [Misc] [NEWS.d] 3.9.0a3.rst, line 766); [backlink](#)

Unknown interpreted text role "func".

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Misc\NEWS.d\ [cpython-main] [Misc] [NEWS.d] 3.9.0a3.rst, line 766); [backlink](#)

Unknown interpreted text role "func".

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Misc\NEWS.d\ [cpython-main] [Misc] [NEWS.d] 3.9.0a3.rst, line 766); [backlink](#)

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Added the `pstats.Stats.get_profile_dict()` method to return the profile data as a `StatsProfile` instance.

Termios magic constants for the following baud rates: - B500000 - B576000 - B921600 - B1000000 - B1152000 - B1500000 - B2000000 - B2500000 - B3000000 - B3500000 - B4000000 Patch by Andrey Smirnov

Mention in docs that `:func:`asyncio.get_event_loop`` implicitly creates new event loop only if called from the main thread.

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Misc\NEWS.d\ [cpython-main] [Misc] [NEWS.d] 3.9.0a3.rst, line 797); [backlink](#)

Unknown interpreted text role "func".

Add an entry for `__module__` in the "function" & "method" sections of the [inspect docs types and members table](#)

In the `:mod:`ast`` module documentation, fix a misleading `NodeTransformer` example and add advice on when to use the `fix_missing_locations` function.

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Misc\NEWS.d\ [cpython-main] [Misc] [NEWS.d] 3.9.0a3.rst, line 818); [backlink](#)

Unknown interpreted text role "mod".

On non-Windows platforms, the `:func:`setenv`` and `:func:`unsetenv`` functions are now required to build Python.

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Misc\NEWS.d\ [cpython-main] [Misc] [NEWS.d] 3.9.0a3.rst, line 829); [backlink](#)

Unknown interpreted text role "c:func".

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Misc\NEWS.d\ [cpython-main] [Misc] [NEWS.d] 3.9.0a3.rst, line 829); [backlink](#)

Unknown interpreted text role "c:func".

Updated the documentation in `./configure --help` to show default values, reference documentation where required and add additional

explanation where needed.

The ctags and etags build targets both include Modules/_ctypes and Python standard library source files.

Make IDLE Settings dialog Help button work again.

Tag memoryview, range, and tuple as classes, the same as list, etcetera, in the library manual built-in functions list.

Add tests for editor newline_and_indent_event method. Remove dead code from pyparse find_good_parse_start method.

Clean header files of interfaces defined but with no implementation. The public API symbols being removed are:

`_PyBytes_InsertThousandsGroupingLocale`, `_PyBytes_InsertThousandsGrouping`, `_Py_InitializeFromArgs`,
`_Py_InitializeFromWideArgs`, `_PyFloat_Repr`, `_PyFloat_Digits`, `_PyFloat_DigitsInit`, `PyFrame_ExtendStack`,
`_PyAIterWrapper_Type`, `PyNullImporter_Type`, `PyCmpWrapper_Type`, `PySortWrapper_Type`, `PyNoArgsFunction`.

Add a private `_PyErr_GetExcInfo()` function to retrieve exception information of the specified Python thread state.