

Changes `urlsplit()` to raise `ValueError` when the URL contains characters that decompose under IDNA encoding (NFKC-normalization) into characters that affect how the URL is parsed.

Don't send cookies of domain A without Domain attribute to domain B when domain A is a suffix match of domain B while using a cookiejar with `:class:'http.cookiejar.DefaultCookiePolicy'` policy. Patch by Karthikeyan Singaravelan.

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Misc\NEWS.d\ [cpython-main] [Misc] [NEWS.d] 3.8.0a3.rst, line 18); [backlink](#)

Unknown interpreted text role "class".

Fix a possible double decref in `_ctypes.c's PyCArrayType_new()`.

Fix a possible crash when creating a new dictionary.

Fix a possible crash in `structseq_repr()`.

Fix bug in parser module when parsing a state in a DFA that has two or more arcs with labels of the same type. Patch by Pablo Galindo.

`repr(structseq)` is no longer limited to 512 bytes.

Fix a possible null pointer dereference in `merge_consts_recursive()`. Patch by Zackery Spytz

At Python initialization, the current directory is no longer prepended to `:data:'sys.path'` if it has been removed.

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Misc\NEWS.d\ [cpython-main] [Misc] [NEWS.d] 3.8.0a3.rst, line 86); [backlink](#)

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Python initialization now fails with an error, rather than silently truncating paths, if a path is too long.

Python initialization now fails if decoding `pybuilddir.txt` configuration file fails at startup.

Fix leak in `_PyRuntimeState_Fini`. Contributed by Stéphane Wirtel.

The builtin `:func:'compile'` can now handle AST objects that contain assignment expressions. Patch by Pablo Galindo.

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Misc\NEWS.d\ [cpython-main] [Misc] [NEWS.d] 3.8.0a3.rst, line 125); [backlink](#)

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Improved error message for too much positional arguments in some builtin functions.

New empty dict uses fewer memory for now. It used more memory than empty dict created by `dict.clear()`. And empty dict creation and deletion is about 2x faster. Patch by Inada Naoki.

Fix an unlikely memory leak on conversion from string to float in the function `_Py_dg_strtod()` used by `float(str)`, `complex(str)`, `:func:'pickle.load'`, `:func:'marshal.load'`, etc.

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Misc\NEWS.d\ [cpython-main] [Misc] [NEWS.d] 3.8.0a3.rst, line 156); [backlink](#)

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Update Unicode databases to version 12.0.0.

Fix a segfault occurring when sorting a list of heterogeneous values. Patch contributed by Rémi Lapeyre and Elliot Gorokhovsky.

Cleaned up left-over vestiges of Python 2 unbound method handling in method objects and documentation. Patch by Martijn Pieters

Add a new interpreter-specific dict and expose it in the C-API via `PyInterpreterState_GetDict()`. This parallels `PyThreadState_GetDict()`. However, extension modules should continue using `PyModule_GetState()` for their own internal per-interpreter state.

Add a `feature_version` flag to `ast.parse()` (documented) and `compile()` (hidden) that allows tweaking the parser to support older versions of the grammar. In particular, if `feature_version` is 5 or 6, the hacks for the `async` and `await` keyword from PEP 492 are reinstated. (For 7 or higher, these are unconditionally treated as keywords, but they are still special tokens rather than `NAME`

tokens that the parser driver recognizes.)

Use UTF-8 as the system encoding on VxWorks.

The `meth:~object.__index__` special method will be used instead of `meth:~object.__int__` for implicit conversion of Python numbers to C integers. Using the `__int__()` method in implicit conversions has been deprecated.

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System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Misc\NEWS.d\ [cpython-main] [Misc] [NEWS.d] 3.8.0a3.rst, line 232); [backlink](#)

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Retire pgen and use a modified version of pgen2 to generate the parser. Patch by Pablo Galindo.

The class documentation created by pydoc now has a separate section for readonly properties.

The `typing.NamedTuple()` class has deprecated the `__field_types` attribute in favor of the `__annotations__` attribute which carried the same information. Also, both attributes were converted from `OrderedDict` to a regular dict.

Fix `mod:'asyncio'` ssl memory issues caused by circular references

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Add method to `statistics.NormalDist` for computing the inverse cumulative normal distribution.

`collections.namedtuple()` misspelled the name of an attribute. To be consistent with `typing.NamedTuple`, the attribute name should have been `"_field_defaults"` instead of `"_fields_defaults"`. For backwards compatibility, both spellings are now created. The misspelled version may be removed in the future.

"unicode_internal" codec is removed. It was deprecated since Python 3.3. Patch by Inada Naoki.

Raise `ModuleNotFoundError` in `pyclbr` when a module can't be found. Thanks to 'mental' for the bug report.

Switch the default format used for writing tars with `mod:tarfile` to the modern POSIX.1-2001 pax standard, from the vendor-specific GNU. Contributed by C.A.M. Gerlach.

Fix integer overflows in the array module. Patch by Stephan Hohe.

Add `_signal` module support for VxWorks.

`mod:'logging'` does not silently ignore `RecursionError` anymore. Patch contributed by Rémi Lapeyre.

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Add a kind field to `ast.Constant`. It is 'u' if the literal has a 'u' prefix (i.e. a Python 2 style unicode literal), else None.

The `mod:'pdb'` debug command now gracefully handles all exceptions.

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Fix format strings used for `stderrprinter` and `re.Match` reprs. Patch by Stephan Hohe.

Fix `CFLAGS` in `customize_compiler()` of `distutils.sysconfig`: when the `CFLAGS` environment variable is defined, don't override `CFLAGS` variable with the `OPT` variable anymore. Initial patch written by David Malcolm.

Update `ensurepip` to install `pip` 19.0.3 and `setuptools` 40.8.0.

Release GIL when closing `class:~mmap.mmap` objects.

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Fix two unlikely reference leaks in `_hashopenssl`. The leaks only occur in out-of-memory cases.

Add `overlap()` method to `statistics.NormalDist`. Computes the overlapping coefficient for two normal distributions.

Default buffer size used by `shutil.copyfileobj()` is changed from 16 KiB to 64 KiB on non-Windows platform to reduce system call overhead. Contributed by Inada Naoki.

Fix `pdb` with `skip=...` when stepping into a frame without a `__name__` global. Patch by Anthony Sottile.

`shutil.copytree(copy_function=...)` erroneously pass `DirEntry` instead of a path string.

Ensure custom `:func:`warnings.formatwarning`` function can receive `line` as positional argument. Based on patch by Tashrif Billah.

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Resolve potential name clash with libm's `sinpi()`. Patch by Dmitrii Pasechnik.

Clean up reference to async generator in `Lib/types`. Patch by Henry Chen.

`:class:`FileCookieJar`` supports `:term:`path-like object``. Contributed by Stéphane Wirtel

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`Enum` has been fixed to correctly handle empty strings and strings with non-Latin characters (ie. 'α', 'x') without crashing. Original patch contributed by Maxwell. Assisted by Stéphane Wirtel.

Add `args` and `kwargs` properties to mock call objects. Contributed by Kumar Akshay.

`pprint.pp` has been added to pretty-print objects with dictionary keys being sorted with their insertion order by default. Parameter `sort_dicts` has been added to `pprint.pprint`, `pprint.pformat` and `pprint.PrettyPrinter`. Contributed by Rémi Lapeyre.

Implement `__getitem__` for `_NamespacePath`. Patch by Anthony Sottile.

Clean up code which checked presence of `os.stat` / `os.lstat` / `os.chmod` which are always present. Patch by Anthony Sottile.

Librates the return value of a `ProcessPoolExecutor` `_process_worker` after it's no longer needed to free memory

Use `:func:`multiprocessing.connection.wait`` instead of polling each 0.2 seconds for worker updates in `:class:`multiprocessing.Pool``. Patch by Pablo Galindo.

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Store the `venv` prompt in `pyvenv.cfg`.

Don't set cookie for a request when the request path is a prefix match of the cookie's path attribute but doesn't end with `"/`. Patch by Karthikeyan Singaravelan.

Calls to a child function created with `:func:`unittest.mock.create_autospec`` should propagate to the parent. Patch by Karthikeyan Singaravelan.

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Fix C++ extension compilation on AIX

Declare the path of the Python binary for the usage of `Tools/scripts/serve.py` when executing `make -C Doc/ serve`.
Contributed by Stéphane Wirtel

Improve documentation about converting `datetime.timedelta` to scalars.

A new entry was added to the Core Language Section of the Programming FAQ, which explains the usage of slash(/) in the signature of a function. Patch by Lysandros Nikolaou

`test_posix.PosixUidGidTests`: add tests for invalid uid/gid type (str). Initial patch written by David Malcolm

Fix `test_re.test_locale_flag()`: use `locale.getpreferredencoding()` rather than `locale.getlocale()` to get the locale encoding. With some locales, `locale.getlocale()` returns the wrong encoding.

Fix race condition in `test_socket`.

Fix leaks that led to build failure when configured with address sanitizer.

Add `TEST_EXTENSIONS` constant to `setup.py` to allow to not build test extensions like `_testcapi`.

Fix `setup.py` on macOS: only add `/usr/include/ffi` to include directories of `_ctypes`, not for all extensions.

Enable build system to cross-build for VxWorks RTOS.

Fixed decoders for the following code pages: 50220, 50221, 50222, 50225, 50227, 50229, 57002 through 57011, 65000 and 42.

Don't honor POSIX `HOME` in `os.path.expanduser` on windows. Patch by Anthony Sottile.

Fix name collisions due to `#define timezone _timezone` in `PC/pyconfig.h`.

Use dict unpacking in `idlelib`.

Remove `fgBg` param of `idlelib.config.GetHighlight()`. This param was only used twice and changed the return type.

Fix IDLE autocomplete & calltip popup colors. Prevent conflicts with Linux dark themes (and slightly darken calltip background).

For the `grep` module, add tests for `findfiles`, refactor `findfiles` to be a module-level function, and refactor `findfiles` to use `os.walk`.

Add docstrings to IDLE search modules.

Remove `colorizer.ColorDelegator.close_when_done` and the corresponding argument of `.close()`. In IDLE, both have always been `None` or `False` since 2007.

Avoid blurry IDLE application icon on macOS with Tk 8.6. Patch by Kevin Walzer.

Refactor class variables to instance variables in `colorizer`.

Increase test coverage of `idlelib.autocomplete` by 30%. Patch by Louie Lu

Fix `py-list` and `py-bt` commands of `python-gdb.py` on `gdb7`.

Fix freeze script on Windows.

Raise `DeprecationWarning` when `'#'` formats are used for building or parsing values without `PY_SSIZE_T_CLEAN`.

The whole `coreconfig.h` header is now excluded from `Py_LIMITED_API`. Move functions definitions into a new internal `pycore_coreconfig.h` header.