

Avoid static buffers when computing the repr of `:class:'ctypes.c_double'` and `:class:'ctypes.c_longdouble'` values.

**System Message: ERROR/3** (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Misc\NEWS.d\ (cpython-main) (Misc) (NEWS.d) 3.10.0a5.rst, line 7); [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) 3.10.0a5.rst, line 7); [backlink](#)

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Refactor the `PyEval_` family of functions.

- An new function `_PyEval_Vector` is added to simplify calls to Python from C.
- `_PyEval_EvalCodeWithName` is removed
- `PyEval_EvalCodeEx` is retained as part of the API, but is not used internally

Replace `:c:func:'Py_FatalError'` calls in the compiler with regular `:exc:'SystemError'` exceptions. Patch by Victor Stinner.

**System Message: ERROR/3** (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Misc\NEWS.d\ (cpython-main) (Misc) (NEWS.d) 3.10.0a5.rst, line 30); [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) 3.10.0a5.rst, line 30); [backlink](#)

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Improve error message for missing `:"` before blocks. Patch by Pablo Galindo.

Improve error message in the parser when using un-parenthesised tuples in comprehensions. Patch by Pablo Galindo.

Fix parser crash when reporting syntax errors in f-string with newlines. Patch by Pablo Galindo.

Syntax errors for unterminated string literals now point to the start of the string instead of reporting EOF/EOL.

The inline cache for `LOAD_ATTR` now also optimizes access to attributes defined by `__slots__`. This makes reading such attribute up to 30% faster.

Improve error messages in the parser when parentheses are not closed. Patch by Pablo Galindo.

Fix `bytearray` repetition incorrectly copying data from the start of the buffer, even if the data is offset within the buffer (e.g. after reassigning a slice at the start of the `bytearray` to a shorter byte string).

Fix the `:c:func:'_PyUnicode_FromId'` function (`_Py_IDENTIFIER(var)` API) when `:c:func:'Py_Initialize'` / `:c:func:'Py_Finalize'` is called multiple times: preserve `_PyRuntime.unicode_ids.next_index` value.

**System Message: ERROR/3** (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Misc\NEWS.d\ (cpython-main) (Misc) (NEWS.d) 3.10.0a5.rst, line 111); [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) 3.10.0a5.rst, line 111); [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) 3.10.0a5.rst, line 111); [backlink](#)

Unknown interpreted text role "c:func".

Fix a crash when working out the error line of a `:exc:'SyntaxError'` in some multi-line expressions.

**System Message: ERROR/3** (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Misc\NEWS.d\ (cpython-main) (Misc) (NEWS.d) 3.10.0a5.rst, line 122); [backlink](#)

Unknown interpreted text role "exc".

frame.f\_lineno is correct even if frame.f\_trace is set to True

Remove deprecated aliases to `:ref:`collections-abstract-base-classes`` from the `:mod:`collections`` module.

**System Message: ERROR/3** (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Misc\NEWS.d\ (cpython-main) (Misc) (NEWS.d) 3.10.0a5.rst, line 141); [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) 3.10.0a5.rst, line 141); [backlink](#)

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Fixed possible leak in `import` when `sys.modules` is not a dict.

In string formatting, preceding the `width` field by `'0'` no longer affects the default alignment for strings.

Fixed a reference leak in the `:mod:`curses`` module. Patch by Pablo Galindo

**System Message: ERROR/3** (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Misc\NEWS.d\ (cpython-main) (Misc) (NEWS.d) 3.10.0a5.rst, line 170); [backlink](#)

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Update the bundled pip to 21.0.1 and setuptools to 52.0.0.

Deprecate `distutils` in documentation and add warning on import.

Improve performance of `:mod:`tokenize`` by 20-30%. Patch by Anthony Sottile.

**System Message: ERROR/3** (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Misc\NEWS.d\ (cpython-main) (Misc) (NEWS.d) 3.10.0a5.rst, line 197); [backlink](#)

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Fix `:func:`math.nextafter`` for NaN on AIX.

**System Message: ERROR/3** (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Misc\NEWS.d\ (cpython-main) (Misc) (NEWS.d) 3.10.0a5.rst, line 206); [backlink](#)

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Add `:data:`sys.stdlib_module_names``, containing the list of the standard library module names. Patch by Victor Stinner.

**System Message: ERROR/3** (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Misc\NEWS.d\ (cpython-main) (Misc) (NEWS.d) 3.10.0a5.rst, line 215); [backlink](#)

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Fix `random.Random.sample` when `counts` argument is not None.

Use `:class:`~traceback.TracebackException``'s new compact param in `:class:`~unittest.TestResult`` to reduce time and memory consumed by traceback formatting.

**System Message: ERROR/3** (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Misc\NEWS.d\ (cpython-main) (Misc) (NEWS.d) 3.10.0a5.rst, line 234); [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) 3.10.0a5.rst, line 234); [backlink](#)

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Add `:func:`randbytes`` to `random.__all__`.

**System Message: ERROR/3** (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Misc\NEWS.d\ (cpython-main) (Misc) (NEWS.d) 3.10.0a5.rst, line 245); [backlink](#)

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[Enum] Flags consisting of a single bit are now considered canonical, and will be the only flags returned from listing and iterating over a Flag class or a Flag member. Multi-bit flags are considered aliases; they will be returned from lookups and operations that result in their value. Iteration for both Flag and Flag members is in definition order.

Added the `compact` parameter to the constructor of `:class:`traceback.TracebackException`` to reduce time and memory for use cases that only need to call `:func:`TracebackException.format`` and `:func:`TracebackException.format_exception_only``.

**System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Misc\NEWS.d\ (cpython-main) (Misc) (NEWS.d) 3.10.0a5.rst, line 267); [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) 3.10.0a5.rst, line 267); [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) 3.10.0a5.rst, line 267); [backlink](#)**

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The `:func:`Py_FatalError`` function and the `:mod:`faulthandler`` module now dump the list of extension modules on a fatal error.

**System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Misc\NEWS.d\ (cpython-main) (Misc) (NEWS.d) 3.10.0a5.rst, line 279); [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) 3.10.0a5.rst, line 279); [backlink](#)**

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Removed recursion from `:class:`~traceback.TracebackException`` to allow it to handle long exception chains.

**System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Misc\NEWS.d\ (cpython-main) (Misc) (NEWS.d) 3.10.0a5.rst, line 289); [backlink](#)**

Unknown interpreted text role "class".

[Enum] move member creation from `EnumMeta.__new__` to `_proto_member.__set_name__`, allowing members to be created and visible in `__init_subclass__`.

Fix `os.set_inheritable()` for `O_PATH` file descriptors on Linux.

Fix a reference leak in the `getcodec()` function of CJK codecs. Patch by Victor Stinner.

Convert the 6 CJK codec extension modules (`_codecs_cn`, `_codecs_hk`, `_codecs_iso2022`, `_codecs_jp`, `_codecs_kr` and `_codecs_tw`) to the multiphase initialization API ([PEP 489](#)). Patch by Victor Stinner.

remove `__init_subclass__` support for Enum members

Make internal caches of the `_json` module compatible with subinterpreters.

Fix `HTMLParser` parsing rules for element attributes containing commas with spaces. Patch by Karl Dubost.

Require `SQLite 3.7.15` or newer. Patch by Erlend E. Aasland.

Convert the `_multibytecodec` extension module (CJK codecs) to multi-phase initialization ([PEP 489](#)). Patch by Erlend E. Aasland.

The distutils `bdist_wininst` command deprecated in Python 3.8 has been removed. The distutils `bdist_wheel` command is now recommended to distribute binary packages on Windows.

The undocumented built-in function `sqlite3.enable_shared_cache` is now deprecated, scheduled for removal in Python 3.12. Its use is strongly discouraged by the `SQLite3` documentation. Patch by Erlend E. Aasland.

Make `pdb` populate `sys.path[0]` exactly the same as regular python execution.

Fix `pdb`: previously `pdb` would fail to restart the debugging target if it was specified using a relative path and the current directory changed.

Fix CLI of `mod: 'cProfile'` and `mod: 'profile'` to catch `exc: 'BrokenPipeError'`.

**System Message: ERROR/3** (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Misc\NEWS.d\ (cpython-main) (Misc) (NEWS.d) 3.10.0a5.rst, line 429); [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) 3.10.0a5.rst, line 429); [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) 3.10.0a5.rst, line 429); [backlink](#)

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Don't decrement the reference count of the previous `user_ptr` when `set_panel_userptr` fails.

Allow executing callables that have a boolean value of `False` when passed to `:class: 'Threading.thread'` as the target. Patch contributed by Barney Stratford.

**System Message: ERROR/3** (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Misc\NEWS.d\ (cpython-main) (Misc) (NEWS.d) 3.10.0a5.rst, line 449); [backlink](#)

Unknown interpreted text role "class".

Add an 'end\_lineno' attribute to the Class and Function objects that appear in the tree returned by `pyclbr` functions. This and the existing 'lineno' attribute define the extent of class and def statements. Patch by Aviral Srivastava.

The `BUTTON5_*` constants are now exposed in the `mod: 'curses'` module if available.

**System Message: ERROR/3** (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Misc\NEWS.d\ (cpython-main) (Misc) (NEWS.d) 3.10.0a5.rst, line 472); [backlink](#)

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Correct call to `mod: 'tkinter.colorchooser'` to return RGB triplet of ints instead of floats. Patch by Cheryl Sabella.

**System Message: ERROR/3** (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Misc\NEWS.d\ (cpython-main) (Misc) (NEWS.d) 3.10.0a5.rst, line 482); [backlink](#)

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Fix doc for `type(name, bases, dict)`. Patch by Boris Verkhovskiy and Ã%oric Araujo.

Updated `importlib.util.resolve_name()` doc to use `__spec__.parent` instead of `__package__`. (Thanks Yair Frid.)

Use `meth: 'unittest.TestLoader().loadTestsFromTestCase'` instead of `meth: 'unittest.makeSuite'` in `mod: 'sqlite3'` tests. Patch by Erlend E. Aasland.

**System Message: ERROR/3** (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Misc\NEWS.d\ (cpython-main) (Misc) (NEWS.d) 3.10.0a5.rst, line 512); [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) 3.10.0a5.rst, line 512); [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) 3.10.0a5.rst, line 512); [backlink](#)

Unknown interpreted text role "mod".

In `mod: 'sqlite3'`, fix `CheckTraceCallbackContent` for SQLite pre 3.7.15.

**System Message: ERROR/3** (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Misc\NEWS.d\ (cpython-main) (Misc) (NEWS.d) 3.10.0a5.rst, line 523); [backlink](#)

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Pass `--timeout=$(TESTTIMEOUT)` option to the default profile task `./python -m test --pgo` command.

`make regen-all` now also runs `regen-keyword`. Patch by Victor Stinner.

Removed the `grep -q` and `-E` flags in the `tzpath` validation section of the configure script to better accommodate users of some platforms (specifically Solaris 10).

Add library search path by `wr-cc` in `add_cross_compiling_paths()` for VxWorks.

Add `--with-wheel-pkg-dir=PATH` option to the `./configure` script. If specified, the `mod:ensurepip` module looks for `setuptools` and `pip` wheel packages in this directory: if both are present, these wheel packages are used instead of `ensurepip` bundled wheel packages.

**System Message: ERROR/3** (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Misc\NEWS.d\ (cpython-main) (Misc) (NEWS.d) 3.10.0a5.rst, line 571); [backlink](#)

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Some Linux distribution packaging policies recommend against bundling dependencies. For example, Fedora installs wheel packages in the `/usr/share/python-wheels/` directory and don't install the `ensurepip._bundled` package.

Updated Windows installer to include OpenSSL 1.1.1i

Upgrade Windows installer to use SQLite 3.34.0.

Ensure that the value of `sysconfig.get_config_var('MACOSX_DEPLOYMENT_TARGET')` is always a string, even in when the value is parsable as an integer.

Make IDLE invoke `:func:sys.excepthook` in normal, 2-process mode. Patch by Ken Hilton.

**System Message: ERROR/3** (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Misc\NEWS.d\ (cpython-main) (Misc) (NEWS.d) 3.10.0a5.rst, line 617); [backlink](#)

Unknown interpreted text role "func".

Fix problem debugging user classes with `__repr__` method.

Disable `Debug=>Stack Viewer` when user code is running or Debugger is active, to prevent hang or crash. Patch by Zackery Spytz.

Finish `zdummy` example extension module: make menu entries work; add docstrings and tests with 100% coverage.

When Python is built in debug mode (with C assertions), calling a type slot like `sq_length(_len_())` in Python now fails with a fatal error if the slot succeeded with an exception set, or failed with no exception set. The error message contains the slot, the type name, and the current exception (if an exception is set). Patch by Victor Stinner.

Fixed a compiler warning in `:c:func:Py_UNICODE_ISSPACE()` on platforms with signed `wchar_t`.

**System Message: ERROR/3** (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Misc\NEWS.d\ (cpython-main) (Misc) (NEWS.d) 3.10.0a5.rst, line 669); [backlink](#)

Unknown interpreted text role "c:func".