Harden ssl module against LibreSSL CVE-2018-8970. X509_VERIFY_PARAM_set1_host() is called with an explicit namelen. A new test ensures that NULL bytes are not allowed.

Minimal fix to prevent buffer overrun in os.symlink on Windows

Regexes in difflib and poplib were vulnerable to catastrophic backtracking. These regexes formed potential DOS vectors (REDOS). They have been refactored. This resolves CVE-2018-1060 and CVE-2018-1061. Patch by Jamie Davis.

When using the -m switch, sys.path[0] is now explicitly expanded as the *starting* working directory, rather than being left as the empty path (which allows imports from the current working directory at the time of the import)

Improve consistency of errors raised by `issubclass()` when called with a non-class and an abstract base class as the first and second arguments, respectively. Patch by Josh Bronson.

Fixed jumping when the function contains an `async for` loop.

Fixed jumping out of "with" block by setting f_lineno.

Fix a crash on fork when using a custom memory allocator (ex: using PYTHONMALLOC env var). _PyGILState_Reinit() and _PyInterpreterState_Enable() now use the default RAW memory allocator to allocate a new interpreters mutex on fork.

Prevent jumps from 'return' and 'exception' trace events.

Don't use temporary variables in cases of list/dict/set comprehensions

Have Field objects pass through __set_name__ to their default values, if they have their own __set_name__.

Allow ttk.Treeview.insert to insert iid that has a false boolean value. Note iid=0 and iid=False would be same. Patch by Garvit Khatri.

Treat type variables and special typing forms as immutable by copy and pickle. This fixes several minor issues and inconsistencies, and improves backwards compatibility with Python 3.6.

When computing dataclass's __hash__, use the lookup table to contain the function which returns the __hash__ value. This is an improvement over looking up a string, and then testing that string to see what to do.

The ssl module now compiles with LibreSSL 2.7.1.

Raise TypeError if a member variable of a dataclass is of type Field, but doesn't have a type annotation.

Fix the failure on OSX caused by the tests relying on sem_getvalue

Add 'Field' to dataclasses.__all__.

Fix an error where subclassing a dataclass with a field that uses a default_factory would generate an incorrect class.

Dataclasses: If a field has a default value that's a MemberDescriptorType, then it's from that field being in __slots__, not an actual default value.

If a non-dataclass inherits from a frozen dataclass, allow attributes to be added to the derived class. Only attributes from the frozen dataclass cannot be assigned to. Require all dataclasses in a hierarchy to be either all frozen or all non-frozen.

Add missing `NoReturn` to `__all__` in typing.py

Fix the size handling in multiprocessing.Queue when a pickling error occurs.

lib2to3 now properly supports trailing commas after `*args` and `**kwargs` in function signatures.

FIX properly close leaking fds in concurrent.futures.ProcessPoolExecutor.

Release the GIL during fstat() calls, avoiding hang of all threads when calling mmap.mmap(), os.urandom(), and random.seed(). Patch by Nir Soffer.

Avoid failing in multiprocessing.Process if the standard streams are closed or None at exit.

Skip sending/receiving data after SSL transport closing.

Fix a regression in :mod:`ipaddress` that result of :meth:`hosts` is empty when the network is constructed by a tuple containing an integer mask and only 1 bit left for addresses.

> **System Message: ERROR/3 (`D:\onboarding-resources\sample-onboarding-resources\cpython-main\Misc\NEWS.d\(cpython-main)(Misc)(NEWS.d)3.7.0b3.rst`, line 287);** *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)3.7.0b3.rst`, line 287);** *backlink*
>
> Unknown interpreted text role "meth".

Fix C implementation of `ABC.__subclasscheck__(cls, subclass)` crashed when `subclass` is not a type object.

Fix inspect.signature() for single-parameter partialmethods.

Expose several missing constants in zlib and fix corresponding documentation.

Improved exceptions raised for invalid number of channels and sample width when read an audio file in modules :mod:`aifc`, :mod:`wave` and :mod:`sunau`.

> **System Message: ERROR/3** (`D:\onboarding-resources\sample-onboarding-resources\cpython-main\Misc\NEWS.d\(cpython-main) (Misc) (NEWS.d) 3.7.0b3.rst`, **line 327**); *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) 3.7.0b3.rst`, **line 327**); *backlink*
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Fix wrong redirection of a low descriptor (0 or 1) to stderr in subprocess if another low descriptor is closed.

In :mod:`tkinter`, `after_cancel(None)` now raises a :exc:`ValueError` instead of canceling the first scheduled function. Patch by Cheryl Sabella.

> **System Message: ERROR/3** (`D:\onboarding-resources\sample-onboarding-resources\cpython-main\Misc\NEWS.d\(cpython-main) (Misc) (NEWS.d) 3.7.0b3.rst`, **line 348**); *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) 3.7.0b3.rst`, **line 348**); *backlink*
>
> Unknown interpreted text role "exc".

http.server now exposes a ThreadedHTTPServer class and uses it when the module is run with -m to cope with web browsers pre-opening sockets.

:class:`sqlite3.Connection` now exposes a :class:`~sqlite3.Connection.backup` method, if the underlying SQLite library is at version 3.6.11 or higher. Patch by Lele Gaifax.

> **System Message: ERROR/3** (`D:\onboarding-resources\sample-onboarding-resources\cpython-main\Misc\NEWS.d\(cpython-main) (Misc) (NEWS.d) 3.7.0b3.rst`, **line 368**); *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) 3.7.0b3.rst`, **line 368**); *backlink*
>
> Unknown interpreted text role "class".

Document PyBuffer_ToContiguous().

Modify documentation for the :func:`islice` recipe to consume initial values up to the start index.

> **System Message: ERROR/3** (`D:\onboarding-resources\sample-onboarding-resources\cpython-main\Misc\NEWS.d\(cpython-main) (Misc) (NEWS.d) 3.7.0b3.rst`, **line 388**); *backlink*
>
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Update :mod:`zipapp` documentation to describe how to make standalone applications.

> **System Message: ERROR/3** (`D:\onboarding-resources\sample-onboarding-resources\cpython-main\Misc\NEWS.d\(cpython-main) (Misc) (NEWS.d) 3.7.0b3.rst`, **line 398**); *backlink*
>
> Unknown interpreted text role "mod".

Documentation changes for ipaddress. Patch by Jon Foster and Berker Peksag.

Update documentation to clarify that `WindowsRegistryFinder` implements `MetaPathFinder`. (Patch by Himanshu Lakhara)

Avoid regrtest compatibility issue with namespace packages.

Fix failing `test_asyncio` on macOS 10.12.2+ due to transport of `KqueueSelector` loop was not being closed.

Add test_bdb.py.

Upgrade pip to 9.0.3 and setuptools to v39.0.1.

Fix potential use of uninitialized memory in nt._getfinalpathname

Fix a memory leak in os.chdir() on Windows if the current directory is set to a UNC path.

Build and link with private copy of Tcl/Tk 8.6 for the macOS 10.6+ installer. The 10.9+ installer variant already does this. This means that the Python 3.7 provided by the python.org macOS installers no longer need or use any external versions of Tcl/Tk, either system-provided or user-installed, such as ActiveTcl.

Set `__file__` while running a startup file. Like Python, IDLE optionally runs one startup file in the Shell window before presenting the first interactive input prompt. For IDLE, `-s` runs a file named in environmental variable :envvar:`IDLESTARTUP` or :envvar:`PYTHONSTARTUP`; `-r file` runs `file`. Python sets `__file__` to the startup file name before running the file and unsets it before the first prompt. IDLE now does the same when run normally, without the `-n` option.

> **System Message: ERROR/3** (`D:\onboarding-resources\sample-onboarding-resources\cpython-main\Misc\NEWS.d\(cpython-main)(Misc)(NEWS.d)3.7.0b3.rst`, line 496); *backlink*
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> Unknown interpreted text role "envvar".

> **System Message: ERROR/3** (`D:\onboarding-resources\sample-onboarding-resources\cpython-main\Misc\NEWS.d\(cpython-main)(Misc)(NEWS.d)3.7.0b3.rst`, line 496); *backlink*
>
> Unknown interpreted text role "envvar".

Simplify and rename StringTranslatePseudoMapping in pyparse.

Add an `-n` flag for `Tools/scripts/pathfix.py` to disable automatic backup creation (files with ~ suffix).

Embedding applications may once again call PySys_ResetWarnOptions, PySys_AddWarnOption, and PySys_AddXOption prior to calling Py_Initialize.

Document that m_traverse for multi-phase initialized modules can be called with m_state=NULL, and add a sanity check