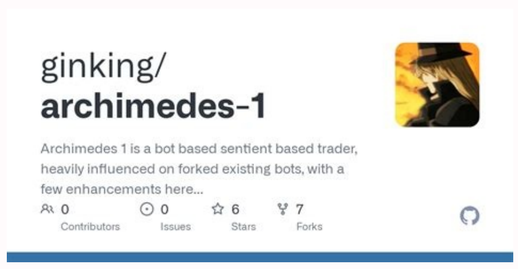
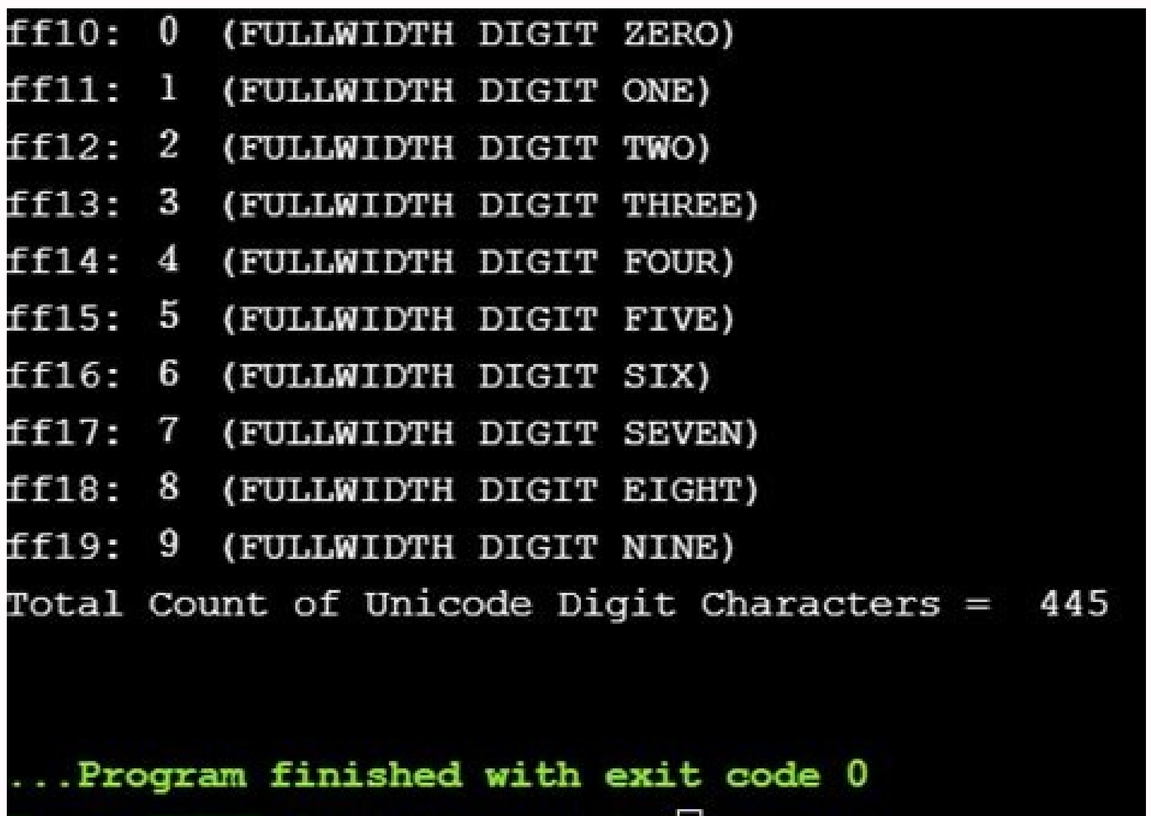
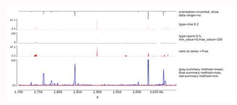
Json python module







Json.dumps python module. Json to csv python module. Json.tool python module. Json load python module. Json2html python module. Jsonpath-rw python module. Python module json validator. Jsonschema python module.

Extensible JSON encoder for Python data structures. Supports the following objects and types by default: Python JSON dict object list, tuple array str string int, float, int- & float-derived Enums number True true False false None null Changed in version 3.4: Added support for int- and float-derived Enum classes. To extend this to recognize other objects, subclass and implement a default() method with another method that returns a serializable object for o if possible, otherwise it should call the superclass implementation (to raise TypeError). If skipkeys is false (the default), a TypeError will be raised when trying to encode keys that are not str, int, float or None. If skipkeys is true, such items are simply skipped. If ensure_ascii is true (the default), the output is guaranteed to have all incoming non-ASCII characters escaped. If ensure_ascii is false, these characters will be output as-is. If check_circular is true (the default), then lists, dicts, and custom encoded objects will be checked for circular references during encoding to prevent an infinite recursion (which would cause an RecursionError). Otherwise, no such check takes place. If allow_nan is true (the default), then NaN, Infinity, and -Infinity will be encoded as such. This behavior is not JSON specification compliant, but is consistent with most JavaScript based encoders and decoders. Otherwise, it will be a ValueError to encode such floats. If sort_keys is true (default: False), then the output of dictionaries will be sorted by key; this is useful for regression tests to ensure that JSON serializations can be compared on a day-to-day basis. If indent is a non-negative integer or string, then JSON array elements and object members will be pretty-printed with that indent level. An indent level of 0, negative, or "" will only insert newlines. None (the default) selects the most compact representation. Using a positive integer indent indents that many spaces per level. If indent is a string (such as "\t"), that string is used to indent each level. Changed in version 3.2: Allow strings for indent in addition to integers. If specified, separators should be an (item_separator, key_separator) tuple. The default is (', ', ': ') if indent is None and (',', ': ') otherwise. To get the most compact JSON representation, you should specify (',', ':') to eliminate whitespace. Changed in version 3.4: Use (',', ': ') as default if indent is not None. If specified, default should be a function that gets called for objects that can’t otherwise be serialized. It should return a JSON encodable version of the object or raise a TypeError. If not specified, TypeError is raised. Changed in version 3.6: All parameters are now keyword-only. default(o)¶ Implement this method in a subclass such that it returns a serializable object for o, or calls the base implementation (to raise a TypeError). For example, to support arbitrary iterators, you could implement default() like this: def default(self, o): try: iterable = iter(o) except TypeError: pass else: return list(iterable) # Let the base class default method raise the TypeError return json.JSONEncoder.default(self, o) encode(o)¶ Return a JSON string representation of a Python data structure, o. For example: >>> json.JSONEncoder().encode({"foo": ["bar", "baz"]}) '{"foo": ["bar", "baz"]}' iterencode(o)¶ Encode the given object, o, and yield each string representation as available. For example: for chunk in json.JSONEncoder().iterencode(bigobject): mysocket.write(chunk) Page 2 This module provides access to some variables used or maintained by the interpreter and to functions that interact strongly with the interpreter. It is always available. sys.abiflags¶ On POSIX systems where Python was built with the standard configure script, this contains the ABI flags as specified by PEP 3149. Changed in version 3.8: Default flags became an empty string (m flag for pymalloc has been removed). sys.addaudithook(hook)¶ Append the callable hook to the list of active auditing hooks for the current (sub)interpreter. When an auditing event is raised through the sys.audit() function, each hook will be called in the order it was added with the event name and the tuple of arguments. Native hooks added by PySys_AddAuditHook() are called first, followed by hooks added in the current (sub)interpreter. Hooks can then log the event, raise an exception to abort the operation, or terminate the process entirely. Calling sys.addaudithook() will itself raise an auditing event named sys.addaudithook with no arguments. If any existing hooks raise an exception derived from RuntimeError, the new hook will not be added and the exception suppressed. As a result, callers cannot assume that their hook has been added unless they control all existing hooks. See the audit events table for all events raised by CPython, and PEP 578 for the original design discussion. Changed in version 3.8.1: Exceptions derived from Exception but not RuntimeError are no longer suppressed. CPython implementation detail: When tracing is enabled (see settrace()), Python hooks are only traced if the callable has a __cantrace__ member that is set to a true value. Otherwise, trace functions will skip the hook. sys.argv¶ The list of command line arguments passed to a Python script. argv[0] is the script name (it is operating system dependent whether this is a full pathname or not). If the command was executed using the -c command line option to the interpreter, argv[0] is set to the string '-c'. If no script name was passed to the Python interpreter, argv[0] is the empty string. To loop over the standard input, or the list of files given on the command line, see the fileinput module. See also sys.orig_argv. Note On Unix, command line arguments are passed by bytes from OS. Python decodes them with filesystem encoding and “surrogateescape” error handler. When you need original bytes, you can get it by [os.fsencode(arg) for arg in sys.argv]. sys.audit(event, *args)¶ Raise an auditing event and trigger any active auditing hooks. event is a string identifying the event, and args may contain optional arguments with more information about the event. The number and types of arguments for a given event are considered a public and stable API and should not be modified between releases. For example, one auditing event is named os.chdir. This event has one argument called path that will contain the requested new working directory. sys.audit() will call the existing auditing hooks, passing the event name and arguments, and will re-raise the first exception from any hook. In general, if an exception is raised, it should not be handled and the process should be terminated as quickly as possible. This allows hook implementations to decide how to respond to particular events: they can merely log the event or abort the operation by raising an exception. Hooks are added using the sys.addaudithook() or PySys_AddAuditHook() functions. The native equivalent of this function is PySys_Audit(). Using the native function is preferred when possible. See the audit events table for all events raised by CPython. sys.base_exec_prefix¶ Set during Python startup, before site.py is run, to the same value as exec_prefix. If not running in a virtual environment, the values will stay the same; if site.py finds that a virtual environment is in use, the values of prefix and exec_prefix will be changed to point to the virtual environment, whereas base_prefix and base_exec_prefix will remain pointing to the base Python installation (the one which the virtual environment was created from). sys.base_prefix¶ Set during Python startup, before site.py is run, to the same value as prefix. If not running in a virtual environment, the values will stay the same; if site.py finds that a virtual environment is in use, the values of prefix and exec_prefix will be changed to point to the virtual environment, whereas base_prefix and base_exec_prefix will remain pointing to the base Python installation (the one which the virtual environment was created from). sys.byteorder¶ An indicator of the native byte order. This will have the value 'big' on big-endian (most-significant byte first) platforms, and 'little' on little-endian (least-significant byte first) platforms. sys.builtin_module_names¶ A tuple of strings containing the names of all modules that are compiled into this Python interpreter. (This information is not available in any other way — modules.keys() only lists the imported modules.) See also the sys.stdlib_module_names list. sys.call_tracing(func, args)¶ Call func(*args), while tracing is enabled. The tracing state is saved, and restored afterwards. This is intended to be called from a debugger from a checkpoint, to recursively debug some other code. sys.copyright¶ A string containing the copyright pertaining to the Python interpreter. sys._clear_type_cache()¶ Clear the internal type cache. The type cache is used to speed up attribute and method lookups. Use the function only to drop unnecessary references during reference leak debugging. This function should be used for internal and specialized purposes only. sys._current_frames()¶ Return a dictionary mapping each thread’s identifier to the topmost stack frame currently active in that thread at the time the function is called. Note that functions in the traceback module can build the call stack given such a frame. This is most useful for debugging deadlock: this function does not require the deadlocked threads’ cooperation, and such threads’ call stacks are frozen for as long as they remain deadlocked. The frame returned for a non-deadlocked thread may bear no relationship to that thread’s current activity by the time calling code examines the frame. This function should be used for internal and specialized purposes only. Raises an auditing event sys._current_frames with no arguments. sys._current_exceptions()¶ Return a dictionary mapping each thread’s identifier to the topmost exception currently active in that thread at the time the function is called. If a thread is not currently handling an exception, it is not included in the result dictionary. This is most useful for statistical profiling. This function should be used for internal and specialized purposes only. Raises an auditing event sys._current_exceptions with no arguments. sys.breakpointhook()¶ This hook function is called by built-in breakpoint(). By default, it drops you into the pdb debugger, but it can be set to any other function so that you can choose which debugger gets used. The signature of this function is dependent on what it calls. For example, the default binding (e.g. pdb.set_trace()) expects no arguments, but you might bind it to a function that expects additional arguments (positional and/or keyword). The built-in breakpoint() function passes its *args and **kws straight through. Whatever breakpointhooks() returns is returned from breakpoint(). The default implementation first consults the environment variable PYTHONBREAKPOINT. If that is set to "0" then this function returns immediately; i.e. it is a no-op. If the environment variable is not set, or is set to the empty string, pdb.set_trace() is called. Otherwise this variable should name a function to run, using Python’s dotted-import nomenclature, e.g. package.subpackage.module.function. In this case, package.subpackage.module would be imported and the resulting module must have a callable named function(). This is run, passing in *args and **kws, and whatever function() returns, sys.breakpointhook() returns to the built-in breakpoint() function. Note that if anything goes wrong while importing the callable named by PYTHONBREAKPOINT, a RuntimeWarning is reported and the breakpoint is ignored. Also note that if sys.breakpointhook() is overridden programmatically, PYTHONBREAKPOINT is not consulted. sys._debugmallocstats()¶ Print low-level information to stderr about the state of CPython’s memory allocator. If Python is built in debug mode (configure --with-pydebug option), it also performs some expensive internal consistency checks. CPython implementation detail: This function is specific to CPython. The exact output format is not defined here, and may change. sys.dllhandle¶ Integer specifying the handle of the Python DLL. Availability: Windows. sys.displayhook(value)¶ If value is not None, this function prints repr(value) to sys.stdout, and saves value in builtins. _. If repr(value) is not encodable to sys.stdout.encoding with sys.stdout.errors error handler (which is probably 'strict'), encode it to sys.stdout.encoding with 'backslashreplace' error handler. sys.displayhook is called on the result of evaluating an expression entered in an interactive Python session. The display of these values can be customized by assigning another one-argument function to sys.displayhook. Pseudo-code: def displayhook(value): if value is None: return # Set '_' to None to avoid recursion builtins._ = None text = repr(value) try: sys.stdout.write(text) except UnicodeEncodeError: bytes = text.encode(sys.stdout.encoding, 'backslashreplace') if hasattr(sys.stdout, 'buffer'): sys.stdout.buffer.write(bytes) else: text = bytes.decode(sys.stdout.encoding, 'strict') sys.stdout.write(text) sys.stdout.write("") builtins._ = value sys.dont_write_bytecode¶ If this is true, Python won’t try to write .pyc files on the import of source modules. This value is initially set to True or False depending on the -B command line option and the PYTHONDONTWRITEBYTECODE environment variable, but you can set it yourself to control bytecode file generation. sys.pycache_prefix¶ If this is set (not None), Python will write bytecode-cache .pyc files to (and read them from) a parallel directory tree rooted at this directory, rather than from __pycache__ directories in the source code tree. Any __pycache__ directories in the source code tree will be ignored and new .pyc files written within the pycache prefix. Thus if you use compileall as a pre-build step, you must ensure you run it with the same pycache prefix (if any) that you will use at runtime. A relative path is interpreted relative to the current working directory. This value is initially set based on the value of the -X pycache_prefix=PATH command-line option or the PYTHONPYCACHEPREFIX environment variable (command-line takes precedence). If neither are set, it is None. sys.excepthook(type, value, traceback)¶ This function prints out a given traceback and exception to sys.stderr. When an exception is raised and uncaught, the interpreter calls sys.excepthook with three arguments, the exception class, exception instance, and a traceback object. In an interactive session this happens just before control is returned to the prompt; in a Python program this happens just before the program exits. The handling of such top-level exceptions can be customized by assigning another three-argument function to sys.excepthook. Raise an auditing event sys.excepthook with arguments hook, type, value, traceback when an uncaught exception occurs. If no hook has been set, hook may be None. If any hook raises an exception derived from RuntimeError the call to the hook will be suppressed. Otherwise, the audit hook exception will be reported as unraisable and sys.excepthook will be called. sys.__breakpointhook__¶ sys.__displayhook__¶ sys.__excepthook__¶ sys.__unraisablehook__¶ These objects contain the original values of breakpointhook, displayhook, excepthook, and unraisablehook at the start of the program. They are saved so that breakpointhook, displayhook and excepthook, unraisablehook can be restored in case they happen to get replaced with broken or alternative objects. New in version 3.7: __breakpointhook__ New in version 3.8: __unraisablehook__ sys.exc_info()¶ This function returns a tuple of three values that give information about the exception that is currently being handled. The information returned is specific both to the current thread and to the current stack frame. If the current stack frame is not handling an exception, the information is taken from the calling stack frame, or its caller, and so on until a stack frame is found that is handling an exception. Here, “handling an exception” is defined as “executing an except clause.” For any stack frame, only information about the exception being currently handled is accessible. If no exception is being handled anywhere on the stack, a tuple containing three None values is returned. Otherwise, the values returned are (type, value, traceback). Their meaning is: type gets the type of the exception being handled (a subclass of BaseException); value gets the exception instance (an instance of the exception type); traceback gets a traceback object which encapsulates the call stack at the point where the exception originally occurred. sys.exec_prefix¶ A string giving the site-specific directory prefix where the platform-dependent Python files are installed; by default, this is also '/usr/local'. This can be set at build time with the --exec-prefix argument to the configure script. Specifically, all configuration files (e.g. the pyconfig.h header file) are installed in the directory exec_prefix/lib/pythonX.Y/config, and shared library modules are installed in exec_prefix/lib/pythonX.Y/lib-dynload, where X.Y is the version number of Python, for example 3.2. Note If a virtual environment is in effect, this value will be changed in site.py to point to the virtual environment. The value for the Python installation will still be available, via base_exec_prefix. sys.executable¶ A string giving the absolute path of the executable binary for the Python interpreter, on systems where this makes sense. If Python is unable to retrieve the real path to its executable, sys.executable will be an empty string or None. sys.exit([arg])¶ Raise a SystemExit exception, signaling an intention to exit the interpreter. The optional argument arg can be an integer giving the exit status (defaulting to zero), or another type of object. If it is an integer, zero is considered “successful termination” and any nonzero value is considered “abnormal termination” by shells and the like. Most systems require it to be in the range 0–127, and produce undefined results otherwise. Some systems have a convention for assigning specific meanings to specific exit codes, but these are generally underdeveloped; Unix programs generally use 2 for command line syntax errors and 1 for all other kind of errors. If another type of object is passed, None is equivalent to passing zero, and any other object is printed to stderr and results in an exit code of 1. In particular, sys.exit("some error message") is a quick way to exit a program when an error occurs. Since exit() ultimately “only” raises an exception, it will only exit the process when called from the main thread, and the exception is not intercepted. Cleanup actions specified by finally clauses of try statements are honored, and it is possible to intercept the exit attempt at an outer level. Changed in version 3.6: If an error occurs in the cleanup after the Python interpreter has caught SystemExit (such as an error flushing buffered data in the standard streams), the exit status is changed to 120. sys.flags¶ The named tuple flags exposes the status of command line flags. The attributes are read only. Changed in version 3.2: Added quiet attribute for the new -q flag. New in version 3.2.3: The hash_randomization attribute. Changed in version 3.3: Removed obsolete division_warning attribute. Changed in version 3.4: Added isolated attribute for -I isolated flag. Changed in version 3.7: Added the dev_mode attribute for the new Python Development Mode and the utf8_mode attribute for the new -X utf8 flag. sys.float_info¶ A named tuple holding information about the float type. It contains low level information about the precision and internal representation. The values correspond to the various floating-point constants defined in the standard header file float.h for the ‘C’ programming language; see section 5.2.4.2.2 of the 1999 ISO/IEC C standard [C99], ‘Characteristics of floating types’, for details. attribute float.h macro explanation epsilon DBL_EPSILON difference between 1.0 and the least value greater than 1.0 that is representable as a float See also math.ulp(). dig DBL_DIG maximum number of decimal digits that can be faithfully represented in a float; see below mant_dig DBL_MANT_DIG float precision: the number of base-radix digits in the significand of a float max DBL_MAX maximum representable positive finite float max_exp DBL_MAX_EXP maximum integer e such that radix**(e-1) is a representable finite float max_10_exp DBL_MAX_10_EXP maximum integer e such that 10**e is in the range of representable finite floats min DBL_MIN minimum representable positive normalized float Use math.ulp(0.0) to get the smallest positive denormalized representable float. min_exp DBL_MIN_EXP minimum integer e such that radix**(e-1) is a normalized float min_10_exp DBL_MIN_10_EXP minimum integer e such that 10**e is a normalized float radix FLT_RADIX radix of exponent representation rounds FLT_ROUNDS integer constant representing the rounding mode used for arithmetic operations. This reflects the value of the system FLT_ROUNDS macro at interpreter startup time. See section 5.2.4.2.2 of the C99 standard for an explanation of the possible values and their meanings. The attribute sys.float_info.dig needs further explanation. If s is any string representing a decimal number with at most sys.float_info.dig significant digits, then converting s to a float and back again will recover a string representing the same decimal value: >>> import sys >>> sys.float_info.dig 15 >>> s = '3.14159265358979' # decimal string with 15 significant digits >>> format(float(s), '.15g') # convert to float and back -> same value '3.14159265358979' But for strings with more than sys.float_info.dig significant digits, this isn’t always true: >>> s = '9876543211234567' # 16 significant digits is too many! >>> format(float(s), '.16g') # conversion changes value '9876543211234568' sys.float_repr_style¶ A string indicating how the repr() function behaves for floats. If the string has value 'short' then for a finite float x, repr(x) aims to produce a short string with the property that float(repr(x)) == x. This is the usual behaviour in Python 3.1 and later. Otherwise, float_repr_style has value 'legacy' and repr(x) behaves in the same way as it did in versions of Python prior to 3.1. sys.getallocatedblocks()¶ Return the number of memory blocks currently allocated by the interpreter, regardless of their size. This function is mainly useful for tracking and debugging memory leaks. Because of the interpreter’s internal caches, the result can vary from call to call; you may have to call _clear_type_cache() and gc.collect() to get more predictable results. If a Python build or implementation cannot reasonably compute this information, getallocatedblocks() is allowed to return 0 instead. sys.getandroidapilevel()¶ Return the build time API version of Android as an integer. Availability: Android. sys.getdefaultencoding()¶ Return the name of the current default string encoding used by the Unicode implementation. sys.getdlopenflags()¶ Return the current value of the flags that are used for dlopen() calls. Symbolic names for the flag values can be found in the os module (RTLD_xxx constants, e.g. os.RTLD_LAZY). Availability: Unix. sys.getfilesystemencoding()¶ Get the filesystem encoding: the encoding used with the filesystem error handler to convert between Unicode filenames and bytes filenames. The filesystem error handler is returned from getfilesystemencoding(). For best compatibility, str should be used for filenames in all cases, although representing filenames as bytes is also supported. Functions accepting or returning filenames should support either str or bytes and internally convert to the system’s preferred representation. os.fsencode() and os.fsdecode() should be used to ensure that the correct encoding and errors mode are used. The filesystem encoding and error handler are configured at Python startup by the PyConfig_Read() function: see filesystem_encoding and filesystem_errors members of PyConfig. Changed in version 3.7: Return 'utf-8' if the Python UTF-8 Mode is enabled. sys.getfilesystemencodeerrors()¶ Get the filesystem error handler: the error handler used with the filesystem encoding to convert between Unicode filenames and bytes filenames. The filesystem encoding is returned from getfilesystemencoding(). os.fsencode() and os.fsdecode() should be used to ensure that the correct encoding and errors mode are used. The filesystem encoding and error handler are configured at Python startup by the PyConfig_Read() function: see filesystem_encoding and filesystem_errors members of PyConfig. sys.getrefcount(object)¶ Return the reference count of the object. The count returned is generally one higher than you might expect, because it includes the (temporary) reference as an argument to getrefcount(). sys.getrecursionlimit()¶ Return the current value of the recursion limit, the maximum depth of the Python interpreter stack. This limit prevents infinite recursion from causing an overflow of the C stack and crashing Python. It can be set by setrecursionlimit(). sys.getsizeof(object[, default])¶ Return the size of an object in bytes. The object can be any type of object. All built-in objects will return correct results, but this does not have to hold true for third-party extensions as it is implementation specific. Only the memory consumption directly attributed to the object is accounted for, not the memory consumption of objects it refers to. If given, default will be returned if the object does not provide means to retrieve the size. Otherwise a TypeError will be raised. getsizeof() calls the object’s __sizeof__ method and adds an additional garbage collector overhead if the object is managed by the garbage collector. See recursive sizeof recipe for an example of using getsizeof() recursively to find the size of containers and all their contents. sys.getswitchinterval()¶ Return the interpreter’s “thread switch interval”; see setswitchinterval(). sys._getframe([depth])¶ Return a frame object from the call stack. If optional integer depth is given, return the frame object that many calls below the top of the stack. If that is deeper than the call stack, ValueError is raised. The default for depth is zero, returning the frame at the top of the call stack. Raises an auditing event sys._getframe with no arguments. CPython implementation detail: This function should be used for internal and specialized purposes only. It is not guaranteed to exist in all implementations of Python. sys.getprofile()¶ Get the profiler function as set by setprofile(). sys.gettrace()¶ Get the trace function as set by settrace(). CPython implementation detail: The gettrace() function is intended only for implementing debuggers, profilers, coverage tools and the like. Its behavior is part of the implementation platform, rather than part of the language definition, and thus may not be available in all Python implementations. sys.getwindowsversion()¶ Return a named tuple describing the Windows version currently running. The named elements are major, minor, build, platform, service_pack, service_pack_minor, service_pack_major, suite_mask, product_type and platform_version. service_pack contains a string, platform_version a 3-tuple and all other values are integers. The components can also be accessed by name, so sys.getwindowsversion()[0] is equivalent to sys.getwindowsversion().major. For compatibility with prior versions, only the first 5 elements are retrievable by indexing. platform will be 2 (VER_PLATFORM_WIN32_NT). product_type may be one of the following values: Constant Meaning 1 (VER_NT_WORKSTATION) The system is a workstation. 2 (VER_NT_DOMAIN_CONTROLLER) The system is a domain controller. 3 (VER_NT_SERVER) The system is a server, but not a domain controller. This function wraps the Win32 GetVersionEx() function; see the Microsoft documentation on OSVERSIONINFOEX() for more information about these fields. platform_version returns the major version, minor version and build number of the current operating system, rather than the version that is being emulated for the process. It is intended for use in logging rather than for feature detection. Note platform_version derives the version from kernel32.dll which can be of a different version than the OS version. Please use platform module for achieving accurate OS version. Availability: Windows. Changed in version 3.2: Changed to a named tuple and added service_pack_minor, service_pack_major, suite_mask, and product_type. Changed in version 3.6: Added platform_version sys.get_asyncgen_hooks()¶ Returns an asyncgen_hooks object, which is similar to a namedtuple of the form (firstiter, finalizer), where firstiter and finalizer are expected to be either None or functions which take an asynchronous generator iterator as an argument, and are used to schedule finalization of an asynchronous generator by an event loop. New in version 3.6: See PEP 525 for more details. Note This function has been added on a provisional basis (see PEP 411 for details.) sys.get_coroutine_origin_tracking_depth()¶ Get the current coroutine origin tracking depth, as set by set_coroutine_origin_tracking_depth(). Note This function has been added on a provisional basis (see PEP 411 for details.) Use it only for debugging purposes. sys.hash_info¶ A named tuple giving parameters of the numeric hash implementation. For more details about hashing of numeric types, see Hashing of numeric types. attribute explanation width width in bits used for hash values modulus prime modulus P used for numeric hash scheme inf hash value returned for a positive infinity nan (this attribute is no longer used) imag multiplier used for the imaginary part of a complex number algorithm name of the algorithm for hashing of str, bytes, and memoryview hash_bits internal output size of the hash algorithm seed_bits size of the seed key of the hash algorithm Changed in version 3.4: Added algorithm, hash_bits and seed_bits sys.hexversion¶ The version number encoded as a single integer. This is guaranteed to increase with each version, including proper support for non-production releases. For example, to test that the Python interpreter is at least version 1.5.2, use: if sys.hexversion >= 0x010502F0: # use some advanced feature ... else: # use an alternative implementation or warn the user ... This is called hexversion since it only really looks meaningful when viewed as the result of passing it to the built-in hex() function. The named tuple sys.version_info may be used for a more human-friendly encoding of the same information. More details of hexversion can be found at API and ABI Versioning. sys.implementation¶ An object containing information about the implementation of the currently running Python interpreter. The following attributes are required to exist in all Python implementations. name is the implementation’s identifier, e.g. 'cpython'. The actual string is defined by the Python implementation, but it is guaranteed to be lower case. version is a named tuple, in the same format as sys.version_info. It represents the version of the Python implementation. This has a distinct meaning from the specific version of the Python language to which the currently running interpreter conforms, which sys.version_info represents. For example, for PyPy 1.8 sys.implementation.version might be sys.version_info(1, 8, 0, 'final', 0), whereas sys.version_info would be sys.version_info(2, 7, 2, 'final', 0). For CPython they are the same value, since it is the reference implementation. hexversion is the implementation version in hexadecimal format, like sys.hexversion. cache_tag is the tag used by the import machinery in the filenames of cached modules. By convention, it would be a composite of the implementation’s name and version, like 'cpython-33'. However, a Python implementation may use some other value if appropriate. If cache_tag is set to None, it indicates that module caching should be disabled. sys.implementation may contain additional attributes specific to the Python implementation. These non-standard attributes must start with an underscore, and are not described here. Regardless of its contents, sys.implementation will not change during a run of the interpreter, nor between implementation versions. (It may change between Python language versions, however.) See PEP 421 for more information. Note The addition of new required attributes must go through the normal PEP process. See PEP 421 for more information. sys.int_info¶ A named tuple that holds information about Python’s internal representation of integers. The attributes are read only. Attribute Explanation bits_per_digit number of bits held in each digit. Python integers are stored internally in base 2**int_info.bits_per_digit sizeof_digit size in bytes of the C type used to represent a digit sys.__interactivehook__¶ When this attribute exists, its value is automatically called (with no arguments) when the interpreter is launched in interactive mode. This is done after the PYTHONSTARTUP file is read, so that you can set this hook there. The site module sets this. Raises an auditing event cpython.run_interactivehook with the hook object as the argument when the hook is called on startup. sys.intern(string)¶ Enter string in the table of “interned” strings and return the interned string – which is string itself or a copy. Interning strings is useful to gain a little performance on dictionary lookup – if the keys in a dictionary are interned, and the lookup key is interned, the key comparisons (after hashing) can be done by a pointer compare instead of a string compare. Normally, the names used in Python programs are automatically interned, and the dictionaries used to hold module, class or instance attributes have interned keys. Interned strings are not immortal; you must keep a reference to the return value of intern() around to benefit from it. sys.is_finalizing()¶ Return True if the Python interpreter is shutting down, False otherwise. sys.last_type¶ sys.last_value¶ sys.last_traceback¶ These three variables are not always defined; they are set when an exception is not handled and the interpreter prints an error message and a stack traceback. Their intended use is to allow an interactive user to import a debugger module and engage in post-mortem debugging without having to re-execute the command that caused the error. (Typical use is import pdb; pdb.pm() to enter the post-mortem debugger; see pdb module for more information.) The meaning of the variables is the same as that of the return values from exc_info() above. sys.maxsize¶ An integer

giving the maximum value a variable of type Py_ssize_t can take. It’s usually 2**31 - 1 on a 32-bit platform and 2**63 - 1 on a 64-bit platform. sys.maxunicode¶ An integer giving the value of the largest Unicode code point, i.e. 1114111 (0x10FFFF in hexadecimal). Changed in version 3.3: Before PEP 393, sys.maxunicode used to be either 0xFFFF or 0x10FFFF, depending on the configuration option that specified whether Unicode characters were stored as UCS-2 or UCS-4. A list of meta path finder objects that have their find_spec() methods called to see if one of the objects can find the module to be imported. By default, it holds entries that implement Python’s default import semantics. The find_spec() method is called with at least the absolute name of the module being imported. If the module to be imported is contained in a package, then the parent package’s __path__ attribute is passed in as a second argument. The method returns a module spec, or None if the module cannot be found. sys.modules¶ This is a dictionary that maps module names to modules which have already been loaded. This can be manipulated to force reloading of modules and other tricks. However, replacing the dictionary will not necessarily work as expected and deleting essential items from the dictionary may cause Python to fail. If you want to iterate over this global dictionary always use sys.modules.copy() or tuple(sys.modules) to avoid exceptions as its size may change during iteration as a side effect of code or activity in other threads. sys.orig_argv¶ The list of the original command line arguments passed to the Python executable. See also sys.argv. sys.path¶ A list of strings that specifies the search path for modules. Initialized from the environment variable PYTHONPATH, plus an installation-dependent default. As initialized upon program startup, the first item of this list, path[0], is the directory containing the script that was used to invoke the Python interpreter. If the script directory is not available (e.g. if the interpreter is invoked interactively or if the script is read from standard input), path[0] is the empty string, which directs Python to search modules in the current directory first. Notice that the script directory is inserted before the entries inserted as a result of PYTHONPATH. A program is free to modify this list for its own purposes. Only strings and bytes should be added to sys.path; all other data types are ignored during import. See also Module site This describes how to use .pth files to extend sys.path. sys.path_hooks¶ A list of callables that take a path argument to try to create a finder for the path. If a finder can be created, it is to be returned by the callable, else raise ImportError. Originally specified in PEP 302. sys.path_importer_cache¶ A dictionary acting as a cache for finder objects. The keys are paths that have been passed to sys.path_hooks and the values are the finders that are found. If a path is a valid file system path but no finder is found on sys.path_hooks then None is stored. Originally specified in PEP 302. Changed in version 3.3: None is stored instead of imp.NullImporter when no finder is found. sys.platform¶ This string contains a platform identifier that can be used to append platform-specific components to sys.path, for instance. For Unix systems, except on Linux and AIX, this is the lowercased OS name as returned by uname -s with the first part of the version as returned by uname -r appended, e.g. 'sunos5' or 'freebsd8', at the time when Python was built. Unless you want to test for a specific system version, it is therefore recommended to use the following idiom: if sys.platform.startswith('freebsd'): # FreeBSD-specific code here... elif sys.platform.startswith('linux'): # Linux-specific code here... elif sys.platform.startswith('aix'): # AIX-specific code here... For other systems, the values are: System platform value AIX 'aix' Linux 'linux' Windows 'win32' Windows/Cygwin 'cygwin' macOS 'darwin' Changed in version 3.3: On Linux, sys.platform doesn’t contain the major version anymore. It is always 'linux', instead of 'linux2' or 'linux3'. Since older Python versions include the version number, it is recommended to always use the startswith idiom presented above. Changed in version 3.8: On AIX, sys.platform doesn’t contain the major version anymore. It is always 'aix', instead of 'aix5' or 'aix7'. Since older Python versions include the version number, it is recommended to always use the startswith idiom presented above. See also os.name has a coarser granularity. os.uname() gives system-dependent version information. The platform module provides detailed checks for the system’s identity. sys.platlibdir¶ Name of the platform-specific library directory. It is used to build the path of standard library and the paths of installed extension modules. It is equal to "lib" on most platforms. On Fedora and SuSE, it is equal to "lib64" on 64-bit platforms which gives the following sys.path paths (where X.Y is the Python major.minor version): /usr/lib64/pythonX.Y/: Standard library (like os.py of the os module) /usr/lib64/pythonX.Y/lib-dynload/: C extension modules of the standard library (like the errno module, the exact filename is platform specific) /usr/lib/pythonX.Y/site-packages/ (always use lib, not sys.platlibdir): Third-party modules /usr/lib64/pythonX.Y/site-packages/: C extension modules of third-party packages sys.prefix¶ A string giving the site-specific directory prefix where the platform independent Python files are installed; on Unix, the default is '/usr/local'. This can be set at build time with the --prefix argument to the configure script. See Installation paths for derived paths. Note If a virtual environment is in effect, this value will be changed in site.py to point to the virtual environment. The value for the Python installation will still be available, via base_prefix. sys.ps1¶ sys.ps2¶ Strings specifying the primary and secondary prompt of the interpreter. These are only defined if the interpreter is in interactive mode. Their initial values in this case are '>>> ' and '... '. If a non-string object is assigned to either variable, its str() is re-evaluated each time the interpreter prepares to read a new interactive command; this can be used to implement a dynamic prompt. sys.setdlopenflags(n)¶ Set the flags used by the interpreter for dlopen() calls, such as when the interpreter loads extension modules. Among other things, this will enable a lazy resolving of symbols when importing a module, if called as sys.setdlopenflags(0). To share symbols across extension modules, call as sys.setdlopenflags(os.RTLD_GLOBAL). Symbolic names for the flag values can be found in the os module (RTLD_xxx constants, e.g. os.RTLD_LAZY). Availability: Unix. sys.setprofile(profilefunc)¶ Set the system’s profile function, which allows you to implement a Python source code profiler in Python. See chapter The Python Profilers for more information on the Python profiler. The system’s profile function is called similarly to the system’s trace function (see settrace()), but it is called with different events, for example it isn’t called for each executed line of code (only on call and return, but the return event is reported even when an exception has been set). The function is thread-specific, but there is no way for the profiler to know about context switches between threads, so it does not make sense to use this in the presence of multiple threads. Also, its return value is not used, so it can simply return None. Error in the profile function will cause itself unset. Profile functions should have three arguments: frame, event, and arg. frame is the current stack frame. event is a string: 'call', 'return', 'c_call', 'c_return', or 'c_exception'. arg depends on the event type. Raises an auditing event sys.setprofile with no arguments. The events have the following meaning: 'call'A function is called (or some other code block entered). The profile function is called; arg is None. 'return'A function (or other code block) is about to return. The profile function is called; arg is the value that will be returned, or None if the event is caused by an exception being raised. 'c_call'A C function is about to be called. This may be an extension function or a built-in. arg is the C function object. 'c_return'A C function has returned. arg is the C function object. 'c_exception'A C function has raised an exception. arg is the C function object. sys.setrecursionlimit(limit)¶ Set the maximum depth of the Python interpreter stack to limit. This limit prevents infinite recursion from causing an overflow of the C stack and crashing Python. The highest possible limit is platform-dependent. A user may need to set the limit higher when they have a program that requires deep recursion and a platform that supports a higher limit. This should be done with care, because a too-high limit can lead to a crash. If the new limit is too low at the current recursion depth, a RecursionError exception is raised. Changed in version 3.5.1: A RecursionError exception is now raised if the new limit is too low at the current recursion depth. sys.setswitchinterval(interval)¶ Set the interpreter’s thread switch interval (in seconds). This floating-point value determines the ideal duration of the “timeslices” allocated to concurrently running Python threads. Please note that the actual value can be higher, especially if long-running internal functions or methods are used. Also, which thread becomes scheduled at the end of the interval is the operating system’s decision. The interpreter doesn’t have its own scheduler. sys.settrace(tracefunc)¶ Set the system’s trace function, which allows you to implement a Python source code debugger in Python. The function is thread-specific; for a debugger to support multiple threads, it must register a trace function using settrace() for each thread being debugged or use threading.settrace(). Trace functions should have three arguments: frame, event, and arg. frame is the current stack frame. event is a string: 'call', 'line', 'return', 'exception' or 'opcode'. arg depends on the event type. The trace function is invoked (with event set to 'call') whenever a new local scope is entered; it should return a reference to a local trace function to be used for the new scope, or None if the scope shouldn’t be traced. The local trace function should return a reference to itself (or to another function for further tracing in that scope), or None to turn off tracing in that scope. If there is any error occurred in the trace function, it will be unset, just like settrace(None) is called. The events have the following meaning: 'call'A function is called (or some other code block entered). The global trace function is called; arg is None; the return value specifies the local trace function. 'line'The interpreter is about to execute a new line of code or re-execute the condition of a loop. The local trace function is called; arg is None; the return value specifies the new local trace function. See Objects/lnotab_notes.txt for a detailed explanation of how this works. Per-line events may be disabled for a frame by setting f_trace_lines to False on that frame. 'return'A function (or other code block) is about to return. The local trace function is called; arg is the value that will be returned, or None if the event is caused by an exception being raised. The trace function’s return value is ignored. 'exception'An exception has occurred. The local trace function is called; arg is a tuple (exception, value, traceback); the return value specifies the new local trace function. 'opcode'The interpreter is about to execute a new opcode (see dis for opcode details). The local trace function is called; arg is None; the return value specifies the new local trace function. Per-opcode events are not emitted by default: they must be explicitly requested by setting f_trace_opcodes to True on the frame. Note that as an exception is propagated down the chain of callers, an 'exception' event is generated at each level. For more fine-grained usage, it’s possible to set a trace function by assigning frame.f_trace = tracefunc explicitly, rather than relying on it being set indirectly via the return value from an already installed trace function. This is also required for activating the trace function on the current frame, which settrace() doesn’t do. Note that in order for this to work, a global tracing function must have been installed with settrace() in order to enable the runtime tracing machinery, but it doesn’t need to be the same tracing function (e.g. it could be a low overhead tracing function that simply returns None to disable itself immediately on each frame). For more information on code and frame objects, refer to The standard type hierarchy. Raises an auditing event sys.settrace with no arguments. CPython implementation detail: The settrace() function is intended only for implementing debuggers, profilers, coverage tools and the like. Its behavior is part of the implementation platform, rather than part of the language definition, and thus may not be available in all Python implementations. Changed in version 3.7: 'opcode' event type added; f_trace_lines and f_trace_opcodes attributes added to frames sys.set_asyncgen_hooks(firstiter, finalizer)¶ Accepts two optional keyword arguments which are callables that accept an asynchronous generator iterator as an argument. The firstiter callable will be called when an asynchronous generator is iterated for the first time. The finalizer will be called when an asynchronous generator is about to be garbage collected. Raises an auditing event sys.set_asyncgen_hooks_firstiter with no arguments. Raises an auditing event sys.set_asyncgen_hooks_finalizer with no arguments. Two auditing events are raised because the underlying API consists of two calls, each of which must raise its own event. New in version 3.6: See PEP 525 for more details, and for a reference example of a finalizer method see the implementation of asyncio.Loop.shutdown_asyncgens in Lib/asyncio/base_events.py Note This function has been added on a provisional basis (see PEP 411 for details.) sys.set_coroutine_origin_tracking_depth(depth)¶ Allows enabling or disabling coroutine origin tracking. When enabled, the cr_origin attribute on coroutine objects will contain a tuple of (filename, line number, function name) tuples describing the traceback where the coroutine object was created, with the most recent call first. When disabled, cr_origin will be None. To enable, pass a depth value greater than zero; this sets the number of frames whose information will be captured. To disable, pass set depth to zero. This setting is thread-specific. Note This function has been added on a provisional basis (see PEP 411 for details.) Use it only for debugging purposes. sys._enablelegacywindowsfsencoding()¶ Changes the filesystem encoding and error handler to ‘mbcs’ and ‘replace’ respectively, for consistency with versions of Python prior to 3.6. This is equivalent to defining the PYTHONLEGACYWINDOWSFSENCODING environment variable before launching Python. See also sys.getfilesystemencoding() and sys.getfilesystemencodeerrors(). Availability: Windows. New in version 3.6: See PEP 529 for more details. sys.stdin¶ sys.stdout¶ sys.stderr¶ File objects used by the interpreter for standard input, output and errors: stdin is used for all interactive input (including calls to input()); stdout is used for the output of print() and expression statements and for the prompts of input(); The interpreter’s own prompts and its error messages go to stderr. These streams are regular text files like those returned by the open() function. Their parameters are chosen as follows: The encoding and error handling are is initialized from PyConfig.stdio_encoding and PyConfig.stdio_errors. On Windows, UTF-8 is used for the console device. Non-character devices such as disk files and pipes use the system locale encoding (i.e. the ANSI codepage). Non-console character devices such as NUL (i.e. where isatty() returns True) use the value of the console input and output codepages at startup, respectively for stdin and stdout/stderr. This defaults to the system locale encoding if the process is not initially attached to a console. The special behaviour of the console can be overridden by setting the environment variable PYTHONLEGACYWINDOWSSTDIO before starting Python. In that case, the console codepages are used as for any other character device. Under all platforms, you can override the character encoding by setting the PYTHONIOENCODING environment variable before starting Python or by using the new -X utf8 command line option and PYTHONUTF8 environment variable. However, for the Windows console, this only applies when PYTHONLEGACYWINDOWSSTDIO is also set. When interactive, the stdout stream is line-buffered. Otherwise, it is block-buffered like regular text files. The stderr stream is line-buffered in both cases. You can make both streams unbuffered by passing the -u command-line option or setting the PYTHONUNBUFFERED environment variable. Changed in version 3.9: Non-interactive stderr is now line-buffered instead of fully buffered. Note To write or read binary data from/to the standard streams, use the underlying binary buffer object. For example, to write bytes to stdout, use sys.stdout.buffer.write(b'abc'). However, if you are writing a library (and do not control in which context its code will be executed), be aware that the standard streams may be replaced with file-like objects like io.StringIO which do not support the buffer attribute. sys.__stdin__¶ sys.__stdout__¶ sys.__stderr__¶ These objects contain the original values of stdin, stderr and stdout at the start of the program. They are used during finalization, and could be useful to print to the actual standard stream no matter if the sys.std* object has been redirected. It can also be used to restore the actual files to known working file objects in case they have been overwritten with a broken object. However, the preferred way to do this is to explicitly save the previous stream before replacing it, and restore the saved object. Note Under some conditions stdin, stdout and stderr as well as the original values __stdin__, __stdout__ and __stderr__ can be None. It is usually the case for Windows GUI apps that aren’t connected to a console and Python apps started with pythonw. sys.stdlib_module_names¶ A frozenset of strings containing the names of standard library modules. It is the same on all platforms. Modules which are not available on some platforms and modules disabled at Python build are also listed. All module kinds are listed: pure Python, built-in, frozen and extension modules. Test modules are excluded. For packages, only the main package is listed: sub-packages and sub-modules are not listed. For example, the email package is listed, but the email.mime sub-package and the email.message sub-module are not listed. See also the sys.builtin_module_names list. sys.thread_info¶ A named tuple holding information about the thread implementation. Attribute Explanation name Name of the thread implementation: 'nt': Windows threads 'pthread': POSIX threads 'solaris': Solaris threads lock Name of the lock implementation: 'semaphore': a lock uses a semaphore 'mutex+cond': a lock uses a mutex and a condition variable None if this information is unknown version Name and version of the thread library. It is a string, or None if this information is unknown. sys.tracebacklimit¶ When this variable is set to an integer value, it determines the maximum number of levels of traceback information printed when an unhandled exception occurs. The default is 1000. When set to 0 or less, all traceback information is suppressed and only the exception type and value are printed. sys.unraisablehook(unraisable, /)¶ Handle an unraisable exception. Called when an exception has occurred but there is no way for Python to handle it. For example, when a destructor raises an exception or during garbage collection (gc.collect()). The unraisable argument has the following attributes: exc_type: Exception type. exc_value: Exception value, can be None. exc_traceback: Exception traceback, can be None. err_msg: Error message, can be None. object: Object causing the exception, can be None. The default hook formats err_msg and object as: f'{err_msg}: {object!r}'; use “Exception ignored in” error message if err_msg is None. sys.unraisablehook() can be overridden to control how unraisable exceptions are handled. Storing exc_value using a custom hook can create a reference cycle. It should be cleared explicitly to break the reference cycle when the exception is no longer needed. Storing object using a custom hook can resurrect it if it is set to an object which is being finalized. Avoid storing object after the custom hook completes to avoid resurrecting objects. See also excepthook() which handles uncaught exceptions. Raise an auditing event sys.unraisablehook with arguments hook, unraisable when an exception that cannot be handled occurs. The unraisable object is the same as what will be passed to the hook. If no hook has been set, hook may be None. sys.version¶ A string containing the version number of the Python interpreter plus additional information on the build number and compiler used. This string is displayed when the interactive interpreter is started. Do not extract version information out of it, rather, use version_info and the functions provided by the platform module. sys.api_version¶ The C API version for this interpreter. Programmers may find this useful when debugging version conflicts between Python and extension modules. sys.version_info¶ A tuple containing the five components of the version number: major, minor, micro, releaselevel, and serial. All values except releaselevel are integers; the release level is 'alpha', 'beta', 'candidate', or 'final'. The version_info value corresponding to the Python version 2.0 is (2, 0, 0, 'final', 0). The components can also be accessed by name, so sys.version_info[0] is equivalent to sys.version_info.major and so on. Changed in version 3.1: Added named component attributes. sys.warnoptions¶ This is an implementation detail of the warnings framework; do not modify this value. Refer to the warnings module for more information on the warnings framework. sys.winver¶ The version number used to form registry keys on Windows platforms. This is stored as string resource 1000 in the Python DLL. The value is normally the first three characters of version. It is provided in the sys module for informational purposes; modifying this value has no effect on the registry keys used by Python. Availability: Windows. sys._xoptions¶ A dictionary of the various implementation-specific flags passed through the -X command-line option. Option names are either mapped to their values, if given explicitly, or to True. Example: $ ./python -Xa=b -Xc Python 3.2a3+ (py3k, Oct 16 2010, 20:14:50) [GCC 4.4.3] on linux2 Type "help", "copyright", "credits" or "license" for more information. >>> import sys >>> sys._xoptions {'a': 'b', 'c': True} CPython implementation detail: This is a CPython-specific way of accessing options passed through -X. Other implementations may export them through other means, or not at all. Citations C99 ISO/IEC 9899:1999. “Programming languages – C.” A public draft of this standard is available at .