The Python Standard Library

While The Python Language Reference describes the exact syntax and semantics of the Python language, this library reference manual describes the standard library that is distributed with Python. It also describes some of the optional components that are commonly included in Python distributions.

Python's standard library is very extensive, offering a wide range of facilities as indicated by the long table of contents listed below. The library contains built-in modules (written in C) that provide access to system functionality such as file I/O that would otherwise be inaccessible to Python programmers, as well as modules written in Python that provide standardized solutions for many problems that occur in everyday programming. Some of these modules are explicitly designed to encourage and enhance the portability of Python programs by abstracting away platform-specifics into platform-neutral APIs.

The Python installers for the Windows platform usually include the entire standard library and often also include many additional components. For Unix-like operating systems Python is normally provided as a collection of packages, so it may be necessary to use the packaging tools provided with the operating system to obtain some or all of the optional components.

In addition to the standard library, there is a growing collection of several thousand components (from individual programs and modules to packages and entire application development frameworks), available from the Python Package Index.

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 - 7.3. **struct** Interpret strings as packed binary data
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 - 7.5. **StringIO** Read and write strings as files

- 7.6. cStringIO Faster version of StringIO
- 7.7. textwrap Text wrapping and filling
- 7.8. codecs Codec registry and base classes
- 7.9. unicodedata Unicode Database
- 7.10. stringprep Internet String Preparation
- 7.11. **fpformat** Floating point conversions

• 8. Data Types

- 8.1. datetime Basic date and time types
- 8.2. calendar General calendar-related functions
- 8.3. collections High-performance container datatypes
- 8.4. heapq Heap queue algorithm
- 8.5. bisect Array bisection algorithm
- 8.6. array Efficient arrays of numeric values
- 8.7. sets Unordered collections of unique elements
- 8.8. sched Event scheduler
- 8.9. mutex Mutual exclusion support
- 8.10. Queue A synchronized queue class
- 8.11. weakref Weak references
- 8.12. UserDict Class wrapper for dictionary objects
- 8.13. UserList Class wrapper for list objects
- 8.14. UserString Class wrapper for string objects
- 8.15. types Names for built-in types
- 8.16. new Creation of runtime internal objects
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- 9.2. math Mathematical functions
- 9.3. cmath Mathematical functions for complex numbers
- 9.4. decimal Decimal fixed point and floating point arithmetic
- 9.5. fractions Rational numbers
- 9.6. random Generate pseudo-random numbers
- 9.7. itertools Functions creating iterators for efficient looping
- 9.8. functools Higher-order functions and operations on callable objects
- 9.9. operator Standard operators as functions

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- 10.3. stat Interpreting stat() results
- 10.4. statvfs Constants used with os.statvfs()
- 10.5. filecmp File and Directory Comparisons
- 10.6. tempfile Generate temporary files and directories
- 10.7. glob Unix style pathname pattern expansion
- 10.8. fnmatch Unix filename pattern matching
- 10.9. Linecache Random access to text lines
- 10.10. shutil High-level file operations
- 10.11. dircache Cached directory listings
- 10.12. macpath Mac OS 9 path manipulation functions

- 11. Data Persistence
 - 11.1. pickle Python object serialization
 - 11.2. cPickle A faster pickle
 - 11.3. copy_reg Register pickle support functions
 - 11.4. shelve Python object persistence
 - 11.5. marshal Internal Python object serialization
 - 11.6. anydbm Generic access to DBM-style databases
 - 11.7. whichdb Guess which DBM module created a database
 - 11.8. dbm Simple "database" interface
 - 11.9. gdbm GNU's reinterpretation of dbm
 - 11.10. dbhash DBM-style interface to the BSD database library
 - 11.11. bsddb Interface to Berkeley DB library
 - 11.12. dumbdbm Portable DBM implementation
 - 11.13. sqlite3 DB-API 2.0 interface for SQLite databases
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 - 12.2. gzip Support for gzip files
 - 12.3. bz2 Compression compatible with bzip2
 - 12.4. zipfile Work with ZIP archives
 - 12.5. tarfile Read and write tar archive files
- 13. File Formats
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 - 13.2. ConfigParser Configuration file parser
 - 13.3. robotparser Parser for robots.txt
 - 13.4. netrc netrc file processing
 - 13.5. xdrlib Encode and decode XDR data
 - 13.6. plistlib Generate and parse Mac OS X .plist files
- 14. Cryptographic Services
 - 14.1. hashlib Secure hashes and message digests
 - 14.2. hmac Keyed-Hashing for Message Authentication
 - 14.3. md5 MD5 message digest algorithm
 - 14.4. sha SHA-1 message digest algorithm
- 15. Generic Operating System Services
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 - 15.2. io Core tools for working with streams
 - 15.3. time Time access and conversions
 - 15.4. argparse Parser for command-line options, arguments and sub-commands
 - 15.5. optparse Parser for command line options
 - 15.6. getopt C-style parser for command line options
 - 15.7. **logging** Logging facility for Python
 - 15.8. **logging.config** Logging configuration
 - 15.9. logging.handlers Logging handlers
 - 15.10. getpass Portable password input
 - 15.11. curses Terminal handling for character-cell displays
 - 15.12. curses.textpad Text input widget for curses programs
 - 15.13. curses.ascii Utilities for ASCII characters
 - 15.14. curses.panel A panel stack extension for curses
 - 15.15. platform Access to underlying platform's identifying data
 - 15.16. errno Standard errno system symbols
 - 15.17. ctypes A foreign function library for Python

- 16. Optional Operating System Services
 - 16.1. select Waiting for I/O completion
 - 16.2. threading Higher-level threading interface
 - 16.3. thread Multiple threads of control
 - 16.4. dummy_threading Drop-in replacement for the threading module
 - 16.5. dummy_thread Drop-in replacement for the thread module
 - 16.6. multiprocessing Process-based "threading" interface
 - 16.7. mmap Memory-mapped file support
 - 16.8. readline GNU readline interface
 - 16.9. rlcompleter Completion function for GNU readline
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 - 17.3. ssl TLS/SSL wrapper for socket objects
 - 17.4. signal Set handlers for asynchronous events
 - 17.5. popen2 Subprocesses with accessible I/O streams
 - 17.6. asyncore Asynchronous socket handler
 - 17.7. asynchat Asynchronous socket command/response handler
- 18. Internet Data Handling
 - 18.1. email An email and MIME handling package
 - 18.2. json JSON encoder and decoder
 - 18.3. mailcap Mailcap file handling
 - 18.4. mailbox Manipulate mailboxes in various formats
 - 18.5. mhlib Access to MH mailboxes
 - 18.6. mimetools Tools for parsing MIME messages
 - 18.7. mimetypes Map filenames to MIME types
 - 18.8. MimeWriter Generic MIME file writer
 - 18.9. mimify MIME processing of mail messages
 - 18.10. multifile Support for files containing distinct parts
 - 18.11. rfc822 Parse RFC 2822 mail headers
 - o 18.12. base64 RFC 3548: Base16, Base32, Base64 Data Encodings
 - 18.13. binhex Encode and decode binhex4 files
 - 18.14. binascii Convert between binary and ASCII
 - 18.15. quopri Encode and decode MIME quoted-printable data
 - 18.16. uu Encode and decode uuencode files
- 19. Structured Markup Processing Tools
 - 19.1. HTMLParser Simple HTML and XHTML parser
 - 19.2. sgmllib Simple SGML parser
 - 19.3. htmllib A parser for HTML documents
 - 19.4. htmlentitydefs Definitions of HTML general entities
 - 19.5. XML Processing Modules
 - 19.6. XML vulnerabilities
 - 19.7. xml.etree.ElementTree The ElementTree XML API
 - 19.8. xml.dom The Document Object Model API
 - 19.9. xml.dom.minidom Minimal DOM implementation
 - 19.10. xml.dom.pulldom Support for building partial DOM trees
 - 19.11. xml.sax Support for SAX2 parsers
 - 19.12. xml.sax.handler Base classes for SAX handlers
 - 19.13. xml.sax.saxutils SAX Utilities
 - 19.14. xml.sax.xmlreader Interface for XML parsers

- 19.15. xml.parsers.expat Fast XML parsing using Expat
- 20. Internet Protocols and Support
 - 20.1. webbrowser Convenient Web-browser controller
 - 20.2. cgi Common Gateway Interface support
 - 20.3. cgitb Traceback manager for CGI scripts
 - 20.4. wsgiref WSGI Utilities and Reference Implementation
 - 20.5. urllib Open arbitrary resources by URL
 - 20.6. urllib2 extensible library for opening URLs
 - 20.7. httplib HTTP protocol client
 - 20.8. ftplib FTP protocol client
 - 20.9. poplib POP3 protocol client
 - 20.10. imaplib IMAP4 protocol client
 - 20.11. nntplib NNTP protocol client
 - 20.12. smtplib SMTP protocol client
 - 20.13. smtpd SMTP Server
 - 20.14. telnetlib Telnet client
 - 20.15. uuid UUID objects according to RFC 4122
 - 20.16. urlparse Parse URLs into components
 - 20.17. SocketServer A framework for network servers
 - 20.18. BaseHTTPServer Basic HTTP server
 - 20.19. SimpleHTTPServer Simple HTTP request handler
 - 20.20. **CGIHTTPServer** CGI-capable HTTP request handler
 - 20.21. cookielib Cookie handling for HTTP clients
 - 20.22. Cookie HTTP state management
 - 20.23. xmlrpclib XML-RPC client access
 - 20.24. SimpleXMLRPCServer Basic XML-RPC server
 - 20.25. DocXMLRPCServer Self-documenting XML-RPC server
- 21. Multimedia Services
 - 21.1. audioop Manipulate raw audio data
 - 21.2. imageop Manipulate raw image data
 - 21.3. aifc Read and write AIFF and AIFC files
 - 21.4. sunau Read and write Sun AU files
 - o 21.5. wave Read and write WAV files
 - 21.6. chunk Read IFF chunked data
 - 21.7. colorsys Conversions between color systems
 - 21.8. imghdr Determine the type of an image
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- o 24.6. IDLE
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 - 25.2. doctest Test interactive Python examples
 - 25.3. unittest Unit testing framework
 - o 25.4. 2to3 Automated Python 2 to 3 code translation
 - 25.5. test Regression tests package for Python
 - 25.6. test.test_support Utility functions for tests
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 - 26.2. pdb The Python Debugger
 - 26.3. Debugger Commands
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 - 26.5. hotshot High performance logging profiler
 - 26.6. timeit Measure execution time of small code snippets
 - 26.7. trace Trace or track Python statement execution
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 - 28.4. future_builtins Python 3 builtins
 - 28.5. __main_ Top-level script environment
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 - 28.8. abc Abstract Base Classes
 - o 28.9. atexit Exit handlers
 - 28.10. traceback Print or retrieve a stack traceback
 - 28.11. **future** Future statement definitions
 - 28.12. gc Garbage Collector interface
 - 28.13. inspect Inspect live objects
 - 28.14. site Site-specific configuration hook
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- 29. Custom Python Interpreters
 - 29.1. code Interpreter base classes
 - 29.2. codeop Compile Python code
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 - 31.3. imputil Import utilities
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- 31.7. runpy Locating and executing Python modules
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 - 32.6. **keyword** Testing for Python keywords
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 - 32.9. pyclbr Python class browser support
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- 37.5. EasyDialogs Basic Macintosh dialogs
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