

21. Internet Protocols and Support

The modules described in this chapter implement Internet protocols and support for related technology. They are all implemented in Python. Most of these modules require the presence of the system-dependent module `socket`, which is currently supported on most popular platforms. Here is an overview:

- 21.1. `webbrowser` — Convenient Web-browser controller
 - 21.1.1. Browser Controller Objects
- 21.2. `cgi` — Common Gateway Interface support
 - 21.2.1. Introduction
 - 21.2.2. Using the `cgi` module
 - 21.2.3. Higher Level Interface
 - 21.2.4. Functions
 - 21.2.5. Caring about security
 - 21.2.6. Installing your CGI script on a Unix system
 - 21.2.7. Testing your CGI script
 - 21.2.8. Debugging CGI scripts
 - 21.2.9. Common problems and solutions
- 21.3. `cgitb` — Traceback manager for CGI scripts
- 21.4. `wsgiref` — WSGI Utilities and Reference Implementation
 - 21.4.1. `wsgiref.util` – WSGI environment utilities
 - 21.4.2. `wsgiref.headers` – WSGI response header tools
 - 21.4.3. `wsgiref.simple_server` – a simple WSGI HTTP server
 - 21.4.4. `wsgiref.validate` — WSGI conformance checker
 - 21.4.5. `wsgiref.handlers` – server/gateway base classes
 - 21.4.6. Examples
- 21.5. `urllib` — URL handling modules
- 21.6. `urllib.request` — Extensible library for opening URLs
 - 21.6.1. Request Objects
 - 21.6.2. OpenerDirector Objects
 - 21.6.3. BaseHandler Objects
 - 21.6.4. HTTPRedirectHandler Objects
 - 21.6.5. HTTPCookieProcessor Objects
 - 21.6.6. ProxyHandler Objects
 - 21.6.7. HTTPPasswordMgr Objects
 - 21.6.8. HTTPPasswordMgrWithPriorAuth Objects
 - 21.6.9. AbstractBasicAuthHandler Objects
 - 21.6.10. HTTPBasicAuthHandler Objects
 - 21.6.11. ProxyBasicAuthHandler Objects
 - 21.6.12. AbstractDigestAuthHandler Objects
 - 21.6.13. HTTPDigestAuthHandler Objects
 - 21.6.14. ProxyDigestAuthHandler Objects
 - 21.6.15. HTTPHandler Objects

- 21.6.16. HTTPSHandler Objects
 - 21.6.17. FileHandler Objects
 - 21.6.18. DataHandler Objects
 - 21.6.19. FTPHandler Objects
 - 21.6.20. CacheFTPHandler Objects
 - 21.6.21. UnknownHandler Objects
 - 21.6.22. HTTPErrorProcessor Objects
 - 21.6.23. Examples
 - 21.6.24. Legacy interface
 - 21.6.25. urllib.request Restrictions
- 21.7. urllib.response — Response classes used by urllib
- 21.8. urllib.parse — Parse URLs into components
 - 21.8.1. URL Parsing
 - 21.8.2. Parsing ASCII Encoded Bytes
 - 21.8.3. Structured Parse Results
 - 21.8.4. URL Quoting
- 21.9. urllib.error — Exception classes raised by urllib.request
- 21.10. urllib.robotparser — Parser for robots.txt
- 21.11. http — HTTP modules
 - 21.11.1. HTTP status codes
- 21.12. http.client — HTTP protocol client
 - 21.12.1. HTTPConnection Objects
 - 21.12.2. HTTPResponse Objects
 - 21.12.3. Examples
 - 21.12.4. HTTPMessage Objects
- 21.13. ftplib — FTP protocol client
 - 21.13.1. FTP Objects
 - 21.13.2. FTP_TLS Objects
- 21.14. poplib — POP3 protocol client
 - 21.14.1. POP3 Objects
 - 21.14.2. POP3 Example
- 21.15. imaplib — IMAP4 protocol client
 - 21.15.1. IMAP4 Objects
 - 21.15.2. IMAP4 Example
- 21.16. nntplib — NNTP protocol client
 - 21.16.1. NNTP Objects
 - 21.16.1.1. Attributes
 - 21.16.1.2. Methods
 - 21.16.2. Utility functions
- 21.17. smtplib — SMTP protocol client
 - 21.17.1. SMTP Objects
 - 21.17.2. SMTP Example
- 21.18. smtpd — SMTP Server
 - 21.18.1. SMTPServer Objects
 - 21.18.2. DebuggingServer Objects

- 21.18.3. PureProxy Objects
 - 21.18.4. MailmanProxy Objects
 - 21.18.5. SMTPChannel Objects
- 21.19. telnetlib — Telnet client
 - 21.19.1. Telnet Objects
 - 21.19.2. Telnet Example
- 21.20. uuid — UUID objects according to **RFC 4122**
 - 21.20.1. Example
- 21.21. socketserver — A framework for network servers
 - 21.21.1. Server Creation Notes
 - 21.21.2. Server Objects
 - 21.21.3. Request Handler Objects
 - 21.21.4. Examples
 - 21.21.4.1. socketserver.TCPServer Example
 - 21.21.4.2. socketserver.UDPServer Example
 - 21.21.4.3. Asynchronous Mixins
- 21.22. http.server — HTTP servers
- 21.23. http.cookies — HTTP state management
 - 21.23.1. Cookie Objects
 - 21.23.2. Morsel Objects
 - 21.23.3. Example
- 21.24. http.cookiejar — Cookie handling for HTTP clients
 - 21.24.1. CookieJar and FileCookieJar Objects
 - 21.24.2. FileCookieJar subclasses and co-operation with web browsers
 - 21.24.3. CookiePolicy Objects
 - 21.24.4. DefaultCookiePolicy Objects
 - 21.24.5. Cookie Objects
 - 21.24.6. Examples
- 21.25. xmlrpc — XMLRPC server and client modules
- 21.26. xmlrpc.client — XML-RPC client access
 - 21.26.1. ServerProxy Objects
 - 21.26.2. DateTime Objects
 - 21.26.3. Binary Objects
 - 21.26.4. Fault Objects
 - 21.26.5. ProtocolError Objects
 - 21.26.6. MultiCall Objects
 - 21.26.7. Convenience Functions
 - 21.26.8. Example of Client Usage
 - 21.26.9. Example of Client and Server Usage
- 21.27. xmlrpc.server — Basic XML-RPC servers
 - 21.27.1. SimpleXMLRPCServer Objects
 - 21.27.1.1. SimpleXMLRPCServer Example
 - 21.27.2. CGIXMLRPCRequestHandler
 - 21.27.3. Documenting XMLRPC server
 - 21.27.4. DocXMLRPCServer Objects

- 21.27.5. DocCGIXMLRPCRequestHandler
- 21.28. ipaddress — IPv4/IPv6 manipulation library
 - 21.28.1. Convenience factory functions
 - 21.28.2. IP Addresses
 - 21.28.2.1. Address objects
 - 21.28.2.2. Conversion to Strings and Integers
 - 21.28.2.3. Operators
 - 21.28.2.3.1. Comparison operators
 - 21.28.2.3.2. Arithmetic operators
 - 21.28.3. IP Network definitions
 - 21.28.3.1. Prefix, net mask and host mask
 - 21.28.3.2. Network objects
 - 21.28.3.3. Operators
 - 21.28.3.3.1. Logical operators
 - 21.28.3.3.2. Iteration
 - 21.28.3.3.3. Networks as containers of addresses
 - 21.28.4. Interface objects
 - 21.28.4.1. Operators
 - 21.28.4.1.1. Logical operators
 - 21.28.5. Other Module Level Functions
 - 21.28.6. Custom Exceptions