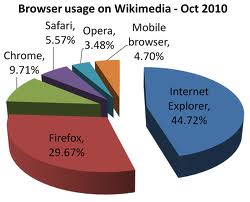
**Unit Six**

**Web browser**

Web browser, a [software application](http://www.webopedia.com/TERM/A/application.html) used to locate, retrieve and also display content on the [World Wide Web](http://www.webopedia.com/TERM/W/World_Wide_Web.html) , including [Web pages](http://www.webopedia.com/TERM/W/web_page.html), images, video and other files. As a [client/server model](http://www.webopedia.com/TERM/C/client_server_architecture.html), the browser is the [client](http://www.webopedia.com/TERM/C/client.html) run on a computer that contacts the Web [server](http://www.webopedia.com/TERM/S/server.html) and requests information. The [Web server](http://www.webopedia.com/TERM/W/Web_server.html) sends the information back to the Web browser which displays the results on the computer or other Internet-enabled device that supports a browser A web browser is an example of a [user agent](http://en.wikipedia.org/wiki/User_agent) (UA). Other types of user agent include the indexing software used by search providers ([web crawlers](http://en.wikipedia.org/wiki/Web_crawler)), [voice browsers](http://en.wikipedia.org/wiki/Voice_browser), [mobile apps](http://en.wikipedia.org/wiki/Mobile_apps) and other software that accesses, consumes or displays web content.

The two most popular browsers are Microsoft [Internet Explorer](http://www.webopedia.com/TERM/I/Internet_Explorer.html) and [Firefox](http://www.webopedia.com/TERM/F/Firefox.html). Other major browsers include [Google Chrome](http://www.webopedia.com/TERM/G/Google_Chrome.html), [Apple Safari](http://www.webopedia.com/TERM/A/Apple_Safari.html) and [Opera](http://www.webopedia.com/TERM/O/Opera.html). While most commonly use to access information on the web, a browser can also be used to access information hosted on Web servers in private [networks](http://www.webopedia.com/TERM/N/network.html).





Also, there are a number of browsers that are designed to access the Web using a [mobile device](http://www.webopedia.com/quick_ref/mobile_OS.asp). These mobile browsers ("[Microbrowser")](http://www.webopedia.com/TERM/M/microbrowser.html) are optimized to display Web content on smaller mobile device screens and to also perform efficiently on these devices which have far less computing power and memory capacity as desktop or laptop computers. Mobile browsers are typically "stripped down" versions of Web browsers and offer fewer features in order to run well on mobile devices.

**WWW.**

The terms Internet and world wide web(www) are often used in everyday speech without much distinction. However, the Internet and the World Wide Web are not the same. The Internet is a global system of interconnected [computer networks](http://en.wikipedia.org/wiki/Computer_networks). In contrast, the web is one of the services that runs on the Internet. It is a collection of text documents and other resources, linked by hyperlinks and URLs, usually accessed by [web browsers](http://en.wikipedia.org/wiki/Web_browsers) from [web servers](http://en.wikipedia.org/wiki/Web_servers). In short, the web can be thought of as an [application](http://en.wikipedia.org/wiki/Application_software) "running" on the Internet.

**IP**

The Internet Protocol (IP) is the principal [communications protocol](http://en.wikipedia.org/wiki/Communications_protocol) in the [Internet protocol suite](http://en.wikipedia.org/wiki/Internet_protocol_suite) for relaying [datagrams](http://en.wikipedia.org/wiki/Datagram) across network boundaries. Its [routing](http://en.wikipedia.org/wiki/Routing) function enables [internetworking](http://en.wikipedia.org/wiki/Internetwork), and essentially establishes the [Internet](http://en.wikipedia.org/wiki/Internet).

IP, as the primary protocol in the [Internet layer](http://en.wikipedia.org/wiki/Internet_layer) of the [Internet protocol suite](http://en.wikipedia.org/wiki/Internet_protocol_suite), has the task of delivering [packets](http://en.wikipedia.org/wiki/Packet_(information_technology)) from the source [host](http://en.wikipedia.org/wiki/Host_(network)) to the destination host solely based on the [IP addresses](http://en.wikipedia.org/wiki/IP_address) in the packet [headers](http://en.wikipedia.org/wiki/Header_(computing)). For this purpose, IP defines packet structures that [encapsulate](http://en.wikipedia.org/wiki/Encapsulation_(networking)) the data to be delivered. It also defines addressing methods that are used to label the datagram with source and destination information.

**HTTP**

The Hypertext Transfer Protocol (HTTP) is an [application protocol](http://en.wikipedia.org/wiki/Application_protocol) for distributed, collaborative, [hypermedia](http://en.wikipedia.org/wiki/Hypermedia) information systems. HTTP is the foundation of data communication for the [World Wide Web](http://en.wikipedia.org/wiki/World_Wide_Web).

[Hypertext](http://en.wikipedia.org/wiki/Hypertext) is structured text that uses logical links ([hyperlinks](http://en.wikipedia.org/wiki/Hyperlinks)) between [nodes](http://en.wikipedia.org/wiki/Node_(computer_science)) containing text. HTTP is the protocol to exchange or transfer hypertext.

HTML or HyperText Markup Language is the main [markup language](http://en.wikipedia.org/wiki/Markup_language) for creating [web pages](http://en.wikipedia.org/wiki/Web_page) and other information that can be displayed in a [web browser](http://en.wikipedia.org/wiki/Web_browser)

HTTP functions as a [request-response](http://en.wikipedia.org/wiki/Request-response) protocol in the [client-server](http://en.wikipedia.org/wiki/Client-server) computing model. A [web browser](http://en.wikipedia.org/wiki/Web_browser), for example, may be the client and an application running on a computer [hosting](http://en.wikipedia.org/wiki/Host_(network)) a [web site](http://en.wikipedia.org/wiki/Web_site) may be the server. The client submits an HTTP request message to the server. The server, which provides resources such as [HTML](http://en.wikipedia.org/wiki/HTML) files and other content, or performs other functions on behalf of the client, returns a response message to the client. The response contains completion status information about the request and may also contain requested content in its message body.

HTTP is designed to permit intermediate network elements to improve or enable communications between clients and servers. High-traffic websites often benefit from [web cache](http://en.wikipedia.org/wiki/Web_cache) servers that deliver content on behalf of [upstream servers](http://en.wikipedia.org/wiki/Upstream_server) to improve response time. Web browsers cache previously accessed web resources and reuse them when possible to reduce network traffic. HTTP [proxy servers](http://en.wikipedia.org/wiki/Proxy_server) at [private network](http://en.wikipedia.org/wiki/Private_network) boundaries can facilitate communication for clients without a globally routable address, by relaying messages with external servers.

[HTTP resources](http://en.wikipedia.org/wiki/Web_resource) are identified and located on the network by [Uniform Resource Identifiers](http://en.wikipedia.org/wiki/Uniform_Resource_Identifier) (URIs)—or, more specifically, [Uniform Resource Locators](http://en.wikipedia.org/wiki/Uniform_Resource_Locator) (URLs)—using the http or [https](http://en.wikipedia.org/wiki/Https) [URI schemes](http://en.wikipedia.org/wiki/URI_scheme). URIs and [hyperlinks](http://en.wikipedia.org/wiki/Hyperlink) in [Hypertext Markup Language](http://en.wikipedia.org/wiki/Hypertext_Markup_Language) (HTML) documents form webs of inter-linked [hypertext](http://en.wikipedia.org/wiki/Hypertext) documents.

**URL**

A uniform resource locator, abbreviated as URL (also known as web address, particularly when used with [HTTP](http://en.wikipedia.org/wiki/HTTP)), is a specific [character string](http://en.wikipedia.org/wiki/Character_string) that constitutes a reference to a resource. In most [web browsers](http://en.wikipedia.org/wiki/Web_browser), the URL of a web page is displayed on top inside an [address bar](http://en.wikipedia.org/wiki/Address_bar). An example of a typical URL would be <http://en.example.org/wiki/Main_Page> A URL is technically a type of [uniform resource identifier](http://en.wikipedia.org/wiki/Uniform_resource_identifier) (URI), but in many technical documents and verbal discussions, URL is often used as a synonym for URI, and this is not considered a problem. URLs are commonly used for web pages (http), but can also be used for file transfer ([ftp](http://en.wikipedia.org/wiki/File_Transfer_Protocol)), email ([mailto](http://en.wikipedia.org/wiki/Mailto)), telephone numbers (tel) and many other applications.

A URL is a URI that, in addition to identifying a [web resource](http://en.wikipedia.org/wiki/Web_resource), provides a means of locating the resource by describing its "primary access mechanism (e.g., its network location)".

The protocol, or scheme, of a URL defines how the resource will be obtained. Two common protocols on the web are [HTTP](http://en.wikipedia.org/wiki/Hypertext_Transfer_Protocol) and [HTTPS](http://en.wikipedia.org/wiki/HTTP_Secure). For various reasons, many sites have been switching to permitting access through both the HTTP and HTTPS protocols. Each protocol has advantages and disadvantages, including for some users that one or the other protocol either does not function, or is very undesirable. When a link contains a protocol specifier it results in the browser following the link using the specified protocol regardless of the potential desires of the user. It is possible to construct valid URLs without specifying a protocol which are called protocol-relative links (PRL) or protocol-relative URLs. Using PRLs on a page permits the viewer of the page to visit new pages using whichever protocol was used to obtain the page containing the link. This supports continuing to use whichever protocol the viewer has chosen to use for obtaining the current page when accessing new pages.

Domain

Domain names are used to identify one or more [IP addresses](http://www.webopedia.com/TERM/I/IP_address.html). For example, the domain name microsoft.com represents about a dozen IP addresses. Domain names are used in [URLs](http://www.webopedia.com/TERM/U/URL.html) to identify particular [Web pages](http://www.webopedia.com/TERM/W/web_page.html). For example, in the URL http://www.pcwebopedia.com/index.html, the domain name is pcwebopedia.com.

Every domain name has a suffix that indicates which [top level domain (TLD)](http://www.webopedia.com/TERM/T/TLD.html) it belongs to. There are only a limited number of such domains. For example:

1. gov - Government agencies
2. edu - Educational institutions
3. org - Organizations (nonprofit)
4. mil - Military
5. com - commercial business
6. net - Network organizations
7. ca - Canada
8. th - Thailand

Because the Internet is based on IP addresses, not domain names, every [Web server](http://www.webopedia.com/TERM/W/Web_server.html) requires a [Domain Name System (DNS)](http://www.webopedia.com/TERM/D/DNS.html) server to translate domain names into IP addresses.

**Function**

Viewing a [web page](http://en.wikipedia.org/wiki/Web_page) on the world wide web normally begins either by typing the [URL](http://en.wikipedia.org/wiki/Uniform_resource_locator) of the page into a [web browser](http://en.wikipedia.org/wiki/Web_browser) or by following a [hyperlink](http://en.wikipedia.org/wiki/Hyperlink) to that page or resource. The web browser then initiates a series of communication messages, behind the scenes, in order to fetch and display it. In the 1990s, using a browser to view web pages—and to move from one web page to another through hyperlinks—came to be known as 'browsing,' 'web surfing,' or 'navigating the web'. Early studies of this new behavior investigated user patterns in using web browsers.

The following example demonstrates how a web browser works.

Consider accessing a page with the URL http://example.org/wiki/World\_Wide\_Web.

First, the browser resolves the server-name portion of the URL (example.org) into an [internet protocol address](http://en.wikipedia.org/wiki/IP_address) using the globally distributed database known as the [Domain Name System](http://en.wikipedia.org/wiki/Domain_Name_System) (DNS); this lookup returns an IP address such as 208.80.152.2.

The browser then requests the resource by sending an [HTTP](http://en.wikipedia.org/wiki/Hypertext_Transfer_Protocol) request across the Internet to the computer at that particular address. It makes the request to a particular application port in the underlying [internet protocol suite](http://en.wikipedia.org/wiki/Internet_Protocol_Suite) so that the computer receiving the request can distinguish an HTTP request from other network protocols it may be servicing such as e-mail delivery; the HTTP protocol normally uses [port 80](http://en.wikipedia.org/wiki/List_of_TCP_and_UDP_port_numbers). The content of the HTTP request can be as simple as the two lines of text GET /wiki/World\_Wide\_Web HTTP/1.1 Host: example.org

The computer receiving the HTTP request delivers it to [web server](http://en.wikipedia.org/wiki/Web_server) software listening for requests on port 80. If the web server can fulfill the request it sends an HTTP response back to the browser indicating success, which can be as simple as HTTP/1.0 200 OK Content-Type: text/html; charset=UTF-8 followed by the content of the requested page.

The web browser [parses](http://en.wikipedia.org/wiki/Parsing) the HTML, interpreting the markup (<title>, <p> for paragraph, and such) that surrounds the words in order to draw the text on the screen.

Many web pages use HTML to reference the URLs of other resources such as images, other embedded media, [scripts](http://en.wikipedia.org/wiki/JavaScript) that affect page behavior, and [cascading style sheets](http://en.wikipedia.org/wiki/Cascading_Style_Sheets) that affect page layout. The browser will make additional HTTP requests to the web server for these other [Internet media types](http://en.wikipedia.org/wiki/Internet_media_type). As it receives their content from the web server, the browser progressively [renders](http://en.wikipedia.org/wiki/Layout_engine) the page onto the screen as specified by its HTML and these additional resources.