**Technology and Software**

The Following are the software we used for our project development:-

**XAMPP**

**XAMPP** is a [free and open source](http://en.wikipedia.org/wiki/Free_software) [cross-platform](http://en.wikipedia.org/wiki/Cross-platform) [web server](http://en.wikipedia.org/wiki/Web_server) [solution stack](http://en.wikipedia.org/wiki/Solution_stack) package, consisting mainly of the [Apache HTTP Server](http://en.wikipedia.org/wiki/Apache_HTTP_Server), [MySQL](http://en.wikipedia.org/wiki/MySQL) [database](http://en.wikipedia.org/wiki/Database), and [interpreters](http://en.wikipedia.org/wiki/Interpreter_%28computing%29) for scripts written in the [PHP](http://en.wikipedia.org/wiki/PHP) and [Perl](http://en.wikipedia.org/wiki/Perl) [programming languages](http://en.wikipedia.org/wiki/Programming_language).

XAMPP's name is an [acronym](http://en.wikipedia.org/wiki/Acronym_and_initialism) for:

**X** (to be read as "cross", meaning [cross-platform](http://en.wikipedia.org/wiki/Cross-platform))

[**A**pache HTTP Server](http://en.wikipedia.org/wiki/Apache_HTTP_Server)

[**M**ySQL](http://en.wikipedia.org/wiki/MySQL)

[**P**HP](http://en.wikipedia.org/wiki/PHP)

[**P**erl](http://en.wikipedia.org/wiki/Perl)

The program is released under the terms of the [GNU General Public License](http://en.wikipedia.org/wiki/GNU_General_Public_License) and acts as a free [web server](http://en.wikipedia.org/wiki/Web_server) capable of serving dynamic pages. XAMPP is available for [Microsoft Windows](http://en.wikipedia.org/wiki/Microsoft_Windows), [Linux](http://en.wikipedia.org/wiki/Linux), [Solaris](http://en.wikipedia.org/wiki/Solaris_%28operating_system%29), and [Mac OS X](http://en.wikipedia.org/wiki/Mac_OS_X), and is mainly used for web development projects. This software is useful while you are creating dynamic WebPages using programming languages like PHP, JSP.

XAMPP requires only one [zip](http://en.wikipedia.org/wiki/ZIP_%28file_format%29), [tar](http://en.wikipedia.org/wiki/Tar_%28file_format%29), or [exe](http://en.wikipedia.org/wiki/EXE) file to be downloaded and run, and little or no configuration of the various components that make up the web server is required. XAMPP is regularly updated to incorporate the latest releases of [Apache](http://en.wikipedia.org/wiki/Apache_HTTP_Server)/[MySQL](http://en.wikipedia.org/wiki/MySQL" \o "MySQL)/[PHP](http://en.wikipedia.org/wiki/PHP) and [Perl](http://en.wikipedia.org/wiki/Perl). It also comes with a number of other modules including [OpenSSL](http://en.wikipedia.org/wiki/OpenSSL) and [phpMyAdmin](http://en.wikipedia.org/wiki/PhpMyAdmin).

Self-contained, multiple instances of XAMPP can exist on a single computer, and any given instance can be copied from one computer to another. It is offered in both a full, standard version and a smaller version.

Officially, XAMPP's designers intended it for use only as a development tool, to allow website designers and programmers to test their work on their own computers without any access to the Internet. To make this as easy as possible, many important security features are disabled by default. In practice, however, XAMPP is sometimes used to actually serve web pages on the [World Wide Web](http://en.wikipedia.org/wiki/World_Wide_Web). A special tool is provided to password-protect the most important parts of the package.

XAMPP also provides support for creating and manipulating databases in [MySQL](http://en.wikipedia.org/wiki/MySQL) and [SQLite](http://en.wikipedia.org/wiki/SQLite) among others.

Once XAMPP is installed you can treat your localhost like a remote host by connecting using an [FTP](http://en.wikipedia.org/wiki/File_Transfer_Protocol) client. You can also connect to localhost via FTP with your [HTML editor](http://en.wikipedia.org/wiki/HTML_editor).

In Our Project XAMPP is being used to act as a virtual server and for database handling. (as it comes with two special module Apache Server and phpMyAdmin). And also it is suitable for us as our project uses PHP as Server side language.

**Web Browser**

Our Project will run successfully on any web browser but we mainly tested it on Mozilla Firefox and Google chrome.

The Following are the technologies we used to build our Project:-

**Apache** [**HTTP**](http://en.wikipedia.org/wiki/Hypertext_Transfer_Protocol) **Server**

The Apache [HTTP](http://en.wikipedia.org/wiki/Hypertext_Transfer_Protocol) Server, commonly referred to as Apache, is [web server](http://en.wikipedia.org/wiki/Web_server) software notable for playing a key role in the initial growth of the [World Wide Web](http://en.wikipedia.org/wiki/World_Wide_Web). In 2009 it became the first web server software to surpass the 100 million website milestone. Apache was the first viable alternative to the [Netscape Communications Corporation](http://en.wikipedia.org/wiki/Netscape_Communications_Corporation) web server (currently named [Oracle iPlanet Web Server](http://en.wikipedia.org/wiki/Oracle_iPlanet_Web_Server)), and since has evolved to rival other web servers in terms of functionality and performance. Typically Apache is run on a [Unix-like](http://en.wikipedia.org/wiki/Unix-like) operating system.

Apache is developed and maintained by an open community of developers under the auspices of the [Apache Software Foundation](http://en.wikipedia.org/wiki/Apache_Software_Foundation). The application is available for a wide variety of [operating systems](http://en.wikipedia.org/wiki/Operating_system), including [Unix](http://en.wikipedia.org/wiki/Unix), [FreeBSD](http://en.wikipedia.org/wiki/FreeBSD), [Linux](http://en.wikipedia.org/wiki/Linux), [Solaris](http://en.wikipedia.org/wiki/Solaris_%28operating_system%29), [Novell NetWare](http://en.wikipedia.org/wiki/Novell_NetWare), [Mac OS X](http://en.wikipedia.org/wiki/Mac_OS_X), [Microsoft Windows](http://en.wikipedia.org/wiki/Microsoft_Windows), [OS/2](http://en.wikipedia.org/wiki/OS/2), [TPF](http://en.wikipedia.org/wiki/Transaction_Processing_Facility), and [eComStation](http://en.wikipedia.org/wiki/EComStation). Released under the [Apache License](http://en.wikipedia.org/wiki/Apache_License), Apache is [open-source software](http://en.wikipedia.org/wiki/Open-source_software).

Apache was originally based on [NCSA HTTPd](http://en.wikipedia.org/wiki/NCSA_HTTPd) code. The NCSA code has since been removed from Apache, due to a [rewrite](http://en.wikipedia.org/wiki/Rewrite_%28programming%29).

Apache supports a variety of features, many implemented as [compiled](http://en.wikipedia.org/wiki/Compiler) [modules](http://en.wikipedia.org/wiki/Modular_programming) which extend the core functionality. These can range from server-side programming language support to authentication schemes. Some common language interfaces support [Perl](http://en.wikipedia.org/wiki/Mod_perl), [Python](http://en.wikipedia.org/wiki/Mod_python), [Tcl](http://en.wikipedia.org/wiki/Tcl), and [PHP](http://en.wikipedia.org/wiki/PHP). Popular authentication modules include mod\_access, mod\_auth, mod\_digest, and mod\_auth\_digest, the successor to mod\_digest. A sample of other features include [Secure Sockets Layer](http://en.wikipedia.org/wiki/Secure_Sockets_Layer) and [Transport Layer Security](http://en.wikipedia.org/wiki/Transport_Layer_Security) support ([mod\_ssl](http://en.wikipedia.org/wiki/Mod_ssl" \o "Mod ssl)), a [proxy](http://en.wikipedia.org/wiki/Proxy_server) module ([mod\_proxy](http://en.wikipedia.org/wiki/Mod_proxy" \o "Mod proxy)), a URL rewriter (also known as a [rewrite engine](http://en.wikipedia.org/wiki/Rewrite_engine), implemented under mod\_rewrite), custom log files (mod\_log\_config), and filtering support (mod\_include and mod\_ext\_filter).

Popular compression methods on Apache include the external extension module, mod\_gzip, implemented to help with reduction of the size (weight) of web pages served over [HTTP](http://en.wikipedia.org/wiki/HTTP). [ModSecurity](http://en.wikipedia.org/wiki/ModSecurity) is an open source intrusion detection and prevention engine for web applications. Apache logs can be analyzed through a web browser using free scripts such as [AWStats](http://en.wikipedia.org/wiki/AWStats)/[W3Perl](http://en.wikipedia.org/wiki/W3Perl) or [Visitors](http://en.wikipedia.org/w/index.php?title=Visitors_%28program%29&action=edit&redlink=1).

[Virtual hosting](http://en.wikipedia.org/wiki/Virtual_hosting) allows one Apache installation to serve many different actual websites. For example, one machine with one Apache installation could simultaneously serve www.example.com, www.example.org, test47.test-server.example.edu, etc.

Apache features configurable error messages, [DBMS](http://en.wikipedia.org/wiki/Database_management_system)-based authentication databases, and [content negotiation](http://en.wikipedia.org/wiki/Content_negotiation). It is also supported by several [graphical user interfaces](http://en.wikipedia.org/wiki/Graphical_user_interface) (GUIs).

It supports password authentication and [digital certificate](http://en.wikipedia.org/wiki/Digital_certificate) authentication. Apache has a built in [search engine](http://en.wikipedia.org/wiki/Search_engine) and an HTML authorizing tool and supports [FTP](http://en.wikipedia.org/wiki/FTP).

Although the main design goal of Apache is not to be the "fastest" web server, Apache does have performance similar to other "high-performance" web servers. Instead of implementing a single architecture, Apache provides a variety of Multi-Processing Modules (MPMs) which allow Apache to run in a process-based, hybrid (process and thread) or event-hybrid mode, to better match the demands of each particular infrastructure. This implies that the choice of correct MPM and the correct configuration is important. Where compromises in performance need to be made, the design of Apache is to reduce latency and increase [throughput](http://en.wikipedia.org/wiki/Throughput), relative to simply handling more requests, thus ensuring consistent and reliable processing of requests within reasonable time-frames.

The Apache version considered by the Apache Foundation as providing high-performance is the multi-threaded version which mixes the use of several processes and several threads per process. This architecture, and the way implemented in Apache 2.4.0, provides for performance at least equal to other event-based web servers.

In our project Apache is installed and used as a localhost server under XAMPP.

**MySQL**

**MySQL** “My S-Q-L", officially, but also commonly ("My Sequel") is the world's most used [relational database management system](http://en.wikipedia.org/wiki/Relational_database_management_system) (RDBMS) that runs as a server providing multi-user access to a number of databases. It is named after developer [Michael Widenius](http://en.wikipedia.org/wiki/Michael_Widenius)' daughter, My. The [SQL](http://en.wikipedia.org/wiki/SQL) phrase stands for Structured Query Language.

The MySQL development project has made its [source code](http://en.wikipedia.org/wiki/Source_code) available under the terms of the [GNU General Public License](http://en.wikipedia.org/wiki/GNU_General_Public_License), as well as under a variety of [proprietary](http://en.wikipedia.org/wiki/Proprietary_software) agreements. MySQL was owned and sponsored by a single [for-profit](http://en.wikipedia.org/wiki/Business) firm, the [Swedish](http://en.wikipedia.org/wiki/Sweden) company [MySQL AB](http://en.wikipedia.org/wiki/MySQL_AB), now owned by [Oracle Corporation](http://en.wikipedia.org/wiki/Oracle_Corporation)

MySQL is written in [C](http://en.wikipedia.org/wiki/C_%28programming_language%29) and [C++](http://en.wikipedia.org/wiki/C%2B%2B). Its [SQL](http://en.wikipedia.org/wiki/SQL) parser is written in [yacc](http://en.wikipedia.org/wiki/Yacc), and a home-brewed [lexical analyzer](http://en.wikipedia.org/wiki/Lexical_analysis) named sql\_lex.cc.[[19]](http://en.wikipedia.org/wiki/My_sql#cite_note-18)

MySQL works on many different [system platforms](http://en.wikipedia.org/wiki/System_platform).

Many [programming languages](http://en.wikipedia.org/wiki/Programming_language) with language-specific [APIs](http://en.wikipedia.org/wiki/Application_programming_interface) include [libraries](http://en.wikipedia.org/wiki/Library_%28computing%29) for accessing MySQL databases. These include MySQL Connector/Net for integration with Microsoft's [Visual Studio](http://en.wikipedia.org/wiki/Visual_Studio) (languages such as [C#](http://en.wikipedia.org/wiki/C_Sharp_%28programming_language%29) and [VB](http://en.wikipedia.org/wiki/Visual_Basic) are most commonly used) and the JDBC driver for Java. In addition, an [ODBC](http://en.wikipedia.org/wiki/ODBC) interface called [MyODBC](http://en.wikipedia.org/wiki/MyODBC) allows additional programming languages that support the ODBC interface to communicate with a MySQL database, such as [ASP](http://en.wikipedia.org/wiki/Active_Server_Pages) or [ColdFusion](http://en.wikipedia.org/wiki/Adobe_ColdFusion). The [HTSQL](http://en.wikipedia.org/wiki/HTSQL) - [URL](http://en.wikipedia.org/wiki/Uniform_resource_locator)-based query method also ships with a MySQL adapter, allowing direct interaction between a MySQL database and any web client via structured URL

MySQL is primarily an [RDBMS](http://en.wikipedia.org/wiki/RDBMS) and ships with no [GUI](http://en.wikipedia.org/wiki/Graphical_user_interface) tools to administer MySQL databases or manage data contained within the databases. Users may use the included [command line](http://en.wikipedia.org/wiki/Command_line) tools, or download MySQL front-ends from various parties that have developed desktop software and web applications to manage MySQL databases, build database structures, and work with data records.

The developers release monthly versions of the MySQL Server. The sources can be obtained from MySQL's website or from MySQL's [Bazaar](http://en.wikipedia.org/wiki/Bazaar_%28software%29) repository, both under the GPL license.

[**PhpMyAdmin**](http://en.wikipedia.org/wiki/PhpMyAdmin) – a free [Web](http://en.wikipedia.org/wiki/World_Wide_Web)-based front end widely installed by [Web hosts](http://en.wikipedia.org/wiki/Web_hosting_service) worldwide, since it is developed in [PHP](http://en.wikipedia.org/wiki/PHP) and is included in the convenient XAMPP software bundle installers.

The Following are the Protocols we Used for Our Project:-

**HTTP**

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

The standards development of HTTP was coordinated by the [Internet Engineering Task Force](http://en.wikipedia.org/wiki/Internet_Engineering_Task_Force) (IETF) and the [World Wide Web Consortium](http://en.wikipedia.org/wiki/World_Wide_Web_Consortium) (W3C), culminating in the publication of a series of [Requests for Comments](http://en.wikipedia.org/wiki/Requests_for_Comments) (RFCs), most notably [RFC 2616](http://tools.ietf.org/html/rfc2616) (June 1999), which defines HTTP/1.1, the version of HTTP in common use.

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. In HTTP, a [web browser](http://en.wikipedia.org/wiki/Web_browser), for example, acts as a *client*, while an application running on a computer [hosting](http://en.wikipedia.org/wiki/Host_%28network%29) a [web site](http://en.wikipedia.org/wiki/Web_site) functions as a *server*. The client submits a HTTP *request* message to the server. The server, which stores content, or provides *resources*, such as [HTML](http://en.wikipedia.org/wiki/HTML) files, or performs other functions on behalf of the client, returns a response message to the client. A response contains completion status information about the request and may contain any content requested by the client in its message body.

A web browser (or client) is often referred to as a [*user agent*](http://en.wikipedia.org/wiki/User_agent) (UA). Other user agents can include the indexing software used by search providers, known as [web crawlers](http://en.wikipedia.org/wiki/Web_crawler), or variations of the web browser such as [voice browsers](http://en.wikipedia.org/wiki/Voice_browser), which present an interactive voice user interface.

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 the original, so-called *origin server*, to improve response time. HTTP [proxy servers](http://en.wikipedia.org/wiki/Proxy_server) at network boundaries facilitate communication when clients without a globally routable address are located in [private networks](http://en.wikipedia.org/wiki/Private_network) by relaying the requests and responses between clients and servers.

HTTP is an [Application Layer](http://en.wikipedia.org/wiki/Application_Layer) protocol designed within the framework of the [Internet Protocol Suite](http://en.wikipedia.org/wiki/Internet_Protocol_Suite). The protocol definitions presume a reliable [Transport Layer](http://en.wikipedia.org/wiki/Transport_Layer) protocol for host-to-host data transfer. The [Transmission Control Protocol](http://en.wikipedia.org/wiki/Transmission_Control_Protocol) (TCP) is the dominant protocol in use for this purpose. However, HTTP has found application even with unreliable protocols, such as the [User Datagram Protocol](http://en.wikipedia.org/wiki/User_Datagram_Protocol) (UDP) in methods such as the [Simple Service Discovery Protocol](http://en.wikipedia.org/wiki/Simple_Service_Discovery_Protocol) (SSDP).

HTTP [Resources](http://en.wikipedia.org/wiki/Resource_%28Web%29) 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 the [Hypertext Markup Language](http://en.wikipedia.org/wiki/Hypertext_Markup_Language) (HTML), form a system of inter-linked resources, called [hypertext](http://en.wikipedia.org/wiki/Hypertext) documents, on the [Internet](http://en.wikipedia.org/wiki/Internet), that led to the establishment of the [World Wide Web](http://en.wikipedia.org/wiki/World_Wide_Web) in 1990 by English computer scientist and innovator [Tim Berners-Lee](http://en.wikipedia.org/wiki/Tim_Berners-Lee)

An HTTP session is a sequence of network request-response transactions. An HTTP client initiates a request by establishing a [Transmission Control Protocol](http://en.wikipedia.org/wiki/Transmission_Control_Protocol) (TCP) connection to a particular [port](http://en.wikipedia.org/wiki/TCP_and_UDP_port) on a server (typically port 80; see [List of TCP and UDP port numbers](http://en.wikipedia.org/wiki/List_of_TCP_and_UDP_port_numbers)). An HTTP server listening on that port waits for a client's request message. Upon receiving the request, the server sends back a status line, such as "HTTP/1.1 200 OK", and a message of its own. The body of this message is typically the requested resource, although an error message or other information may also be returned.

Our Project use HTTP for serving Web pages

The Following Languages are used in Our Project Development:-

**HTML**

**HyperText Markup Language** (**HTML**) is the main [markup language](http://en.wikipedia.org/wiki/Markup_language) for [web pages](http://en.wikipedia.org/wiki/Web_page). HTML elements are the basic building-blocks of web pages.

HTML is written in the form of [HTML elements](http://en.wikipedia.org/wiki/HTML_element) consisting of *tags* enclosed in [angle brackets](http://en.wikipedia.org/wiki/Angle_brackets) (like <html>), within the web page content. HTML tags most commonly come in pairs like <h1> and </h1>, although some tags, known as *empty elements*, are unpaired, for example <img>. The first tag in a pair is the *start tag*, the second tag is the *end tag* (they are also called *opening tags* and *closing tags*). In between these tags web designers can add text, tags, comments and other types of text-based content.

The purpose of a [web browser](http://en.wikipedia.org/wiki/Web_browser) is to read HTML documents and compose them into visible or audible web pages. The browser does not display the HTML tags, but uses the tags to interpret the content of the page.

HTML elements form the building blocks of all websites. HTML allows [images and objects](http://en.wikipedia.org/wiki/Img_%28HTML_element%29) to be embedded and can be used to create [interactive forms](http://en.wikipedia.org/wiki/Fieldset). It provides a means to create [structured documents](http://en.wikipedia.org/wiki/Structured_document) by denoting structural [semantics](http://en.wikipedia.org/wiki/Semantic) for text such as headings, paragraphs, lists, links, quotes and other items. It can embed [scripts](http://en.wikipedia.org/wiki/Scripting_language) in languages such as [JavaScript](http://en.wikipedia.org/wiki/JavaScript) which affect the behavior of HTML web pages.

Web browsers can also refer to [Cascading Style Sheets](http://en.wikipedia.org/wiki/Cascading_Style_Sheets) (CSS) to define the appearance and layout of text and other material. The [W3C](http://en.wikipedia.org/wiki/W3C), maintainer of both the HTML and the CSS standards, encourages the use of CSS over explicitly presentational HTML markup.

HTML documents are composed entirely of HTML elements that, in their most general form have three components: a pair of *tags*, a "start tag" and "end tag"; some *attributes* within the start tag; and finally, any textual and graphical *content* between the start and end tags, perhaps including other nested elements. The HTML element is everything between and including the start and end tags. Each tag is enclosed in angle brackets.

**Attributes**

Most of the attributes of an element are [name-value pairs](http://en.wikipedia.org/wiki/Attribute-value_pair), separated by "=" and written within the start tag of an element after the element's name. The value may be enclosed in single or double quotes, although values consisting of certain characters can be left unquoted in HTML (but not XHTML). Leaving attribute values unquoted is considered unsafe. In contrast with name-value pair attributes, there are some attributes that affect the element simply by their presence in the start tag of the element, like the ismap attribute for the img element.

There are several common attributes that may appear in many elements:

* The id attribute provides a document-wide unique identifier for an element. This is used to identify the element so that style sheets can alter its presentational properties, and scripts may alter, animate or delete its contents or presentation. Appended to the URL of the page, it provides a globally unique identifier for the element, typically a sub-section of the page.
* The class attribute provides a way of classifying similar elements. This can be used for [semantic](http://en.wikipedia.org/wiki/Semantics) or presentation purposes. For example, an HTML document might semantically use the designation class="notation" to indicate that all elements with this class value are subordinate to the main text of the document. In presentation, such elements might be gathered together and presented as footnotes on a page instead of appearing in the place where they occur in the HTML source. Class attributes are used semantically in [micro formats](http://en.wikipedia.org/wiki/Microformat). Multiple class values may be specified; for example class="notation important" puts the element into both the 'notation' and the 'important' classes.
* An author may use the style attribute to assign presentational properties to a particular element. It is considered better practice to use an element's id or class attributes to select the element from within a style sheet, though sometimes this can be too cumbersome for a simple, specific, or ad hoc styling.
* The title attribute is used to attach sub textual explanation to an element. In most browsers this attribute is displayed as a [tooltip](http://en.wikipedia.org/wiki/Tooltip).

**Cascading Style Sheets** (**CSS**)

**Cascading Style Sheets** (**CSS**) is a [style sheet language](http://en.wikipedia.org/wiki/Style_sheet_language) used for describing the [presentation semantics](http://en.wikipedia.org/wiki/Presentation_semantics) (the look and formatting) of a document written in a [markup language](http://en.wikipedia.org/wiki/Markup_language). Its most common application is to style [web pages](http://en.wikipedia.org/wiki/Web_page) written in [HTML](http://en.wikipedia.org/wiki/HTML) and [XHTML](http://en.wikipedia.org/wiki/XHTML), but the language can also be applied to any kind of [XML](http://en.wikipedia.org/wiki/XML) document, including [plain XML](http://en.wikipedia.org/wiki/Plain_Old_XML), [SVG](http://en.wikipedia.org/wiki/Scalable_Vector_Graphics) and [XUL](http://en.wikipedia.org/wiki/XUL).

CSS is designed primarily to enable the separation of document content (written in HTML or a similar markup language) from document presentation, including elements such as the [layout](http://en.wikipedia.org/wiki/Page_layout), [colors](http://en.wikipedia.org/wiki/Color), and [fonts](http://en.wikipedia.org/wiki/Typeface).[[1]](http://en.wikipedia.org/wiki/Css#cite_note-0) This separation can improve content [accessibility](http://en.wikipedia.org/wiki/Accessibility), provide more flexibility and control in the specification of presentation characteristics, enable multiple pages to share formatting, and reduce complexity and repetition in the structural content (such as by allowing for [tableless web design](http://en.wikipedia.org/wiki/Tableless_web_design)). CSS can also allow the same markup page to be presented in different styles for different rendering methods, such as on-screen, in print, by voice (when read out by a speech-based browser or [screen reader](http://en.wikipedia.org/wiki/Screen_reader)) and on [Braille](http://en.wikipedia.org/wiki/Braille)-based, [tactile](http://en.wikipedia.org/wiki/Tactile) devices. It can also be used to allow the web page to display differently depending on the screen size or device on which it is being viewed. While the author of a document typically links that document to a CSS style sheet, readers can use a different style sheet, perhaps one on their own computer, to override the one the author has specified.

CSS specifies a priority scheme to determine which style rules apply if more than one rule matches against a particular element. In this so-called *cascade*, priorities or *weights* are calculated and assigned to rules, so that the results are predictable.

CSS has a simple [syntax](http://en.wikipedia.org/wiki/Syntax) and uses a number of English keywords to specify the names of various style properties.

A style sheet consists of a list of *rules*. Each rule or rule-set consists of one or more *selectors* and a *declaration block*. A declaration-block consists of a list of *declarations* in braces. Each declaration itself consists of a *property*, a colon (:), and a *value*. If there are multiple declarations in a block, a semi-colon (;) must be inserted to separate each declaration.[[2]](http://en.wikipedia.org/wiki/Css#cite_note-1)

In CSS, *selectors* are used to declare which of the markup elements a style applies to, a kind of match expression. Selectors may apply to all elements of a specific type, or only those elements that match a certain attribute; elements may be matched depending on how they are placed relative to each other in the markup code, or on how they are nested within the [Document Object Model](http://en.wikipedia.org/wiki/Document_Object_Model).

*Pseudo-classes* are another form of specification used in CSS to identify markup elements, and in some cases, specific user actions to which a particular declaration block applies. An often-used example of a pseudo-class is :hover, which applies a style only when the user 'points to' the visible element, usually by holding the mouse cursor over it. It is appended to a selector as in a:hover or #elementid:hover. Other pseudo-classes and *pseudo-elements* are, for example, :first-line, :visited or :before. A special pseudo-class is :lang(c), "c".[[*clarification needed*](http://en.wikipedia.org/wiki/Wikipedia:Please_clarify)]

A *pseudo-class* selects entire elements, such as :link or :visited, whereas a *pseudo-element* makes a selection that may consist of partial elements, such as :first-line or :first-letter.

Selectors may be combined in other ways too, especially in CSS 2.1, to achieve greater specificity and flexibility.

Here is an example summing up the rules above:

selector [, selector2, ...] [:pseudo-class] {

property: value;

[property2: value2;

...]

}

/\* comment \*/

CSS files are inserted into HTML documents using the following syntax:

<link rel="stylesheet" href="http://example.com/css/style.css" type="text/css" />

CSS information can be provided by various sources. CSS style information can be either attached as a separate document or embedded in the HTML document. Multiple style sheets can be imported. Different styles can be applied depending on the output device being used; for example, the screen version can be quite different from the printed version, so that authors can tailor the presentation appropriately for each medium.

One of the goals of CSS is also to allow *users* greater control over presentation.

**JavaScript**

**JavaScript** is a [prototype-based](http://en.wikipedia.org/wiki/Prototype-based) [scripting language](http://en.wikipedia.org/wiki/Scripting_language) that is [dynamic](http://en.wikipedia.org/wiki/Dynamic_language), [weakly typed](http://en.wikipedia.org/wiki/Weak_typing) and has [first-class functions](http://en.wikipedia.org/wiki/First-class_functions). It is a [multi-paradigm](http://en.wikipedia.org/wiki/Multi-paradigm) language, supporting [object-oriented](http://en.wikipedia.org/wiki/Object-oriented_programming), [imperative](http://en.wikipedia.org/wiki/Imperative_programming), and [functional](http://en.wikipedia.org/wiki/Functional_programming) programming styles.

JavaScript was formalized in the [ECMAScript](http://en.wikipedia.org/wiki/ECMAScript) language standard and is primarily used in the form of [client-side JavaScript](http://en.wikipedia.org/wiki/Client-side_JavaScript), implemented as part of a [Web browser](http://en.wikipedia.org/wiki/Web_browser) in order to provide enhanced [user interfaces](http://en.wikipedia.org/wiki/User_interface) and dynamic [websites](http://en.wikipedia.org/wiki/Website). This enables [programmatic](http://en.wikipedia.org/wiki/Computer_programming) access to computational objects within a host environment.

JavaScript's use in [applications](http://en.wikipedia.org/wiki/Application_software) outside Web pages — for example in [PDF](http://en.wikipedia.org/wiki/Portable_Document_Format) documents, [site-specific browsers](http://en.wikipedia.org/wiki/Site-specific_browser), and [desktop widgets](http://en.wikipedia.org/wiki/Desktop_widget) — is also significant. Newer and faster JavaScript [VMs](http://en.wikipedia.org/wiki/Virtual_machine) and frameworks built upon them (notably [Node.js](http://en.wikipedia.org/wiki/Node.js)) have also increased the popularity of JavaScript for server-side web applications.

JavaScript uses syntax influenced by that of [C](http://en.wikipedia.org/wiki/C_%28programming_language%29). JavaScript copies many names and naming conventions from [Java](http://en.wikipedia.org/wiki/Java_%28programming_language%29), but the two languages are otherwise unrelated and have very different semantics. The key design principles within JavaScript are taken from the [self](http://en.wikipedia.org/wiki/Self_%28programming_language%29) and [Scheme](http://en.wikipedia.org/wiki/Scheme_%28programming_language%29) programming languages.[[7]](http://en.wikipedia.org/wiki/JavaScript#cite_note-6)

### Dynamic

Dynamic typing

As in most scripting languages, [types](http://en.wikipedia.org/wiki/Type_system) are associated with [values](http://en.wikipedia.org/wiki/Value_%28computer_science%29), not with [variables](http://en.wikipedia.org/wiki/Variable_%28programming%29). For example, a variable x could be bound to a number, and then later rebound to a [string](http://en.wikipedia.org/wiki/String_%28computer_science%29). JavaScript supports various ways to test the type of an object, including [duck typing](http://en.wikipedia.org/wiki/Duck_typing).

Object based

JavaScript is almost entirely [object-based](http://en.wikipedia.org/wiki/Object-based). JavaScript [objects](http://en.wikipedia.org/wiki/Object_%28computer_science%29) are [associative arrays](http://en.wikipedia.org/wiki/Associative_array), augmented with prototypes (see below). Object property names are string keys: obj.x = 10 and obj['x'] = 10 are equivalent, the dot notation being [syntactic sugar](http://en.wikipedia.org/wiki/Syntactic_sugar). Properties and their values can be added, changed, or deleted at run-time. Most properties of an object (and those on its prototype inheritance chain) can be enumerated using a for...in loop. JavaScript has a small number of built-in objects such as Function and Date.

[**Functions**](http://en.wikipedia.org/wiki/Subroutine) are [first-class](http://en.wikipedia.org/wiki/First-class_function); they are objects themselves. As such, they have properties and methods, such as length and call(); and they can be assigned to variables, passed as arguments, returned by other functions, and manipulated like any other object. Any reference to a function allows it to be invoked using the () operator.

functions as object constructors

Functions double as object constructors along with their typical role. Prefixing a function call with new creates a new object and calls that function with its local this keyword bound to that object for that invocation. The constructor's prototype property determines the object used for the new object's internal prototype. JavaScript's built-in constructors, such as Array, also have prototypes that can be modified.

functions as methods

Unlike many object-oriented languages, there is no distinction between a function definition and a [method](http://en.wikipedia.org/wiki/Method_%28computer_science%29) definition. Rather, the distinction occurs during function calling; a function can be called as a method. When a function is called as a method of an object, the function's local this keyword is bound to that object for that invocation.

A simple alert box:

alert("alert alert")

A simple [recursive](http://en.wikipedia.org/wiki/Recursion) function:

function factorial(n) {

if (n === 0) {

return 1;

}

return n \* factorial(n - 1);

}

**jQuery**

**jQuery** is a [cross-browser](http://en.wikipedia.org/wiki/Cross-browser) [JavaScript library](http://en.wikipedia.org/wiki/JavaScript_library) designed to simplify the [client-side scripting](http://en.wikipedia.org/wiki/Client-side_scripting) of [HTML](http://en.wikipedia.org/wiki/HTML). It was released in January 2006 at [BarCamp](http://en.wikipedia.org/wiki/BarCamp) NYC by [John Resig](http://en.wikipedia.org/wiki/John_Resig). Used by over 55% of the 10,000 most visited websites, jQuery is the most popular [JavaScript library](http://en.wikipedia.org/wiki/JavaScript_library) in use today.

jQuery is [free, open source software](http://en.wikipedia.org/wiki/Free_and_open_source_software), [dual-licensed](http://en.wikipedia.org/wiki/Dual-licensing) under the [MIT License](http://en.wikipedia.org/wiki/MIT_License) or the [GNU General Public License, Version 2](http://en.wikipedia.org/wiki/GNU_General_Public_License_Version_2). jQuery's syntax is designed to make it easier to navigate a document, select [DOM](http://en.wikipedia.org/wiki/Document_Object_Model) elements, create [animations](http://en.wikipedia.org/wiki/Animation), handle [events](http://en.wikipedia.org/wiki/Event_%28computing%29), and develop [Ajax applications](http://en.wikipedia.org/wiki/Ajax_%28programming%29). jQuery also provides capabilities for developers to create [plug-ins](http://en.wikipedia.org/wiki/Plug-in_%28computing%29) on top of the JavaScript library. This enables developers to create [abstractions](http://en.wikipedia.org/wiki/Abstraction_%28computer_science%29) for low-level interaction and animation, advanced effects and high-level, theme-able widgets. The modular approach to the jQuery library allows the creation of powerful [dynamic web pages](http://en.wikipedia.org/wiki/Dynamic_web_page) and web applications.

jQuery includes the following features:

* [DOM](http://en.wikipedia.org/wiki/Document_Object_Model) element selections using the cross-browser open source selector engine *Sizzle*, a spin-off out of the jQuery project
* DOM traversal and modification (including support for CSS 1-3)
* DOM manipulation based on [CSS](http://en.wikipedia.org/wiki/Cascading_Style_Sheets) selectors that uses node elements name and node elements attributes (id and class) as criteria to build selectors
* Events
* Effects and animations
* [Ajax](http://en.wikipedia.org/wiki/AJAX_%28programming%29)
* [Extensibility](http://en.wikipedia.org/wiki/Extensibility) through plug-ins
* Utilities - such as user agent information, feature detection
* Compatibility methods that are natively available in modern browsers but need fallbacks for older ones - For example the inArray() and each() functions.
* Cross-browser support

<script type="text/javascript" src="jquery.js"></script>

The most popular and basic way to introduce a jQuery function is to use the .ready() function.

$(document).ready(function() {

// jquery goes here

});

or the shortcut

$(function() {

// jquery goes here

});

jQuery has two usage styles:

* via the $ function, which is a [factory method](http://en.wikipedia.org/wiki/Factory_method_pattern) for the jQuery object. These functions, often called *commands*, are [*chainable*](http://en.wikipedia.org/wiki/Method_chaining) (They all return jQuery objects, for details please see [method chaining](http://en.wikipedia.org/wiki/Method_chaining#JavaScript))
* via $.-prefixed functions. These are *utility functions* which do not work on the jQuery object *per se*.

Typically, access to and manipulation of multiple DOM nodes begins with the $ function being called with a [CSS](http://en.wikipedia.org/wiki/CSS) selector string, which results in a jQuery object referencing matching elements in the [HTML](http://en.wikipedia.org/wiki/HTML) page. This node set can be manipulated by calling instance methods on the jQuery object, or on the nodes themselves.

**PHP**

**PHP** is a general-purpose [server-side](http://en.wikipedia.org/wiki/Server-side) [scripting language](http://en.wikipedia.org/wiki/Scripting_language) originally designed for [Web development](http://en.wikipedia.org/wiki/Web_development) to produce [dynamic Web pages](http://en.wikipedia.org/wiki/Dynamic_Web_page). It is one of the first developed server-side scripting languages to be embedded into an [HTML](http://en.wikipedia.org/wiki/HTML) source document, rather than calling an external file to process data. Ultimately, the code is [interpreted](http://en.wikipedia.org/wiki/Interpreter_%28computing%29) by a Web server with a PHP processor module which generates the resulting Web page. It also has evolved to include a [command-line interface](http://en.wikipedia.org/wiki/Command-line_interface) capability and can be used in [standalone](http://en.wikipedia.org/wiki/Standalone_software) [graphical applications](http://en.wikipedia.org/wiki/Graphical_user_interface). PHP can be deployed on most Web servers and also as a standalone [shell](http://en.wikipedia.org/wiki/Shell_%28computing%29) on almost every [operating system](http://en.wikipedia.org/wiki/Operating_system) and [platform](http://en.wikipedia.org/wiki/Platform_%28computing%29) free of charge. A competitor to [Microsoft](http://en.wikipedia.org/wiki/Microsoft)'s [Active Server Pages](http://en.wikipedia.org/wiki/Active_Server_Pages) (ASP) server-side script engine and similar languages, PHP is installed on more than 20 million Web sites and 1 million [Web servers](http://en.wikipedia.org/wiki/Web_server). PHP was originally created by [Rasmus Lerdorf](http://en.wikipedia.org/wiki/Rasmus_Lerdorf" \o "Rasmus Lerdorf) in 1995. The main implementation of PHP is now produced by [The PHP Group](http://en.wikipedia.org/wiki/The_PHP_Group) and serves as the formal reference to the PHP language. PHP is [free software](http://en.wikipedia.org/wiki/Free_software) released under the [PHP License](http://en.wikipedia.org/wiki/PHP_License), which is incompatible with the [GNU General Public License](http://en.wikipedia.org/wiki/GNU_General_Public_License) (GPL) due to restrictions on the usage of the term *PHP*.

While PHP originally stood for "Personal Home Page", it is now said to stand for "PHP: Hypertext Preprocessor", a [recursive acronym](http://en.wikipedia.org/wiki/Recursive_acronym).

PHP is a general-purpose scripting language that is especially suited to [server-side](http://en.wikipedia.org/wiki/Server-side_scripting) [web development](http://en.wikipedia.org/wiki/Web_development) where PHP generally runs on a [web server](http://en.wikipedia.org/wiki/Web_server). Any PHP code in a requested file is [executed](http://en.wikipedia.org/wiki/Execution_%28computing%29) by the PHP runtime, usually to create [dynamic web page](http://en.wikipedia.org/wiki/Dynamic_web_page) content or dynamic images used on Web sites or elsewhere. It can also be used for [command-line](http://en.wikipedia.org/wiki/Command-line) scripting and [client-side](http://en.wikipedia.org/wiki/Client-side) [GUI](http://en.wikipedia.org/wiki/Graphical_user_interface) applications. PHP can be deployed on most Web servers, many [operating systems](http://en.wikipedia.org/wiki/Operating_system) and [platforms](http://en.wikipedia.org/wiki/Platform_%28computing%29), and can be used with many [relational database management systems](http://en.wikipedia.org/wiki/Relational_database_management_system) (RDBMS). It is available free of charge, and the PHP Group provides the complete source code for users to build, customize and extend for their own use.

PHP acts primarily as a [filter](http://en.wikipedia.org/wiki/Filter_%28software%29), taking input from a file or stream containing text and/or PHP instructions and outputting another stream of data; most commonly the output will be HTML. Since PHP 4, the PHP [parser](http://en.wikipedia.org/wiki/Parser) [compiles](http://en.wikipedia.org/wiki/Compiler) input to produce [bytecode](http://en.wikipedia.org/wiki/Bytecode) for processing by the [Zend Engine](http://en.wikipedia.org/wiki/Zend_Engine), giving improved performance over its [interpreter](http://en.wikipedia.org/wiki/Interpreter_%28computing%29) predecessor.

Originally designed to create dynamic Web pages, PHP now focuses mainly on [server-side scripting](http://en.wikipedia.org/wiki/Server-side_scripting), and it is similar to other server-side scripting languages that provide dynamic content from a Web server to a [client](http://en.wikipedia.org/wiki/Client_%28computing%29), such as [Microsoft](http://en.wikipedia.org/wiki/Microsoft)'s [ASP.NET](http://en.wikipedia.org/wiki/ASP.NET), [Sun Microsystems](http://en.wikipedia.org/wiki/Sun_Microsystems)' [JavaServer Pages](http://en.wikipedia.org/wiki/JavaServer_Pages), and [mod\_perl](http://en.wikipedia.org/wiki/Mod_perl). PHP has also attracted the development of many [frameworks](http://en.wikipedia.org/wiki/Software_framework) that provide building blocks and a design structure to promote [rapid application development](http://en.wikipedia.org/wiki/Rapid_application_development) (RAD).

The PHP interpreter only executes PHP code within its [delimiters](http://en.wikipedia.org/wiki/Delimiter). Anything outside its delimiters is not processed by PHP (although non-PHP text is still subject to [control structures](http://en.wikipedia.org/wiki/Control_structures) described within PHP code). The most common delimiters are <?php to open and ?> to close PHP sections. <script language="php"> and </script> delimiters are also available, as are the shortened forms <? or <?= (which is used to echo back a [string](http://en.wikipedia.org/wiki/String_%28computer_science%29) or [variable](http://en.wikipedia.org/wiki/Variable_%28programming%29)) and ?> as well as [ASP](http://en.wikipedia.org/wiki/Active_Server_Pages)-style short forms <% or <%= and %>. While short delimiters are used, they make script files less portable as support for them can be disabled in the [PHP configuration](http://wiki.php.net/rfc/shortags), and so they are discouraged. The purpose of all these delimiters is to separate PHP code from non-PHP code, including HTML.

Basic example of [object-oriented programming](http://en.wikipedia.org/wiki/Object-oriented_programming) as described above:

class Person {

public $firstName;

public $lastName;

public function \_\_construct($firstName, $lastName = '') { //Optional parameter

$this->firstName = $firstName;

$this->lastName = $lastName;

}

public function greet() {

return "Hello, my name is " . $this->firstName . " " . $this->lastName . ".";

}

public static function staticGreet($firstName, $lastName) {

return "Hello, my name is " . $firstName . " " . $lastName . ".";

}

}

$he = new Person('John', 'Smith');

$she = new Person('Sally', 'Davis');

$other = new Person('Joe');

echo $he->greet(); // prints "Hello, my name is John Smith."

echo '<br />';

echo $she->greet(); // prints "Hello, my name is Sally Davis."

echo '<br />';

echo $other->greet(); // prints "Hello, my name is Joe ."

echo '<br />';

echo Person::staticGreet('Jane', 'Doe'); // prints "Hello, my name is Jane Doe."

PHP [source code](http://en.wikipedia.org/wiki/Source_code) is [compiled](http://en.wikipedia.org/wiki/Compiler) on-the-fly to an internal format that can be executed by the PHP engine. In order to speed up execution time and not have to compile the PHP source code every time the Web page is accessed, PHP scripts can also be deployed in executable format using a [PHP compiler](http://en.wikipedia.org/wiki/PHP#Compilers).

**AJAX**

**Ajax** (also **AJAX**; an acronym for [**Asynchronous**](http://en.wikipedia.org/wiki/Asynchronous_I/O)[**JavaScript**](http://en.wikipedia.org/wiki/JavaScript) **and** [**XML**](http://en.wikipedia.org/wiki/XML)) is a group of interrelated [web development](http://en.wikipedia.org/wiki/Web_development) techniques used on the [client-side](http://en.wikipedia.org/wiki/Client-side) to create asynchronous [web applications](http://en.wikipedia.org/wiki/Web_application). With Ajax, web applications can send data to, and retrieve data from, a [server](http://en.wikipedia.org/wiki/Web_server) asynchronously (in the background) without interfering with the display and behavior of the existing page. Data is usually retrieved using the [XMLHttpRequest](http://en.wikipedia.org/wiki/XMLHttpRequest) [object](http://en.wikipedia.org/wiki/Object_%28computer_science%29). Despite the name, the use of XML is not needed ([JSON](http://en.wikipedia.org/wiki/JSON) is often used instead), and the requests do not need to be [asynchronous](http://en.wikipedia.org/wiki/Asynchrony).

Ajax is not a single technology, but a group of technologies. [HTML](http://en.wikipedia.org/wiki/HTML) and [CSS](http://en.wikipedia.org/wiki/Cascading_Style_Sheets) can be used in combination to mark up and style information. The [DOM](http://en.wikipedia.org/wiki/Document_Object_Model) is accessed with JavaScript to dynamically display, and to allow the user to interact with the information presented. JavaScript and the XMLHttpRequest object provide a method for exchanging data asynchronously between browser and server to avoid full page reloads.

The term *Ajax* has come to represent a broad group of web technologies that can be used to implement a web application that communicates with a server in the background, without interfering with the current state of the page. In the article that coined the term Ajax,[[1]](http://en.wikipedia.org/wiki/Asynchronous_Javascript_and_XML#cite_note-garrett-0) [Jesse James Garrett](http://en.wikipedia.org/wiki/Jesse_James_Garrett) explained that the following technologies are incorporated:

* [HTML](http://en.wikipedia.org/wiki/HTML) (or [XHTML](http://en.wikipedia.org/wiki/XHTML)) and [CSS](http://en.wikipedia.org/wiki/CSS) for presentation
* The [Document Object Model](http://en.wikipedia.org/wiki/Document_Object_Model) (DOM) for dynamic display of and interaction with data
* [XML](http://en.wikipedia.org/wiki/XML) for the interchange of data, and [XSLT](http://en.wikipedia.org/wiki/XSLT) for its manipulation
* The [XMLHttpRequest](http://en.wikipedia.org/wiki/XMLHttpRequest) object for asynchronous communication
* [JavaScript](http://en.wikipedia.org/wiki/JavaScript) to bring these technologies together

Since then, however, there have been a number of developments in the technologies used in an Ajax application, and the definition of the term Ajax. In particular, it has been noted that JavaScript is not the only client-side scripting language that can be used for implementing an Ajax application; other languages such as [VBScript](http://en.wikipedia.org/wiki/VBScript) are also capable of the required functionality. JavaScript is the most popular language for Ajax programming due to its inclusion in and compatibility with the majority of modern web browsers. Also, XML is not required for data interchange and therefore XSLT is not required for the manipulation of data. [JavaScript Object Notation](http://en.wikipedia.org/wiki/JSON) (JSON) is often used as an alternative format for data interchange, although other formats such as preformatted HTML or plain text can also be used.