**Practical No. 1**

**Aim:**

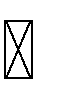
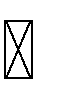
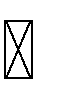
Introduction to PHP and Configure it to work with Apache Web Server.

**Theory:**

**What You Should Already Know**

Before you continue you should have a basic understanding of the following:

* HTML
* CSS

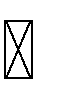
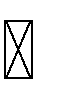
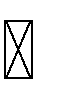
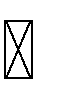


* JavaScript

If you want to study these subjects first, find the tutorials on our home page.

**What is PHP?**

* PHP is an acronym for "PHP: Hypertext Pre-processor"
* PHP is a widely-used, open-source scripting language



* PHP scripts are executed on the server
* PHP is free to download and use

**PHP is an amazing and popular language!**

It is powerful enough to be at the core of the biggest blogging system on the web (WordPress)!

It is deep enough to run large social networks!

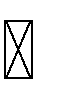
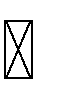
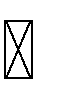
It is also easy enough to be a beginner's first server-side language!

**What is a PHP File?**

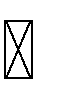
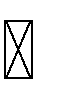
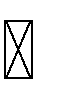
* PHP files can contain text, HTML, CSS, JavaScript, and PHP code
* PHP code is executed on the server, and the result is returned to the browser as plain HTML
* PHP files have extension ".php"

**What Can PHP Do?**

* PHP can generate dynamic page content
* PHP can create, open, read, write, delete, and close files on the server



* PHP can collect form data
* PHP can send and receive cookies
* PHP can add, delete, modify data in your database
* PHP can be used to control user-access



* PHP can encrypt data

With PHP you are not limited to output HTML. You can output images, PDF files, and even Flash movies. You can also output any text, such as XHTML and XML.

**Why PHP?**

* PHP runs on various platforms (Windows, Linux, Unix, Mac OS X, etc.)
* PHP is compatible with almost all servers used today (Apache, IIS, etc.)
* PHP supports a wide range of databases
* PHP is free. Download it from the official PHP resource: www.php.net
* PHP is easy to learn and runs efficiently on the server side

**An Introduction to Apache**

If Apache has always seemed like a black box to you, it's time to learn just what's going on behind the scenes!

*Apache is the most popular web server available.*

A web server's job is basically to accept requests from clients and send responses to those requests. A web server gets a URL, translates it to a filename (for static requests), and sends that file back over the internet from the local disk, or it translates it to a program name (for dynamic requests), executes it, and then sends the output of that program back over the internet to the requesting party. If for any reason, the web server was not able to process and complete the request, it instead returns an error message. The word, web server, can refer to the machine (computer/hardware) itself, or the software that receives requests and sends out responses.

Apache is the most popular web server (after which comes Microsoft's IIS) available. The reasons behind its popularity, to name a few, are:

1. It is free to download and install.
2. It is open source: the source code is visible to anyone and everyone, which basically enables anyone (who can rise up to the challenge) to adjust the code, optimize it, and fix errors and security holes. People can add new features and write new modules.
3. It suits all needs: Apache can be used for small websites of one or two pages, or huge websites of hundreds and thousands of pages, serving millions of regular visitors each month. It can serve both static and dynamic content.

**What is Apache?**

*Functionality that you don't need or want can easily be removed.*

The Apache HTTP server is a software (or program) that runs in the background under an appropriate operating system, which supports multi-tasking, and provides services to other applications that connect to it, such as client web browsers. It was first developed to work with Linux/Unix operating systems, but was later adapted to work under other systems, including Windows and Mac. The Apache binary running under UNIX is called *HTTPd* (short for HTTP daemon), and under win32 is called *Apache.exe*.

Installing Apache on Linux does require a bit of programming skills (though it is not too difficult). Installing it on a Windows platform is straight forward, as you can run it through a graphical user interface.

Apache's original core is fairly basic and contains a limited number of features. Its power rather comes from added functionality introduced through many modules that are written by programmers and can be installed to extend the server's capabilities. To add a new module, all you need to do is install it and restart the Apache server. Functionality that you don't need or want can easily be removed which is actually considered a good practice as it keeps the server small and light, starts faster, consumes less system resources and memory, and makes the server less prone to security holes. The Apache server also supports third party modules, some of which have been added to Apache 2 as permanent features. The Apache server very easily integrates with other open-source applications, such as PHP and MySQL, making it even more powerful than it already is.

*A web server in its simplest form is a computer with special software, and an internet connection that allows it to connect to other devices.*

Every device connected to a network has an IP address through which others connect to and communicate with it. This IP address is sort of like a regular address that you need in real life to call or visit any contact of yours. If they didn't have an address, you wouldn't know how to call or reach them. IP addresses serve the exact same purpose. If a device didn't have one, the other machines on the same network wouldn't know how to reach it.

The Apache server offers a number of services that clients might make use of. These services are offered using various protocols through different ports, and include: hypertext transfer protocol (HTTP), typically through port 80, simple mail transfer protocol (SMTP), typically through port 25, domain name service (DNS) for mapping domain names to their corresponding IP addresses, generally through port 53, and file transfer protocol (FTP) for uploading and downloading files, usually through port 21.

**How Apache Works**

Apache's main role is all about communication over networks, and it uses the TCP/IP protocol (Transmission Control Protocol/Internet Protocol which allows devices with IP addresses within the same network to communicate with one another).

*The TCP/IP protocol is a set of rules that define how clients make requests and how servers respond, and determine how data is transmitted, delivered, received, and acknowledged.*

The Apache server is set up to run through configuration files, in which directives are added to control its behaviour. In its idle state, Apache listens to the IP addresses identified in its config file (HTTPd.conf). Whenever it receives a request, it analyses the headers, applies the rules specified for it in the Config file, and takes action.

But one server can host many websites, not just one - though, to the outside world, they seem separate from one another. To achieve this, every one of those websites has to be assigned a different name, even if those all map eventually to the same machine. This is accomplished by using what is known as virtual hosts.