Web server Fundamentals

The primary function of a **web server** is to store, process and deliver web pages to clients. The communication between client and server takes place using the Hypertext Transfer Protocol **(HTTP)**. Pages delivered are most frequently HTML documents, which may include images, style sheets and scripts in addition to the text content.

Web servers are able to map the path component of a Uniform Resource Locator (**URL**) into:

- A local file system resource (for static requests)
- An internal or external program name (for dynamic requests)

Web Server Working

Web server respond to the client request in either of the following two ways:

- Sending the file to the client associated with the requested URL.
- Generating response by invoking a script and communicating with database

Web Server Architecture follows the following two approaches:

1. Concurrent Approach
2. Single-Process-Event-Driven Approach.

Concurrent Approach

Concurrent approach allows the web server to handle multiple client requests at the same time. It can be achieved by following methods:

- Multi-process
- Multi-threaded

- Hybrid method.

Multi-processing

In this a single process (parent process) initiates several single-threaded child processes and distribute incoming requests to these child processes. Each of the child processes are responsible for handling single request.

It is the responsibility of parent process to monitor the load and decide if processes should be killed or forked.

Multi-threaded

Unlike Multi-process, it creates multiple single-threaded process.

Hybrid

It is combination of above two approaches. In this approach multiple process are created and each process initiates multiple threads. Each of the threads handles one connection. Using multiple threads in single process results in less load on system resources.

- Proxy server is an intermediary server between client and the internet. Proxy servers offers the following basic functionalities:

1. Firewall and network data filtering.
2. Network connection sharing.
3. Data caching.

Proxy servers allow to hide, conceal and make your network id anonymous by hiding your IP address.

Purpose of Proxy Servers

Following are the reasons to use proxy servers:

- Monitoring and Filtering
- Improving performance
- Translation
- Accessing services anonymously
- Security

Types of Proxies

1. Forward Proxy
2. Open Proxy
3. Reverse Proxy

Search Engine refers to a huge database of internet resources such as web pages, newsgroups, programs, images etc. It helps to locate information on World Wide Web.

User can search for any information by passing query in form of keywords or phrase. It then searches for relevant information in its database and return to the user.

Search Engine Components

Generally there are three basic components of a search engine as listed below:

1. Web Crawler
2. Database
3. Search Interfaces

- ### Web crawler

  It is also known as spider or bots. It is a software component that traverses the web to gather information.

- ### Database

All the information on the web is stored in database. It consists of huge web resources.

- ## Search Interfaces

  This component is an interface between user and the database. It helps the user to search through the database.