IT8201 - Information Technology Essentials

UNIT - I

WEB ESSENTIALS

Creating a Website - Working principle of a Website - Browser fundamentals - Authoring tools - Types of servers: Application Server - Web Server - Database Server.

Creating a Website :-

A website is a collection of webpages, including multimedia content (like text, images, videos, social media buttons, etc), typically identified with a common domain name, and published on at least one web server.

Ex: www.google.com, www.amazon.com.

Webpages are special type of documents written in scripting languages like,

* HTML
* CSS
* JavaScript
* PHP, etc.

Webpages are written for web browsers. The web browsers read the web page document and display the formatted result.

A Web Server is a program that uses HTTP (Hypertext Transfer Protocol) to serve the files that form Webpages to users, in response to their requests, which are forwarded by their computer's HTTP Client.

Example: Internet Explorer, Google Chrome, Mozilla Firefox, Opera, and Safari.

* They read the web page document and display the formatted result.

Features Need to be considered while designing websites:-

* Quality web content
* Clear user-friendly navigation
* Simple and professional web design
* Webpage speed.
* Search Engine optimization
* Web compatibility.

Why do people visit web site?

1). To find the required information.

2). To complete a task, Visitors may want to buy the latest best-seller, download a s/w pgm, or participate in an online discussion about a favorite hobby.

Steps for creating Website:-

1) Web Site Creation:-

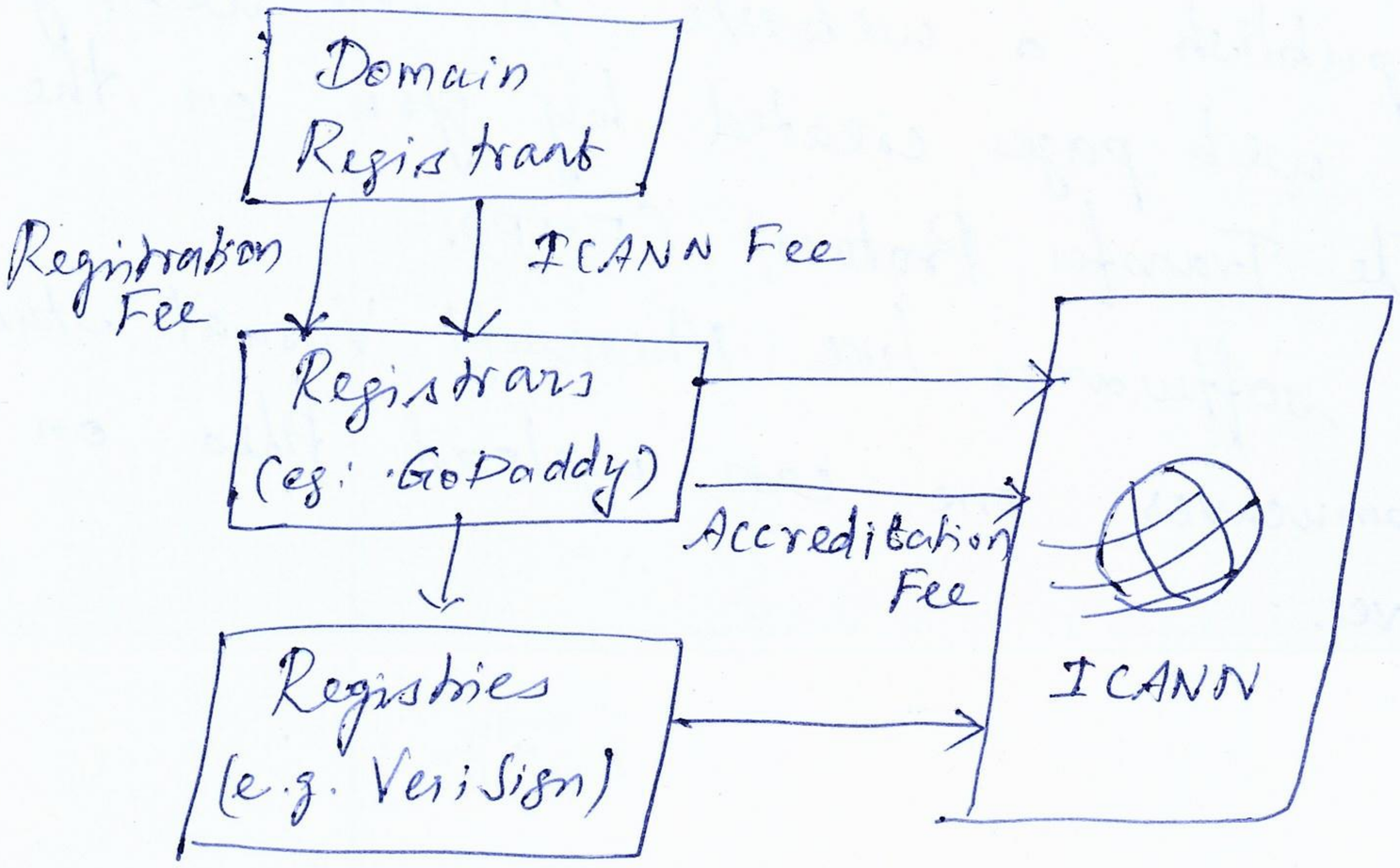
* Create a web page using suitable scripting language.
* Design the web page so that it will be easier for the people to use.
* Use different backgrounds, images, hyperlinks, button forms for creating a website.
* Create user-friendly navigatable website.

2) Choose the Web Hosting Service :-

* Web hosting company host your web pages on the web server. Thus, your website will be available to any one who knows your URL.
* Many web hosting companies offer hosting services for both personal and official purpose.
* The web host provides you with Internet access, email accounts, and provide space or storage for your website.
* Small websites (around 15-20 pages of content) don't need much more than 1 or 2 MB of server space.
* Your web hosting package may vary as the storage space increases.

3) Registering Domain Name :-

* Domain names is the alias names that point to the actual location of your website on the Web Server.
* Domain names are managed by ICANN (Internet Corporation for Assigned Names and Numbers).
* ICANN has agreements with a no. of vendors to provide domain name registeration services.



4) Planning You Website;-

While planning your website you need to make some important decisions:

Type: Select the type of your site whether it is a business site or news site or Informational site or a company site or a non-profit site or E-Commerce sites, etc.,

* Each of these sites have different focus and design strategies.

Navigation Design: Navigation means moving the site from one page to another page.

*Navigation should be in a user-friendly manner.

Content: The quality of the contents of the website plays a very important role in succes of it.

* Different websites focus on different types of content like, text, images, videos and audios, and more.

* Before designing or building web page we should have a clear strategy of the content.

5) Uploading Files;-

To publish a website on the web, you must send the web pages created by you on the Web Server ming a File Transfer Protocol (FTP).

*Using softwares like Microsoft Visual Studio, or Adobe Dreamweaves one can upload files on the Web Server.

Testing the Website;-

Testing must be performed throughout the development of the website.

& Even after creating the website, it must be tested for as web pages are present live on the web.

& Various factor for testing the website after publishing are;-

1) Multiple Browser;-

It is necessary to display the website on as many web browsers as possible to ensure that the contents of the website are consistently displayed and the work done is portable.

2) Multiple Operating System:

It is necessary to display the web site on diff. O.S.

3) Connection Speed:

Do not rely on the same connection speed. when testing your website, specially if you work in a corporate environment where the connection to the Internet usually is faster than the average users. Also test the downloading time for diff. connection speed.

4) Device Types:-

Test the website on the computers having different screen size. It is necessary to ensure that pages are displayed consistently on all screen size.

5) Links;

Use a link validation tool to ensure that all of your links connect to a live page.

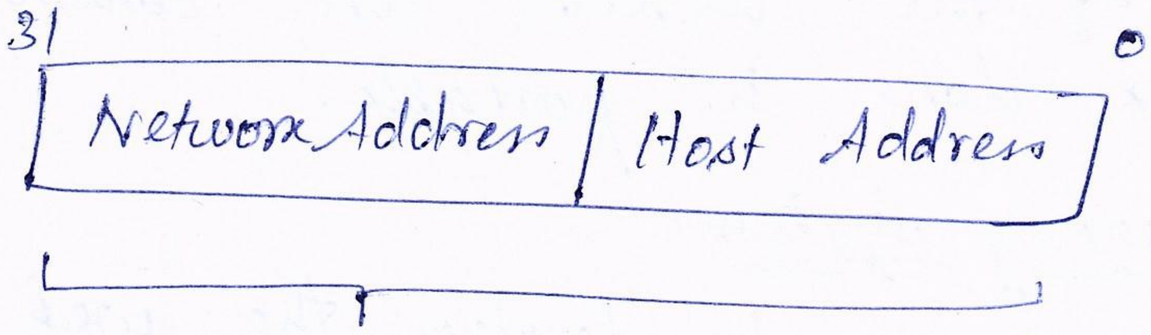
Link validation tools are built into many HTML editors and are available stand-alone tools.

8) Security Testing:

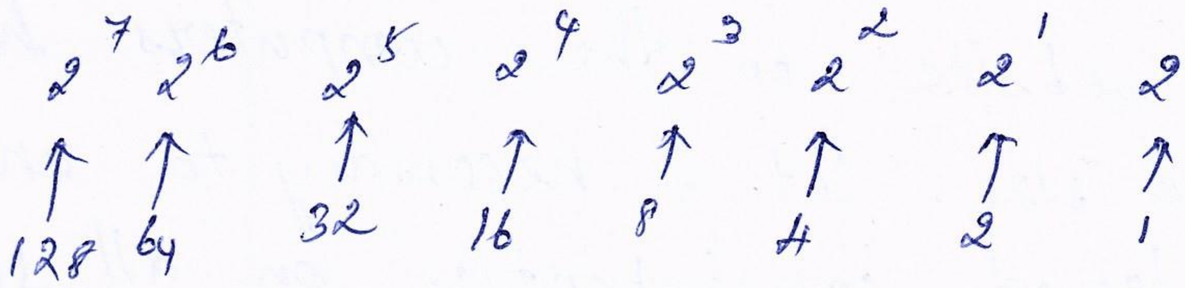
This step is necessary to test the security vulnerabilities in the application running on the website.

IP Addressing ;-

Each host on a TCP/IP network is assigned with a unique 32-bit logical address that is of two parts: the network address and the host address.



* An IP address uniquely identifies a Domain or host in the network.
* The combination network and host address is called the IP address.
* The IP address is grouped four into 8-bit separated by dot. Each bit in the octet has binary weights



* There are 5 classes based on two categories viz, A, B, C, D and E.
* Here N stands for Network address and H stands for host address.

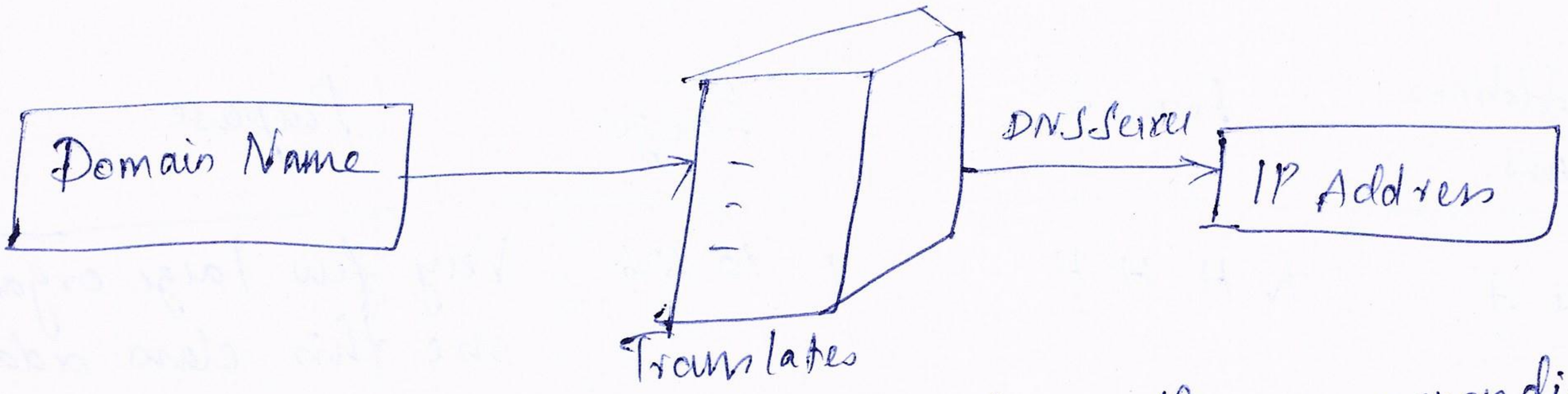
IP Address class	Format	Range	Purpose
Class A	N.H.H.H	1 to 126	Very few large organizations use this class addressing.
Class B	N.N.H.H	127 to 191	Medium size organizations use this addressing.
Class C	N.N.N.H	192 to 223	Relatively small organizations use this class.
class D	-	224 to 239	Used for multicasting
class E	-	240 to 254	Reserved for experimental purpose.

* IP address is assigned to the devices participating in the computer network.
* The IP protocol makes use of this address for communication b/n two computer.
* Using IP addresses, we can easily identified a particular node/host in the network.

Domain Name System:-

It is very difficult to remember the IP addresses, but it is simple to remember the textual information.

* Domain Names are alphabets, they are easier to remember.
* It is an Internet Service that translates the domain names into IP addresses.
* The Internet is entirely based on IP addresses.
* DNS Server acts as a translator that translates the domain name into the corresponding IP address.

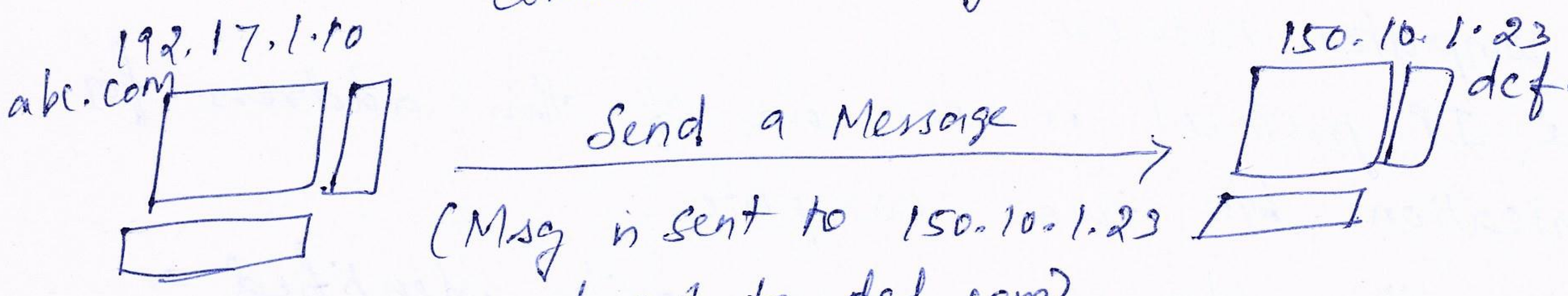


* If the DNS Server doesn't find the corresponding IP address, the request goes to another DNS server (which is located in another region) to find the IP until the IP is returned

* The names which are used to identify the computer within a network are called domain names.

* The domain name is the name which is given to a network for human reference.

Communication using domain names.



* Hence in DNS, instead of using the IP address, name of the computer is used to access it.

* Hence to uniquely identify your computer the name must be referred using DNS hierarchy.

DNS Hierarchy:

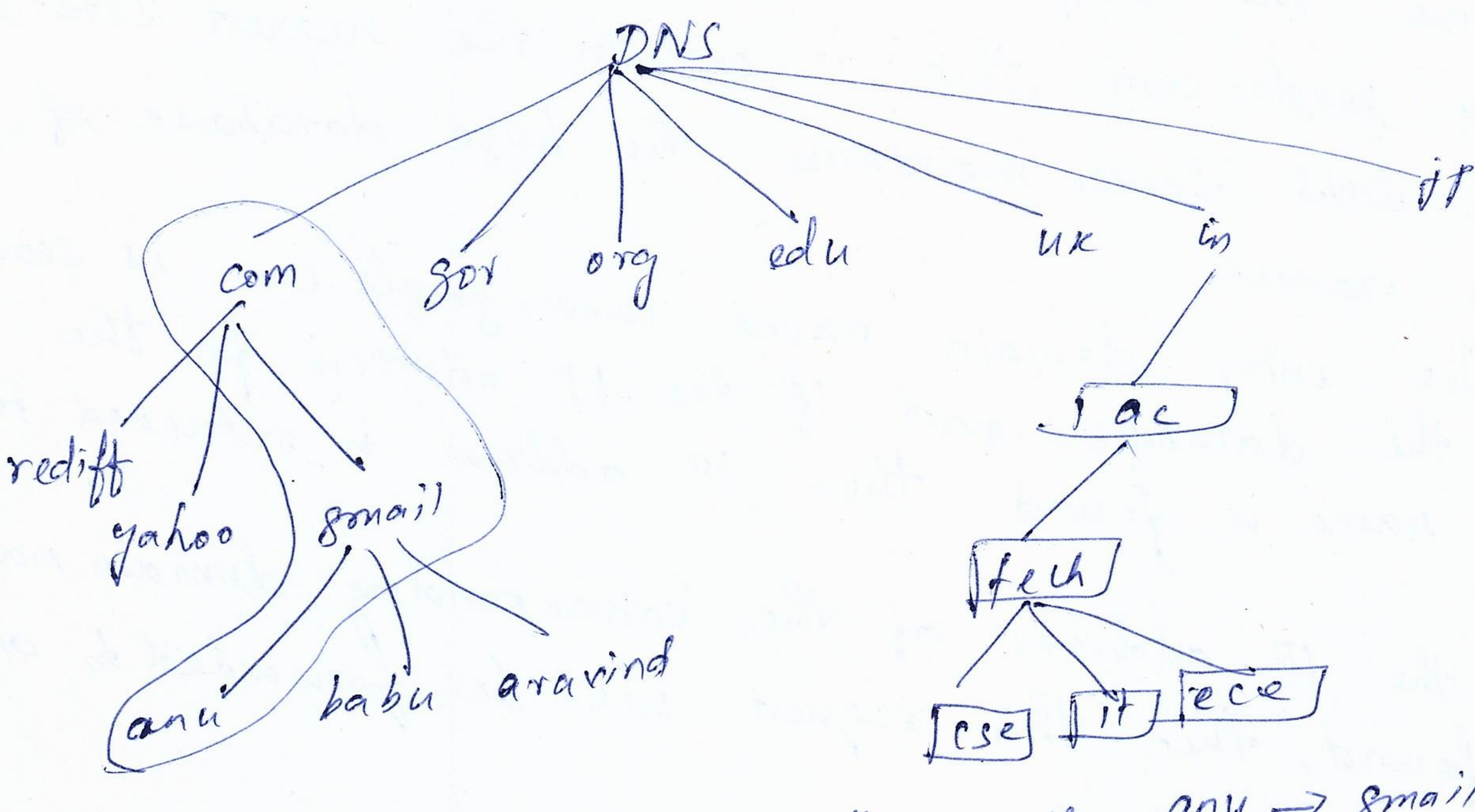
Domain names	Purpose
com	Commercial organizations
gov	Government organizations
edu	Educational institutions/ organizations
int	International organization
net	Network group
org	Non-profit organization

Domain names	Purpose
mil	Military group/organization
in	Sub domain name used to refer India
uk	" " " United kingdom
jp	" " " Japan

* The Internet logically arranges the domain names in an Hierarchical form.

* There are some top level DNS such as com, org, edu, mil, net, uk, and so on.

* Each domain is further divided into subdomains then sub-sub-domains and so on.



eg. anu @gmail.com uses the path anu → gmail → com

Similarly cse.tech.ac.in. is chosen the path cse → tech → ac → in.

* These domain names are easily traced out with the help of domain name space.

Working of DNS;-

There are two tasks that can be carried out by DNS Servers.

1) Accepting the request and then requesting the pgms to convert domain names to IP addresses.

2) Accepting and then requesting the other DNS servers to convert domain names to IP addresses.

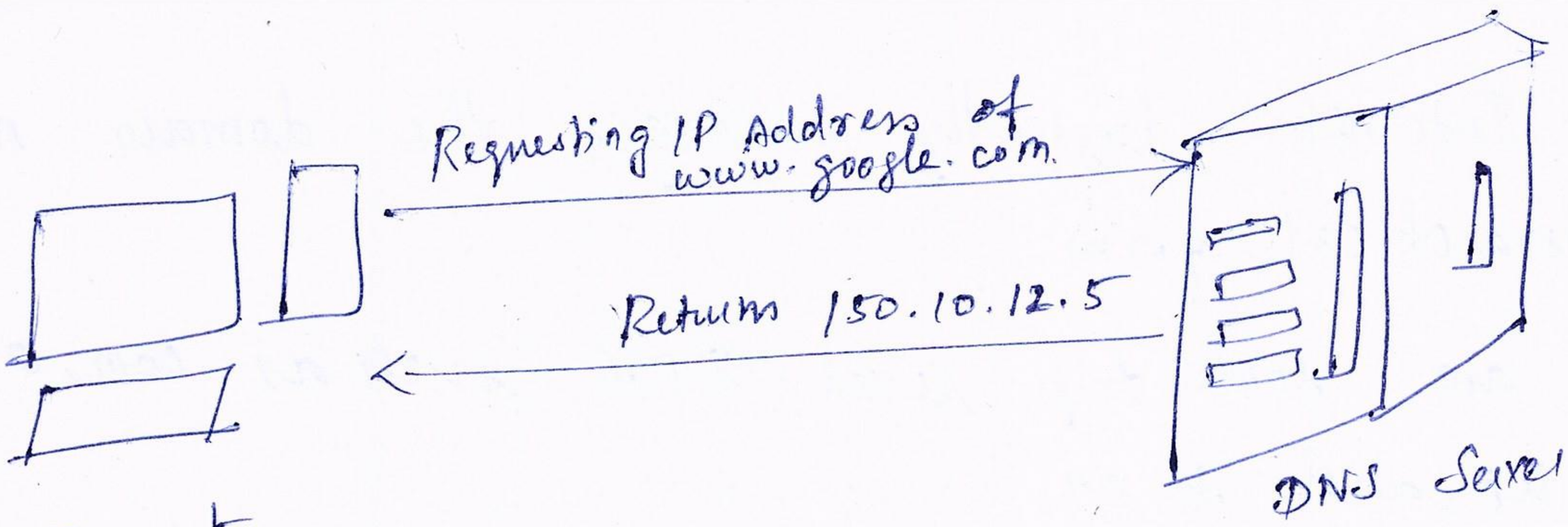


Fig. Working of DNS

Suppose the Computer is interested to know the IP address of www.google.com, then it contacts the nearest DNS server.

* the DNS Server maintains the huge database of domain names.

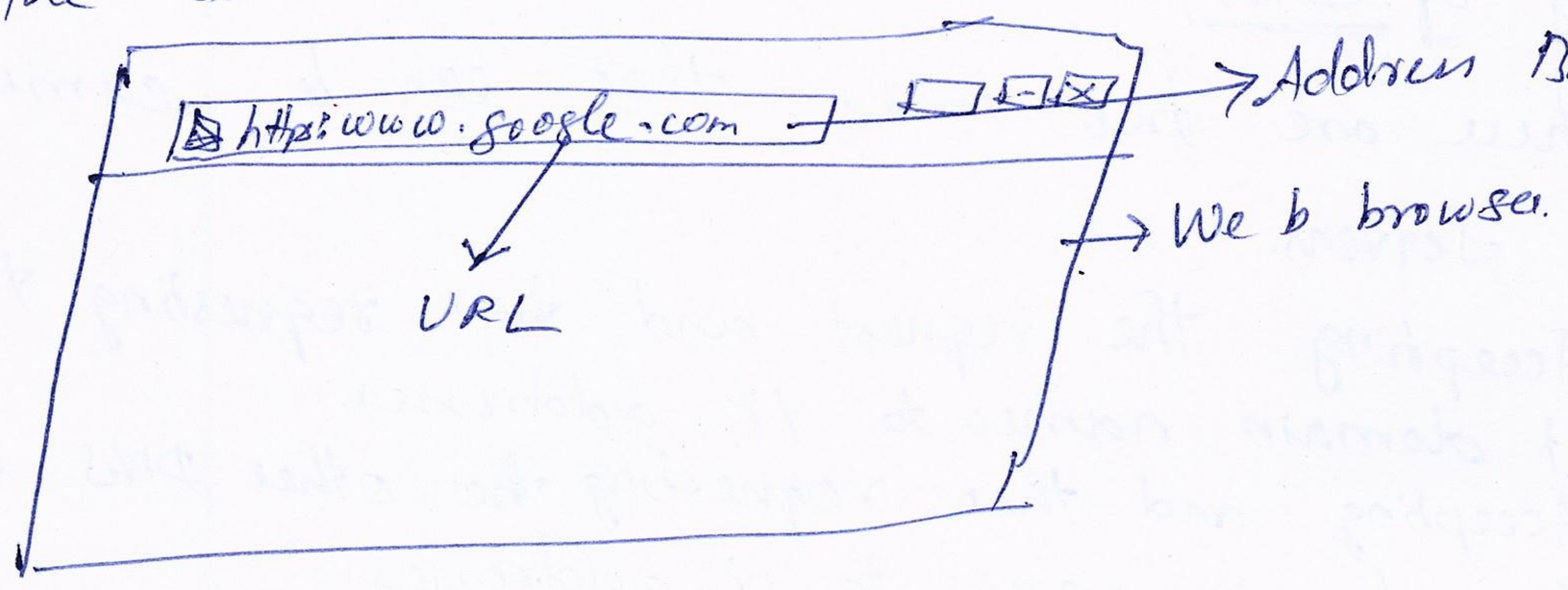
* The entry domain name www.google.com is searched within the database. and if the IP address for the domain name is found then IP address is returned to the computer.

* If the IP address of the corresponding domain name is not found, then this request will be forwarded to another DNS server.

URL :-

The Uniform Resource Locator (URL) is unique address for the file that has to be accessed over the Internet.

* If we want to access any website, we enter the URL in the address bar of the web browser.



* If we want to access www.google.com, then we must specify its URL in the address bar as shown above:

URL format:

protocol :// username (or) domain name / path / filename

Ex:

https:// www.mywebsite.co.in / photos / joy.jpeg.

* The URL may contain the name of the protocol like http, ftp, https.

* Instead of domain names, IP address can also be used:

Ex: http://192.168.0.10

* But use of IP address as URL is not preferred because human cannot remember number, very easily but they can remember names easily.

URL → 2 types

Absolute Relative.

Absolute URL:-

is a URL which directly point to a file. It exactly specifies the location of a file or directory on the Internet. Each absolute URL is unique.

Ex: http://www.mypage.com/home.jpeg.

Relative URL:-

The relative URL point to the file or directory in relation to the present directory.

Ex: http://www.mypage.com/photos/home.jpeg

Relative URL

Working Principle of a Website:-

1) Features of Web Site Design:

There are many features that need to be considered while designing the website for any purpose. Some of them are mentioned below:

(1) Quality Web Content:

People desire information in fast and reliable fashion. For buisnes websites, content should include important and specific information which is releoant to the site. These type of websites need to display high quality pictures of their products, and the highlight for client testimonials.

(2) Clear, User-friendly Navigation:

A user-friendly navigation scheme allows visitors to quickly find the information needed.

*Important links must be easy to find and given logical, simple, and include easy-to-understand labels.

*If there is a plethora of content, then a search box is suggested to make it faster to reach more specific pages within a website.

(3) Simple and Profesional Web Design:

The webpage design must be simple and profesional.

& Google website is an excellent example for simple and profesional website.

* To keep websites simple a balanced distribution of graphical contents is required.
* The use of slightly contrasting colors and clear fonts is also necessary.
* Also, needed space and breaks between the text of the web contents should be managed in order to appear good the web page.

(4) Webpage Speed:

Usually people loose their patience if the page loads slowly.

* The pages with high graphical content, audio, video takes more time to load.
* Also, if the website is accessed by many users at a same time that time also the page load slowly.
* Hence, a web designer or web designing company must take care of all the controlling factors that will maintain a desirable speed of the websites.

(5) Search Engine Optimization:

Search Engine Optimization means that the process of maximizing the no. of visitors to a particular website by ensuring that the size appears high on the list of results returned by a search engine

Ex: In Google search engine, we can easily search the required information by typing the keyword in the search bar.

* This allows the insertion of search keywords in website content, an appropriate link profile, social media signals.

(6) Web Compatibility:

A website should easily rendered or displayed on various resolutions, screen sizes, and different browsers and different mobile devices.

* This is with the designer's hand to design the website compatible so that it can be easily accessible with all the devices and in all resolutions.

2) Web Site Design Issues;-

While designing a website, the following issues are needed to be comidered:

(1) Simplicity:

Usually web designers provide lot of animations, huge amount of information, extrem visual content.

* But this makes your web page heavily loaded and it takes time to load the page since added of huge graphical content.

* This should be avoided because the website should be simple and moderate.

(2) Identity:

Web design must be based on the nature of the web application.

* It is driven by the objective of the web application and category of user using it.

* A web designer must establish identity for the web application through the design.

(3) Consistency:

The contents of the web application should be constructed consistently.

* The text formatting, font-style should be some for overall text document of the web application.

* Similarly the graphics design, color scheme and style must be identical for overall web pages of the web applications

* Interface design should be consistent modes of interactions, navigation and content display.

* Navigation mechanism must be used consistently across web application elements.

(4) Robustness:

If any failure occurs or internet facility faidures, the functionality of the web application should not be missed.

* If any function or content of the web page gets missing and damaged then the web application will fail.

(5) Navigability:

The navigation should be simple and consistent.

* The design of navigations should intuitive and predictable in nature.

* That means any novice user should be in a position to make use of navigation links without any help.

(6) Visual Appeal:

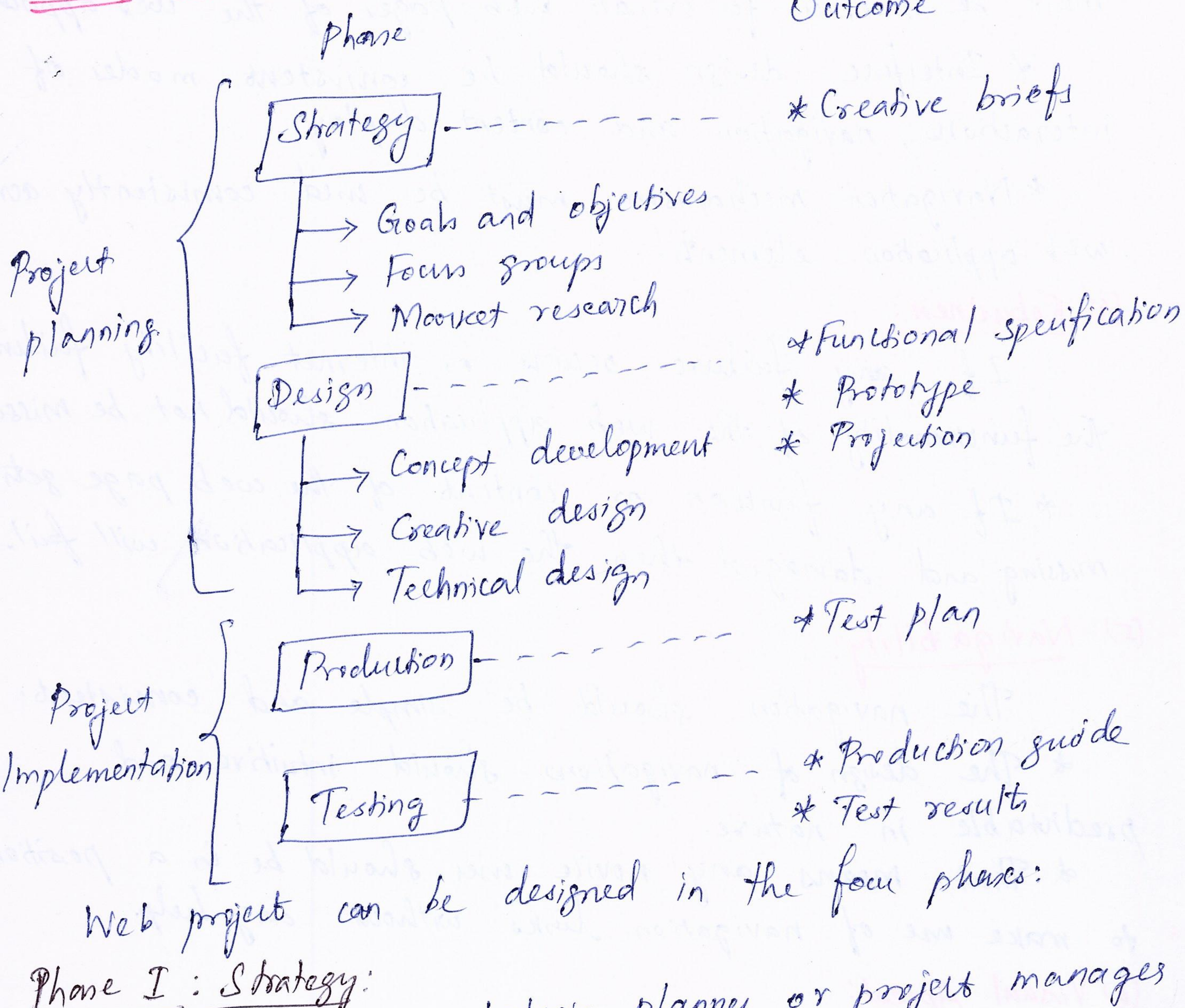
The web applications are most visual and most dynamic and aesthetic in nature.

* There are various factors that contribute to visual appeal.
  - Look & feel
  - interface layout
  - color coordination
  - Balance of text
  - Graphics and other media
  - Navigation mechanism.

(7) Compatibility:

The web application can be used in variety of environment and configurations such as different browsers, internet connection types, operating systems and various browsers.

Phases of Website Development:-



Web project can be designed in the four phases:

Phase I : Strategy:

In this phase, a strategic planner or project manages along with the client determines the objective of the site.

* As an output of this phase creative briefs are prepared
* The creative brief is a kind of document in which project objectives, requirements and key insights are clearly mentioned.

* Every team member makes use of creative brief as a guideline for the development.

Phase II : Design:

In this phase, actual design of the website is done with the help of creative and technical team members.

* The front end is designed by the creative team in which user interface and interactions are designed.
* the back end is designed by the technical team which is responsible for designing the database architecture.
* As an outcome of this phase functional and technical specifications, site architecture are prepared.

Phase III : Production

During this phase, actual site is built using the source code.

* Functionalities and features of the website are closely examined.
* If the client demands for a change in any functionality then a change order is issued.
* At the end of this phase a production guide is prepared.

Phase IV : Testing

At this phase, all the functionalities and features of the website are tested, bugs are identified and resolved before launching the website.

* The QA manager develops the test plan.
* The test suit mentioned in it used to test the product thoroughly.

Browser Fundamentals:-

Web browser is a kind of software which is basically used to use resources on the web.

* When user wants some web document then he makes the request for it using the web browser.
* The browsers are the programs that are running on the client's machines.
* The request then gets served by the server and the requested page is then returned to the client.
* It is getting displayed to the client on web browser.
* The web browsers can browse the information on the server and hence is the name.
* Various web browsers are.

Browser	Vendor
Internet Explorer	Microsoft
Google Chrome	Google
Mozilla Firefox	Mozilla
Netscape Navigator	Netscape Communications Corp
Opera	Opera Software
Safari	Apple

* Web browser supports variety of protocols but the most commonly used protocol is HTTP (Hypertext Transfer Protocol). This protocol is typically used when the browser communicates with the server.

1) Functions defined by Web Browser;-

Various functions of web browser are -

i) Reformat the URL and send a valid HTTP request

ii) When the user gives the address of particular web site it is in the form of domain name. The web browser converts the DNS to corresponding IP address.

iii) The web browser establishes a TCP connection with the web browser while procesing the user's request.

iv) The web browsers send the HTTP request to the web server.

v) The web server processes the HTTP request sent by the web browser and ~~the web browser~~ returns the desired web page to the client machine. The web browser on the client's machine displays this web page in the appropriate format.

2) Web Browser Architecture;-

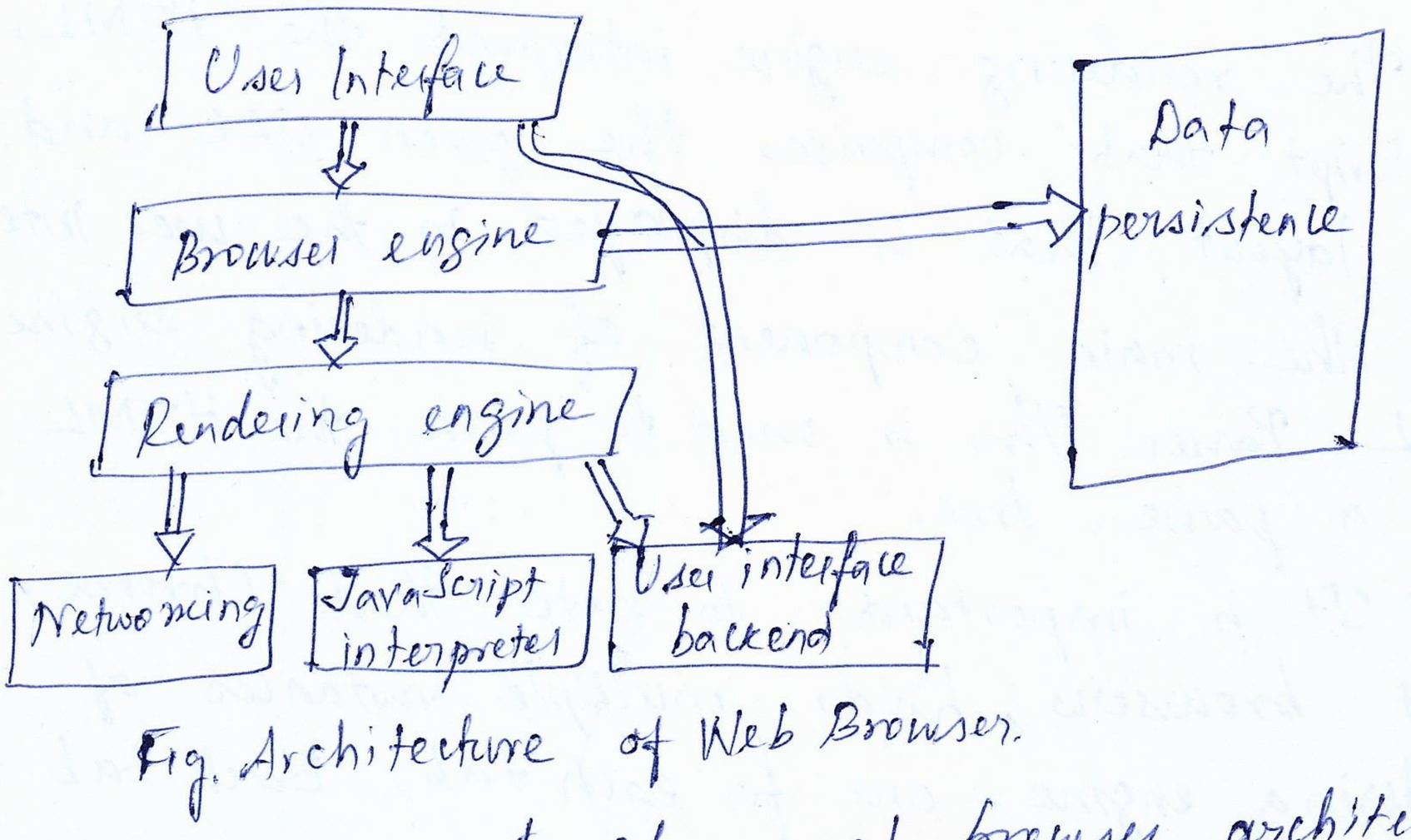


Fig. Architecture of Web Browser.

The main components of a web browser architecture are as follows:

1) User Interface:

* User interacts the browser engine by using the user interface.
* The user interface contains: Address bar, back/forward button, book mark menu and so on.
* The page requested by the user is displayed in this user interface.

2) Browser Engine:

* It contains the mechanism by which the input of user interface is communicated to the Rendering Engine.
* The browser engine is responsible for querying the rendering engine according to various user interfaces.

3) Rendering Engine:

* It is responsible for displaying the requested contents on the screen.
* The rendering engine interprets the HTML, XML and JavaScript that comprises the given URL and generates the layout that is displayed in the user interface.
* The main component of rendering engine is HTML Parser. This is used to parse the HTML markup into a parse tree.
* It is important to note that Chrome, unlike most browsers, holds multiple instances of the rendering engine - one for each tab, Each tab is a separate process.
* Different browsers use different rendering engines.

Browser	Rendering Engine
Internet Explorer	Trident
Firefox	Gecko
Safari	Webkit
Chrome	Webkit
Opera	Webkit

4) Networking:

* The functionality of networking is to retrieve the URL ming common internet protocols such as HTTP and FTP.

* The networking is responsible to handle the internet communication and security issues.

* The network component may use the cache for retrieved documents. This feature in useful for increasing the response time.

5) JavaScript Interpreter:

* The interpreter executes the JavaScript code which is embedded in a web page.

6) User Interface Backend:

* This is used to draw the widgets like combo boxes and windows.

7) Data Persistence:

* This is a small database created on local drives of the computer where the browser is installed.

* The data storage manages user data such as book marks, cookies, and preferences.

3) Working of Web Browser;-

Step 1:

* First the user types the website address (URL) for demanding the desired web page.

Ex: http://www.irctc.co.in/reserv.aspx.

and then the home page of thin website appears on the screen.

* The web address is divided into three parts:

(i) The first part is the protocol - The http is a hypertext transfer protocol which tells the web browser that user want to communicate with web server on port 80. Port 80 is reserved for the communication between web server and web browser.

(ii) The second part is the server address. This tells the web browser which server it needs to contact in order to retrieve the information you are looking for. The web browser communicates with a Domain Name Server (DNS) to find out the IP Address for the website. All communications on the Internet me IP Addresses for communications. Use of the numeric address for accessing the web

(iii) The third part of this address denotes the resource the user wants to see.

Step 2:

The web. browser, on locating the IP Address which it requires, sends a request directly to the web server, using port 80, asking for the file reserv. aspx.

Step 3:

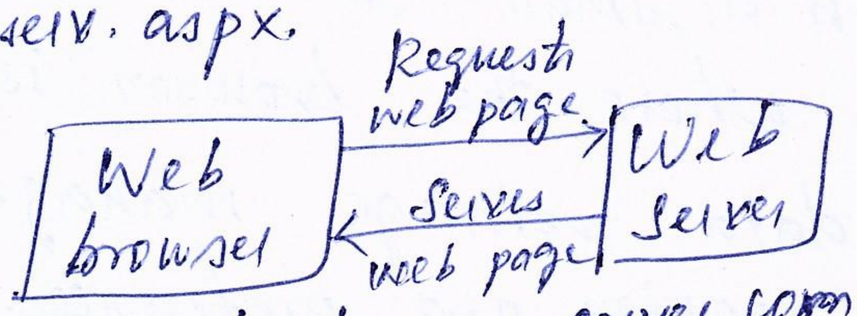


Fig. Web browser server communication.

* The web server sends the html for this page back to the user's web browser.

* If there are additional files needed in order to show the web page (like images, for example), the web browser makes additional requests for each of these.

Basic Features of Web Browser:-

1). Web browsers should be able to look at the web pages throughout Internet or connect to various sites to access information.

2). The web browser must enable you to follow the hyperlinks on a Web and type in a URL for it to follow.

3). One of the main feature of a browser is to search the information on the current page as well as search the WWW itself.

4). Browsers gives you the facility to save a Web page in a file on your computer, print a Web page and send the contents of a Web page e-mail to others on the Internet.

5). Web browser should be able to handle text, images of the World Wide Web, and hyperlinks to digital video, or other types of information.

6). Web browsers interact not just with the Web, but also with your computer's operating system and with other programs, called plug-ins, that gives the browser enhanced features.

7). Another important feature to insist on in your computer is called caching. A browser that caches keeps of the pages you visit so that it does not have to download them again if you want to return to them. Reloading a page from the cache is much quicker than downloading it again from the original source.

8). The most important feature is ease of use. While all web browsers are fundamentally simple to use, it makes user comfortable.

4) Comparison among Popular Browsers;-

S.No.	Features	Firefox	Chrome	Internet Explorer
1.	Fast JavaScript engine for better performance	Yes	Yes	Yes
2.	Notification when add-ons slow browser performance	No	No	Yes
3.	Simple browsing controls for a better browsing experience	Yes	Yes	Yes
4.	Combined search and Address bar	No	Yes	Yes
5.	Protection from malicious cross-site scripting attacks	Yes	Yes	Yes
6.	Automatic recovery of crashed tabs	Yes	Yes	Yes
7.	Compatibility mode to view websites designed for older browsers	No	No	Yes
8.	Developer tools built-in to the browser	No	Yes	Yes
9.	Reopen accidentally closed tabs	No	Yes	Yes
10.	Best protection against phishingattacks	Yes	No	Yes
11.	Different Operating System	Windows, Linux, Mac	Windows, Linux, Mac	Windows, Mac

5) HTTP Protocol;-

Hyper Text Transfer Protocol (HTTP) takes part in web browser and web server communication. Hence it is called a communication protocol.

* The basic feature of HTTP protocol is that it follows the ~~basic~~ request response model.

* The client makes a request for desired web page by giving the URL in the address bar.
* This request is submitted to the web server and then web server gives the response to the web browser by returning the required web page.

1) HTTP Request Message Structure:

The basic structure of request message is given by following general form:

<Start line>
<Header fields>
<Blank line>
<Message Body>

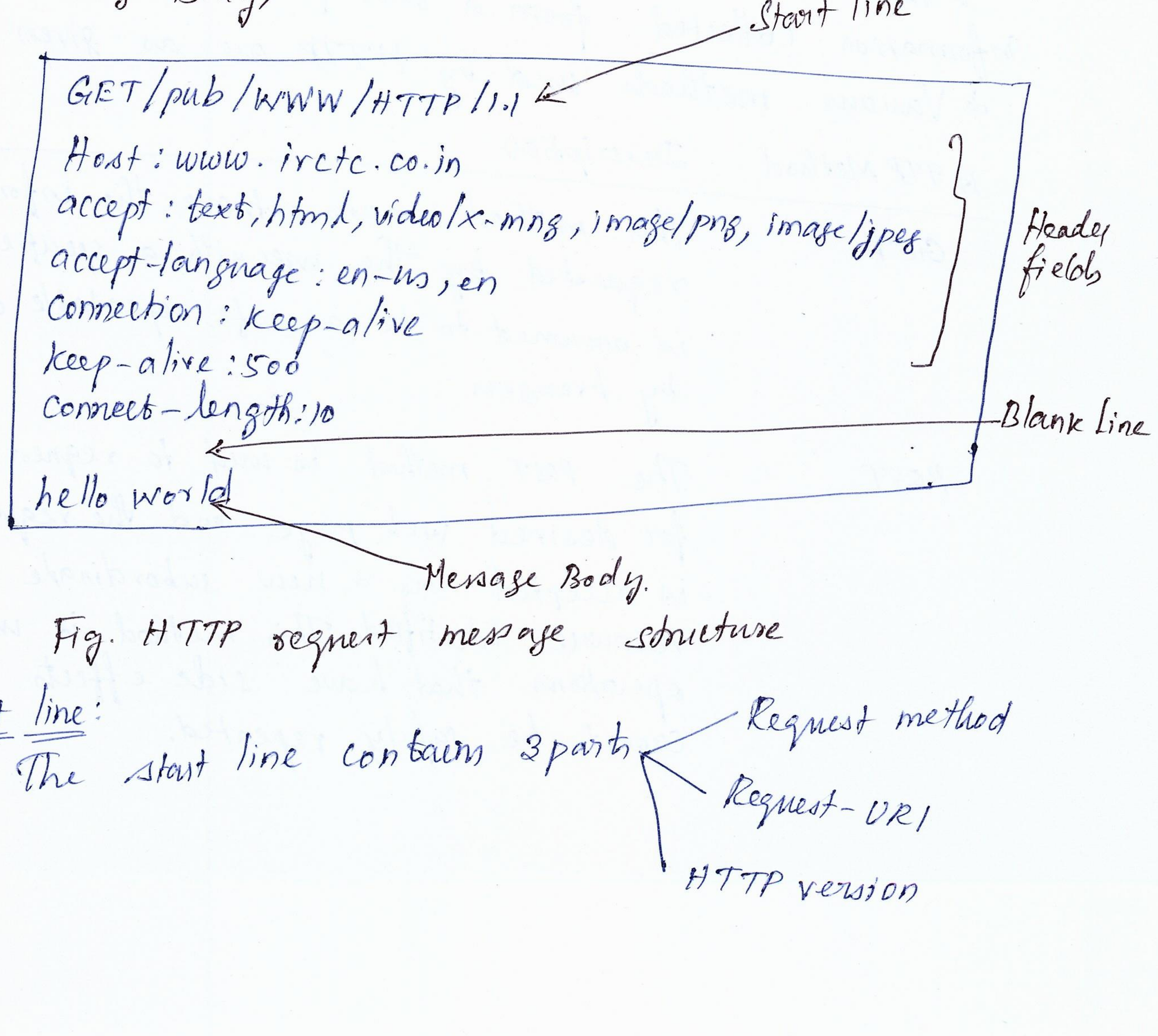


Fig. HTTP request message structure

Start line:

The start line contains 3 parts
- Request method
- Request-URI
- HTTP version

Request method:

The method defines the CONNECT method which is used during the web browser and server communication.

* It is always written in upper case letter.
* The primary method in HTTP is GET.
* The GET method is used when -
  (1) You type a URL in address bar
  (2) When you click on some hyperlink which is present in the document
  (3) When browser download images for display within a HTML document.

* There is another method POST - used to send an information collected from a user form.
* Various methods used by HTTP are as given in Table.

HTTP Method	Description
GET	This method means retrieve the information requested by the user with a specified URI and is assumed to be a safe, repeatable operation by browsers.
POST	The POST method is used to request the server for desired web page and the request made is accepted as a new subordinate of the resource identified. This method is used for operations that have side effects and cannot be safely repeated.

HTTP Method	Description
HEAD	The HEAD method is identical to GET. The only difference is that the server should not return a message-body in the response. The meta-information contained in the HTTP headers in response to a HEAD request should be similar to the information sent in response to a GET request.
OPTION	This method supports for the specified URL. It can be used to check the functionality of a web server by requesting '*' instead of a specific resource.
PUT	This method uploads a representation of the specified resource.
DELETE	This method is used to delete the specified resource
TRACE	When request is made using this method, the server echoes back the received request so that a client can see what intermediate servers are adding or changing in the request.

Request URI:

The Uniform Resource Identifier (URI) is a string used to identify the names or resources on the Internet.

* The URI is a combination of URL and URN.
* The URL stands for Uniform Resource Locator and URN stands for Uniform Resource Name.
* The web address denotes the URL and specific name of the place or a person or item denotes the URN.

Every URI consists of two parts; the part before colon denotes the scheme and the part after colon depends upon the scheme.

* The URIs are case insensitive but generally written in lower case.

* If the URI is written in the form of http: then it is both an URI and URL but there are some other URI which can also be used as URL. For example

URL	Intended Server
http://ftp.mypage.com/index.txt	File can be located on FTP Server
telnet://mypage.org	Telnet Server
mailto:myself@mypage.org	Mail box
http://www.mypage.com	Web Server

HTTP Version:

The first HTTP version was HTTP/0.9 but the official version of HTTP was HTTP/1.1

Header Fields and message body:

The host header field is associated with the http request

* The header fields are in the form of field name and field value.

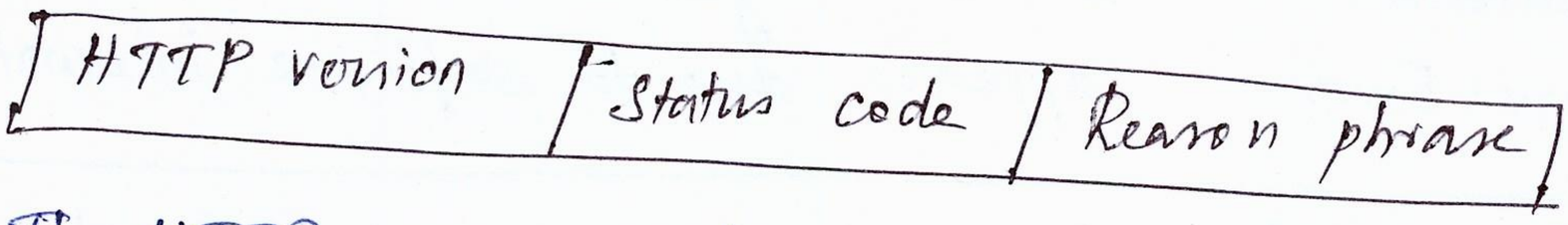
2) HTTP Response Message Structure:-

The structure of response message is similar to the request message structure. It is in the form of:

<Status line>
<Header fields>
<Blank Line>
<Message Body>

Status line:

Status line is similar to the start line in the request message. It consist of three fields.

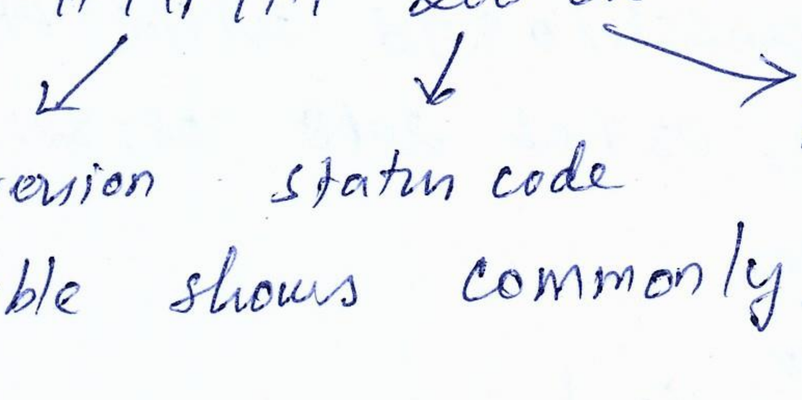


* The HTTP version denotes the HTTP version such as HTTP/1.1.

* The status code is a numeric code indicating the type of response.

* The reason phrase is in the text string form and presents the information about the status code

For example:



* Following table shows commonly used status codes.

Status code	Reason phrase	Description
200	OK	This is a standard response for successful request.
201	Created	It shows that the request is fulfilled and a new resource is being created.
202	Accepted	When the request is accepted for processing but is not processed yet is denoted by this code
301	Moved permanently	The URI for requested resource is moved at some other location
401	Unauthorized	The requested resource is protected by some password and the user has not provided any password
403	Forbidden	The requested resource is present on the server but the server is not able to respond it.

404	Not Found	The requested resource is not present currently but may be available in future
500	Internal Server Error	It is a generic error message that appears due to software internal failure.

* The header field in response message is similar to that of a request message. The message body consists of respome message.

For example,

```
HTTP/1.1  200 OK
Date: Fri, 1 Jan 2018  08:10:01 GMT
Server: Apache/2.0.50 (Unix) mod_perl/1.99_10 Perl/v5.8.4,
mod_ssl/2,0.50 OpenSSL/0.9.7d DAV/2 · PHP/4.3.8
Last-Modified: Mon, 23 Feb 2018  08:32:41 GMT
Accept-Ranges: bytes
Content-Length: 2010
Content-Type :text/html
<!DOCTYPE HTML PUBLIC "-//W3C// DTD HTML 4.01
Tramitional// EN">
<html>...</html>
```

The respome header fields are enlisted in the table:

Header field	Desciption.
Date	It represents the date and time at which the respome is generated.
Server	The name of the server which is responding
Last-Modified	The date and time at which the respome is last modified.
Accept-ranges	It specifies the unit which is med by the client to accept the range regnest.

3) Cache Control;-

More times the response header fields are used in conjunction with cache control.

* Cache is used as a repository.
* Use of cache improves the system performance.
* Many web browser stores web pages viewed by the client in the cache memory.
* For instance, client reads a daily Newspaper on his PC then caching the corresponding web address or web pages will quicely display the web page.

4) Features of HTTP Protocol;-

(1) It is a communication protocol used between web browser and web server.

(2) This protocol is based on request-response messaging. That means client makes the request of desired webpage and then the server responds it by sending the requested resource.

(3) It is a stateless protocol. That mean, HTTP protocol can not remember the previous user's information nor it remembers the no. of times the user has visited particular website.

(4) The request-response message consists of plain text in fairly readable form.

(5) The HTTP protocol has a cache control. Most of the web browsers automatically store the recently visited web pages. This is very useful feature because if the user requests the same web page that has been visited already then it can be displayed from the cache memory instead of requesting the web server and bringing it from there.

Authoring Tools:-

An e-learning content authoring tool is a software package which developers use to create and package e-learning content deliverable to end users.

* The multimedia authoring tools provide the capability for creating a complete multimedia presentation, including interactive user control.

* Some examples are,
  1. Macromedia Flash
  2. Macromedia Director
  3. Author Wave
  4. Quest
  5. Adobe Captivate
  6. Elucidat

* Authoring software provides an integrated environment for combining the content and functions of a project.

* It enables the developer to create, edit, and import data.

* In multimedia authoring systems, multimedia elements and events are considered as object.

* Each object is assigned properties and modifiers. On receiving messages, the objects perform tasks depending on properties and modifiers.

Features of Authoring Tools:-

(1) Programming Features:

*Authoring tools offer the programming using high level languages or support for scripting environments.

* The tools that offer the pgming features are Macromedia Flash, HyperCard, MetaCard and ToolBook.

* Some authoring tools offer direct importing of pore formatted text, including facilities, complex text search mechanisms and hyper linkage tools.

* Visual authoring tools such as Authorware and IconAuthor are suitable for slide shows and presentations.

(2) Interactivity Features:

* The interactivity features allow the user to have control over flow of information

* Using the interactivity features the contents are well organized by the user.

* The conditional branching support the complex programming logic, subroutines, event tracking and message passing among objects and elements.

(3) Editing and Organizing Features:

* The elements of multimedia - image, animation, text, digital audio and MIDI music and video clips - need to be created, edited, and converted to standard file formats and the specialized applications provide these capabilities.

* Editing tools for these elements, particularly text and still images are often included in an authoring tool.

* Some authoring tools provide a visual flowcharting system or overview facility for illustrating your project's structure at a macro level.

* Story boards or navigation diagrams too can help organize a project.

(4) Delivery Features:

* Delivering your project may require building a run-time version of the project using the multimedia authoring software.

* A run-time version allows you project to play back without requiring the full authoring Multimedia Systems (MMS) software and all its tools and editors. Many times the run time version does not allow user to access or change the contents, structure and programming of the project.

(5) Cross Platform Features:

* By this feature, it is possible to transfer the contents across the platform easily.

* The run time players are available for providing the compatibility to the authoring tools to work on other platform.

Examples of Authoring Tools:-

1) Macromedia Flash:

Adoble Flash Player (formerly Macromedia Flash Player) is a multimedia platform which has become the standard for implementing animation and interactivity into web pages to create ads, integrate video into websites.

2) HyperCard:

It is a hypermedia program created for Macintosh computer.

* It combines database abilities with a graphical, flexible, user-modifiable interface.

* HyperCard also features HyperTalk, a programming language for manipulating data and the user interface.

3) FrontPage:

It is a Web site administration tool from Microsoft for the Microsoft Windows.

* Frontpage consists of a Split View option to allow the user to code in Code View and preview in Design View without the hassle of switching from the Design and Code View tabs for each review.

* Interactive buttons give users a new easy way to create Web graphics for navigation and links, eliminating the need for a complicated image-editing package.

4) Dreamweaver:

Dreamweaver is a web authoring tool rather than a multimedia authoring tool.

* It supports a wide range of multimedia file types.

* These include graphics formats such as JPEG, GIF and PNG, as well as compiled Flash files (SWF).

* Support exists for embedding other media such as audio and video within HTML or script.

* A range of interactive elements are pre-scripted as behaviors, including some that can be used for multimedia and interactivity.

* An extensive range of languages including HTML, XML, ASP, PHP, JSP, JavaScript and VBScript are supported by Dreamweaver.

5) NetObjects Fusion:

NetObjects Fusion is a web authoring tool that is the solution for small business websites, from planning, building and managing your site to promoting and growing online business quickly and effectively.

* One can drag images, text and other objects anywhere on the page and simply drop them in.
* This is the first pgm to remove the tedious hand coding from creating pixel-precise page layouts in HTML.

Types of Servers:-

A server is a computer or a device on a network that manages network resources.

* Servers are used for a multitude of reason. For data collection and transmission, for hosting websites and other web client applications such as video games, and streaming.

1) Application Server:

An application server is a server program in a computer in a distributed network that provides the business logic for an application program.

* It basically provides middleware services for security and state maintenance.

The application server is frequently viewed as part of a three-tier application, consisting of a Graphical User Interface (GUI) server, an application (business logic) server and a transaction server.

1) A first-tier, front-end, Web browser-based graphical user interface, usually at a personal computer or workstation.
2) A middle-tier business logic application or set of applications, possibly on a local area network or intranet server.
3) A third-tier, back-end, database and transaction server, sometimes on a mainframe or large server.

The Examples of Application Servers are:

* JBoss: Open-source server from JBoss community.
* Glassfish: Provided by Sun Microsystem. Now acquired by Oracle.
* Weblogic: Provided by Oracle. It more secured.
* Wepsphere: Provided by IBM.

2) Web Server:

Web server is a program that uses HTTP to serve files that create web pages to users in response to their requests, which are forwarded by their computers HTTP connection.

* Always a web server is connected to the internet. Every Web server that connects to the Internet will be provided with a unique address which was arranged with a series of four numbers between 0 and 255 separated by periods.
* Popularly used web servers are Apache and IIS from Microsoft.

Functions of a web server:-

1) The web servers accept the request from the web browsers.
2) The user request is processed by the web server.
3) The web servers respond to the users by providing the services which they demand over the web browsers.
4) The web servers serve the web based applicabom.
5) The DNS translate the domain names into the IP addres.
6) The servers verify given addres exists, find necessary files, run appropriate scripts exchange cookies if necessary and returns back to the browser.
7) Some servers actually participate in session handling techniques.

1) **Apache:-**

It is an excellent server became of its two important features: Reliability and Efficiency.

* It is more popular and is an open source software.
* Apache web server is best suitable for UNIX systems but it can be used on Windows box.
* The apache web server can be configured as per the requirements ming the file **httpd.conf**. This file is present in the Apache software package.

2) **IIS:-**

The Internet Information Services or Internet Information Server is a kind of web server provided by Microsoft. This server is most popular on Windows platform.

Difference b/n Apache and IIS Servers

Apache Web Server	IIS Web Server
Apache web server is useful on both Unix and Windows platform	IIS web server is used only on Windows platform.
It is an open source product	It is a vendor specific product and can be used on windows products only.
This server can be controlled by editing the configuration file httpd.conf.	For IIS server, the behaviour is controlled by modifying the window based management programs called IIS snap-in. We can access IIS snap-in through the Control-Panel → Administrative Tools.

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2) Database Server;-

The term database server may refer to both hardware and software used to run a database, according to the ~~cot~~ context.

* As software, a database server, is the back-end portion of a database application, following the traditional client-server model. This back-end portion is sometimes called the instance.

* It may also refer to the physical computer used to host the database. This is a dedicated high-end computer that hosts the database.

* When considering databases in the client-server model, the database server may be the back-end of the database application, or it may be the hardware computer that hosts the instance. Sometimes, it may even refer to the combination of both hardware and software.

* The database server holds the Database Management System (DBMS) and the databases. Upon requests from the client machines, it searches the database for selected records and passes them back over the n/w.

* A database server is useful for organizations that have a lot of data to deal with on a regular bais. If you have client-server architecture where the clients need process data too frequently, it is better to work with a database server.

* All database functions are controlled by the database server. Any type of computer can be used as database server. It may be micro computer, minicomputer or mainframe computer. In large organization networks, the mainframe computers are med as server.

* The Database server manages the recovery security services of the DBMS.

* It provides concurrent access control. It provides better security and server hides the DBMS from clients. It provides the multi-user environment. Several users can access the database simultaneously. All the data is stored on the the data server therefore, the DBA can easily create the backup of the database.

& Examples of proprietary database servers include Oracle, DB2, Informix, and Mirosoft SQL Server. †

& Example of free software database server is PostgreSQL.

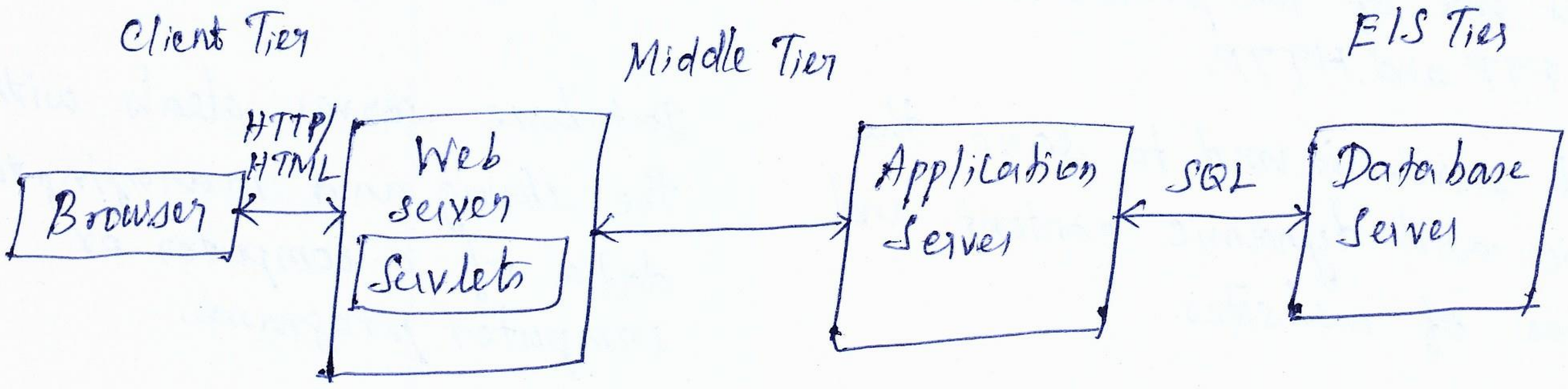

Fig. Server Architecture.

Application Server	Web Server
A server that exposes business logic to client applications through various protocols including HTTP	A server that handles HTTP protocol.
Application server is used to serve web based applications and enterprise applications (i.e, servlets, JSP, and EJB, etc). Application servers may contain a web server internally.	Web Server is used to serve web based applications. (i.e, servlets and JSP)
To deliver various applications to another device, it allows everyone in the network to run software off of the same machine.	Keeping HTML, PHP, ASP, etc files available for the web browsers to view when a user accesses the site on the web, handles HTTP requests from clients.
It makes use of distributed transaction and EJB's	It makes use of Servlets and JSP
Resource utilization is high	Resource utilization is low.

Web Server	Database Server
Web server makes use of the languages like PHP, ASP, JSP, It makes use of the protocols such as FTP and HTTP.	The database server has its own specific program language or query language.
Web server is used to save the static and dynamic content and pages of websites.	Database server deals with the storing and managing the data of a computer or computer program.
Web server only perfoms web based services.	Database server can manage the web based, enterprise based or buisiness based services at the same time.
Apache HTTP server, Microsoft Internet Information Services (IIS), Google Web Server (GWS) and Sun Java System Web Server are examples of web server.	Oracle, SAP, MySQL, and DB2 are some common examples of database server.