



Chapter # 1

Internet & World Wide Web

Dr. Shaukat Ali
Department of Computer Science
University of Peshawar

Internet.

- Internet is a network of the networks.
- It is a global network of computers.
- Internet is a collection of millions of computers around the world that are all connected to one another.
- These computers are connected through different telecommunication links like:
 - ❖ Phone Lines.
 - ❖ Fiber Optics Lines.
 - ❖ Satellite and Wireless Connections.
- A computer connected to the internet will either act as a host or server or both.
- These computers uses a common protocol called TCP/IP for communication.



Internet.

- No government or organization is the owner of Internet.
- Many people, organizations, universities and research agencies participates to run and the development of the Internet.
- Different organization sets standards for the Internet .i.e. IETF, ISO, IEEE etc.



Uses of Internet.

- To access information, news, research and education material.
- To conduct business.
- To access sources of entertainment such as online games, magazines etc.
- To meet and talk with people around the world in discussion groups or chat rooms.
- To access other computers and exchange files.
- To send and receive E-mail messages.
- To shop for goods and services.



History of Internet.

- The work on Internet was started during cold war of Russia and America.

❖ ARPANET:

- In 1957, during the Cold War, Russia launched Sputnik satellite and America developed a network known as ARPANET.
- ARPANET was developed by ARPA.
- ARPA worked on project to send information to armed forces at long distance.
- Different organization and universities were involved in this research.



History of Internet.

❖ Paul Baran:

- In 1964, Paul Baran published a paper on Distributed Communication Networks.
- It was a theoretical idea for data transfer.
- It included:
 - Decentralization of data storage.
 - Data packets as unit of data transfer.
 - Routes for data transfer.

❖ NCP Protocol:

- Protocol is a collection of rules that makes the communication possible and efficient.
- In 1970s, Network Control Protocol was developed.
- It was the first standard protocol for data transfer.



History of Internet.

❖ DARPA:

- Defense Advanced Research Project Agency was a new name for ARPA.
- DARPA started work to share information not only on single network but also among different and scattered networks.

❖ TCP/IP:

- TCP/IP was developed by Stanford Research Institute.
- It was designed to share and transfer data among different networks.



History of Internet.

❖ BITNET and CSNET:

- BITNET (Because It's Time Network) and CSNET (Computer Science Network) were established for non-military persons.
- These networks were used for academic and research purposes.
- In these network, IBM computers and other universities computer were connected together.

❖ World Wide Network:

- Different universities and research institutions started work on a global network (Internet).
- In 1986, NSFNet (National Science Foundation Network) was developed. It connected academic research institutions of different countries together.



History of Internet.

❖ Internet:

- Internet is now the largest network in the world.
- Millions of computers are connected together through different mediums.
- Any computer with a modem and telephone line can become a part of the Internet.



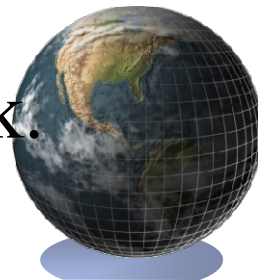
Connection to the Internet.

- Computer:
 - ❖ Any computer can be used for connection to Internet.
- DSL Modem:
 - ❖ DSL modem is an electronic device that converts digital data form the computer to an analog form and vice versa.
- ISP Connection:
 - ❖ ISP provides the link between the computer and the Internet.
 - ❖ A person has to get an account of an ISP for establishing a connection to the Internet.
- Web Browser:
 - ❖ Web browser is a software that is used to view web pages .i.e. Internet Explorer and Netscape Communicator etc.

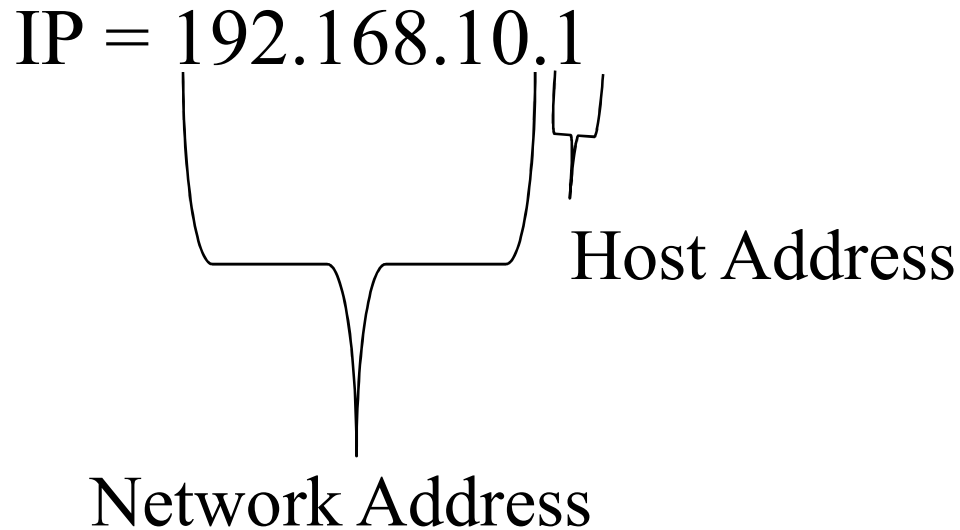


IP Addressing.

- Each computer on the Internet has a unique IP address, that are used by the computers to communication.
- IP address is a 32-bits address represented in decimal format.
- It consists of four parts (octets) separated by period. Each part can have a value between 0 and 255.
- An IP address consists of TWO parts:
 - ❖ Network Address:
 - It shows the network to which the computer is attached or connected. It depends on the class to which IP belongs.
 - ❖ Host Address:
 - It represents the hosts uniquely on the network.



Example IP Address.



- Servers normally has static IP address, whereas a computer gets an IP address form the ISP each time it is connected.



Uniform Resource Locator.

- IP addresses are difficult to remember for the users.
- An alternative to the IP address assigned to a server is a textual name called URL.

`http://www.w3.org/TR/html4/`

scheme *server* *path*

❖ Scheme:

- Scheme is the protocol used to access web pages on the Internet .i.e. HTTP.

❖ Server:

- Server is the textual name of the server.

❖ Path:

- It is the reference to a particular piece of information on the Server.

- DNS is used to convert IP address into URL and vice versa.



Service of Internet.

- Word Wide Web:
 - ❖ It is a collection of documents or web pages stored on computers permanently connected with the Internet around the world.
 - ❖ A collection of related web pages is called website.
 - ❖ The web pages in a website are connected to one another using hyperlinks.
- E-mail:
 - ❖ E-mail stands for Electronic Mail.
 - ❖ E-mail is the exchange of messages through Internet.
 - ❖ Message can be in the form of graphics, sound, video clips or simple text.
 - ❖ It is a fast way of delivering messages anywhere in the world in a very short time.



Service of Internet.

- E-commerce:
 - ❖ Electronic commerce means to carry out financial and business dealings using Internet.
 - ❖ A person can deal with his customers throughout the world.
 - ❖ People can buy and sell goods on Internet, Even payment can be made using Credit Card numbers.
- Telnet:
 - ❖ Telnet is a program that allows you to connect to a remote computer on the Internet.
 - ❖ After connecting, your computer acts like a terminal directly linked to the remote computer. You can make change in the computer configuration as that you can do local.
 - ❖ A Telnet program must be installed on your local computer and configured to your web browser in order to work.



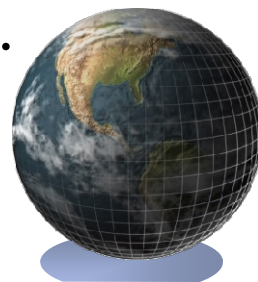
Service of Internet.

- File Transfer Protocol (FTP).
 - ❖ FTP is used for sending files from one place to another.
 - ❖ Audio, video, graphics and data files can be uploaded and downloaded using this protocol.
 - ❖ Different softwares like CuteFTP, WS_FTP uses this protocol for transferring files on the Internet.
- Chatting and Instant Messaging:
 - ❖ Chat programs allow users on the Internet to communicate with one another by typing messages.
 - ❖ These programs can be either a single program like Yahoo Massagner, MSN Massanger etc or included as a feature of a website, where users can log into the chat room to exchange comments and information.



Basic Terminologies of Internet.

- Website:
 - ❖ A collection of related web pages that you can access electronically is called website. It contains text, graphics, sound and video.
- Home Page:
 - ❖ Home page is the starting point of a web site. It normally provides information about the site's purpose and content.
- Hyper Link:
 - ❖ Hyper link is simply a part of text or graphics on a web page that is when clicked will either take the user to a different part of the same page or to a different page within or out side of the website etc.
- Frames:
 - ❖ Frames are used to divide a web page into different parts. Different web pages can be displayed in each part.



Basic Terminologies of Internet.

- HTTP:
 - ❖ HTTP is the protocol used to make web requests (web page on the Internet).
- HTML:
 - ❖ HTML is the fundamental language to design web pages.
- Webmaster:
 - ❖ A person who develops and maintains a website.
- ISP:
 - ❖ ISP is a company that provides a connection between the user's computer and the Internet.
 - ❖ The common type of connection is dial-up using modems on normal telephone lines.
 - ❖ ISP provides the facilities like FTP and E-mail.
 - ❖ Examples are Comsats, Brain Net etc.



Advantages of Internet.

- Information Search:
 - ❖ Internet contains information on all types of topics.
 - ❖ People can search information on any topic.
 - ❖ Search engines are used to search information on Internet .i.e. Google etc.
- E-mail:
 - ❖ E-mail is an inexpensive and fast way of communication.
 - ❖ It is used to send messages, pictures and files from one part of the world to another part.
- E-commerce:
 - ❖ People can use Internet for financial and business dealings.
 - ❖ A person can deal with his customers throughout the world.
- Online Results:
 - ❖ Students can see their result using Internet from any part of the world.
- Fast Communication:
 - ❖ People can communicate with one another in less time from any part of the world



Advantages of Internet.

- Entertainment:
 - ❖ Internet provides a lot of entertainment to the people. The users can play online games, listen songs, watch movies and live matches etc.
 - ❖ People can also download entertainment stuff.
- Online Education:
 - ❖ Many websites provides tutorials and lectures on different subjects and topics.
 - ❖ Student can study them online or can download them.
 - ❖ This is the fast and cheaper way of educating a large number of people.
- Advertisement:
 - ❖ Many commercial organizations use Internet to advertise their products.
 - ❖ Internet is the cheapest and easiest way of providing information's about product to the people all over the world.
- Video Conferencing:
 - ❖ People can use Internet for video conferencing.
 - ❖ They can talk on different topics by watching to one another.



Disadvantages of Internet.

- Security problems and Hacking :
 - ❖ Internet has created many security problems.
 - ❖ The hackers can access the important data stored on the computers across the Internet. They can use this data illegally or even destroy it.
- Immortality.
 - ❖ Many immoral websites contains materials that is against the moral values of our society.
 - ❖ These websites are damaging the character of young people.
- Viruses:
 - ❖ Most of the viruses spreads over the Internet either using E-mail or pictures etc.
 - ❖ Many websites also contain different viruses that are copied to the computers when the users download data form these website.



Disadvantages of Internet.

- Wastage of Time:
 - ❖ Many people use Internet without any positive purpose.
 - ❖ The young people waste their time in chatting. It effects their performance and makes them inefficient.
- Cyber Crimes:
 - ❖ Internet is the source of many cyber crimes.
 - ❖ The hackers, hacks the Credit Card Numbers of the people and can use them for shopping.
 - ❖ Some people uses Internet to spread illegal and immoral material.
 - ❖ Many governments are introducing laws to stop cyber crimes.



Web Browser.

- A web browser is an application software that acts as an interface between the user and the Internet.
- It has the capability to understand HTML.
- It can display text and graphics.
- Browsers are also known as web clients or universal clients.
- Two types of browsers:
 - ❖ Text-based Browsers:
 - It displays only textual information, not graphics.
 - Text is all of the same size and can only be either underlined or boldface.
 - It supports only keyboard to move in the web page. It does not support mouse.
 - Example is Lynx.
 - ❖ Graphical Browsers:
 - It can display both text and graphics.
 - Web page contents can be formatted in any way and colors.
 - It supports both keyboard and mouse for user interaction.
 - Examples are Internet Explorer and Netscape Communicator.

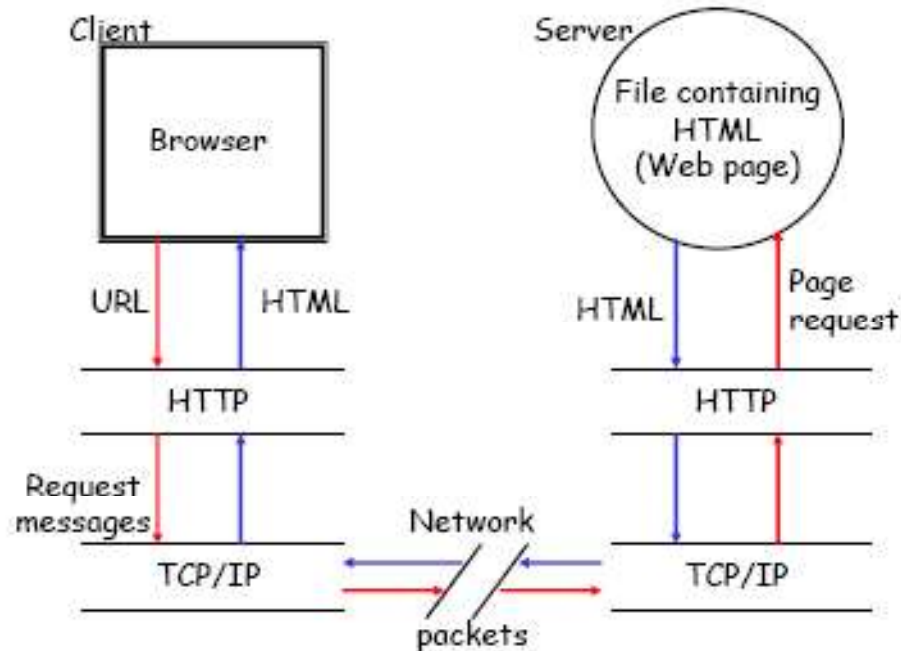
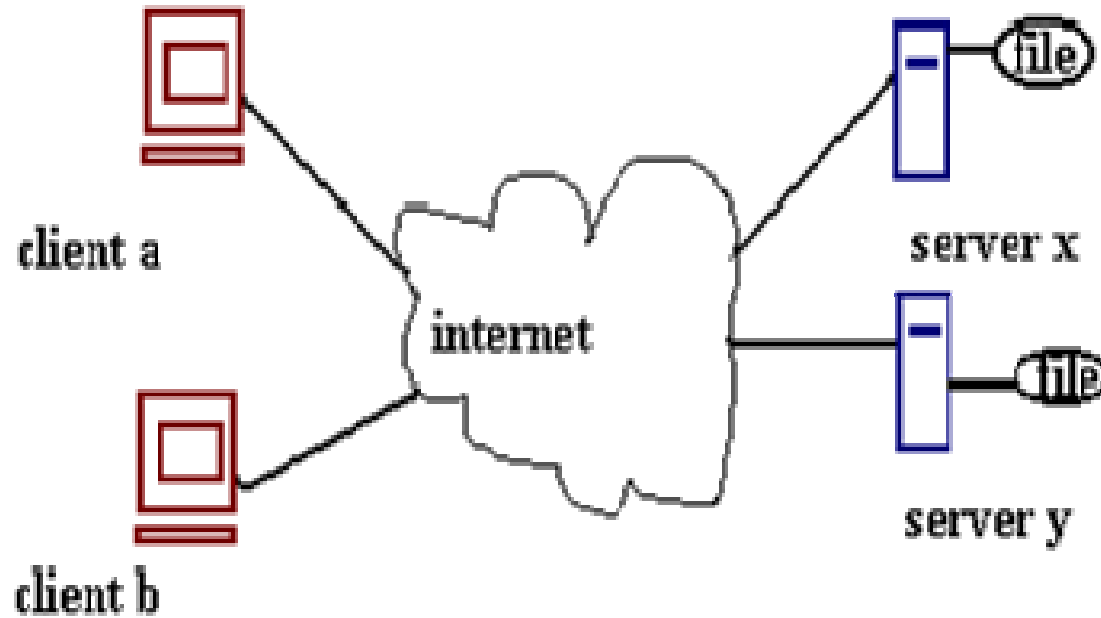


Web Server.

- Web server is a software running on a computer much faster and powerful than an ordinary PC computer.
- Commonly the computer running with web server software is called web server.
- Web server shares the web pages stored on the web server computer among the users upon request.
- Web server computer can be located anywhere in the world and is connected to the Internet 24 hours a day.
- A web server can host any number of websites depending on its performance.
- A web server receives a web request from a web browser and responds with the contents of the page requested.
- The contents of a page is described in HTML.



Client-Server Interaction Model.



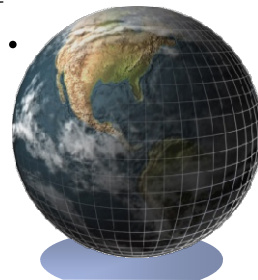
Search Engine.

- Internet is an important source of informations. A large number of websites provides informations about different topics.
- Search engine is a website working with a very vast and rich database, that provides the ability to find the required website on a particular topic.
- Search engine contains record of different websites and display the relevant websites to the users depends on the topic they are interested in.
- Some popular search engines are:
 - www.google.com.
 - www.altavista.com.
 - www.hotbot.com.
 - www.excite.com.



Types of Websites.

- Portal:
 - ❖ Portal is a website that provides different types of Internet services such as:
 - Search engine.
 - News.
 - Sports and Weather.
 - Stock quotes.
 - Shopping malls.
 - Auctions.
 - Emails.
 - Online communication.
 - ❖ The common portal is YAHOO!, Alta Vista, AOL, MSN.



Types of Websites.

- **News:**

- ❖ News websites provides different types of news related to current affairs, politics, sports and weather etc.
- ❖ Popular magazines and news papers provide news on their websites.
- ❖ Examples are:
 - www.geo.com.
 - www.jang.com.pk.

- **Informational:**

- ❖ Informational websites provides information with facts and figures.
- ❖ Governments provides information about different departments and policies for general public.
- ❖ Examples are:
 - www.pakistan.gov.pk.
 - www.hec.gov.pk.
 - www.oec.gov.pk.



Types of Websites.

- **Business/Marketing.**

- ❖ Business/Marketing websites provides material to promote products and services.
- ❖ Most companies have their own sites. The customer can view the products and interact with the company.
- ❖ Most companies also provides the facilities of online shopping using Internet.
- ❖ Examples are:
 - www.dell.com.
 - www.ibm.com.

- **Educational:**

- ❖ Educational institutions provides their informations on their sites.
- ❖ They provides informations related to teaching and learning.
- ❖ Some websites also provides online training classes.
- ❖ Universities provides information about their classes, courses, admissions, results on their website.
- ❖ Examples are:
 - www.pu.edu.pk.
 - www.pesh.edu.pk.



Types of Websites.

- **Entertainment:**

- ❖ Entertainment websites provides material for enjoyment. They provides information about movies, music, sports, games and chats etc.
- ❖ Some website provides online shows, live sports etc.
- ❖ Examples are:
 - www.lollywood.com.
 - www.pakistanmusic.com.

- **Advocacy:**

- ❖ Advocacy websites provides material to convince people of a cause, opinion or idea.
- ❖ Examples are : NGO's websites.

- **Personal:**

- ❖ Personal websites contains material of an individual or a family.
- ❖ People publish personal website to share their life, views etc with others.
- ❖ Examples are : websites of actors like Amir Khan, Shah Rukh Khan etc



Web Pages Types.

- Two types of web pages:

- ❖ Static web pages:

- Static web pages are those pages whose contents does not changes with the passage of time or they will show the same contents each time it has been visited until or unless they are changed by the web author.

- ❖ Dynamic web pages:

- Dynamic web pages are those pages whose contents changes with the passage of time or they will show different contents each time it has been visited.

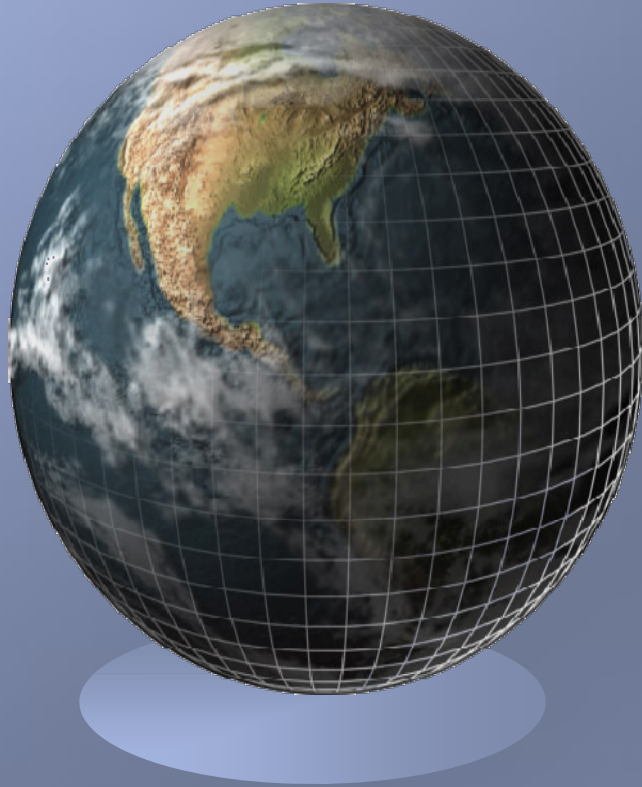
- They changes their content automatically.



Scripting Languages.

- Scripting languages are used to provides programming capabilities to a web page.
- Scripting language can be divided into TWO types:
 - ❖ **Clie-Side Scripting Languages:**
 - The Script that is executed on the client machine is called client-side scripting.
 - Languages used for client-side scripting are:
 - JavaScript.
 - VBScript.
 - ❖ **Server-Side Scripting Languages:**
 - The script that is executed on the server machine.
 - Languages used for server-side scripting are:
 - Active Server Pages.
 - Servlet.
 - PERL CGI.





End of Chapter # 1.