HANDOUT-2

CONCEPTS OF NETWORKING AND INTERNET

Introduction

These days, there are few topics hotter than Internet. In fact, the internet has become the talk of the town these days. This is because Internet affects our lives directly or indirectly. Television programs cover it, newspapers and magazines write about it, every other person is using it, and so forth. The name itself suggests its meaning, its **Interconnected Ne**twork of computers. The simplest definition of the Internet is that it is the largest computer network in the world. But technically speaking, the internet is actually a network of many smaller networks that exists all over the world.

Let us know the term Network

A network is a collection of computers that are connected to each other with the help of cables or satellite to share information and communicate around the world. Networks can be designed using following architecture.

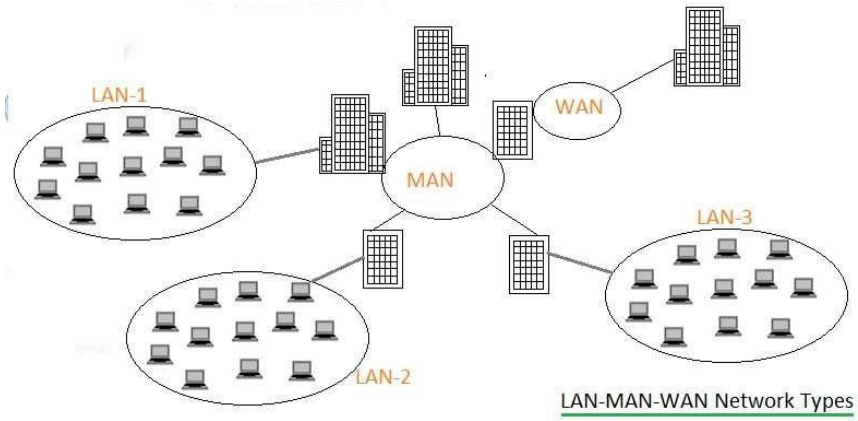
Types of Network

Peer-to-peer (P2P)

Networks on which all computers have equal status are called **peer-to-peer** networks.

Client-server

On most networks, certain computers have special dedicated tasks. Since these machines provide **services** to other computers, they are called **servers**. The computers that make use of the services or servers are called **clients**. A network such as this is called a **client-server** network.



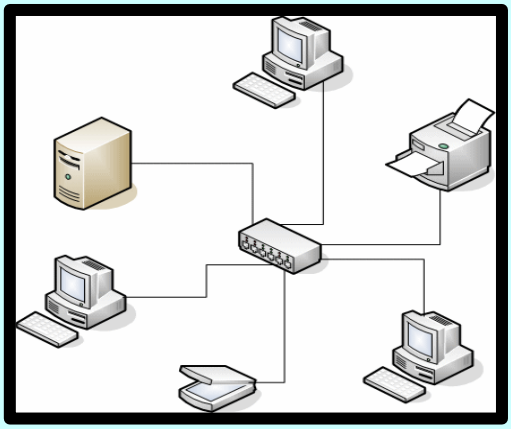
LAN-MAN-WAN Network Types

Comparison Chart

BASIS OF COMPARISON	LAN	MAN	WAN
Expands to	Local Area Network	Metropolitan Area Network	Wide Area Network
Meaning	A network that connects a group of computers in a small geographical area.	It covers relatively large region such as cities, towns.	It spans large locality and connects countries together. Example Internet.
Used for	College, School, Hospital.	Small towns, City.	Country/Continent.

Let us know the term Internet

Internet consists of inter-connected networks. Internet is a worldwide network of computers that use common communication standards and interfaces to provide the physical backbone for a number of interesting applications. Computers on the internet use remote server machine that provides files and devices to the user's machine. You can review newspapers, magazines, books, listen music, watch movies, play games, keep yourself update to current events, go for online shopping, know more about recipes, airline schedules, railway reservations, send E-mail and much more.

Network	Internet
	

History of Internet

The seeds of internet were planted in 1969, when U.S. Department of Defense sponsored a project name ARPANET (Advanced Research Projects Agency Network). The goal of this project was to connect computers at different universities and U.S. defense. Soon the engineers, scientists, students and researchers who were part of this system began exchanging hardware and software resources. ARPANET started with a handful of computers but it expanded rapidly. In mid-80's the National Science Foundation created a new high capacity network called NSFnet which was more capable than ARPANET.

NSFnet allowed only the academic research on its network and not any kind of private business on it. So many private companies built their own networks, which was later interconnected along with ARPANET and NSFnet to form Internet.

How Internet works

The thing that characterizes the Internet is how data transferred from one computer to another. Did you ever wonder what magical things go on behind the scenes that results in a Web page being displayed on your screen seconds after you request it? How does the data get from one side of the world to the other?

Here's what happens to a piece of data (eg. a Web page) when it is transferred over the Internet:

- It is broken up into a whole lot of **same-sized pieces** (called **packets**).
- A **header** is added to each packet that explains where it came from, where it should end up and how it fits in with the rest of the packets.
- Each packet is **sent from computer to computer** until it finds its way to its destination. Each computer along the way decides where next to send the packet. This could depend on things like how busy the other computers are when the packet was received. The packets may not all take the same route.
- At the destination, the **packets are examined**. If there are any packets missing or damaged, a message is sent asking for those packets to be resent. This continues until all the packets have been received intact.
- The packets are **reassembled** into their original form.

World Wide Web (WWW)

Each computer connected to the Internet has software called TCP/IP (Transmission Control Protocol/Internet Protocol) which is responsible for receiving, sending and checking packets. TCP/IP is the 'glue' of the Internet.

World Wide Web is same as traveling in the Information World. It contains millions of documents or “pages” that contain text, graphics, video and audio and link to other pages. These pages can be accessed by software programs called, Web Browser.
The World Wide Web allows users to display and access information, spread across “bunch of pages” called as Web Pages. Each page can be a combination of text, pictures, audio clips,

video clips, animations and other stuff and contain link called hyperlinks pointing to another web page.

Web Browsers

a) Web Browser is the software used to view Web sites. It acts as an interface between the user and World Wide Web. It allows user to send request to a web server, to view the required webpage on their computer. Internet Explorer is the default browser in Windows 98.
Some of the commonly used web browsers are:

- Internet Explorer
- Netscape Navigator
- Mozilla Firefox
- Hot java
- Mosaic
- Opera

Web Server

A web server is a computer that stores websites and their related files for viewing on the Internet

Uniform Resource Locator

A URL refers to an address on the internet. A URL has two main components:

- Protocol identifier: For the URL `http://example.com`, the protocol identifier is `http`.
- Resource name: For the URL `http://example.com`, the resource name is `example.com`.

The protocol identifier and the resource name are separated by a colon and two forward slashes. The first part of a URL (before the two slashes) tells you the type of resource or method of access at that address. The second part is typically the address of the computer where the data or service is located.

DOMAIN NAME SYSTEM

The **Domain Name System** (DNS) a critical part of the Internet's technical infrastructure, correlates a numerical address to a word.
A domain name always has two or more parts separated by dots and typically consists of some form of an organization's name and a three letter or more suffix. For example, the domain name for IBM is "ibm.com"; the United Nations is "un.org." it describes the type of WEBSITE.

Domain Types
com or co – a commercial company
edu or ac – an education establishment
gov – a government organization

IP ADDRESSES

Your IP (Internet Protocol) Address is a **unique** set of four numbers (0-255) that is always in the form of 255.255.255.255. Each computer hooked up to the internet has to have these numbers so that the requested information has a place to be delivered. Your Internet Service Provider (ISP) probably has your IP Address associated to a Domain Name also. The Domain Name is not the IP Address but they are related. Take a look at the following information.

IP Address	DNS entry
207.46.131.15	www.microsoft.com

Now you see why they have both - the number for the computers and the name for us. (It is easier for us to remember.)

The company or organization that provides you with access to the Internet, either via a dial-up or direct (hard wired) connection.

The whole world is on a click and the world is too small are the famous lines which are proved not only in literature but scientifically, due to technological advancements. INTERNET is the final and the versatile product of this technology. It is the biggest and the most penetrating network in the world without any geographical boundaries. Information is available for 24

hours of any type like political, economic, research, defense, astronomy, business etc on a click. You can have your own banking, rail and air reservations etc.

Search Engines

A search engine is a program that searches Web pages and online documents for specified keywords and returns a list of the web pages/documents where the keywords were found. Google, Yahoo! search, MSN Search, Lycos and AltaVista are some examples of search engines.

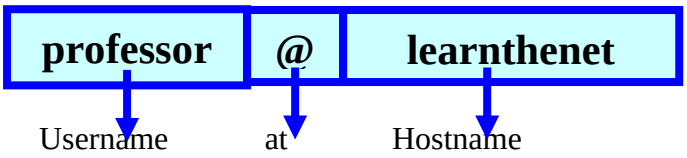
Let us see the working of the search engine.

E-mail

Allows you to send and receive messages. You can attach pictures, videos, sounds, to your email message and send to any one.

Internet e-mail addresses typically have two main parts: the **user name** and the **domain name**.

Here's an example:



Professor is the user name and refers to the recipient's mailbox. After the **@** sign comes **learnthenet**, the host name, also called the **domain name**. This refers to the **mail server**, the computer where the recipient has an electronic mailbox. It's usually the name of a company or organization

Chatting

Is the most fantastic thing on Internet. Chatting is like a text phone. In chatting you type a message on your screen, which is immediately received by the recipient ; then the recipient can type a message in response to your message, which is received by you instantly. Eg – Yahoo Messenger. RediffBol, GoogleTalk.

Write the user name and password to login.

Instant Messenger

Instant messaging (IM) are technologies that create the possibility of real-time text-based communication between two or more participants over the internet or some form of internal network/intranet. It is important to understand that what separates chat and instant messaging from technologies such as e-mail is the perceived synchronicity of the communication by the user - Chat happens in real-time. Some systems allow the sending of messages to people not currently logged on (*offline messages*), thus removing much of the difference between Instant Messaging and e-mail.

News group

A news group or forum is like a community bulletin board. You can post a message, reply to a message or just read messages. When a user sends a message, the mews server posts it for everyone to read. Other members of the news group can now respond to your message.

Video conferencing

It involves sending images and sounds through the internet where users not only hear each other but can have face to face conversation with each other on the internet. This technology is mainly used for virtual meetings among a group of people to discuss political, business medical and social affairs.

E commerce

Stands for Electronic Commerce. E-commerce is about buying and selling goods and services on the Internet, rather than visiting to the actual shopping place.

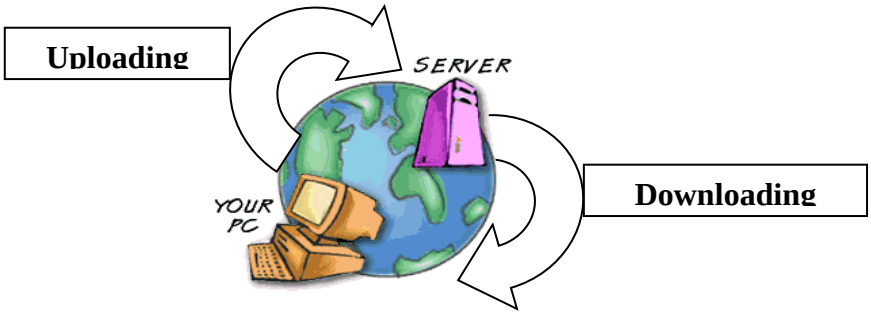
Applications of Ecommerce

E-Banking – This is the way of performing bank transactions using Internet.
E-Marketing – Making advertisements using Internet for marketing purpose.
E-Shopping – Shopping on Internet.
E-books – Are the electronic books that can be seen and purchased over the Internet.
E-forms – Submission of forms such as registration, job applying forms etc. on Internet.
E-greetings – Sending greetings through Internet.

M commerce

M-commerce (mobile commerce) is the buying and selling of goods and services through wireless handheld devices such as cellular telephone and personal digital assistants (PDAs). Known as next-generation e-commerce, m-commerce enables users to access the Internet without needing to find a place to plug in. The emerging technology behind m-commerce, which is based on the Wireless Application Protocol

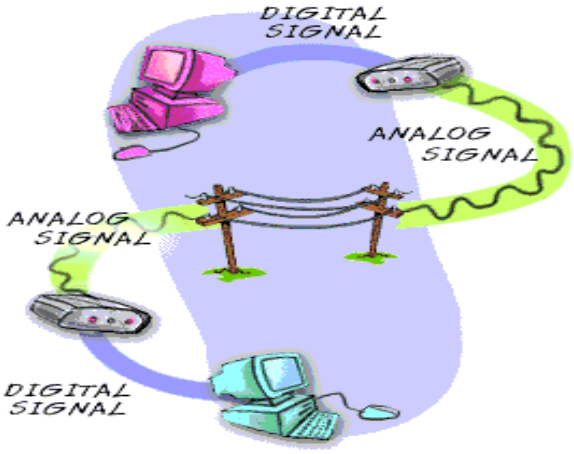
Downloading and Uploading Files



Downloading refers to the method by which you access digital information from a remote computer. As it turns out, almost everything you do on the Web is some form of downloading --it's as simple as clicking your mouse. When you access a web page, for instance, you are actually downloading the document and its entire associated graphics from a **web server**.

Uploading refers to saving your data on a server so that it can be used by others users too? Some of the websites offer you this kind of facility.

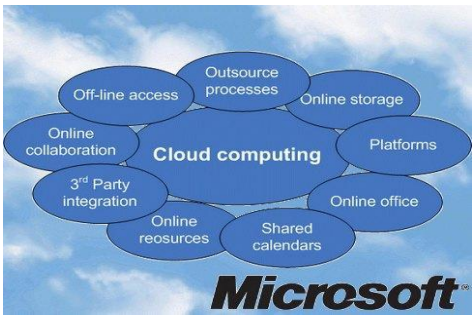
M ODEM



Telephone lines were designed to transmit the human voice, not electronic data from computers. Modems were invented to convert digital computer signals into a form that allows them to travel over phone lines. Those are the scratchy sounds you hear from a modem's speaker. A modem on the other end of the line understands it and converts the sounds back to digital information that the computer understands. By the way, the word *modem* stands for **Mo**dulator / **DEM**odulator

Cloud Computing

Cloud computing means storing and accessing data and programs over the Internet instead of your computer's hard drive. Cloud computing can be used easily in one's personal life as well as in one's business life. Cloud computing provides us a means by which we can access the applications as utilities, over the Internet. It allows us to create, configure, and customize applications online.



With Cloud Computing users can access database resources via the internet from anywhere for as long as they need without worrying about any maintenance or management of actual resources.

Major corporations including Amazon, Google, IBM, Sun, Cisco, Dell, HP, Intel, Novell, and Oracle have invested in cloud computing and offer individuals and businesses a range of cloud-based solutions.

Common Examples of Cloud based applications-

Microsoft office 365, Google Drive, Apple iCloud, Dropbox

Cloud based applications are widely used for collaboration and offer concurrence control Here is an example of a tool used for collaboration-

PADLET

Padlet is the easiest way to create and collaborate in the world.

Padlet is a free application to create an online bulletin board that you can use to display information for any topic. Easily create an account and build a new board. You can add images, links, videos, and more.

Padlet Features

- Add posts with one click, copy-paste, or drag and drop
- Works the way your mind works - with sight, sound, and touch
- Changes are auto saved
- Simple link sharing allows for quick collaboration
- Available on iOS (iPhone, iPad, iPod Touch), Android, and Kindle devices

Activity -1

If you are working on a group project. You can use a Padlet to collaborate in collecting ideas, brainstorming during school break. Share the link to a teacher-created, public wall where students can share notes about what they did during the school break or respond to a thought-provoking question.

Activity -2

Create Padlet to collect ideas, images, quotes, and more in an "idea bin." Require them to share a brainstorming Padlet to show you the ideas for your PBL activity. Use Padlet as a virtual writer's journal or design notebook to collect ideas, images, and even video clips.

Concepts of Networking and Internet
Worksheet No. 2.1

Q1. FILL IN THE BLANKS

1. The worldwide _____ is a very powerful tool of the Internet.
2. _____ is a collection of web pages, which links to other pages.
3. _____ is used to type the address of the site to be visited.
4. _____ button is used to reload the web page.
5. _____ button is used to visit the previous page.
6. _____ folder stores the addresses of the sites to be visited again and again.
7. WWW stands for _____.
8. URL stands for _____.
9. HTTP stands for _____.
10. _____ is a subset of Internet.
11. The main page on an internet site is called the _____ page.
12. For surfing the web,the software, you need is called a web _____.
13. Web site is divided into different web _____.
14. You can click on a _____ on a web page to find more information on the topic.
15. The websites used to search information on the internet is called_____.

Q2. **STATE TRUE OR FALSE**

a. There are millions of sites in the internet.	
b. All browsers perform different functions.	
c. Web site is a collection of web pages.	
d. Menu bar shows the name of the current web page.	
e. Address bar is used to type the internet address of the site to be visited	

Q3. What do you mean by ISP? Name few of the popular ISP's.

Q4 Differentiate between IP addresses and URL.

Q5. Identify the parts of your email address

Q6. Give difference between downloading and uploading

Q7. What is a modem?

Q8. Name any four services offered by internet?

Q9. Define URL.

Q10. Differentiate between E-commerce and M-commerce.

Concepts of Networking and Internet

Worksheet No. 2.2

1. Choose the correct answer:

a. A search engine:

i. MS Word ii. Google
iii. Lycos iv. Both ii and iii.

b. A chat software

i. RediffBol ii. Photoshop
ii. Flash iii. MS Excel

c. The first page that you normally view at a web site is its:

i. Home Page ii. Master Page
iii. First Page iv. Banner Page

d. The first network that planted the seeds of Internet was

i. NSFnet ii. Vnet
iii. ARPANET iv. Inet

e. Web-site is a collection of

i. HTML documents ii. Graphic Files
iii. Audio and Video files iv. iv. All of above

2. Write the full forms:

a) ISP :_____

b) Internet :_____

c) E-commerce :_____

d) ARPANET :_____

e) URL :_____

f) WWW :_____

g) E-mail :_____

h) NSFnet :_____

Concepts of networks and Internet

Worksheet No. 2.3

1. Fill in the blanks:

a) Exploring the Internet is commonly referred to as _____

b) A _____ searches web page and online documents for specified keywords.

c) _____ programs let you communicate with other users instantaneously through text messages.

d) _____ is a collection of web pages that are interconnected.

e) To close your account you have to click _____.

2. State True or False:

a) Hypertext is also known as hyper link.

b) The network NSFnet was later renamed as Internet.

c) Internet Explorer is the default browser in Windows 98.

d) Web browser access HTML documents by using URLs.

e) When you send mail, the mail software expects to be able to open a connection to the addressee's computer, in order to send the mail.

f) Ordinary mail is quicker than e – mail.

g) You cannot send the MS Word document as an attachment with your e-mail.

h) You can send pictures with your e-mail.