ACMT Group of Colleges

Polytechnic- 3rd Year/5th Sem.

Basics of Internet Notes

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Unit – 1

Internet Technology

Internet Evolution:

The original ARPANET grew into the Internet. Internet was based on the idea that there would be multiple independent networks of rather arbitrary design, beginning with the ARPANET as the pioneering packet switching network, but soon to include packet satellite networks, ground-based packet radio networks and other networks.

The concept of Internet was originated in 1969 and has undergone several technological & Infrastructural changes as discussed below:

- The origin of Internet devised from the concept of **Advanced Research Project Agency Network (ARPANET).**
- **ARPANET** was developed by United States Department of Defense.
- Basic purpose of ARPANET was to provide communication among the various bodies of government.
- Initially, there were only four nodes, formally called **Hosts.**
- In 1972, the **ARPANET** spread over the globe with 23 nodes located at different countries and thus became known as **Internet.**
- By the time, with invention of new technologies such as TCP/IP protocols, DNS, WWW, browsers, scripting languages etc.,
- Internet provided a medium to publish and access information over the web.
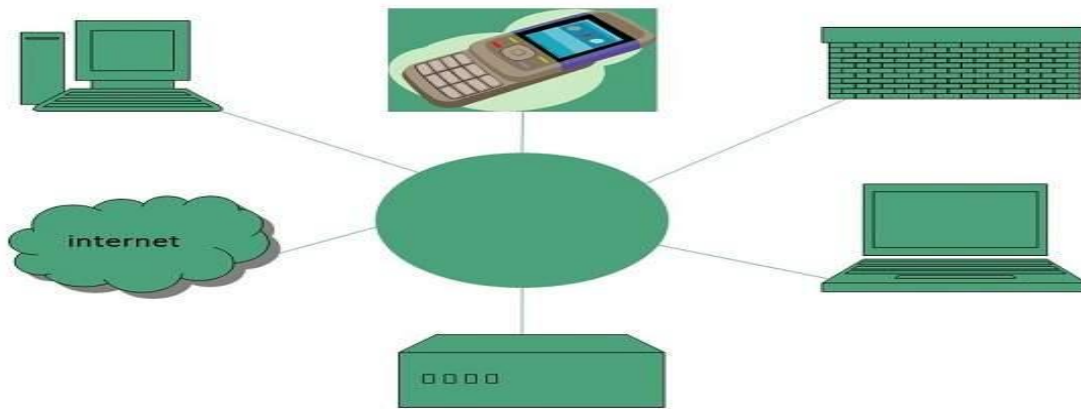
Internet:

Fig.: Internet

Internet is defined as an Information super Highway, to access information over the web. However, it can be defined in many ways as follows:

- Internet is a world-wide global system of interconnected computer networks.
- Internet uses the standard Internet Protocol (TCP/IP).
- Every computer in internet is identified by a unique IP address.
- IP Address is a unique set of numbers (such as 110.22.33.114) which identifies a computer location.
- A special computer DNS (Domain Name Server) is used to give name to the IP Address so that user can locate a computer by a name.
- Internet is accessible to every user all over the world.

Advantages of Internet:

Fig.: Advantages of Internet

1. Social Networking:

Internet allows us to communicate with the people sitting at remote locations. There are various apps available on the wed that uses Internet as a medium for communication. One can find various social networking sites such as:

- Face book
- Twitter
- Yahoo
- Google+
- Flickr
- Orkut

2. Education and Technology:

Internet allow us to use many services provide such as technology, health and science, social studies, information technology, etc.

3. Entertainment:

Apart from communication and source of information, internet also serves a medium for entertainment. Following are the various modes for entertainment over internet.

- Online Television
- Online Games
- Songs
- Videos
- Social Networking Apps

4. Online Services:Internet allows us to use many services like:

- Internet Banking
- Matrimonial Services
- Online Shopping
- Online Ticket Booking
- Online Bill Payment
- Data Sharing
- E-mail

5. E- Commerce

Internet provides concept of electronic commerce that allows the business deals to be conducted on electronic systems.
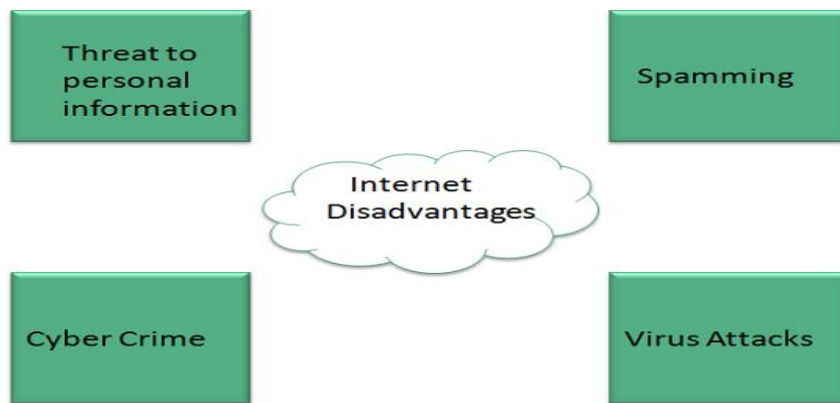
Disadvantages of Internet:

Fig.: Disadvantages of Internet

1. Threat to personal information:

There are always chances to lose personal information such as name, address, credit card number. Therefore, one should be very careful while sharing such information. One should use credit cards only through authenticated sites.

2. Spamming:

Spamming corresponds to the unwanted e-mails in bulk. These e-mails serve no purpose and lead to obstruction of entire system.

3. Cyber Crime:

Also a biggest threat on internet is pornography. There are many pornographic sites that can be found, letting your children to use internet which indirectly affects the children healthy mental life.

4. Virus Attack:

Virus can easily be spread to the computers connected to internet. Such virus attacks may cause your system to crash or your important data may get deleted.

Protocols:

A protocol is a set of rules that governs the communications between computers on a network. In order for two computers to talk to each other, they must be speaking the same language. Many different types of network protocols and standards are required to ensure that your computer can communicate with another computer located on the next desk or half-way around the world.

Types of Protocol

1. TCP

Transmission control protocol is used for communication over a network. In TCP data is broken down into small packets and then sent to the destination. However, IP is making sure packets are transmitted to the right address.

2. Internet Protocol (IP)

IP is also working with TCP. It is an addressing Protocol. IP addresses packets route them and show different nodes and network Unless it reaches its right destination. The IP protocol is developed in 1970.

3. FTP

File transfer protocol is basically used for transferring files to different networks. There may be a mass of files such as text files, multimedia files, etc. This way of file transfer is quicker than other methods.

4. SMTP

Simple mail transfer protocol manages the transmission and outgoing mail over the internet.

5. HTTP

HTTP is based on client and server model. HTTP is used for making a connection between the web client and web server. HTTP shows information in web pages.

6. Ethernet

Ethernet is a most important for LAN communication. Ethernet transmits the data in digital packets. If any computer wants to use this protocol they should contain

Ethernet Network Interface Card (NIC). The card is implemented with unique address code fixed in the microchip.

7. Telnet

Telnet is an established with some rules which are used to connect to another computer. Telnet is mainly used for the remote login process. The computer which is requesting for a connection that is a local computer and which is accepting the connection that is a remote computer. If you give a command in a local computer that command is executed in the remote computer. Telnet is also based on client and server model.

Computer Network Architecture

Computer Network Architecture is defined as the physical and logical design of the software, hardware, protocols, and media of the transmission of data. Simply we can say that how computers are organized and how tasks are allocated to the computer.

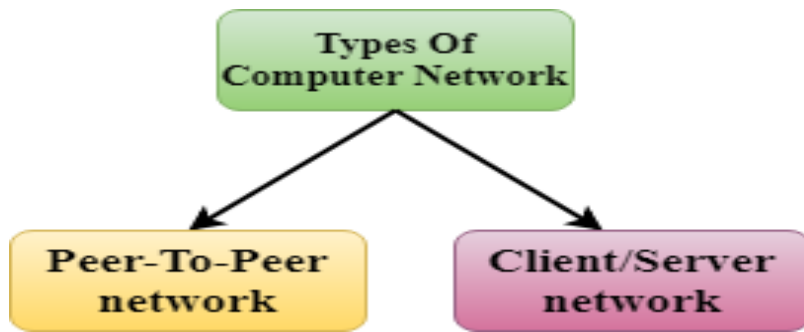## The two types of network architectures are used:

Fig.: Types of Computer Networks

1. Peer-To-Peer network

- Peer-To-Peer network is a network in which all the computers are linked together with equal privilege and responsibilities for processing the data.
- Peer-To-Peer network is useful for small environments, usually up to 10 computers.
- Peer-To-Peer network has no dedicated server.
- Special permissions are assigned to each computer for sharing the resources, but this can lead to a problem if the computer with the resource is down.
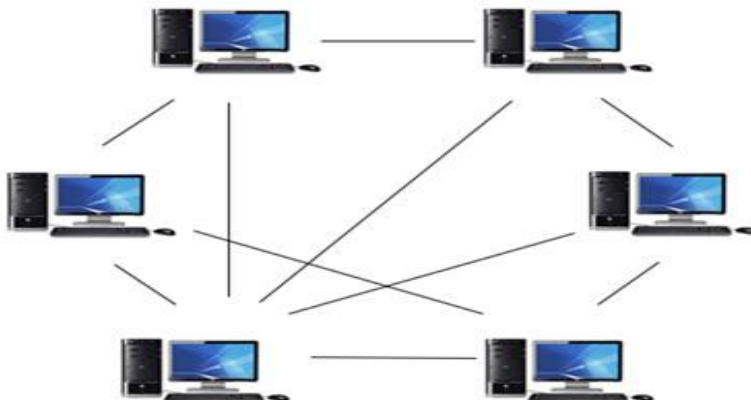

Fig.: Peer- To- Peer network

Advantages of Peer-To-Peer Network:

- It is less costly as it does not contain any dedicated server.
- If one computer stops working but, other computers will not stop working.
- It is easy to set up and maintain as each computer manages itself.

Disadvantages of Peer-To-Peer Network:

- In the case of Peer-To-Peer network, it does not contain the centralized system. Therefore, it cannot back up the data as the data is different in different locations.
- It has a security issue as the device is managed itself.
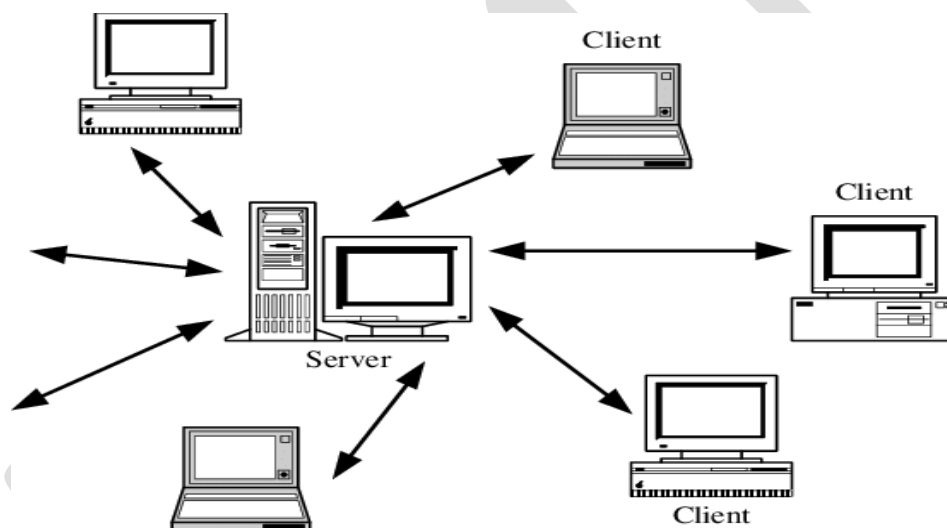
2. Client/Server Network

Fig.1 : Client Server Network

- Client/Server network is a network model designed for the end users called clients, to access the resources such as songs, video, etc. from a central computer known as Server.
- The central controller is known as a **server** while all other computers in the network are called **clients**.
- A server performs all the major operations such as security and network management.
- A server is responsible for managing all the resources such as files, directories, printer, etc.
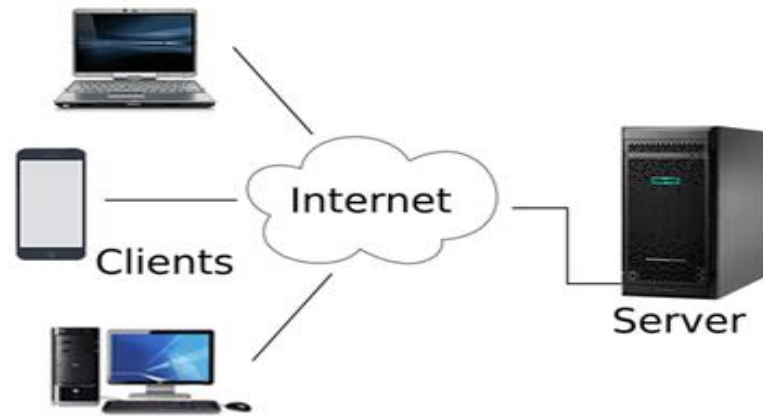- All the clients communicate with each other through a server.

Fig.2: Client Server Architecture

Advantages of Client/Server network:

- A Client/Server network contains the centralized system. Therefore we can back up the data easily.
- A Client/Server network has a dedicated server that improves the overall performance of the whole system.
- Security is better in Client/Server network as a single server administers the shared resources.
- It also increases the speed of the sharing resources.

Disadvantages of Client/Server network:

- Client/Server network is expensive as it requires the server with large memory.
- A server has a Network Operating System(NOS) to provide the resources to the clients, but the cost of NOS is very high.
- It requires a dedicated network administrator to manage all the resources.

Remote Login:

Remote login is a process in which user can login into remote site i.e. computer and use services that are available on the remote computer. With the help of remote login a user is able to understand result of transferring result of processing from the remote computer to the local computer.

It is implemented using **Telnet**.
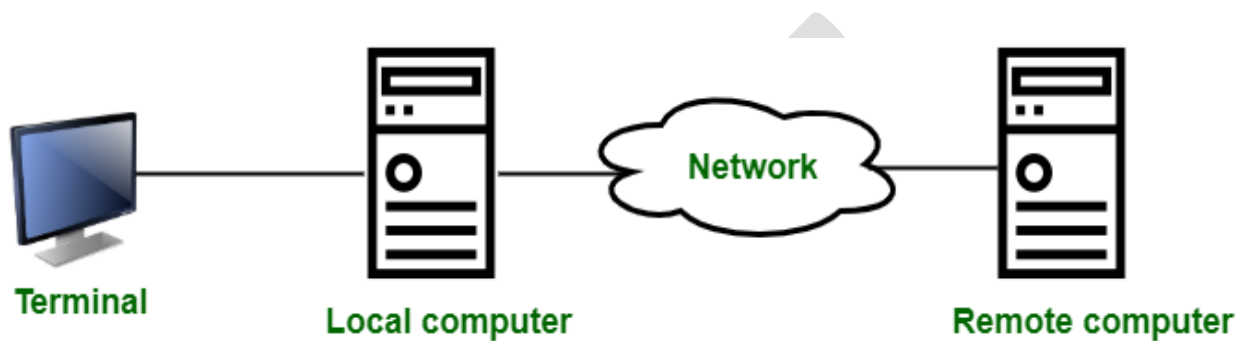
Fig.: Remote Login

Interface Concepts:

An interface is a shared boundary across which two or more separate components of computer system exchange information. The exchange can be between software, computer hardware, peripheral devices, humans, and combinations of these. Some computer hardware devices, such as a touchscreen, can both send and receive data through the interface, while others such as a mouse or microphone may only provide an interface to send data to a given system.

Internet Service Provider (ISP)

- **Internet Service Provider (ISP)** is a company offering access to internet. They offer various services:
- Internet Access
- Domain name registration
- Dial-up access
- Leased line access

Examples: Airtel, BSNL, Jio, Vodafone, etc.

Or

- An Internet service provider (ISP) is a company that provides web access to both businesses and consumers.
- ISPs may also provide other services such as email services, domain registration, web hosting, and browser services.
- An ISP is considered to be an information service provider, storage service provider, Internet network service provider (INSP), or a mix of all of them.

Connectivity Types:

Dial-up Connection

Dial-up connection uses telephone line to connect PC to the internet. It requires a modem to setup dial-up connection. This modem works as an interface between PC and the telephone line.

There is also a communication program that instructs the modem to make a call to specific number provided by an ISP.
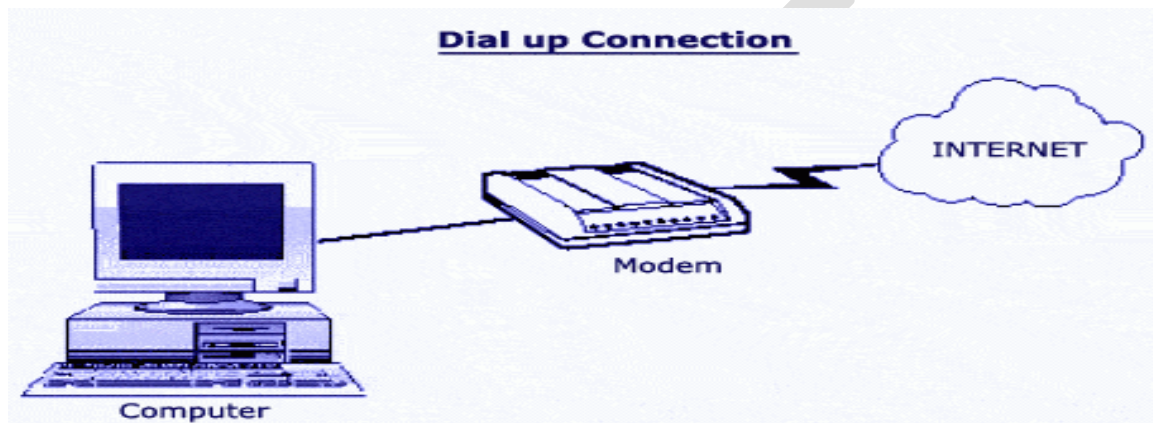
Fig.: Dial- Up Connection

Leased Line

- A leased line is a dedicated, fixed-bandwidth data connection. It allows data-hungry businesses to have a reliable, high-quality internet connection with guarantees of upload and download speed.
- A leased line can directly connect to the public internet through a dedicated fiber optic cable.
- A leased-line is also known as a fiber leased line.
- The speed of this leased line ranges from 2 Mbps to 10 Gbps.
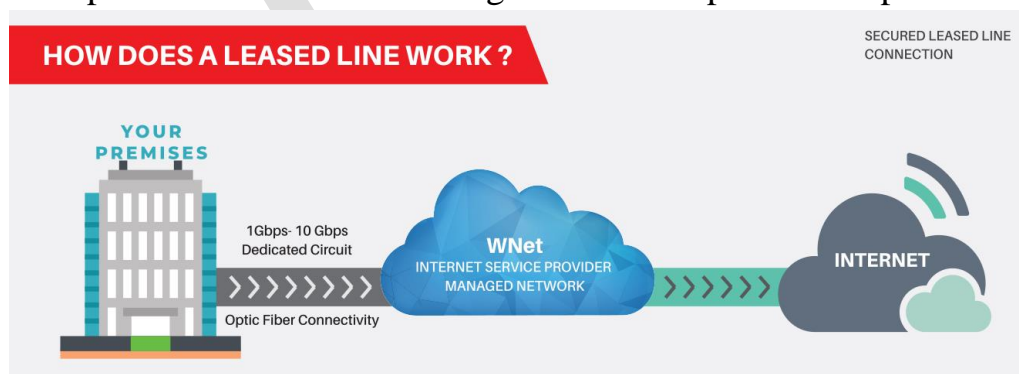
Fig.: Leased Line Connection

Advantages:

- Symmetrical: Leased lines must be symmetrical. This means they have the same upload and download speed.
- Uncontended**:** Leased lines are – by definition – uncontended connections, not shared with other users.
- Point to point**:** They connect two points together, eg the ISP with a business location.

Digital Subscriber Line (DSL)

DSL is acronym of **Digital Subscriber Line.** It is a form of broadband connection as it provides connection over ordinary telephone lines.

Unit- 2

Web Concept

World Wide Web (WWW):

World Wide Web, which is also known as a Web, is a collection of websites or web pages stored in web servers and connected to local computers through the internet. These websites contain text pages, digital images, audios, videos, etc. Users can access the content of these sites from any part of the world over the internet using their devices such as computers, laptops, cell phones, etc.

Web Publishing:

Website publishing is the process of uploading content on the internet. It includes:

- uploading files
- updating web pages
- posting blogs

Web Browser:

A web browser, which is commonly known as a browser, is a program that displays text, data, pictures, videos, animation, and more.

It provides a software interface that allows you to click hyperlinked resources on the World Wide Web.

Examples:

Chrome   Safari   UC Browser   Firefox   IE

Fig.: Web Browser

Web Page:

A web page is a hypertext document provided by a website and displayed to a user in a web browser. A website typically consists of many web pages linked together in a coherent fashion.

Website:

A collection of web pages which are grouped together and usually connected together in various ways. Often called a "web site" or a "site".

Web Server:

A computer that hosts a website on the internet.

Search Engine:

A web services that helps you find other web pages such as Google, Bings, Yahoo, etc.

HTML: Hyper Text Mark-up Language

- **HTML** (Hyper Text Markup Language) is the standard markup language for web pages.
- With HTML you can create your own website.
- HTML stands for Hyper Text Markup Language.
- Other technologies besides HTML are generally used to describe a web page's appearance/presentation (CSS) or functionality/behavior (JavaScript).
- "Hypertext" refers to links that connect web pages to one another, either within a single website or between websites.

Design Tools

1) WordPress

WordPress is, without doubt, one of the best and most recognised web design tools.

It has been at the top of the web design industry for a while now, and it continues to make waves and lead many other designs tools.

WordPress' plugins are essential for a designer to build, customise, enhance and optimise the websites they are making.

2) InVision Studio

This is an incredible UI tool with unmatched features and applications, with many web designers already hailing it as a complete package and the best tool for designing a website.

The incredible features of InVision Studio help the designer to create website interfaces that are both user-friendly and beautiful, apart from the overall website being responsive and collaborative.

3) Photoshop

This is another vital tool and is undoubtedly the most important of the adobe suite for web designers.

If you are a creative web designer, then Photoshop is the right tool for you.

The endless color options and gradients allow you to create beautiful prints and patterns in your design project.

4) ProofHub

One thing that web designers tend to overlook in the web design process is proofing.

There are a different number of levels where web designers have to check their design work before they settle for what is final.

It is not exactly a tool used for creating websites, but it is one that can help the designer a lot with hassle-free communication and editing.

It helps to speed up the completion of your <u>web design project by the need</u> to meet-up or send regular e-mails throughout the project.

5) Adobe Dreamweave

This is an impressive <u>design tool that allows you to directly code the design you want for the website</u> without having extensive knowledge of programming.

It works mainly by HTML editing, and visual editing making it easier to learn for users.

This means you can optimise the website you <u>create for mobile</u> devices, and also for desktops without affecting the experience of the website user.

6) Bluefish

This is undoubtedly one of the smallest <u>website design</u> tools that you will come across as a designer.

The installer package is just about 53 MB, and it takes just a short while to set up.

Although bluefish mainly focuses on HTML, it also supports a lot of other languages such as JavaScript, Java, PHP, SQL, CSS and XML.

7) Google Web Designer

Google <u>web designer</u> tool is primarily used in HTML5, CSS and JavaScript to create interactive content.

This means that it is primarily intended for building ads.

This can be done through a GUI that is very simple to use.

8) Sketch

This is another popular <u>web design</u> tool that is used mainly for vector UI designs.

The Symbols of this tool is also an important feature, as it allows the <u>designer to design UI assets and elements</u> that can be reused.

Sketch also allows you to export your design into a clickable prototype.

It is a very user-friendly tool with a minimal fee.

HTML Versions List

1. **HTML 1.0: released in 1991**
2. **HTML 2.0: released in 1995**
3. **HTML 3.2: released in 1997**
4. **HTML 4.01: released in 1999**
5. **XHTML: released in 2000**
6. **HTML5: released in 2014**

HTML 1.0

- First version of HTML was a version of SGML that had ability to link different document or pages using **'href'**.
- HTML 1.0 had 20 elements or tags, now latest version of HTML, ie HTML5 has a lot more.

HTML 2.0

- After HTML 1.0, the second version of HTML was released in 1994. **HTML 2.0** was an expansion of HTML 1.0.
- Internet Engineering Task Force (IETF) was behind it's creation.

HTML 3.2

- It was released In 1997. HTML 3.2 had many new features like tables, superscript, subscript etc.
- Two most important features introduced in HTML 3.2 were tables and text flow around images.
- Tables were widely used and programmers still use them but it is not recommended anymore. In HTML5 div tags and other semantic elements are used more frequently instead of table element.

HTML 4.01

- It was released in 1999. HTML 4.01 introduced features like scripting, style sheets, better tables, better forms frames and embedding objects.
- HTML 4.01 was a revised version of **HTML 4.0**, it also included features for the disabled people to enhance their interactivity with the Global world through Internet.

XHTML

- In 2000 **XHTML** was released. XHTML stands for Extensible Hyper Text Markup Language.
- XHTML has strict set of rules and it is basically an XML application of HTML.

HTML5

- So all of this added up and then after so many years**HTML5** was released in 2014. HTML5 is the best version of HTML up till now. HTML5 improved user interactivity so much and also lessened the burden of devices.
- HTML5 fully supports all kind of media application that is there. HTML5 supports both audio and video media content. HTML5 also provides full support for JavaScript to run in the background.

Image editing

- Image editing refers to modifying or improving digital or traditional photographic images using different techniques, tools or software.
- Images produced by scanners, digital cameras or other image-capturing devices may be good, but not perfect.
- Image editing is done to create the best possible look for the images and also to improve the overall quality of the image according to different parameters.

Issue in Website creation & maintenance

a. Outdated website design

- Websites built to be Google friendly by adhering to Google's best practices.
- Page layouts optimized to work well on mobile devices as well as desktop.
- Integration with social media channels to encourage the social sharing of content.
- Design that is focused around converting leads and sales/

b. Websites that are not periodically backed up

- Is your website backed up on a regular basis? It should be!
- In a recent study of over 40,000 of the most popular WordPress websites around the world, 73% of these websites are vulnerable to being hacked.
- I suggest at the minimum you should backup your website once a week.

c. Lack of quality images

Seeing as that opening image is the first impression the viewer will get, why settle for mediocre? Again, rather than thinking "how much will it cost to get quality pictures?" ask yourself "how much will it cost me if I don't have quality pictures?" A good photographer is worth every penny.

d. Poor or confusing user journey

Talking of clutter and confusion, another common issue with websites is a lack of clear signposting. Ask yourself a simple question: how easy is it for someone to get where you want them to go? If it takes more than two clicks for the customer to be able to buy or book, your conversion rate could well be suffering.

e. Low standard of written content

Naturally, as a copywriter I'm biased here. As it happens, I am a bit of an English pedant. However, it still amazes me how many companies' websites are littered with mistakes. At best this gives the impression that you are careless.

f. Poor standard of SEO

Most companies have some idea of how important search engine optimisation (SEO) is these days. When it comes to being found by your customers, it is an information war out there. If you are poorly armed in terms of incorporating key terms and technical knowhow, your business is at a significant disadvantage.

g. Security issues and certification problems

Security is one of the most commonly overlooked aspects of any business website; until you get a major security scare! Hackers and cyber criminals can give any company a headache, but sadly many organizations only realize the true value of security following a difficult or costly episode.

Use of Frames and Forms in web pages

HTML Frames:

HTML frames are used to divide your browser window into multiple sections where each section can load a separate HTML document. A collection of frames in the browser window is known as a frameset. The window is divided into frames in a similar way the tables are organized: into rows and columns.

HTML Forms:

HTML Forms are required, when you want to collect some data from the site visitor. For example, during user registration you would like to collect information such as name, email address, credit card, etc.

FTP Software for uploading

1. FileZilla

Topping the list is FileZilla, an open source FTP client. It's fast, being able to handle simultaneous transmissions (multi-threaded transfers), and supports SFTP and FTPS (which stands for FTP over SSL).

2. Cyberduck

Cyberduck can take care of a ton of your file-transferring needs: SFTP, WebDav, Amazon S3, and more. It has a minimalist UI, which makes it super easy to use.

3. FireFTP

This Mozilla Firefox add-on gives you a very capable FTP/SFTP client right within your browser. It's available on all platforms that can run Firefox.

4. Classic FTP

Classic FTP is a file transfer client that's free for non-commercial use. It has a very simple interface, which is a good thing, because it makes it easy and intuitive to use. I like its "Compare Directories" feature that's helpful for seeing differences between your local and remote files.

5. WinSCP

This popular FTP client has a very long list of features, and if you're a Windows user, it's certainly worth a look. WinSCP can deal with multiple file-transfer protocols (SFTP, SCP, FTP, and WebDav).

Unit- 3

E- Commerce

Introduction:

E-commerce is the buying and selling of goods or services via the internet, and the transfer of money and data to complete the sales. It's also known as electronic commerce or internet commerce.

Types of e-commerce

Following are the most traditional types of e-commerce models:

1. Business to Consumer (B2C):

B2C e-commerce is the most popular e-commerce model. Business to consumer means that the sale is taking place between a business and a consumer, like when you buy a rug from an online retailer.

2. Business to Business (B2B):

B2B e-commerce refers to a business selling a good or service to another business, like a manufacturer and <u>wholesaler</u>, or a wholesaler and a retailer. Business to business e-commerce isn't consumer-facing, and usually involves products like raw materials, software, or products that are combined. Manufacturers also sell directly to retailers via B2B ecommerce.

3. Direct to Consumer (D2C):

Direct to consumer e-commerce is the newest model of ecommerce, and <u>trends within this category</u> are continually changing. D2C means that a brand is selling directly to their end customer without going through a retailer, distributor, or wholesaler. Subscriptions are a popular D2C item, and social selling via platforms like InstaGram, Pinterest, Facebook, SnapChat, etc. are popular platforms for direct to consumer sales.

4. Consumer to Consumer (C2C):

C2C e-commerce refers to the sale of a good or service to another consumer. Consumer to consumer sales take place on platforms likes eBay, Etsy, Fivver, etc.

5. Consumer to Business (C2B):

Consumer to business is when an individual sells their services or products to a business organization. C2B encompasses influencers offering exposure, photographers, consultants, freelance writers, etc.

6. Direct to Consumer (D2C):

Direct to consumer e-commerce is the newest model of ecommerce. D2C means that a brand is selling directly to their end customer without going through a retailer, distributor, or wholesaler.

Advantages of E- Commerce:

- Faster buying/selling procedure, as well as easy to find products.
- Buying/selling 24/7.
- More reach to customers, there is no theoretical geographic limitations.
- Low operational costs and better quality of services.
- No need of physical company set-ups.
- Easy to start and manage a business.
- Customers can easily select products from different providers without moving around physically.

Disadvantages of E- Commerce:

➢ There is no guarantee of product quality.

➢ E-commerce Delay goods.

➢ Many goods can't be purchase online.

➢ Not everyone is connected to the internet.

Internet/ Online Business

1. Drop Shipping:

- You list products for sale on your website or a platform like Amazon, eBay, or Etsy.
- When one of your customers makes a purchase, you purchase the product from a third-party company for a lower price. This process is as simple as forwarding the order from your customer, a process that can actually be completely automated.
- Your drop shipper then sends the product to the customer.

2. Affiliate Marketing:

- Affiliate marketing is somewhat similar to drop shipping but with some key differences.
- With this e-commerce model, you again don't maintain an inventory of your own products, and you don't have to worry about shipping products to customers.

3. Blogging:

- If you have the expertise or a passion or interest for a subject, you're ready to start making money with a blog. With a service like Blogger (www.blogger.com), you can start up your blog totally free.
- You can also create your own site and secure your own hosting for a low price, which is generally the route I recommend, as many free blogging sites have restrictions on what you can say or do, including making money or advertising.

4. Online Video:

- Have you watched a YouTube video lately? Of course you have! This is one of the world's most popular websites, with more than 2 billion users watching hundreds of millions of hours of video each day. and it's not all cats doing funny things, by any means.

5. Information Products:

- Audio: a recorded teleconference, interview, course, or some other spoken-word product
- Video: a recorded webinar, a how-to, an interview
- Text: an ebook, an instruction booklet of some sort, a travel guide.

Applications of E-Commerce:

The applications of E-commerce are used in various business areas such as retail and wholesale and manufacturing. The most common E-commerce applications are as follows:

1. **Online marketing and purchasing**
2. **Retail and wholesale**
3. **Finance**
4. **Manufacturing**
5. **Online Auction**
6. **E-Banking**
7. **Online publishing**
8. **Online booking (ticket, seat.etc)**

1. Online marketing and purchasing:

Fig.: Online marketing and purchasing

- Data collection about customer behavior, preferences, needs and buying patterns is possible through Web and E-commerce.
- This helps marketing activities such as price fixation, negotiation, product feature enhancement and relationship with the customer.

2. Retail and wholesale:

Fig.: Retail and wholesale

- E-commerce has a number of applications in retail and wholesale.
- E-retailing or on-line retailing is the selling of goods from Business-to-Consumer through electronic stores that are designed using the electronic catalog and shopping cart model.

3. Finance:

Fig.: Finance

Financial companies are using E-commerce to a large extent. Customers can check the balances of their savings and loan accounts, transfer money to their other account and pay their bill through on-line banking or E-banking.

4. Manufacturing:

Fig.: Manufacturing

- E-commerce is also used in the supply chain operations of a company.

- Some companies form an electronic exchange by providing together buy and sell goods, trade market information and run back office information such as inventory control.

5. Auctions:

- Customer-to-Customer E-commerce is direct selling of goods and services among customers.
- It also includes electronic auctions that involve bidding. Bidding is a special type of auction that allows prospective buyers to bid for an item. For example, airline companies give the customer an opportunity to quote the price for a seat on a specific route on the specified date and time.

6. E-Banking:

- Online banking or E- banking is an electronic payment system that enables customers of a financial institution to conduct financial transactions on a website operated by the institution, Online banking is also referred as internet banking, e-banking, virtual banking and by other terms.

Fig.: E- Banking

7. Online Publishing:

Electronic publishing (also referred to as e-publishing or digital publishing) includes the digital publication of e-books, digital magazines, and the development of digital libraries and catalogs.

8. Online Booking (ticket, seat.etc)

Fig.: Online Booking

An **Internet booking engine** (IBE) is an application which helps the travel and tourism industry support reservation through the Internet. It helps consumers to book flights, hotels, holiday packages, insurance and other services online. This is a much needed application for the aviation industry as it has become one of the fastest growing sales channels.