WHAT ARE THE 5 GENERATIONS OF COMPUTERS?

- First Generation: Vacuum Tubes
- Second Generation: Transistors
- Third Generation: Integrated Circuits
- Fourth Generation: Microprocessors
- Fifth Generation: Artificial Intelligence

FIRST GENERATION: VACUUM TUBES (1940–1956)

The first computer systems used vacuum tubes for circuitry and magnetic drums for main memory, and they were often enormous, taking up entire rooms. These computers were very expensive to operate, and in addition to using a great deal of electricity, the first computers generated a lot of heat, which was often the cause of malfunctions. The maximum internal storage capacity was 20,000 characters.

First-generation computers relied on machine language, the lowest-level programming language understood by computers, to perform operations, and they could only solve one problem at a time. It would take operators days or even weeks to set up a new problem. Input was based on punched cards and paper tape, and output was displayed on printouts.

SECOND GENERATION: TRANSISTORS (1956–1963)

The world would see transistors replace vacuum tubes in the second generation of computers. The transistor was invented at Bell Labs in 1947 but did not see widespread use in computers until the late 1950s. This generation of computers also included hardware advances like magnetic core memory, magnetic tape, and the magnetic disk.

The transistor was far superior to the vacuum tube, allowing computers to become smaller, faster, cheaper, more energy-efficient, and more reliable than their first-generation predecessors. Second-generation computers moved from cryptic binary language to symbolic, or assembly, languages, which allowed programmers to specify instructions in words. High-level programming languages were also being developed at this time

THIRD GENERATION: INTEGRATED CIRCUITS (1964–1971)

The development of the integrated circuit was the hallmark of the third generation of computers. Transistors were miniaturized and placed on silicon chips, called semiconductors, which drastically increased the speed and efficiency of computers.

Instead of punched cards and printouts, users would interact with a third-generation computer through keyboards, monitors, and interfaces with an operating system, which allowed the device to run many different applications at one time with a central program that monitored the memory. Computers, for the first time, became accessible to a mass audience because they were smaller and cheaper than their predecessors.

FOURTH GENERATION: MICROPROCESSORS (1971–PRESENT)

The microprocessor ushered in the fourth generation of computers, as thousands of integrated circuits were built onto a single silicon chip. The technology in the first generation that filled an entire room could now fit in the palm of the hand. The Intel 4004 chip, developed in 1971, integrated all the components of the computer, from the central processing unit and memory to input/output controls, on a single chip.

In 1981, IBM introduced its first personal computer for the home user, and in 1984 Apple introduced the Macintosh. Microprocessors also moved out of the realm of desktop computers and into many areas of life as more and more everyday products began to use the microprocessor chip.

FIFTH GENERATION: ARTIFICIAL INTELLIGENCE (PRESENT AND BEYOND)

Fifth-generation computer technology, based on artificial intelligence, is still in development, though there are some applications, such as voice recognition, that are being used today. The use of parallel processing and superconductors is helping to make artificial intelligence a reality. This is also so far the prime generation for packing a large amount of storage into a compact and portable device.

Quantum computation and molecular and nanotechnology will radically change the face of computers in years to come. The goal of fifth-generation computing is to develop devices that will respond to natural language input and are capable of learning and self-organization.

Input Devices

Input devices are the devices that are used to send signals to the computer for performing tasks. The receiver at the end is the CPU (Central Processing Unit), which has work to send signals to the output devices. Some of the classifications of Input devices are:

- Keyboard Devices
- Pointing Devices
- Composite Devices
- Game Controller
- Visual Devices
- Audio Input Devices

Some of the input devices are described below.

Keyboard

The keyboard is the most frequent and widely used input device for entering data into a computer. Although there are some additional keys for performing other operations, the keyboard layout is similar to that of a typical typewriter.

Generally, keyboards come in two sizes: 84 keys or 101/102 keys but currently keyboards with 104 keys or 108 keys are also available for Windows and the Internet.

Types of Keys

- **Numeric Keys:** It is used to enter numeric data or move the cursor. It usually consists of a set of 17 keys.
- **Typing Keys:** The letter keys (A-Z) and number keys (09) are among these keys.
- **Control Keys:** These keys control the pointer and the screen. There are four directional arrow keys on it. Home, End, Insert, Alternate(Alt), Delete, Control(Ctrl), etc., and Escape are all control keys (Esc).
- **Special Keys:** Enter, Shift, Caps Lock, NumLk, Tab, etc., and Print Screen are among the special function keys on the keyboard.
- **Function Keys:** The 12 keys from F1 to F12 are on the topmost row of the keyboard.

Mouse

The most common pointing device is the mouse. The mouse is used to move a little cursor across the screen while clicking and dragging. The cursor will stop if you let go of the mouse. The computer is dependent on you to move the mouse; it won't move by itself. As a result, it's an input device.

A mouse is an input device that lets you move the mouse on a flat surface to control the coordinates and movement of the on-screen cursor/pointer.

The left mouse button can be used to select or move items, while the right mouse button when clicked displays extra menus.

Joystick

A joystick is a pointing device that is used to move the cursor on a computer screen. A spherical ball is attached to both the bottom and top ends of the stick. In a socket, the lower spherical ball slides. You can move the joystick in all four directions.

The joystick's function is comparable to that of a mouse. It is primarily used in CAD (Computer-Aided Design) and playing video games on the computer.

Track Ball

Track Ball is an accessory for notebooks and laptops, which works on behalf of a mouse. It has a similar structure to a mouse. Its structure is like a half-inserted ball and we use fingers for cursor movement. Different shapes are used for this like balls, buttons, or squares.

Light Pen

A light pen is a type of pointing device that looks like a pen. It can be used to select a menu item or to draw on the monitor screen. A photocell and an optical system are enclosed in a tiny tube. When the tip of a light pen is moved across a monitor screen while the pen button is pushed, the photocell sensor element identifies the screen location and provides a signal to the CPU.

Scanner

A scanner is an input device that functions similarly to a photocopier. It's employed when there's information on paper that needs to be transferred to the computer's hard disc for subsequent manipulation. The scanner collects images from the source and converts them to

a digital format that may be saved on a disc. Before they are printed, these images can be modified.

Optical Mark Reader (OMR)

An Optical Mark Reader is a device that is generally used in educational institutions to check the answers to objective exams. It recognizes the marks present by pencil and pen.

Optical Character Reader (OCR)

OCR stands for optical character recognition, and it is a device that reads printed text. OCR optically scans the text, character by character turns it into a machine-readable code, and saves it to the system memory.

Magnetic Ink Card Reader (MICR)

It is a device that is generally used in banks to deal with the cheques given to the bank by the customer. It helps in reading the magnetic ink present in the code number and cheque number. This process is very fast compared to any other process.

Bar Code Reader

A bar code reader is a device that reads data that is bar-coded (data that is represented by light and dark lines).Bar-coded data is commonly used to mark things, number books, and so on. It could be a handheld scanner or part of a stationary scanner. A bar code reader scans a bar code image, converts it to an alphanumeric value, and then sends it to the computer to which it is connected.

Web Camera

Because a web camera records a video image of the scene in front of it, a webcam is an input device. It is either built inside the computer (for example, a laptop) or attached through a USB connection. A webcam is a computer-connected tiny digital video camera. It's also known as a web camera because it can take images and record video. These cameras come with software that must be installed on the computer in order to broadcast video in real-time over the Internet. It can shoot images and HD videos, however, the video quality isn't as good as other cameras (In Mobiles or other devices or normal cameras).

Digitizer

Digitizer is a device that is used to convert analog signals to digital signals. it converts signals into numeric values. An example of a Digitizer is Graphic Tablet, which is used to convert graphics to binary data.

Microphone

The microphone works as an input device that receives input voice signals and also has the responsibility of converting it also to digital form. It is a very common device that is present in every device which is related to music.

Output Devices

Output Devices are the devices that show us the result after giving the input to a computer system. Output can be of many different forms like image, graphic audio, video, etc. Some of the output devices are described below.

Monitor

Monitors, also known as Visual Display Units (VDUs), are a computer's primary output device. It creates images by arranging small dots, known as pixels, in a rectangular pattern. The amount of pixels determines the image's sharpness.

The two kinds of viewing screens used for monitors are described below.

- **Cathode-Ray Tube (CRT) Monitor:** Pixels are minuscule visual elements that make up a CRT display. The higher the image quality or resolution, the smaller the pixels.
- **Flat-Panel Display Monitor:** In comparison to the CRT, a flat-panel display is a type of video display with less volume, weight, and power consumption. They can be hung on the wall or worn on the wrist.

Flat-panel displays are currently used in calculators, video games, monitors, laptop computers, and graphical displays.

Television

Television is one of the common output devices which is present in each and every house. It portrays video and audio files on the screen as the user handles the television. Nowadays, we are using plasma displays as compared to CRT screens which we used earlier.

Printer

Printers are output devices that allow you to print information on paper. There are certain types of printers which are described below.

- Impact Printers
- Character Printers
- Line Printers
- Non-Impact Printers
- Laser Printers
- Inkjet Printers

Impact Printer

Characters are printed on the ribbon, which is subsequently crushed against the paper, in impact printers. The following are the characteristics of impact printers:

- Exceptionally low consumable cost.
- Quite noisy
- Because of its low cost, it is ideal for large-scale printing.
- To create an image, there is physical contact with the paper.

Character Printers

Character Printer has the capability to print only one character at a time. It is of two types.

- Dot Matrix Printer
- Daisy Wheel

Line Printers

Line Printers are printers that have the capability to print one line at a time. It is of two types.

- Drum Printer
- Chain Printer

Non-Impact Printers

Characters are printed without the need for a ribbon in non-impact printers. Because these printers print a full page at a time, they're also known as Page Printers. The following are the characteristics of non-impact printers:

- Faster
- They don't make a lot of noise.
- Excellent quality
- Supports a variety of typefaces and character sizes

Laser Printers

Laser Printers use laser lights for producing dots which will produce characters on the page.

Inkjet Printers

Inkjet printers are printers that use spray technology for printing papers. High-quality papers are produced in an Inkjet printer. They also do color printing.

Speakers

Speakers are devices that produce sound after getting a command from a computer. Nowadays, speakers come with wireless technology also like Bluetooth speakers.

Projector

Projectors are optical devices that have the work to show visuals on both types of screens, stationary and moving both. It helps in displaying images on a big screen. Projectors are generally used in theatres, auditoriums, etc.

Plotter

Plotter is a device that helps in making graphics or other images to give a real view. A graphic card is mandatorily required to use these devices. These are the pen-like devices that help in generating exact designs on the computer.

Braille Reader

Braille Reader is a very important device that is used by blind users. It helps people with low vision or no vision to recognize the data by running their fingers over the device to understand easily. It is a very important device for blind persons as it gives them the comfort to understand the letters, alphabets, etc which helps them in study.

Video Card

A video Card is a device that is fitted into the motherboard of the computer. It helps in improvising digital content in output devices. It is an important tool that helps people in using multiple devices.

Global Positioning System (GPS)

Global Positioning System helps the user in terms of directions, as it uses satellite technology to track the geometrical locations of the users. With continuous latitudinal and longitudinal calculations, GPS gives accurate results. Nowadays, all smart devices have inbuilt GPS.

Headphones

Headphones are just like a speaker, which is generally used by a single person or it is a single-person usable device and is not commonly used in large areas. These are also called headsets having a lower sound frequency.

Both the Input and Output Devices of the Computer

There are so many devices that contain the characteristics of both input and output. They can perform both operations as they receive data and provide results. Some of them are mentioned below.

USB Drive

USB Drive is one of the devices which perform both input and output operations as a USB Drive helps in receiving data from a device and sending it to other devices.

Modem

Modems are one of the important devices that helps in transmitting data using telephonic lines.

CD and DVD

CD and DVD are the most common device that helps in saving data from one computer in a particular format and send data to other devices which works as an input device to the computer.

Headset

The headset consists of a speaker and microphone where a speaker is an output device and a microphone works as an input device.

Hardware and Software

Software and hardware are the two primary components of a computer. The visible and touchable physical or tangible part of a computer is called hardware.

Software is an ethereal element that cannot be seen with the naked eye but is essential to the operation of a computer.

Introduction to Hardware

Types of Hardware	Examples
Input devices.	Keyboard, Mouse, Scanner.
Output devices.	Monitor, Speakers, Printer.
Secondary storage devices.	Hard disc, DVD.
Internal components.	Motherboard, RAM, CPU.

1. Keyboard

One of a computer's most crucial input devices is the **keyboard**. A keyboard's design enables users to enter text, characters, and other commands into computers, tablets, desktops, and other devices directly.

2. Mouse

A **mouse** may be characterized as a little, handheld object. This tool is made to move or operate the cursor in a GUI (Graphical User Interface). A mouse essentially aids the user in selecting or pointing to any object that is present on the computer's display screen.

3. Printer

The **printer** is an external hardware output device. printer converts digital data stored on a computer or other device into a physical copy.

4. Monitor

The display unit of a computer is known as a **monitor**. All the processed data, such as texts and photos, are presented right on the screen. A screen circuit is another component of a monitor.

5. Hard Disc

A non-volatile data storage device is a computer **hard disc drive (HDD)**. Non-volatile storage devices are those that retain data even after being switched off. HDDs are only one form of storage device, yet they are required by all computers.

6. Speakers

A **computer speaker** is a device used for audio output that is connected to a computer. The sound card in the computer generates the signal that is needed to generate the sound that originates from a computer speaker.

7. Scanner

A **scanner** is a computing device that can take pictures of tangible objects and transform them into digital forms that may then be stored in a computer and viewed or altered using software programs.

8. Motherboard

The **motherboard** is the thin circuit board, Except for this board keeps essentially all of the components of a computer together. This indicates that the motherboard is where the CPU, RAM, ports for input and output devices, and hard drives are all found.

9. CPU

A **central processing unit (CPU)**, is the electronic circuitry that performs instructions comprising a computer program. The CPU performs basic arithmetic, logic and input/output tasks specified by the instructions in the given program.

Introduction to Software

A set of instructions provided to the computer to carry out a certain task is known as **computer software**.

The portion of a computer that cannot be seen or handled is known as its software.

When we input data into a computer, it first goes through input devices before being processed by software in the CPU. It receives user input, processes it, and outputs the result on the monitor.

Application software is a term used to describe software that is created to do a certain kind of task.

Few examples of Software are:

- Internet Browser
- Audio Player
- Video Player
- Operating System
- Game Software

What is Microsoft Office or MS Office?

Microsoft Office or MS Office can be seen as a form of a collection of an array of officerelated applications. Each of these Office-related applications has been created by the team of developers at Microsoft to cater to different uses. Microsoft in 2019 launched the latest version of its

cloud-based computing platform of MS Office called Microsoft 365. The first suite of MS Office containing various applications was launched in the year 1988, and since then different versions and a

total of 16 suites have been released by Microsoft the latest being the MS Office 19 which is for offline use unlike Microsoft 365 which is for online use.

MS Office Notes - MS Word Microsoft Word is the most convenient software used for creating text files. These text files can be like: As a word processing application, there are the following functions available in it

: • To process any commands on the existing text in Word, first, you need to select the text. To select any text, you need to place the cursor before the word and press Shift+Right arrow. Alternatively, you can place the cursor after the word ends and press Shift+Left Arrow.

• From Home Menu, you can copy/cut the existing text & paste it to some other place in the same document or in the other document. The other processes that can be performed from 'Home' menu are changing fonts, size, colour, Case, alignment, spacing etc. Bullets & Numbers, Paragraphs can also be introduced from the same menu. You can look for a particular word in the document by clicking on Find from Home menu or simply Pressing Ctrl+F. There is an option of replacing that word too.

• From 'Insert' menu, files apart from text can be inserted in the document. E.g. images, screenshots, tables, links & hyperlinks, charts, shapes, equations, special symbols, headers, footers & page numbers

• From Design menu, you can obtain pre-decided templates of fonts & font sizes for heading, subheading & other text of the document. That helps improve readability of the file quickly.

• Page layout option provides you with a chance to change spacing before the paragraphs, indents and general margin spacing of the page.

• From References option, you can insert Bibliography & Citation of the texts in different formats like MLA, APA but for that, you need to insert list of books you have referred

. • Review option helps you check spelling & grammar errors in the document & protect the document from being edited by non-trusted users. Now that we have looked at basics of MS Word, now let us move on to MS Excel

MS Office - Microsoft Publisher i)Microsoft Publisher is a Desktop Publishing Application and works as an entry-level Graphic Design application. ii)Though on the onset it may seem similar to MS Word it has a greater emphasis on Page layout and Design. It can be used to create basic templates, cover pages and logo designs. iii)The first version of Microsoft Publisher 1.0 was released in 1991. The file extension of files created by using Microsoft Publisher is .pub.

Microsoft Publisher allows you to easily and professionally create: R Newsletters R Signs R Brochures R Invitations R Catalogs R Web Sites R Flyers R Letterhead R Postcards R Envelopes R Business Cards R Business Forms R Greeting Cards R Banners R Calendars R Advertisements R Award Certificates R Labels R Gift Certificates R Programs R And More Using a desktop application such as Microsoft's Publisher is a great way to save time. It allows you to combine text, graphics, charts, and more to create an exciting publication. MS Publisher has 2000 publication templates to get you started right away. Wizards are available to help create your projects with step-by-step instructions. Publisher offers more than 40 design sets that allow you to have a consistent look when creating newsletters to letterhead, catalogs to web sites. Plus, with just a click of your mouse, you can change the design, color scheme, or layout.

What Are Computer Files and Folders?

Files and folders are a common metaphor for storing data on a computer. Even a modern device that hides files from you as much as possible still uses them under the hood. Here's a look at what files and folders are---and how computers got that way to begin with.

What Is a File?

When it comes to computers, a file is an abstract idea. It's a conceptual object -- more precisely, a group of related computer records treated as a single unit. The method by which computer operating systems store and retrieve files from disk is called a file system.

Files keep related data together so it isn't lost or disorganized, and so you can find it when you need to read or process it. Usually, each file represents a single document (such as a book report), a spreadsheet, a digital image, a video, a song, or otherwise. A file can also be a program that tells a computer what to do.

Applications use many files to work, including executable program files (that contain the instructions required to run the program), configuration files (that tell the program how to run), and data files that might store extra required information in a modular way.

Today, thanks to graphical operating system icons, many people think of a file as being equivalent to a document such as as a piece of paper, or perhaps a photographic print. Interestingly, the term "computer file" originated in the 1950s from a different (but related) metaphor.

The Origins of the File Metaphor

In a paper-based office, a "file" is a set of documents stored together in a container or a drawer, such as in a file cabinet. A file can also be the name of the cabinet itself. At the dawn of computing, many computers used punched cards to store data. Each card didn't hold much information, so a program or set of records typically spanned a stack of punched cards. When not in use, these stacks of cards were often stored in a file (a collection of related cards grouped together) within a special file cabinet or in large tubs called "tub files."

When it came time to load the data into the computer, someone would retrieve a "file of punched cards" and load it into a machine for reading. So at this time, a computer file was just a physical collection of records stored on paper. Later, when magnetic tape came into computer use, "files" were still typically associated with the physical media itself (such as a "tape file"), since the data was stored in a linear fashion and associated with other records by its location on a physical tape spool.

According to the Encyclopedia of Computer Science by Anthony Ralston (1976), when random access magnetic disks came on the scene, the concept of a "computer file" began to break free from its physical constraints. When hard drives became large enough, a computer file (a collection of related records, remember) could suddenly live anywhere on disk, even broken into pieces--that is, not necessarily stored in a physically contiguous manner on the disk's surface. At that point, a computer file became a logical concept: a collection of data defined by a digital index rather than a collection of data physically grouped together. That definition persists today.

What Is a Folder?

A folder is a collection of files. In modern operating systems, each folder can typically contain files, other folders, or both. Folders are a great way to organize files into groups that make sense for later retrieval.

A potentially confusing aspect of folders is that they are also sometimes called "directories." That's because a "directory" was an earlier term of a list of files on a disk. When PC operating systems began to support subdirectories (directories within directories) on larger disks in the 1980s, people used directories to group related files together in the same way we use folders today.

The modern concept of a "folder" on a computer originated in the 1981 with the Xerox Star operating system, which represented directories with icons that looked like manila file folders used with paper in an office environment. Later, the Apple Macintosh popularized this concept of the folder-as-directory, and Windows adopted it as well.

Chapter 2

What is Multimedia?

Multimedia is characteristically a convergence of various media platforms that include different contents, such as words or text, audio, music, images, infographics, videos, and animations. Today's multimedia is diametrically opposed to traditional media which relied only on text and other forms of paper-printed content. It also involves the integration of various other content forms, such as the integration of text with graphics.

One of the main features of multimedia is that it can be visually recorded and subsequently put on display on numerous platforms at the same time. Through the applications of multimedia, it is now possible to connect and interact with the masses via different devices.

- Creative Industries
- Commerce
- **Entertainment**
- Education
- **Educational Technology**
- Social Work Purposes
- **Communication**
- **Journalism**
- **Engineering**
- **Medicine**
- Research
- **Interior Designing**

Journalism

Media organizations everywhere are incorporating convergent technology in their daily reporting and practices of journalism. Global newspapers like the New York Times, Guardian, etc, have already made themselves pioneers in its usage and ushering global media towards a new age. Guardian's multimedia story 'The Shirt on Your Back' is a prime example of how a multimedia story is developed through the use of text, video, and other forms of interactive technologies. Nowadays, a journalist, with the help of a mobile phone, is capable of making live video broadcasts without the need for a camera person.

Application of Multimedia in E-Commerce

Online business has effectively replaced traditional ways of buying and selling. Simply, by scrolling through online shopping sites like Amazon we see how text, pictures, and videos have been blended into making an appealing user interface. Through the use of multimedia various companies offer interesting details of products to the prospective consumer who, simply through, a mobile phone buys and compares products online to check their suitability and price variances. For Example: During the early stage of online shopping or selling, still, pictures of the products were uploaded. But following the recent trends and advancements, you can now see videos in that place and can decide whether the piece of clothing or accessory will look good on you or not.

Application of Multimedia in Entertainment

One of the main and widespread applications of multimedia can be seen in the entertainment Industry. Movies, ADs, and Short clips are now being created using special effects and animations, like VFX. Multimedia is also used for gaming purposes which is distributed online or through CDs. These games also integrated various multimedia features. Online storage distribution of movies is not only its efficient use but also a way to secure them against any loss through infinite copies.

Applications of Multimedia in Education

The applications of multimedia in the education sector are no less than a paradigm shift. Through its usage, it is now feasible to create interactive educational materials, like books, PDFs, videos, PowerPoint presentations, etc along with one-touch access to websites like Wikipedia and Encyclopedia. Through virtual classrooms, teachers and students can avail the opportunity to learn, interact and exchange informative ideas without stepping outside and sitting for hours inside a classroom. On top of everything, computer-based competitive as well as scholastic exams are being conducted globally only via the use of multimedia.

Applications of Multimedia in Computer

With the **emergence of the internet** and its rapid spread across the world, traditional types of communication have become obsolete. Online video calling has become the new face of communication. Video platforms like Skype, and Google Meet allow video chats that can happen between friends or can be used for conducting meetings between different heads of countries. Communication has been moulded as a matter of a fraction of a second, hence, now you can easily convey anything with just a few clicks. This has turned out to be a boon in situations of emergency, thus, it is known as one of the most beneficial applications of multimedia.

Applications of Multimedia in Medicine

Multimedia is increasingly used by doctors to get trained by simply watching a surgery being done on a virtual platform. Simulation technology is used to develop human anatomy and study how it gets affected by different illnesses and then accordingly develop medicines and other remedial measures. Furthermore, the other applications of multimedia in medicine allow patients to consult a doctor online to get medical intervention and treatment for their sickness.

Interior Designing

Nowadays, **interior designing** is not a process of drawing sketches or designing structures on long white paper. Today, interior designers use different software like SketchUp, AutoCAD, and Revit to create designs that allow a customer to have a virtual walk through the house before it takes the shape of a real house. With the use of this application, we can now take an intricate look at the combined product of an architecture and interior designer.

Advantages of Multimedia

- The digitization process merges all the various media, making it dynamic and integrated.
- It is very user-friendly because the user can sit and watch the presentation, read the text, and listen to the audio, they do not have to expend much energy.
- Any type of media is easily shareable because it is digital. adapted to fit a variety of contexts and target audiences.
- It engages a range of senses. When using multimedia, takes full use of the user's senses, including hearing, observing, and speaking.
- It can be used for a variety of audiences, including both individuals and groups.

What Is a Text File?

A text file is a file containing text, but there are several ways to think about that, so it's important to know the kind of text document you have before dealing with a program that can open or convert it.

Types of Text Files

In the general sense, a text file refers to any file that has *only* text and is void of images and other non-text characters. These sometimes use the TXT file extension, but don't necessarily need to. For example, a Word document that's an essay containing just text can be in the DOCX file format but still be called a text file.

I've even seen semi-text-only files be referred to as text files, just because the *majority* of the document is in fact text. Back to the DOCX example, if the file does have some graphs and a few photos, some people might still refer to it as a text document.

Another kind of text file is the "plain text" file. This contains zero formatting (unlike RTF files), meaning nothing is bold, italic, underlined, colored, using a special font, etc. Several examples of plain text file formats include ones that end in these file extensions: XML, REG,

Introduction to Computer Graphics & Graphics Systems
Overview of computer graphics, storage tube graphics display, Raster scan display. Points & lines, Line drawing algorithms, DDA algorithm, Bresenham's line algorithm, Circle generation algorithm, Ellipse generating algorithm, scan line polygon, fill algorithm, boundary fill algorithm, flood fill algorithm.

2D Transformation
Basic transformations: translation, rotation, scaling, Matrix representations & homogeneous coordinates, transformations between coordinate systems, reflection shear, Transformation of points, lines, parallel lines, intersecting lines.

Viewing
Viewing pipeline, Window to viewport coordinate transformation, clipping operations, point clipping, line clipping, clipping circles, polygons & ellipse.

3D Transformations

Translation, rotation, scaling & other transformations. Rotation about an arbitrary axis in space, reflection through an arbitrary plane, general parallel projection transformation; clipping, viewport clipping, 3D viewing.

Curves

Curve representation, surfaces, designs, Bezier curves, B-spline curves, end conditions for periodic B-spline curves, rational B-spline curves.

Hidden surface Detection

Depth comparison, Z-buffer algorithm, Backface detection, BSP tree method, the Printer's algorithm, scan-line algorithm, Hidden line elimination, wireframe methods.

Color & shading models

Light & color model, interpolative shading model, Flat shading, Phong shading, Gouraud shading, Lambert lighting model, Phong lighting model, Blinn-Phong lighting model, Texture.

Computer Drawings

The variety of drawings that are utilized in engineering are too numerous to illustrate individually here. A few examples from engineering disciplines will demonstrate the versatility of modern CAD systems. · Aerospace: Layout drawings, part drawings, subassemblies, assemblies · Chemical: Process schematics, process plant layout drawings · Civil, Construction: Structural detail drawings, site plan drawings, construction drawings, road - use plans · Electrical, Computer: Circuit board design, very large system integration (VLSI) design · Industrial and Manufacturing: Manufacturing plant layout drawings, subassemblies, assemblies · Mechanical : part drawing, subassemblies, assemblies In the near future, CAD will become an important part of engineering activities. But we will still have to know the rules of engineering drawing. In other words, as the computer does not poses the ability to design a component, without knowing these rules we cannot draw, even with the help of a computer. But drawing has been made simpler with the aid of computers. The advantages of using CADD systems are listed as follow: · constant quality drawing the quality of lines, dimensions, symbols, notes, etc., are independent of the individual skill of the draughtsman; · creation of database, which is the collection of useful information that may be retrieved by draughtsmen and accessed by other processors; · creation of library of commonly used electrical, hydraulic, welding, etc., symbols standard components such as nuts, bolts, screws, bearings, etc., projection symbols, parts of drawings, etc., can be stored in the memory and recalled when needed and additionally they can be positioned anywhere on the screen and redrawn to any scale and angle of inclination. · use of layers the drawings may be drawn on any one of a number of available layers, which may be considered as a stack of transparent sheets and any separate sheet can be selected for drawing construction lines, grids, dimensions, notes, hatching, etc., but to make up together a complete drawing when required. · saving on repetition repetitive work on similar features or drawings and the resulting tiredness and boredom is replaced by automatic redrawing, hence attention and interest are maintained with the consequent marked increase in speed and productivity; · greater accuracy due to computer mathematical accuracy, a high level of dimensional control is obtained with reduction in the number of mistakes resulting in accurate material and cost estimates; · multicolour drawings visualisation of drawings relates directly to the projection used, pictorial projections are easier to understand than orthographic projection and the different colours obtainable by computers enhance the understanding even further; · editing

functions the powerful editing functions of correcting mistakes, deleting and inserting new features, copying, moving, translating and rotating features, scaling, etc., is only made possible with the use of computers.

Frame-by-frame animation

The oldest form of animation, frame-by-frame animation is any form of animation that is shot one frame at a time, like a flipbook. It is usually reserved for non-digital animation such as hand-drawn or stop motion animation.

Motion capture (mocap) animation

Motion capture uses a mix of technology and mocap sensors to track and record real-life movement, and translate it into 3D animation. Mocap devices, made up of sensors and markers, are attached to an object or actor, which are then filmed on a special camera rig.

Procedural animation

Procedural animation automatically generates animation in real-time. This is different from mocap and other 3D animation where animations are predefined assets (i.e., they have been created by hand or with a mocap device). The technique for procedural animation is to generate animations that are reliant on physics simulations like water, for example, where the simulation would take fluid dynamics into account.

Behavioral animation

Behavioral animation is a form of procedural animation where an autonomous character can determine its own actions to an extent. It relies on generation using certain rules that define how objects react to their environment. It can be used to animate crowds or flocks of animals, using relatively simple rule-based motion for a large number of moving objects.

Keyframing

Keyframing is the backbone of animating any form of movement, creating a smooth transition between frames. Digital keyframe animation identifies different elements in each frame, and chooses how those elements will move over time (frames per second) for the most natural result. You can adjust your keyframes using different parameters like position, scale, rotation, and opacity, and also the manner in which you want the action to be performed. This is called keyframe interpolation.

Physically based dynamics

In computer graphics, physically based dynamics is concerned with the simulation of often complex physically plausible behaviors. This form of animation is popular in video games, movies, and interactive simulations. These animations are created in physics engines where physical behaviors can be scripted, even those with minute details such as fluids or smoke.

Morphing

Morphing is a visual effects technique where one object seamlessly transforms into another. This is different from tweening, which inserts images between keyframes as an animation effect to create the illusion of movement.

2D animation

A traditional form of animation, 2D animation creates movement in a two-dimensional space. It occurs when slightly different drawings are sequenced together over time (typically at 24 frames per second), giving the illusion of movement, but with no depth to the image. This is most commonly used for cartoons.

3D animation

Created using software, 3D animation takes computer-generated objects and creates the illusion of movement through a digital three-dimensional space. Unlike 2D animation, you don't need to animate every frame. 3D animation is split into three parts: modeling, layout and animation, and rendering.

Audio Video Software's (AV)

What is AV (audio video)?

AV, an abbreviation for audio/video, is frequently used as a generic term for the audio and video components and capabilities in home entertainment systems and related product descriptions and reviews.

The term "AV" is also used to describe any form of media that involves both sound and visual elements. This can include a wide range of applications, from traditional film and television to more modern forms of media such as video games, virtual reality and interactive multimedia presentations.

The role of AV in technology

In the world of technology, AV refers to the systems and equipment used to create, process and distribute audio and visual content. This can include everything from cameras and microphones to software for editing and post-production, as well as the various hardware and software systems used to display and amplify the final product.

The role of AV in entertainment/media

One of the key applications of AV technology is in the entertainment industry, where it is used to create movies, television shows and other forms of media that are intended to be

watched and heard by audiences. AV technology is also used in a variety of other settings, such as corporate events, live performances and educational environments.

Adobe Audition

Adobe Audition is a digital audio editing program developed by Adobe Systems Inc. The workstation includes features such as a multitrack, nondestructive mix/edit environment and a non-destructive wave form editor. It was initially developed as a shareware program that includes some cripplewar capabilities.

The program was initially called Cool Edit Pro until Adobe purchased the rights to the 2.0 version from Syntrillium Software in 2003.

Techopedia Explains Adobe Audition

Adobe Audition software is a complete multitrack digital audio recorder, mixer and editor for Windows. When used along with a Windows sound card, the program provides a complete digital recording studio experience to the user's computer.

The program offers flexible work flow through its multitrack recording studio and is used in producing music, radio broadcasts, or audio for video. Adobe Audition also supports thousands of royalty-free music loops that can be used to compile songs and soundtracks.

Adobe Premier pro

The most powerful video editing and production tool

Adobe Premiere Pro is the most powerful, impressive, feature-packed, and reliable video editing software. Over the years, Adobe has released several products, which have become industry standards in multiple fields. Premiere Pro is part of Creative Cloud apps, and you can start using the program with a monthly subscription. There's also a free trial period to test the interface, features, and functionalities.

Premiere Pro has a flexible, intuitive, and feature-packed interface. When you launch the video production software, the startup view lets you quickly access ongoing projects, create new projects, and search Adobe Stock. With a dark-colored program window, all the clips are clearly visible. With a single click, you can switch among features like Editing, Titles, Color, Assembly, Effects, and Audio. You can either edit preset workspaces or create new customized panels.

By default, the program comes with a 4-panel layout. At the top left of the screen, you'll notice the source preview, while the project preview is located at the top right-hand side. Project assets are visible at the lower left side of the screen, and timeline tracks can be

accessed from the lower right-hand side. You can easily remove or add control buttons per your preferences.

Software Design is the process to transform the user requirements into some suitable form, which helps the programmer in software coding and implementation. During the software design phase, the design document is produced, based on the customer requirements as documented in the SRS document. Hence the aim of this phase is to transform the SRS document into the design document.
The following items are designed and documented during the design phase:

- Different modules required.
- Control relationships among modules.
- Interface among different modules.
- Data structure among the different modules.
- Algorithms required to implement among the individual modules.

Objectives of Software Design:

1. **Correctness:**
   A good design should be correct i.e. it should correctly implement all the functionalities of the system.
2. **Efficiency:**
   A good software design should address the resources, time, and cost optimization issues.
3. **Flexibility:**
   A good software design should have the ability to adapt and accommodate changes easily. It includes designing the software in a way, that allows for modifications, enhancements, and scalability without requiring significant rework or causing major disruptions to the existing functionality.
4. **Understandability:**
   A good design should be easily understandable, for which it should be modular and all the modules are arranged in layers.
5. **Completeness:**
   The design should have all the components like data structures, modules, and external interfaces, etc.
6. **Maintainability:**
   A good software design aims to create a system that is easy to understand, modify, and maintain over time. This involves using modular and well-structured design principles eg.(employing appropriate naming conventions and providing clear documentation). Maintainability in software Design also enables developers to fix bugs, enhance features, and adapt the software to changing requirements without excessive effort or introducing new issues.

What is Content/Media Website

What social media sites should my department be on?
With so many new social media sites launching each year, deciding which one is right for your department can be overwhelming. It is important to be aware of emerging social media sites, and understand how they could fit into your communications strategy. However, not all social media sites will be conducive to your department's brand or marketing goals.

Before you launch an official account on a new social media site for your department, try it on a personal level. Create an account for yourself, and then use it. Study how other individuals and companies use the site. What type of content is posted on the site? Which posts are the most popular on the site? How often are users and companies posting?

Then, think about how your department would fit in. Just because you can be on a social media site, doesn't necessarily mean you should be. Spreading yourself across too many social media sites could dilute your social strategy, preventing you from using any of them effectively. Instead, focus on the social media sites that allow you to share your content with the appropriate audience.

Social Media Sites?

Facebook is the largest social media platform in the world with 2.96 billion users. Here are the figures for the most popular social media websites as of January 2023:

1. Facebook (2.96 billion users)
2. YouTube (2.51 billion users)
3. WhatsApp (2 billion users)
4. Instagram (2 billion users)
5. WeChat (1.31 billion users)
6. TikTok (1.05 billion users)
7. Facebook Messenger (931 million users)
8. Douyin (715 million users)
9. Telegram (700 million users)
10. Snapchat (635 million users)

Interestingly, two sites that are especially well-known in the U.S., X platform and Pinterest, don't make the top 10 list globally. X platform is 14th, with 556 million users worldwide, while Pinterest is 15th with 445 million users.

News media describes content that a third party creates relating to your brand, products, and services. It's the coverage you receive on sites other than your own.

News media, or earned media, coverage comes from media relations. It’s getting your company, product, service, expert, opinion, and ideas included in a news story – online, in print, and on radio, TV, podcasts, etc. It’s when a newspaper or industry trade publication (blog, magazine, website) features and quotes your brand. It’s appearing on local and national TV morning shows or the evening news. It’s what most people think of when they think of PR. Some might call this publicity.

DIGITAL PAPER?

Use digital paper to create digital scrapbook pages (which can then be printed or used digitally). Or, print your paper to use just as you would traditional scrapbook paper. Digital

paper is a great supply to create coordinating party decorations. Here are just a few party or shower decorations you could make with printed digital paper: napkin rings, placemats, water bottle labels, straw flags, cupcake toppers, tray liners, vase wraps, favor tags.

Digital paper is an electronic artwork file, often in jpeg or png format, featuring a pattern like those found on traditional printed scrapbook paper. The "paper" is typically offered as 12" x 12" or 8.5" x 11" images. After downloading, the paper can be used to create digital scrapbook pages or printed to create crafts, invites, decorations or anything else that typically uses traditional paper.

(Digital Paper) A line of document collaboration software from ePlus inc., Herndon, VA (www.eplus.com). Specializing in fast access and distribution of engineering drawings, blueprints and technical manuals to users, the Digital Paper products offer numerous features, including converting high-resolution images to GIFs for collaborative viewing over the Web. A variety of CAD and other image formats are supported.

What is a blog?

A blog, short for weblog, is a frequently updated web page used for personal commentary or business content. Blogs are often interactive and include sections at the bottom of individual blog posts where readers can leave comments.

Most are written in a conversational style to reflect the voice and personal views of the blogger. Some businesses use blogs to connect with target audiences and sell products.

Blogs were originally called weblogs, which were websites that consisted of a series of entries arranged in reverse chronological order, so the newest posts appeared at the top. They were frequently updated with new information about various topics.

Today's blogs are more likely to be a personal online journal or commentary related to a business that's frequently updated and intended for general public consumption. Blogs are still often defined by their format, consisting of a series of entries posted to a single page in reverse chronological order. Many blogs are collaborative and include multiple authors often writing on a single theme such as Engadget, a tech blog with multiple authors.

The first blog sites were essentially online personal diaries or journals. They became popular for their regular content updates, personal point of view, aggregation of interesting links, and the opportunity to engage in the comments section with the blogger and their audience.

Blogs have come a long way from their early days as online journals, though it's still a popular reason people create a blog. They've also become an important way for buyers to gather information about the products and services they're researching.

What Does Podcast Mean?

A podcast is a type of digital media, usually audio, that is available in a series of episodes or parts and is streamed or downloaded by the end user over the Internet. Podcasts can be made available via a release schedule or uploaded to the Web randomly

The podcast was initially conceived by Apple for delivering musical/audio-based content for the iPod. A podcast can be played from the website directly, or downloaded as an MP3 or similar format to be played on a computer or compatible mobile device. Typically, podcasts are distributed directly by the producer or podcaster, or are syndicated via a content delivery platform. Besides audio, podcasts can now deliver other digital media such as video, e-books and radio broadcasting. Podcasts are used for everything from news and entertainment to education.

A blog is usually devoted to a subject of interest to a target audience -- such as fashion, politics or information technology. Blogs can be thought of as providing ongoing commentary on a theme. They're intended to engage with a community interested in a topic and the personality or products of the blogger or sponsoring business. Bloggers often pick unique domain names that reflect the topic at hand, such as Not Another Cooking Show, a food blog.

“Podcasting is a way to distribute audio and video programming over the Web that differs from earlier online audio and video publishing because the material is automatically transferred to the user’s computer and can be consumed at any time, usually on an Apple iPod or another kind of portable digital music player commonly known as an MP3 player.”

Rather than listening or watching content from a live stream on the web, in other words, individuals download the file to a portable media player or PC. They can then play it anytime, anywhere. Podcasts now include everything from NPR news reports to episode recaps of HBO’s hit series, Entourage.

The term podcast was first coined by the journalist Ben Hammersley in an article published in The Guardian in February 2004. Only a year later, the New Oxford American Dictionary anointed it as the word of the year due to its rapid evolution from an obscure, techie activity toward a mass medium.

What follows below is meant to be a primer on podcasting and includes sections on audience data, where to go to download podcasts, the economics of the medium, and tips on how one can create a podcast.

Bloggers control their content and don't have to rely on other outlets to publish their views and connect with an audience. Monetization strategies let bloggers make money from their writing and sometimes build entire careers.

Chapter 3

What is the Internet & History of the Internet

The Internet started off with research into what was then known as packet switching as early as the 1960s. Packet switching was thought of as a better and faster method to transfer data than the hardware solution to the problem, i.e., the circuitry. The packet switching technology was essential to the development of ARPANET by the United States Military. ARPANET is considered the first known group of interconnected computers aka the internet. This system was used to transfer confidential data between the Military. This data-sharing technology was then opened to educational institutes in the United States to allow them to access to government's supercomputer, first at 56 kbit/s, then at 1.5 Mbit/s, and then at 45 Mbit/s. Com Internet service providers began to arise in the late 1980s and the internet was fully commercialized in the US by 1995.

This question may seem easy to answer to the young generations, who have grown under its influence, but defining it isn't really as easy. Internet, also known as the World Wide Web (www), is a global system of interconnected computer networks that use a protocol called the Internet Protocol Suite (TCP/IP) to link to billions of devices all around the world. The impact of this has been so enormous that it has been referred to as the 8th continent of the world. This carries a vast range of information, from the top-secret military and research files

to the most trending and viral video of the week. This massive storage is shared by everyone, with everyone's computer contributing to the ever-expanding treasure trove of knowledge.

The advent of the internet is heavily influencing most traditional communication methods such as newspapers, telephones, television, etc. They are giving rise to new services such as internet phones and internet tv. The exchange of information has been accelerated exponentially and consequentially the exchange of information has led to an improvement in the standard of life for many people across the globe.

What's most curious about the internet is its structure. It has no centralized governance either technologically or legally, speaking regarding the policy for access and usage. Every network decides its policy and implements it within its jurisdiction.

Two Main Types of Computer Networks

A network consists of two or more computers that are linked to each other in order to exchange files, share resources, and allow electronic communication. These interconnected computers are linked to one another by cables, radio waves, telephone lines, infrared beams, and satellites. Listed below are the two main types of a computer networks:

- **Local Area Network (LAN):** A LAN is two or more connected laptops or computers or phones sharing information with each other in a small geographic location. For example, a network of computers at your home or work.
- **Wide Area Network (WAN):** A WAN is basically two or more interconnected LANs. These networks are farther apart than the systems in LAN. They can communicate via telephone

Concept of internet

The **Internet** is an increasingly important part of everyday life for people around the world. But if you've never used the Internet before, all of this new information might feel a bit confusing at first.

Throughout this tutorial, we'll try to answer some basic questions you may have about the Internet and how it's used. When you're done, you'll have a good understanding of **how the Internet works**, how to **connect to the Internet**, and **how to browse the Web**.

The Internet is a **global network** of billions of computers and other electronic devices. With the Internet, it's possible to access almost any information, communicate with anyone else in the world, and do much more.

You can do all of this by connecting a computer to the Internet, which is also called **going online.** When someone says a computer is online, it's just another way of saying it's connected to the Internet.

The **World Wide Web**—usually called the **Web** for short—is a collection of different **websites** you can access through the Internet. A **website** is made up of related text, images, and other resources. Websites can resemble other forms of media—like newspaper articles or television programs—or they can be interactive in a way that's unique to computers.

The purpose of a website can be almost anything: a news platform, an advertisement, an online library, a forum for sharing images, or an educational site like us!

Once you are connected to the Internet, you can access and view websites using a type of application called a **web browser**. Just keep in mind that the web browser itself is not the Internet; it only displays websites that are stored on the Internet.

Significance / Importance Of Internet Technology

1. Uses of the Internet in Education

The Internet is a great platform for students to learn throughout their lifetime. They can use the internet to learn new things and even acquire degrees through online education programs. Teachers can also use the internet to teach students around the world.

2. Internet Use to Speed Up Daily Tasks

The Internet is very much useful in our daily routine tasks. For example, it helps us to see our notifications and emails. Apart from this, people can use the internet for money transfers, shopping order online food, etc.

3. Use of the Internet for Shopping

With the help of the internet, anybody can order products online. The increase in online shopping has also resulted in companies offering a huge discount for their customers.

4. Internet for Research & Development

The Internet plays a pivotal role in research and development as it is propelled through internet research. The benefit of the internet is enjoyed by small businessmen to big universities.

5.Business Promotion and Innovation

The Internet is also used to sell products by using various e-Commerce solutions. The result is new services and businesses starting every day thereby creating job opportunities and reducing unemployment.

6.Communication

Without a doubt, the internet is the most powerful medium of communication at present. It connects people across different parts of the world free and fast.

7. Digital Transactions

The internet facilitates internet banking, mobile banking, and e-wallets. Since all digital transactions are stored in a database, it helps the government to track income tax details or income reports in the ITR.

8. Money Management

The internet can also be used to manage money. Now, there are many websites, applications, and other tools that help us in daily transactions, transfers, management, budget, etc.

9. Tour & Travel

During tour and travel, the use of the internet is highly effective as it serves as a guide. People browse the internet before they start visiting the places. Tour bookings can also be done using the internet.

The influence of the internet in our daily life is huge. It has opened us a magical world of information and we would have never seen the world as it is without the internet. Considering its scope and importance, it would be hard to imagine a world without the internet.

Elements of internet

The Elements of the Internet They are tools that allow users to connect to the Internet and use it from anywhere in the world. These elements are constantly evolving.

The Internet is a group of global communications networks that provide access to a number of communication services, including the World Wide Web. Contains emails, news, entertainment and data files.

The Internet contains a lot of huge information, and new ways of access, interaction and connection are constantly provided. A new dictionary is constantly being added to its development.

The main elements of the Internet are the cloud, connection, browser, user, web pages and social networks.

6 most important elements of the Internet

1- Cloud

A cloud is a collection of computers connected to a specific network protocol.

This protocol allows you to transmit data, which can be websites, e-mail, audio or video.

2- Connection

It refers to a link that connects the cloud to a specific user’s device. There are several types of connections.

For example, there is a cable connection directly connected to a PC or laptop; but the most used is a wireless connection, such as Wi-Fi. Both installed internally and via a USB port, a Wi-Fi connection allows the computer to connect to radio frequencies to the device in a

relatively short range. This device, in turn, connects to the Internet. Another form of wireless communication is bluetooth, a technology similar to Wi-Fi, but which requires the interaction of two devices. The range is even shorter.

Finally, there is the Internet connection via the mobile cellular network.

3- Browser

This is a program used to access websites. A few years ago, Microsoft Internet Explorer was the most popular.

Today, Windows Explorer and its successor, Edge (Windows 10/11), have been replaced. The top and most used browser today is Google Chrome.

4 – User

Internet users are all those who use this network, no matter where they are.

The user accesses the Internet through a computer, mobile phone with Internet connection, digital TV, games, computers and tablets, among others ..

It is estimated that the number of Internet users worldwide is over three thousand eight hundred million people.

China has the largest number of Internet users, followed by India and the United States.

5- Website

These are the documents that make up the World Wide Web. These documents are written in a hypertext language called HTML and translated by a browser.

Pages can be static; that is, they always show the same content. Dynamic pages change the content every time you access them.

A web page is not like a website. Website or website this is a collection of pages; a web page is a separate HTML document.

6- Social networks

These are communities that are hosted on the Internet and allow users to interact with each other on the Internet.

The most popular social networks are Facebook, Twitter, Instagram, LinkedIn and Pinterest.

Functions of the internet

THE FUNCTION OF THE INTERNET

The internet has become an essential part of our lives, and its functions are vast and varied. One of the most important functions of the internet is communication. The internet has

revolutionized the way we communicate with each other, making it faster and more efficient. With email, instant messaging, and social media, we can now communicate with people all over the world in real-time. The internet has also made it easier to stay in touch with friends and family, even if they are on the other side of the world.

In addition to communication, the internet has also changed the way we access and share information. With just a few clicks, we can access a vast amount of information on any topic imaginable. The internet has made it possible for us to learn new things, research topics, and access news and information from anywhere in the world. The internet has also made it easier for us to share information with others, whether it be through social media, blogs, or online forums.

Another significant function of the internet is e-commerce. With the rise of online shopping, the internet has become a global marketplace, connecting buyers and sellers from all over the world. Online retailers can reach a much larger audience than traditional brick-and-mortar stores, and consumers can shop from the comfort of their own homes. The internet has also made it easier for small businesses to compete with larger companies, as they can now sell their products and services online.

The System Behind Internet

The internet is a complex system of interconnected networks that enables the exchange of information and data between devices all over the world. Its function is to provide a way for computers and other devices to communicate with each other, allowing users to access information and services from anywhere in the world.

At its core, the internet is made up of servers and routers. Servers are powerful computers that store and manage data and services, while routers are devices that connect different networks together. When a user requests information or data from the internet, their device sends a request to a server, which then sends the requested information back to the user's device.

Email

Email is a service which allows us to send the message in electronic mode over the internet. It offers an efficient, inexpensive and real time mean of distributing information among people.

E-Mail Address

Each user of email is assigned a unique name for his email account. This name is known as E-mail address. Different users can send and receive messages according to the e-mail address.

E-mail is generally of the form username@domainname. For example, webmaster@tutorialspoint.com is an e-mail address where webmaster is username and tutorialspoint.com is domain name.

- The username and the domain name are separated by **@ (at)** symbol.
- E-mail addresses are not case sensitive.
- Spaces are not allowed in e-mail address.

- Electronic mail, commonly shortened to “email,” is a communication method that uses electronic devices to deliver messages across computer networks. "Email" refers to both the delivery system and individual messages that are sent and received.
- Email has existed in some form since the 1970s, when programmer Ray Tomlinson created a way to transmit messages between computer systems on the Advanced Research Projects Agency Network (ARPANET). Modern forms of email became available for widespread public use with the development of email client software (e.g. Outlook) and web browsers, the latter of which enables users to send and receive messages over the Internet using web-based email clients (e.g. Gmail).
- Today, email is one of the most popular methods of digital communication. Its prevalence and security vulnerabilities also make it an appealing vehicle for cyber attacks like phishing, domain spoofing, and business email compromise (BEC).

Web Browser

The web browser is an application software to explore www (World Wide Web). It provides an interface between the server and the client and requests to the server for web documents and services. It works as a compiler to render HTML which is used to design a webpage. Whenever we search for anything on the internet, the browser loads a web page written in HTML, including text, links, images, and other items such as style sheets and JavaScript functions. Google Chrome, Microsoft Edge, Mozilla Firefox, and Safari are examples of web browsers.

A web browser helps us find information anywhere on the internet. It is installed on the client computer and requests information from the web server such a type of working model is called a client-server model.

The browser receives information through HTTP protocol. In which transmission of data is defined. When the browser received data from the server, it is rendered in HTML to user-readable form and, information is displayed on the device screen.

Website Cookies

When we visited any website over the internet our web browser stores information about us in small files called cookies. Cookies are designed to remember stateful information about our browsing history. Some more cookies are used to remember about us like our interests, our browsing patterns, etc. Websites show us ads based on our interests using cookies.

Some Popular Web Browsers

Here is a list of 7 popular web browsers:

1. Google Chrome:

Developed by Google, Chrome is one of the most widely-used web browsers in the world, known for its speed and simplicity.

2. Mozilla Firefox:

Developed by the Mozilla Foundation, Firefox is an open-source browser that is known for its privacy features and customization options.

3. Apple Safari:

Developed by Apple, Safari is the default browser on Mac and iOS devices and is known for its speed and integration with other Apple products.

4. Microsoft Edge:

Developed by Microsoft, Edge is the default browser on Windows 10 and is known for its integration with other Microsoft products and services.

5. Opera:

Developed by Opera Software, Opera is a web browser that is known for its speed and built-in VPN feature.

6. Brave:

Developed by Brave Software, Brave is a web browser that is focused on privacy and security and blocks third-party ads and trackers by default.

7. Tor Browser:

Developed by The Tor Project, Tor Browser is a web browser that is designed for anonymous web browsing and is based on Mozilla Firefox.

These are some of the most popular web browsers, there are other browsers available such as Vivaldi, Brave, and so on. The choice of a web browser depends on the user's preference and requirements.

What is LAN?

It is an abbreviation for Local Area Network. It connects various network devices in a way that the workstations and PCs (personal computers) can share programs, tools, and data. A single switch or stack of various switches connects a group of various devices and computers together. They use a private addressing scheme- that the TCP/IP protocol defines. The private addresses of every computer are unique in relation to one another. At every LAN's boundary, you will find routers that connect them all to a larger WAN.

The rate of data transmission is very high because it links to a very limited number of computers. These connections exhibit a higher speed and require relatively inexpensive hardware (for example, network adapters, hubs, Ethernet cables, etc.). A LAN covers a very small area of about a few kilometers, and people own them privately for home, office buildings, schools, hospitals, etc. It is very easy for people to design a LAN and maintain it. The communication medium that it uses has coaxial cables and twisted-pair cables. It also has minimal noise and error due to its short distance coverage.

Data rates in early LAN ranged from 4 Mbps to 16 Mbps. This speed extends to approx 100-1000 Mbps today. The LAN has a very short propagation delay. It relies typically on wired connections (to attain better security and speed), but it may also comprise wireless connections. The smallest of LANs may make use of just two computers, and the larger ones may accommodate thousands of them. Users experience high fault tolerance and low congestion in a LAN network (like a few students playing together in the same room).

What is WAN?

It stands for Wide Area Network. It basically extends over large areas, but it might stay confined within a state or a country's boundaries. A connection of various LANs may also constitute a WAN. They may connect to each other using radio waves and telephone lines. A WAN typically may stay limited to any enterprise (an organization or a corporation) or may even be accessible to the general public. It comes with a technology that is very expensive and relatively high-speed.

WANs are basically of two types: Point-to-Point WAN and Switched WAN. It is also very difficult to maintain as well as design a WAN. The fault tolerance is also very less, just like MAN, and it brings more congestion in a network. The communication medium deployed for WAN is the Satellite Link or Public Switched Telephone Network (PSTN). The usual long-distance transmission leads to a higher error and voice in a WAN.

The data rate concerning a WAN is comparatively slower than LAN- about a tenth of its speed. It is because of the higher distance that it covers and more number of terminals, servers, etc. The speed of transmission may range in a WAN from a few Kbps (Kilobits per second) to Mbps (Megabits per second). One of the biggest issues that WAN faces is the propagation delay. A few devices that help in data transmission via WAN are: Satellites, Microwaves, and Optic wires. One example of a Point-to-Point WAN is the dial-up line connecting any home computer to the Internet. One example of a Switched WAN is the ATM (Asynchronous Transfer Mode) Network.

What Is an IP Address?

IP address stands for internet protocol address; it is an identifying number that is associated with a specific computer or computer network. When connected to the internet, the IP address allows the computers to send and receive information.

- An internet protocol (IP) address allows computers to send and receive information.
- An IP address allows information to be sent and received by the correct parties, which means it can also be used to track down a user's physical location in some instances.
- IP addresses are generated through a hierarchical system involving the IANA, RIRs and ISPs.
- Common IP security threats include hijacking, blacklisting, and DDoS attacks.
- Users can protect their IP address by using firewalls, keeping software updated, using VPNs, and enabling two-factor authentication.
- Different types of IP addresses include public and private, with public IP addresses being either dynamic or static.

Social Media Applications

Social media refers to websites and applications that enable users to create and share content or to participate in social networking.

With the rise of more powerful technologies and better computer networks connecting computers sites like Six Degrees, one of the earliest recognized social media platforms, became popular fast. With the ability for users to connect and share photos and information people with access to the internet and a computer were able to interact with anyone.

Eventually as technology progressed Myspace and Facebook became more relevant social media applications. With this came the need for cybersecurity on social media since many people were very new and would share personal information on such sites. Uses of Social Media Advertisement - With so many individuals signing up and accessing social media platforms, companies are able to create their own accounts and increase their reach for advertisements.

They are able to quickly spread information about sales and products to the palms of people within seconds. Communication - Like many other forms of technology, people often use social media to connect and get to know people from virtually any point on the globe.

People are able to create communities who share the same interests with them and often collaborate with one another on whatever they choose. Entertainment - Many social media platforms such as YouTube and Instagram have created multiple careers for people. Through company sponsoring and advertisements, people are able to make a living from posting on social media. Users are able to filter what kind of content gets displayed on their application. Being able to find others with similar interests such as gaming, beauty, and many other subjects.

4th chapter

WHAT IS MULTIMEDIA?

People who use the term "multimedia" often seem to have quite different, even opposing, viewpoints. A PC vendor would like us to think of multimedia as a PC that has sound capability, a DVD-ROM drive, and perhaps the superiority of multimedia-enabled microprocessors that understand additional multimedia instructions. A consumer entertainment vendor may think of multimedia as interactive cable TV with hundreds of digital channels, or a cable-TV-like service delivered over a high-speed Internet connection

. A computer science student reading this book likely has a more application-oriented view of what multimedia consists of: applications that use multiple modalities to their advantage, including text, images, drawings (graphics), animation, video, sound (including speech), and, most likely, interactivity of some kind. The popular notion of "convergence" is one that inhabits the college campus as it does the culture at large. In this scenario, PCs, DVDs, games, digital TV, set-top web surfing, wireless, and so on are converging in technology, presumably to arrive in the near future at a final all-around, multimedia-enabled product. While hardware may indeed involve such devices, the present is already exciting multimedia is part of some of the most interesting projects underway in computer science. The convergence going on in this field is in fact a convergence of areas that have in the past been separated but are now finding much to share in this new application area. Graphics, visualization, HCI, computer vision, data compression, graph theory, networking, database systems - all have important contributions to make in multimedia at the present time.

Definition

Multimedia is the media that uses multiple forms of information content and information processing (e.g. text, audio, graphics, animation, video, interactivity) to inform or entertain the user. Multimedia also refers to the use of electronic media to store and experience multimedia content. Multimedia is similar to traditional mixed media in fine art, but with a broader scope. The term "rich media" is synonymous for interactive multimedia.

Multimedia uses computers to present and combine text, graphics, audio, and video with links and tools, allowing the user to navigate, interact, create, and communicate. It has 5 key elements:

- Text
- Audio
- Animation
- Graphics
- Videos

Components / of Multimedia

Following are the common components of multimedia:

Text- All multimedia productions contain some amount of text. The text can have various types of fonts and sizes to suit the profession presentation of the multimedia software.
Graphics- Graphics make the multimedia application attractive. In many cases people do not like reading large amount of textual matter on the screen. Therefore, graphics are used more often than text to explain a concept, present background information etc. There are two types of Graphics:
Bitmap images- Bitmap images are real images that can be captured from devices such as digital cameras or scanners. Generally bitmap images are not editable. Bitmap images require a large amount of memory.
Vector Graphics- Vector graphics are drawn on the computer and only require a small amount of memory. These graphics are editable.
Audio- A multimedia application may require the use of speech, music and sound effects. These are called audio or sound element of multimedia.Speech is also a perfect way for teaching. Audio are of analog and digital types. Analog audio or sound refers to the original sound signal. Computer stores the sound in digital form. Therefore, the sound used in multimedia application is digital audio.
Video- The term video refers to the moving picture, accompanied by sound such as a picture in television. Video element of multimedia application gives a lot of information in small duration of time. Digital video is useful in multimedia application for showing real life objects. Video have highest performance demand on the computer memory and on the bandwidth if placed on the internet. Digital video files can be stored like any other files in the computer and the quality of the video can still be maintained. The digital video files can be transferred within a computer network. The digital video clips can be edited easily.
Animation- Animation is a process of making a static image look like it is moving. An animation is just a continuous series of still images that are displayed in a sequence. The animation can be used effectively for attracting attention. Animation also makes a presentation light and attractive. Animation is very popular in multimedia application

Applications of Multimedia

Nowadays, it is nearly impossible for an organization or company to work without integrating different multimedia platforms to conduct its day-to-day operations. Catering to the demand of various types, multimedia has different usages in a given situation. These are some of the popular applications of multimedia.

- Creative Industries
- Commerce
- **Entertainment**
- Education
- **Educational Technology**
- Social Work Purposes
- **Communication**
- **Journalism**
- **Engineering**
- **Medicine**
- Research
- **Interior Designing**

Journalism

Media organizations everywhere are incorporating convergent technology in their daily reporting and practices of journalism. Global newspapers like the New York Times, Guardian, etc, have already made themselves pioneers in its usage and ushering global media towards a new age. Guardian's multimedia story 'The Shirt on Your Back' is a prime example of how a multimedia story is developed through the use of text, video, and other forms of interactive technologies. Nowadays, a journalist, with the help of a mobile phone, is capable of making live video broadcasts without the need for a camera person.

Application of Multimedia in E-Commerce

Online business has effectively replaced traditional ways of buying and selling. Simply, by scrolling through online shopping sites like Amazon we see how text, pictures, and videos have been blended into making an appealing user interface. Through the use of multimedia various companies offer interesting details of products to the prospective consumer who, simply through, a mobile phone buys and compares products online to check their suitability and price variances. For Example: During the early stage of online shopping or selling, still, pictures of the products were uploaded.

Application of Multimedia in Entertainment

One of the main and widespread applications of multimedia can be seen in the entertainment Industry. Movies, ADs, and Short clips are now being created using special effects and animations, like VFX. Multimedia is also used for gaming purposes which is distributed online or through CDs. These games also integrated various multimedia features. Online storage distribution of movies is not only its efficient use but also a way to secure them against any loss through infinite copies.

Applications of Multimedia in Education

The applications of multimedia in the education sector are no less than a paradigm shift. Through its usage, it is now feasible to create interactive educational materials, like books, PDFs, videos, PowerPoint presentations, etc along with one-touch access to websites like Wikipedia and Encyclopedia. Through virtual classrooms, teachers and students can avail the opportunity to learn, interact and exchange informative ideas without stepping outside and sitting for hours inside a classroom. On top of everything, computer-based competitive as well as scholastic exams are being conducted globally only via the use of multimedia.

Applications of Multimedia in Computer

With the **emergence of the internet** and its rapid spread across the world, traditional types of communication have become obsolete. Online video calling has become the new face of communication. Video platforms like Skype, and Google Meet allow video chats that can happen between friends or can be used for conducting meetings between different heads of countries. Communication has been moulded as a matter of a fraction of a second, hence, now you can easily convey anything with just a few clicks. This has turned out to be a boon in situations of emergency, thus, it is known as one of the most beneficial applications of multimedia.

Applications of Multimedia in Medicine

Multimedia is increasingly used by doctors to get trained by simply watching a surgery being done on a virtual platform. Simulation technology is used to develop human anatomy and study how it gets affected by different illnesses and then accordingly develop medicines and other remedial measures. Furthermore, the other applications of multimedia in medicine allow patients to consult a doctor online to get medical intervention and treatment for their sickness.

Interior Designing

Nowadays, **interior designing** is not a process of drawing sketches or designing structures on long white paper. Today, interior designers use different software like SketchUp, AutoCAD, and Revit to create designs that allow a customer to have a virtual walk through the house before it takes the shape of a real house. With the use of this application, we can now take an intricate look at the combined product of an architecture and interior designer.

What is Visual communication?

Visual communication has the power to evoke emotions, enhance storytelling and create memorable experiences. It is the process of conveying information and ideas through visual elements such as images, symbols, typography and colours. It is a powerful means of communication that transcends language barriers and engages viewers in a visually compelling manner. Visual content attracts and retains attention more effectively than text alone. It helps in conveying messages quickly, making it ideal for social media platforms, websites, and digital advertisements.

Visual communication has evolved significantly from its early stages to the digitally driven world we live in today. In the past, visual communication relied heavily on traditional mediums such as print, paintings, and hand-drawn illustrations. Artists and painters worked with physical tools like brushes, pens, and paper to convey their messages. However, with the advent of digital technology, the landscape of visual communication has been revolutionised. Digital mediums, such as graphic design software, digital cameras, motion graphics tools, and interactive media platforms, have emerged as powerful tools for creating and sharing visual content. This shift has opened up new avenues for creativity, collaboration, and engagement, making visual communication an integral part of our digitally interconnected world. Visual Communication is like a master storyteller who weaves tales through captivating visuals, igniting emotions and leaving a lasting impression.

Types

- **Graphics:**

  Despite the numerous technological inventions, data management and comprehension continues to be a tedious task. Even though the software can store and regulate data for you, it cannot automatically make it seem intellectually stimulating to a person. But graphs have the ability to compare data easily while simultaneously guarding the human mind against the monotonicity of data management. For example, a bar graph or pie chart.

- **Maps:**

  Maps have always remained an effective element of visual communication. Even before Google took over and electronified maps and GPS systems, maps already played an important role in travelling and exploring geographical locations. They can also be used to showcase specific issues of a community such as which geographical locations have an abundance of resources or which areas of the country are the most fertile.

  Image credit - Unsplash

- **Models:**

  Growing up, every student is taught how an atom is the building unit of the universe but it is sometimes difficult to understand how they work. Another example of 3d visual aids, models come in handy at such a time. Models are micro versions of a vision that can be used to make a point or understand a concept. Other examples can be the solar system or miniature models of building designs.

- **Photographs:**

  Photographs are another basic element of visual communication. English author Edward Bulwer Lytonn said that a pen is mightier than a sword. However, a picture is worth a thousand words. They can rejoice in the remains of experiences from a long time ago and communicate a thousand emotions through them or pieces of evidence at a crime scene. They can also be presented as snippets of reality from a backward town and used to compare with the sky-reaching buildings in a city.

What is video conferencing?

Video conferencing is the process of sending and receiving audio, video, and content in a seamless exchange between a variety of endpoints like mobile devices, room systems, laptops, and integrated or peripheral webcams. Unlike traditional audio conferencing and on-premises video systems, today's meetings are typically hosted by leveraging a secure, cloud-based service.

As your organization continues to scale with a growing employee base, answering the demands for modernized collaboration in remote settings is essential. Your ultimate goal of connecting every level of the workforce requires a fundamental understanding of video conferencing to support flexible, digital communication for distributed teams. Instead of sifting through an assortment of information from various vendors, the following guide will boil down the basics to set you up for video conferencing success.

This comprehensive overview brings the most important elements into your research for implementing a video conferencing solution. From the different types of video conferencing,

to internal and external use cases, to expert tips and tricks that drive user adoption — here's your guide to informing your team's approach to video conferences.

Types of Video conference

1.Telepresence Video Conferencing

A ***teleconference*** is a video meeting for a large number of users united by a common topic or issue. Messages in teleconference mode can be exchanged in real time, through various audio and/or video communication systems, as well as through email clients.

2.Desktop Video Conferencing Technology

Many organizations widely use desktop conferencing because this technology eliminates the need to use bulky professional equipment or rent conference rooms. Video conferences can be run from desktops or laptops with built-in cameras, speakers and microphones.

3.Room-Based Video Conferencing Technology

Room-based technology is typically a hardware solution that is installed and configured in conference rooms. For successful work in small and medium-sized conference rooms, this technology is equipped with sensitive microphones

4 Multiway Technology

This technology is particularly useful for businesses that want to consolidate their offices in different locations. Multiway technology allows multiple video conferencing systems to be used simultaneously. A user who calls from a multiway endpoint can use the MCU network resource for the call.

6.Integrated Video Conferencing

Integrated video conferencing systems are the most functionally advanced as they support the maximum number of additional functions, including multipoint video conferencing, operation in heterogeneous (IP-ISDN) environments, image transmission from multiple sources and many others. Difficult to configure, they require preliminary design.

7.Data sharing

This video conferencing technology provides high collaboration capabilities, such as document sharing, live session recordings, video downloads, etc. The ability to easily exchange data and discuss plans and strategies in such a quick way improves the way a company does business.

Video conferencing use cases

Video conferencing technology can be applied to a variety of vertical industries, such as distance education, telemedicine, finance and banking, etc. to hold seminars, training guide, webinars or to facilitate day-to-day communications.

Government

Video conferencing is a cost-effective tool that allows government and public sector agencies to expand the coverage of their programs and services, and facilitate collaboration among departments, employees and suppliers. This type of communication is also widely used in the army, police and other law enforcement units during emergencies, man-made and natural disasters.

Telemedicine

Telemedicine is the use of electronic, information and communication technologies to provide and receive medical services. One of the main objectives of this area is to ensure that patients, medical specialists, or institutions geographically distant from one another can work together over any distance, without compromising the quality and level of interaction. To solve these problems, video conferencing is actively used, raising healthcare to a qualitatively different technological level.

Education

Video conferencing brings distance education to a new level, as close as possible to face-to-face learning. The teacher can not only give a lecture, but also show additional materials illustrating it. Students, in their turn, will be able to ask questions on the studied material. In addition, videoconferencing is very convenient for remote personnel training, because the specialist does not have to travel every time to a new group of trainees.

Banking Solutions

Video conferencing allows financial institutions to maintain personalized interaction with customers, improves customer service and expands reach while reducing costly investments in the company. Using video conferencing, investment banks are able to exchange information about market shares,currencies and other time-sensitive information with peers around the world.

Enterprise

Video conferencing encourages and supports learning, collaboration and communication and brings company leaders into the room with their teams and employees regardless of location. The best video conferencing services allow employees to share screens, communicate via text messages, share files and even stream conferences to large groups of passive viewers. Using this type of communication significantly reduces travel expenses, improves collaboration and ensures business data security.

HR & Recruitment

Video conferencing technology can be used by human resources departments for the hiring process of potential employees. Video conferencing interviews save time and money while providing a similar, if not better, experience than a face-to-face meeting. Human resource and hiring managers meeting with potential candidates get a live, real-time experience where they can read the candidate's body language and demeanor

Definition of Computer Graphics.

Computer graphics generally means creation, storage and manipulation of models and images. Such models come from diverse and expanding set of fields including physical, mathematical, artistic, biological, and even conceptual (abstract) structures. "Perhaps the best way to define computer graphics is to find out what it is not. It is not a machine. It is not a computer, nor a group of computer programs. It is not the know-how of a graphic designer, a programmer, a writer, a motion picture specialist, or a reproduction specialist. Computer

graphics is all these –a consciously managed and documented technology directed toward communicating information accurately and descriptively.

What do we need in computer graphics? In computer graphics we work with points and vectors defined in terms of some coordinate frame (a positioned coordinate system). We also need to change coordinate representation of points and vectors, hence to transform between different coordinate frames. Hence a mathematical background of geometry and algebra is very essential and also a knowledge of basic programming in C language.

Computer animation is a visual digital display technology that processes the moving images on screen. In simple words, it can be put or defined as the art or power of giving life, energy and emotions etc. to any non-living or inanimate object via computers. It can be presented in form of any video or movie. Computer animation has the ability to make any dead image alive. The key/main concept behind computer animation is to play the defined images at a faster rate to fool the viewer so that the viewer should interpret those images as a continuous motion of images.

Computer Animation is a sub-part or say small part of computer graphics and animation. Nowadays, animation can be seen in many area around us. It is used in a lot of movies, films and games, education, e-commerce, computer art, training etc. It is a big part of entertainment area as most of the sets and background is all build up through VFX and animation.