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Explain characteristic of computer:-

⇒ The main characteristics of computer is following below.

- Speed
- Accuracy
- Diligence
- Reliability
- Versatility
- Storage capacity
- Automatic
- quick Decision
- Multitasking
- No Feeling
- Power of Remembering
- No IQ

• Speed:-

Computer are much faster to perform mathematical calculations than human. The computer is capable of performing millions of tasks per second.

• Accuracy:-

A computer is very accurate. It does not make any kind of mistake in calculating. Sometimes we get some error but these are because of the mistake performed by us.

• Diligence:-

A person gets tired of doing some work in a few hours and a computer has the ability to do any work continuously for many hours, days, months.

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- Reliability:-

Reliability is a very big characteristics of computer. Today almost all the big industries or big e-commerce companies search engine companies like - Google and Bing, all these companies are very dependent on computers.

- Versatility:-

Versatility is the characteristics of a computer. It means it that the computer is capable of working in almost every field.

- Storage Capacity:-

Computer systems have a very large capacity to store any type of data. A computer can store and resell any information due to its storage capacity.

- Automatic:-

A computer is an automatic machine because once started on a job they carry on until the job is finished without any human assistance.

- Quick Decision:-

The Computer takes the decision very quickly, given by the user which is the instruction arithmetic data or logic data.

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- Multitasking :-

Multitasking is also a very special feature of computers. A user can do different types of tasks on the computer at the same time. We can do a lot of work at the same time.

- No Feeling :-

In computer, like humans, there is no feeling and emotion, nor does the computer have any knowledge and experience, because a computer is a machine which works continuously on the instructions of humans without any selfishness and without tiredness.

- Power of Remembering :-

Power of remembering is also very special characteristics of the computer.

- No IQ :-

A computer is a dumb machine, without a user, a computer is a useless machine and device. A computer system is completely dependent on us humans how to work.

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### 3. Hybrid Computers

- ~~Hybrid computers are computers that includes features of both analog computers and digital computers.~~
- ~~The digital computer components provide logical and numerical operations while analog components serve as a solver of equations.~~
- ~~It is a mix of analog and digital computers.~~



### Explain generations of computer :-

#### History of Computers:-

- Growth in the computer industry is determined by the development in technology.
- Each generation of computer development is characterized by one or more hardware development.
- Computer generation are divided into 5 phases.

#### I First Generation Computers:-(1942-1955)

- The components of first generation used Vacuum tubes as the basic component for memory and circuit for CPU.

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→ Punched cards, paper tape and magnetic tape were used as input and output devices

→ It used machine code as programming language

⇒ Main Features of First Generation Computer:-

Vacuum tube technology  
Unreliable

Supported machine language only  
Very costly

Generated lot of heat

Slow input and output devices

Huge size

Need of AC

Non-portable

Consumed lot electricity

Computers of This Generation:-

- ENIAC
- EDVAC
- UNIVAC
- IBM - 701
- IBM - 650

## [2] Second Generation Computers: [1955-1964]

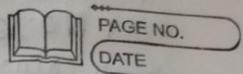
→ In this generation, transistors were used

→ Computers used batch pr. operating systems and multiprogramming OS

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- They were cheaper, consumed less power, more compact in size, more reliable; faster than the first generation computers
- In this generation; assembly language and high-level language like FORTRAN, COBOL were used

### Main Features of Second Generation Computers:-

- AC needed
- Supported machine and assembly language
- Faster as compared to first generation
- Smaller in size in comparison to first generation computers.
- Reliable in comparison to first generation computers.
- still very costly

### Computers of second generation:-

- IBM 7600
- CDC 1604
- IBM 7094
- UNIVAC 1108

### [3] Third Generation Computers:- [1964-1975]

- The third generation computer Integrated circuits (IC) in place of transistors
- A single IC has many transistors, registers and capacitors along with circuits
- ICs were made up of Silicon
- The IC was invented by Jack Kilby
- This made computers smaller in size and reliable

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### Main Features of Third Generation Computer

- Used IC
- More reliable in comparison to previous generations
- Faster
- Less maintenance
- Smaller in size
- Generated less heat
- Still costly
- AC needed

### Computers of This Generation.

- IBM 360 series
- Honeywell 6000 series
- POP (personal data processor)
- IBM 370/168
- TDC -326

### [4] Fourth generation computer: [1975 - 1980]

- The computers used Very Large Scale Integration (VLSI) circuits
- VLSI circuits having about 5000 transistors and other elements on a single chip made it possible to have microcomputer
- They became more powerful, compact, reliable and affordable
- As a result, personal computers (PC) were invented
- In this generation time sharing, network systems were used

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- All high level language like C, C++, DBASE are used

Main features of fourth generation computers:-

- VLSI technology used
- Very cheap
- portable
- Reliable
- Use of PC
- Very small in size
- No AC needed

Computers of this Generation:-

- DEC 20
- STAR 1000
- PDP 11
- CRAY (super computer)
- Cray -xc-mp (Super Computer)

### [5] Fifth generation Computers: [1980-till date]

- In this generation VLSI became ULSI (Ultra Large Scale Integration) technology, resulting in the production of microprocessors chips having 10 million computer.
- This generation is based on parallel processing and AI (Artificial Intelligence)
- AI is an emerging branch of computer science, which method of making computers think like human beings
- C, C++, Java, Net are used in this generation

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AI includes:-

- Robotics
- Neural networks
- Game playing
- Development of expert systems for decision making
- Understanding natural language

Main features of this generation:-

- VLSI technology
- AI development
- Parallel processing
- More user friendly interfaces with multimedia features
- Very powerful
- cheap

Computer of this generation

- Desktop
- Laptops
- Notebook
- Ultrabook
- Chromebook
- Tablets
- Smart phones
- Desktop
- laptops
- Not ebook
- Ultrabook
- chromebook
- Tablets
- Smart phone

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List out and explain Input devices:-

⇒ Following are some of the important input devices which are used in a computer -

- Keyboard
- Mouse
- Joy stick
- Light pen
- Track Ball
- Scanner
- Cryptic Tablet
- Microphoe
- MICR
- OCR
- Bar code Reader
- OMR

• Keyboard :-

⇒ Keyboard is the most common and very popular input device which helps to input data to computer. The layout of the keyboard is like that of traditional typewriter, although there are some additional keys provided for performing additional functions.

• Mouse :-

⇒ Mouse is the most popular pointing device. It is a very famous cursor-control device having a small palm size box with a round ball at its base, which senses the movement of the mouse and sends corresponding signals to the CPU when the mouse buttons are pressed.

• Joystick :-

⇒ Joystick is also a pointing device, which is used to move the cursor position on a

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~~Light~~ monitor ball cut its both lower and upper ends. The lower spherical ball moves in a socket. The joystick can't be moved in all four directions.

- Light Pen :-

⇒ Light pen is a pointing device similar to a pen. It is used to select a displayed menu item or draw pictures on the monitor screen. It consists of a photo and an optical system placed in a small tube.

- Track Ball :-

⇒ Track ball is an input device that is mostly used in notebooks or laptop computer, instead of a mouse.

- Scanner :-

⇒ Scanner is an input device, which works more like a photocopy machine. It is used when some information is available hard disk of the computer on paper and it is to be transferred to the hard disk of the computer for further manipulation.

- Digitizer :- (Graphic Tablet)

⇒ Digitizer is an input device which converts analog information into digital form. Digitizer can convert a signal from the television or camera into a series of numbers that could be stored in a computer.

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- Microphone :-

⇒ Microphone is an input device to input sound. Sound that is then stored in a digital form.

- MICR (magnetic Ink Card Reader) :-

⇒ MICR input device is generally used in banks as there are large number of cheques to be processed every day. The bank's code number and cheque number are printed on the cheques with a special type of ink that contains particles of magnetic material that are machine readable.

- Optical Character Reader (OCR) :-

⇒ OCR is an input device used to read a printed text. OCR scans the text optically character by character, converts them into a machine readable code, and stores the text on the system memory.

- Bar code Reader :-

⇒ Bar code Reader is a device used for reading bar coded data (data in the form of light and dark lines).

- Optical Mark Reader (OMR) :-

⇒ OMR is a special type of optical scanner used to recognize the type of mark made by pen or pencil.

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Explain ROM with its types:-

⇒

ROM stands for Read Only Memory. The memory from which we can only read but cannot write on it. This type of memory is non-volatile. The information is stored permanently in such memories during manufacture. A ROM stores such instructions that are required to start a computer. This operation is referred to as bootstrap. ROM chips are not used in the computer but also in other electronic items like washing machine and microwave oven.

• Advantages of ROM:-

⇒ The advantages of ROM are as follows:-

• Non-volatile in nature

• These cannot be accidentally changed

• Cheaper than RAMs

• Easy to test

• More reliable than RAMs

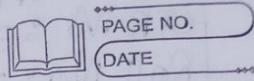
• These are static and do not require refreshing

• Its contents are always known and can be verified.

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- Following are the various type ROM:-

- MROM (Masked ROM) :-

→ The very first ROMs were hardwired devices that contained a pre-programmed set of data or instructions. These kind of ROMs are known as masked ROMs which are inexpensive.

- PROM (Programmable Read Only Memory) :-

→ PROM is read-only memory that can be modified only by a user. The user buys a blank PROM and enters the desired contents using a PROM programmer. Inside the PROM chip there are small fuses which are burnt open during programming. It can be programmed only once and is not erasable.

- EEPROM (Erasable and Programmable Read Only memory) :-

→ The EEPROM can be erased by exposing it to ultra-violet light for a duration of up to 40 minutes. Usually, an EEPROM eraser achieves this function. During programming, an electrical charge is trapped in an insulated gate region. The charge is retained for more

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than a ten year because the charge has no leakage path. For erasing this charge, ultra-violet light is passed through a quartz crystal window (lid). This exposure to ultra-violet light dissipates the charge. During normal use the quartz lid is sealed with a sticker.

### • EEPROM (Electrically Erasable and programmable Read only memory)

→ The EEPROM is programmed and erased electrically. It can be erased and reprogrammed about ten thousand times. Both erasing and programming take about 4 to 10 ms (millisecond). In EEPROM, any location can be selectively erased and programmed. EEPROMs be erased one byte at a time, rather than erasing the entire chip. Hence, the process of re-programming is flexible but slow.

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Explain Graphics card, Network card and Sound card.

\* GRAPHICS CARD:-

⇒ A graphics card is a piece of computer hardware that produces the image you see on a monitor.

- Types of graphics card?

(1) Integrated:-

→ Graphics built into the motherboard where no add-in card is used. You'll find these built into most 'standard' laptops and computers, they are a cost-effective model but cannot be easily upgraded.

(2) Discrete:-

→ An add-in graphics card that is installed onto the motherboard as an extra component. Ideal for those wanting to modify their system by upgrading the graphics cards.

- GPU:-

⇒ GPU stands for Graphics Processing Unit. It's the brain of the graphics card and is what creates the visuals you see on the screen. How powerful those GPU's are will vary on the model you select.

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- **FPS:-**

⇒ modern games provide 3d action and photoshop realism, but for the user to get the best experience, their graphics card need to be up to scratch.

- **Manufacturers:-**

⇒ There are two main manufacturers of discrete graphics cards, AMD and Nvidia. Some users have allegiances to a particular brand but each will do the same job.

### \* NETWORK CARD:-

⇒ A network interface card (NIC) is a hardware component without which a computer cannot be connected over a network. It is a circuit board installed in a computer that provides a dedicated network connection to the computer. It is also called network interface controller, network adapter or LAN adapter.

- **Purpose:-**

→ NIC allows both wired and wireless communications.

→ NIC allows communications between computer connected via local area network (LAN) as well as communications over large-scale network through Internet Protocol (IP).

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- Types of NIC cards:-

NIC cards are two types-

### Network Interface Card

Internal network card

External network card

- (i) Internal network cards:-

→ In internal network cards, mother board has a slot for the network card where it can be inserted. It requires network cables to provide network access. Internal network cards are of two type.

- (1) PCI (Peripheral component Interconnect)
- (2) ISA (Industry standard Architecture)

- (ii) External Network Cards:-

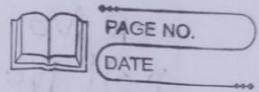
⇒ In desktops and laptops that do not have an internal NIC, external NICs are used.

External network cards are two types:-

Wireless and USB based. Wireless network card needs to be inserted into the motherboard, however no network cable is required to connect to the network.

They are useful while traveling or accessing a wireless signal.

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## \* SOUND CARD

→ Alternatively referred to as an ~~act~~ audio output device, sound board, or audio card. A sound card is an expansion card or IC for producing sound on a computer that can be heard ~~the~~ through speakers or headphones. Although the computer doesn't need a sound card, it's included on every machine as either in an expansion slot (shown below) or built into the motherboard (onboard).

### Sound Card Connections:-

- Digital out (white or yellow; words: "digital" or "digital out") - used with surround ~~set~~ sound or loudspeakers.
- Sound in or line in (blue; arrow pointing into waves) - connection for external audio sources (e.g., tape recorder, record player, or CD player)
- Microphone or Mic (pink) - The connection for a microphone or headphones.
- Sound out or line out (green; arrow pointing out of waves) - The primary sound connection for your speakers or headphones. This sound card also has a second (black) and third (orange) sound out connectors.

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- Uses of a Computer Sound card:-
- Below are all of the different uses of a computer where sound card can be used.
- Games.
- Audio CDs and listening to music.
- Watch movies.
- Audio and video conferencing.
- Creating and playing MIDI.
- Education software.
- Business presentations.
- Record dictations
- Voice recognition.