COMPUTER CAPSULE

The word Computer in earlier times meant a person who performed calculations or computations. With years its definition changed to a machine that performs calculations. It can perform all type of mathematical and logical operations; it can accept data, store data, retrieve data, process data and produce output. Charles Babbage was known as father of computer. He invented two machines in 1822 introduced Difference Engine and in 1834, introduced Analytical engine
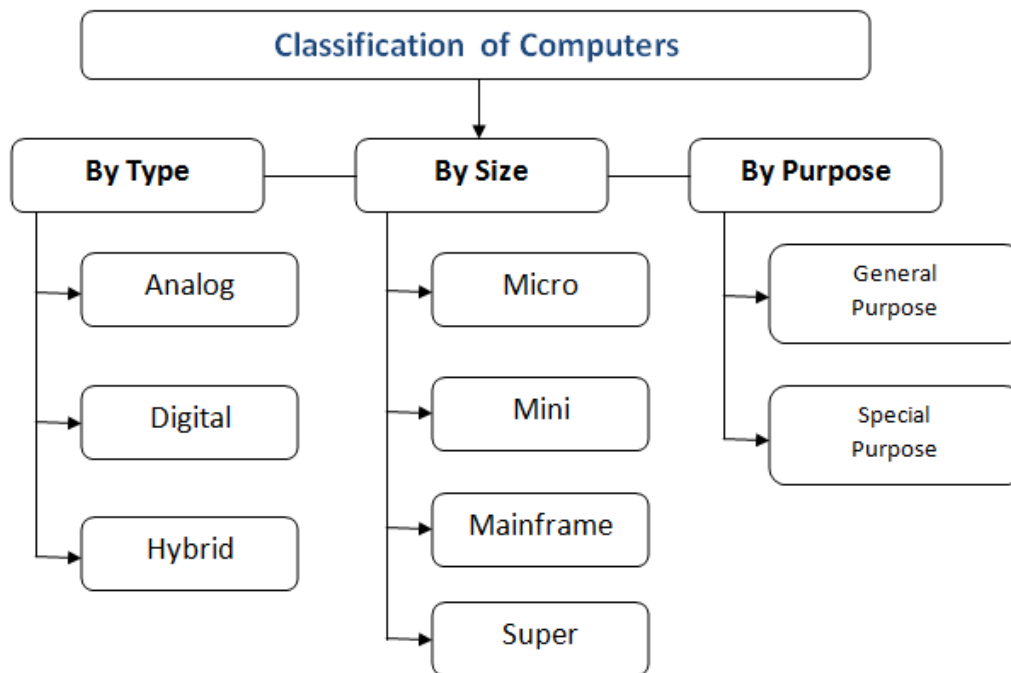
HISTORY AND GENERATION

- In 1822, Charles Babbage conceptualized and began developing the Difference Engine, considered to be the first automatic computing machine.

- Then after almost a decade, Charles Babbage proposed the **first general mechanical computer, the Analytical Engine**. The Analytical Engine contained an Arithmetic Logic Unit (ALU), basic flow control, and integrated memory concept and is the first general-purpose computer.

- In 1946, ENIAC- **Electronic Numerical Integrator and Computer was the first electronic general-purpose computer.** It was the first large-scale computer to run at electronic speed without being slowed by any mechanical parts. And it was invented by J.Presper Eckert and John W. Mauchly.

- **Douglas Engelbart** invented the first computer mouse.

- First computer with RAM - MIT introduces the **Whirlwind machine,** a revolutionary computer that was the first digital computer with magnetic core RAM and real-time graphics.

- The first minicomputer - In 1960 **Digital Equipment Corporation** released its first of many PDP computers the PDP-1.

- The first laptop - First Laptop was introduced in 1981 by Adom Osborne and the company "EPSON" manufactured first Laptop.

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The following table categorises generations of computers and other important factors associated with the generations.

Subject	1st generation	2nd generation	3rd generation	4th generation	5th generation
Period	1940-1956	1956-1963	1964-1971	1971-present	present & beyond
Circuitry	Vacuum tube	Transistor	Integrated chips (IC)	Microprocessor (VLSI)	ULSI (Ultra Large Scale Integration) technology
Memory Capacity	20 KB	128KB	1MB	Magnetic core memory, LSI and VLSI. High Capacity	ULSI
Processing Speed	300 IPS instructions Per sec.	300 IPS	1MIPS (1 million inst. Per sec.)	Faster than 3rd generation	Very fast
Programming Language	Machine, Language	Assembly language & early high-level languages(FORTRAN, COBOL, ALGOL)	C,C++	Higher level languages,C,C++,Java	All the Higher level languages,,Neural networks,
Example of computers	UNIVAC, EDVAC	IBM 1401, IBM 7094, CDC 3600,D UNIVAC 1108	IBM 360 series, 1900 series	Pentium series,Multimedia,	Artificial Intelligence, Robotics

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TYPES OF COMPUTER

Computer Types:

1. Personal Computer

2. Mini Computer

3. Main Frame Computer

4. Super Computer

5. Workstation

Personal computer:

It maintains hardware and software components. It can be defined as a small that range up to the limited pounds. It appeared in the year of 1970's that work with small CPU, RAM and memory chips. It is useful to the word processing, accounting, desktop, database management applications and etc. Number of home users use this software for play games and learn anything from internet easily.

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Personal computer maintains several kinds of computers such as following.

1. Notebook

2. Tower computer

3. Laptop

4. Subnotebook

5. Handheld

6. Plamtop

7. PDA

Mini Computer:

It is a midsize computer useful in work stations that can cover 200 users simultaneously.

Workstation:

It designs forengineering applications SDLC and various kinds of applications with moderate power and graphic technologies. It generally maintains high storage media along with large RAM. Workstation only work by the UNIX and Linux operating systems. It has several types of storage media that maintain both diskless and disk drive workstations.

Supercomputer and Mainframe:

Supercomputer is best fastest computer in world that is very expensive. It work based on mathematical calculations so, everything work well with simple procedure. Supercomputers deals with scientific simulations, animated graphics, electrical design, perform dynamic calculations and etc.

TYPES OF COMPUTER NETWORK

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Computer network is basically classified into five types, but broadly classified into three types.

Local Area Network (LAN):

LAN is a small and single-site network. A LAN connects network devices over a relatively short distance. It is a system in which computers are interconnected and the geographical area such as home, office, building, school may be within a building to 1 km. All the terminals are connected to a main computer called SERVER. On most LAN's cables are used to connect the computers. LANs are typically owned, controlled and managed by a single person or organization. They also use certain specific connectivity technologies, primarily Ethernet and Token Ring.

Wireless LAN or WLAN: is a wireless local Area Network that uses radio waves as its carrier. The last link with the users is wireless to give a network connection to all users in the surrounding area.

WIDE AREA NETWORK (WAN)

A WAN is a geographically dispersed collection of LAN's. A WAN like the internet spans most of the world. A network device called a ROUTER connects LAN's to a WAN.

These kinds of networks use telephone lines, satellite links and other long-range communication technologies to connect. In IP networking, the router maintains both a LAN address and a WAN address.

Metropolitan Area Network (MAN)

It is a data network designed for a town or a city. It connects an area larger than a LAN, but smaller than a WAN, such as a city, with dedicated or high performance hardware. Its main purpose is to share hardware and software resources by the various users. Cable TV network is an example of metropolitan area network. The computers in a MAN are connected using coaxial cables or fibre optic cables.

Personal Area Network (PAN)

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PAN refers to a small network of communication. These are used in a few limited ranges, which is in reachability of individual person. For examples of PAN are Bluetooth, wireless USB, Z-wave and Zig Bee.

Virtual Private Network (VPN)

A Virtual Private Network (VPN) is a technology that is gaining popularity among large organizations that use the global Internet for both intra-and inter-organization communication, but require privacy in their intra-organization communication. VPN is a network that is private but virtual. It is private because it guarantees privacy inside the organization. It is virtual because it does not use real private WANs; the network is physically public but virtually private.

TYPES OF OPERATING SYSTEM

- A real - time Operating System is a multi tasking Operating System that aims at executing real time applications.
- Real - time processing responds to input instantly.
- An Operating System which allows multiple users to access a computer system concurrently is known as multi user operating system.
- When the Operating System allows the execution of multiple tasks at one time, it is classified as a multi tasking Operating System.
- A distributed Operating System manages a group of independent computers and makes them appear to be a single computer.
- Embedded Operating Systems are designed to be used in embedded computer systems.
- Examples of embedded Operating Systems are Windows 10, UBUNTU and Mac OS X yosemite.

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- Multi processing Operating System supports running a program on more than one CPU.

- Multi threading Operating System allows different parts of a single program to run concurrently.

DATA REPRESENTATION -

Memory Units:

4 bit = 1 nibble

8 bit = 1 byte

1024 B = 1 KB (Kilo Byte)

1024 KB = 1 MB (Mega Byte)

1024 MB = 1 GB (Giga Byte)

1024 GB = 1 TB (Tera Byte)

1024 TB = 1 PB (Peta Byte)

1024 PB = 1 XB (Exa Byte)

1024 XB = 1 ZB (Zeta Byte)

1024 ZB = 1 YB (Yota Byte)

bit < Byte < KB < MB < GB < TB < PB < XB < ZB < YB

Some basic Keys Common Tasks

- *Ctrl + Shift + Spacebar* - Create a non breaking space

- *Ctrl + B* - Make letters bold

- *Ctrl + I* - Make letters italic

- *Ctrl + U* - Make letters underline

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- *Ctrl + Shift+ <* - Decrease font size one value

- *Ctrl + Shift + >* - Increase the font size one value

- *Ctrl + [* - Increase the font size by 1 point

- *Ctrl +]* - Decrease the font size by 1 point

- *Ctrl + Spacebar* - Remove paragraph or character formatting.

- *Ctrl + C* - Copy the selected text or object

- *Ctrl + X* - Cut the selected text or object

- *Ctrl + V* - Paste text or an object

- *Ctrl + Alt + V* - Paste special

- *Ctrl + Shift + V* - Paste formatting only

- *Ctrl + Z* - Undo the last action

- *Ctrl + Y* - Redo the last action

Control - Keys + Function Keys

- *Ctrl+F2* - Choose the print preview command (Microsoft office Button)

- *Ctrl+F3* - Cut on the spike

- *Ctrl+F4* - Close the window

- Ctrl+F6 - Go to the next window

- Ctrl+F9 - Insert an empty field

- *Ctrl+F10* - Maximise the document window

- *Ctrl+F11* - Lock a field

- *Ctrl+F12* - Choose the Open command (Microsoft Office Button)

Function Keys

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- *Ctrl+F2* - Choose the print preview command (Microsoft office Button)

- *Ctrl+F3* - Cut on the spike

- *Ctrl+F4* - Close the window

- *Ctrl+F6* - Go to the next window

- *Ctrl+F9* - Insert an empty field

- *Ctrl+F10* - Maximise the document window

- *Ctrl+F11* - Lock a field

- *Ctrl+F12* - Choose the Open command (Microsoft Office Button)

- *Ctrl+F2* - Choose the print preview command (Microsoft office Button)

- *Ctrl+F3* - Cut on the spike

- *Ctrl+F4* - Close the window

Shortcut Keys of MS-Excel

- *F2* - Edit the selected cell

- *F5* - Go to a specific cell

- *F7* - Spell check selected text and/or document

- *F11* - Create chart

- *Ctrl + Shift + ;* - Enter the current time

- *Ctrl + ;* - Enter the current date

- *Shift + F3* - Open the Excel formula window

- *Shift + F5* - Bring up search box.

- *Ctrl + A* - Select all contents of the worksheet

- *Ctrl + B* - Bold highlighted selection

- *Ctrl + I* - Italic highlighted selection

- *Ctrl + U* - Underline highlighted selection

- *Ctrl + P* - Bring up the print dialog box to begin printing

- *Ctrl + Z* - Undo last action

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- *Ctrl + F9* - Minimise current workbook

- *Ctrl + F10* - Maximise currently selected workbook

- *Ctrl + F6* - Switch between open workbooks/window

- *Ctrl + Page Up* - Move between Excel worksheet in the same Excel document.

- *Ctrl + Page Down* - Move between Excel worksheets in the same Excel document

- *Ctrl + Tab* - Move between two or more open Excel files

- *Alt + =* - Create a formula to sum all of the above cells

- *Ctrl + '* - Insert the value of the above cell into cell currently selected.

- *Ctrl + Arrow key* - Move to next section to text

- *Ctrl + Space* - Select entire column

- *Shift + Space* - Select entire row

IMPORTANT ABBREVIATIONS

A

- **AI – Artificial intelligence**

- **ALGOL – Algorithmic Language**

- **ARP – Address resolution Protocol**

- **ASCII – American Standard Code for Information Interchange**

B

- **BINAC - Binary Automatic Computer**

- **BCC – Blind Carbon Copy**

- **Bin – Binary**

- **BASIC - Beginner's All-purpose Symbolic Instruction Code**

- **BIOS – Basic Input Output System**

- **Bit – Binary Digit**

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- **BSNL – Bharat Sanchar Nigam Limited**

C

- **CC – Carbon Copy**

- **CAD – Computer Aided Design**

- **COBOL – Common Business Oriented Language**

- **CD – Compact Disc**

- **CRT – Cathode Ray Tube**

- **CDR – Compact Disc Recordable**

- **CDROM – Compact Disc Read Only Memory**

- **CDRW – Compact Disc Rewritable**

- **CDR/W – Compact Disk Read/Write**

D

- **DBA – Data Base Administrator**

- **DBMS – Data Base Management System**

- **DNS – Domain Name System**

- **DPI – Dots Per Inch**

- **DRAM – Dynamic Random Access Memory**

- **DVD – Digital Video Disc/Digital Versatile Disc**

- **DVDR – DVD Recordable**

- **DVDROM – DVD Read Only Memory**

- **DVDRW – DVD Rewritable**

- **DVR – Digital Video Recorder**

- **DOS – Disk Operating System**

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E

- **EBCDIC – Extended Binary Coded Decimal Interchange Code**

- **e-Commerce – Electronic Commerce**

- **EDP – Electronic Data Processing**

- **EEPROM – Electrically Erasable Programmable Read Only Memory**

- **ELM/e-Mail – Electronic Mail**

- **ENIAC - Electronic Numerical Integrator and Computer**

- **EOF - End Of File**

- **EPROM - Erasable Programmable Read Only Memory**

- **EXE - Executable**

F

- **FAX - Far Away Xerox/ facsimile**

- **FDC - Floppy Disk Controller**

- **FDD - Floppy Disk Drive**

- **FORTRAN - Formula Translation**

- **FS - File System**

- **FTP - File Transfer Protocol**

G

- **Gb - Gigabit**

- **GB - Gigabyte**

- **GIF - Graphics Interchange Format**

- **GSM - Global System for Mobile Communication**

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H

- **HDD - Hard Disk Drive**

- **HP - Hewlett Packard**

- **HTML - Hyper Text Markup Language**

- **HTTP - Hyper Text Transfer Protocol**

I

- **IBM - International Business Machine**

- **IM - Instant Message**

- **IMAP - Internet Message Access Protocol**

- **ISP - Internet Service Provider**

J

- **JPEG - Joint Photographic Experts Group**

K

- **Kb - Kilobit**

- **KB - Kilobyte**

- **KHz - Kilohertz**

- **Kbps - Kilobit Per Second**

L

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- **LCD – Liquid Crystal Display**

- **LED – Light Emitting Diode**

- **LPI – Lines Per Inch**

- **LIS – Large Scale Integration**

M

- **Mb – Megabit**

- **MB – Megabyte**

- **MPEG – Moving Picture Experts Group**

- **MMS – Multimedia Message Service**

- **MICR – Magnetic Ink Character reader**

- **MIPS – Million Instructions Per Second**

N

- **NIC – Network Interface Card**

- **NOS – Network Operating System**

O

- **OMR – Optical Mark Reader**

- **OOP – Object Oriented Programming**

- **OSS – Open Source Software**

P

- **PAN – Personal Area Network**

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- **PC – Personal Computer**

- **PDA - Personal Digital Assistant**

- **PDF – Portable Document Format**

- **POS – Point Of Sale**

- **PNG - Portable Network Graphics**

- **PPM – Pages Per Minute**

- **PPP – Point-to-Point Protocol**

- **PROM – Programmable Read Only Memory**

- **PSTN – Public Switched Telephone Network**

- **POST – Power On Self Test**

- **PING – Packet Internet Gopher**

R

- **RAM – Random Access Memory**

- **RDBMS – Relational Data Base Management System**

- **RIP – Routing Information Protocol**

- **RTF – Rich Text Format**

S

- **SMTP – Simple Mail Transfer Protocol**

- **SQL – Structured Query Language**

- **SRAM – Static Random Access Memory**

- **SNMP – Simple Network Management Protocol**

- **SIM – Subscriber Identification Module**

T

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- **TCP – Transmission Control Protocol**

- **TB – Tera Bytes**

U

- **UPS – Uninterrupted Power Supply**

- **URI – Uniform Resource Identifier**

- **URL – Uniform Resource Locator**

- **USB - Universal Serial Bus**

- **ULSI - Ultra Large Scale Integration**

- **UNIVAC - Universal Automatic Computer**

V

- **VAR – Variable**

- **VGA – Video Graphics Array**

- **VSNL – Videsh Sanchar Nigam Limited**

- **VDU – Visual Display Unit**

W

- **Wi-Fi – Wireless Fidelity**

- **WLAN – Wireless Local Area Network**

- **WPA – Wi-Fi Protected Access**

- **WWW – World Wide Web**

- **WORM – Write Once Read Many**

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X

- **XHTML – eXtensible Hyper text Markup Language**

- **XML - eXtensible Markup language**

Z

- **ZB – Zeta Byte**

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