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NATIONAL BOARD OF COMPUTER EDUCATION

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Course :- PGDCA (POST GRADUTE DIPLOMA IN COMPUTER APPLICATION).

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SSCAT DHENKANAL

Susil Behera
M.D. Susil Enterprises
Director SSCAT &NBCE

SUBJECT

Sl.NO.	TOPIC	DURATION
1	FUNDAMENTALS OF COMPUTER	1 MONTH
2	WINDOWS XP/VISTA/7/8/10	1 MONTH
3	MS OFFICE 2010(WORD, EXCEL, ACCESS, POWERPOINT)	4 MONTHS
4	ENGLISH TYPING	1 MONTH
5	INTERNET	1 MONTH
6	PHOTOSHOP	1 MONTH
7	ACCOUNTING CONCEPT	1 MONTH
8	TALLY	1 MONTH
9	COMPUTER HARDWARE & NETWORKING	1 MONTH

FUNDAMENTALS OF COMPUTER

COMPUTER:-

Computer is an electronic device. The word computer has been derived from the Greek word “compute” which means “to calculation”. Therefore a computer is a machine which have a memory you can put lots of numbers into a computer memory and you can put lots of words also.

The word computer has been derived from computing and calculating. It is a huge data processing unit which process data into a meaningful information.

DATA:-

Data is a collection of facts and figures which produce information after processing under a set of instructions. It can be word, numbers, symbol, graphics etc.

PROCESSING:-

The processing is series of actions which is taken by a computer to convert a data into information.

INFORMATION:-

Information in a computer is the data that has been processed to create facts that can be used in context.

COMPUTER STANDS FOR:-

C	**Common**
O	**Operating**
M	**Machine**

P	**Purposely**
U	**Used For**
T	**Technological and**
E	**Educational**
R	**Research**

Computer has 4 basics:-

1. To accept data as input. **(KEYBOARD)**
2. To store data and information. **(MEMORY)**
3. To process the data. **(C.P.U)**
4. To supply the information as output. **(MONITOR)**

Characteristics of Computer:-

(A) Speed:- Computers can work as extremely high speed and are much faster than human. Speed is the rate at which a computer can process instructions per second. A typical computer is capable of doing millions of calculations per second.

(B) Accuracy:- The word accuracy means exactness of result. The accuracy with which a computer perform, calculations, hour process data is very high. The computercan make mistakes in situations where input is wrong if the input data is valid and of the program is correct, then the computer could produce accurate results.

(C) Storage Capacity :- The computer can store large quantity of instructions which are called program and store a large value of data. Computer has device which can store programs, the user just need to run the computer, it can store large amount of data. It is the most convenient way to process data.

(D)Automation:- It is the ability to take in and store a sequence of instructions such as sequence of instructions is called a program. The program instructions are stored within the computer. It is the ability to obey a sequence of program.

HISTORY OF COMPUTERS:-

1. 450BCE-1642CE (*ABACUS)*

The *abacus* which emerged about 5000 years ago in Asian minor. It may be considered as the 1st computer. It consists of rectangular frame having iron rods. A divider with columns beads in rows. It is used for calculating or counting.

2. 1642-1694 *(PASCALINE)*

In 1642 Blaise Pascal invented a numerical calculator which is brass rectangular also called a pascaline. Movable beads are used in this to add sum of 8 figures. This device is believed to be the first calculator of the world.

3. 1694-1801 *(STEP RECKONER)*

In 1694 Gottfried Wilhelm Leibniz improved the Pascaline. This device had a system of shift mechanic operating through a series of sliders. This device could perform addition, subtraction, multiplication, and division.

4. 1801-1889*(DIFFERENCE ENGINE)*

The real beginning of the computer started with English & Mathematics Professor Charles Babbage. Charles Babbage is also known as "*the father of the computer*". In 1882, he purposed a machine to perform differential equation called a difference engine. Difference engine was powered by steam and was a large locomotive machine. The machine would have a storage program and could perform various calculations and print the result.

5. 1889-1945*(HOLLERITH MACHINE)*

In 1889, an American inventor Herman Hollerith found a faster way to count questionnaires. From the inspiration of tram conductor punching holes in ticket & the design on the jacquard loom, he developed an machine which was an electromechanical tabulator that used punched cards to process data. He first

used this machine to count questionnaires for the 1880 U.S.A census. Hollerith's method used to store the data and information which is feed into the machine and they complete the result mechanically.

GENERATIONS OF COMPUTER:-

Like human generations the different computer generation are defined by the technology of basic computer elements. The generation's categories are defined into 5 generations:-

A. *1ST GENERATION (1946-1959)*:-

In 1st generation computers used electronic vacuum tubes for processing.

ENIAC (Electronic Numerical Integrator and Calculator) was the first computer of this generation. This computer used in 18 thousands numbers of vacuum tubes. It was the thousand times faster than the machine.

Advantages

(i) It was used for business purpose.

(ii) This computer was the 1st calculating at that times.

Disadvantages

(i) Slow operating speed.

(ii) High power consumption

(iii) Requirement of very large space.

B. *2ND GENERATION (1959-1965)*:-

In the 2nd generation the transistors were used by replacing vacuum tubes. The use of transistors reduced the size and improved the processing power. These were used in business, universities and companies such as Honey Well, Control Data, IBM and others.

Advantages

(i) It reduced the size.

(ii) Higher processing capability and higher storage capacity.

Disadvantages

(i) Limited programs capability.

C. *3RD GENERATION (1965-1970)*:-

In this generation a significant development was made in machine hardxware and software design. In these computers the integrated circuits (I.C) were used instead of transistors. To run the machine these operating system provide capability for automation processing.

Advantages

(i) Smaller in size as compare to the previous generations of computer.

(ii) Maintenance cost is very low.

(iii) Its higher processing capability and the first operating system.

Disadvantages

(i) Air conditioner required.

(ii) Highly sophisticated technology required for the manufacture of chips.

D. *4TH GENERATION (1970-1980)*:-

In this generation is used a very large scale integrated chips (VLSI). It is the main component. The VLSI means a whole computer circuit as a available in a single chip. It is very small but extremely very powerful.

Advantages

(i) Computer size at reduced like Television.

(ii) Higher storage capacity.

(iii) It is very low cost in price.

(iv) The power supply in electricity were reduced.

Disadvantages

(i) High sophisticated technology required for the manufacture of chips.

(ii) A/C is required.

E. *5TH GENERATION (1980-PRESENT)*:-

The basic of 5th generation computer is Artificial Intelligence and experts systems. Expert system is a software package. This computer is developed for institute of computer technology in Japan. The main component of this generation of computer is ULSI (Ultra Large Scale Integrated chips).

TYPES OF COMPUTER:-

On the basis of function; Computer are classified into 3 different categories.

(1) Analog Computer

(2) Digital Computer

(3) Hybrid Computer

1. *ANALOG COMPUTER:-*

- Analog computer is a form of computer that uses the continuously changeable aspects of physical quantities such as electrical, mechanical, or hydraulic quantities to model the problem being solved.
- Analog computers are operated by measuring rather than by counting.
- This computer measures the physical quantity like; *electric current, temperature, time, length, speed etc.*
- It's converted to numerical value.
- These are mainly used for scientific and engineering purpose because they deal with quantity very constantly.
- These give only approximate result.

2. *DIGITAL COMPUTER*:-

- A Digital computer is a system that processes data and instructions using binary codes (0s and 1s) at high speed, performing functions like input, storage, control, processing and output.
- The digital computers are very fast and cheap.
- These computers can perform complex and representing calculations.
- It provides information textual and graphical manner.

3. *HYBRID COMPUTERS:-*

- A Hybrid computer is a computation system that combines the features of both analog and digital computers.
- It utilizes the service of devices, which converts analog signals to digital.
- A special type of device is used in this computer called "*MODEM*" (Modulator and demodulator) is used to convert digital signal into analog signals.
- Hybrid computer measures a patient's vital sign like temperature, heart functions and measure complex in digts.
- It can handle a broader range of tasks compared to their digital or analog counter parts.

CLASSIFICATION OF COMPUTER:-

Depending upon the size, cost, performance and capability of machines computers are classified into 4 groups. Such as:-

(a) Micro Computers

(b) Mini Computers

(c) Mainframe Computers

(d) Super Computers

A. *MICRO COMPUTERS:-*

- These the 4^{th} generation of computer
- It is a small, inexpensive computer with a single micro processor that acts as its central processing unit.
- It includes a microprocessor, memory unit, input and output unit, and a motherboard.
- It was used generally in business, office, administration, education, banking and playing games.
- It is again divided into 2 parts:- **(1)** Personal Computer
  (2) Home Computer

1. Personal Computers:-

- A P.C has a keyboard and mouse which is used to input data.
- A display monitor if used to display graphics as output.
- It consists of monitor, keyboard and one more disk drives.

2. Home Computers:-

- A home computer is used in entertainment and professional.

B. *MINI COMPUTERS:-*

- This computer is larger than micro computer in physical size
- It is multi-user or share-system.
- It has more powerful microprocessor and used as quantities monitor.
- It display like a personal computer
- It is generally used in banking sector, business and railways.

C. *MAINFRAME COMPUTER:-*

- These computers are more powerful than s microcomputer
- These computers have very large capacity of support.
- It can perform scientific calculation and used for scientific purpose.
- All popular high level high level programming language can be used in mainframe computer.
- It can be used by 1000 users at a particular time.

D. *SUPER COMPUTER*:-

- These are the most expensive computers and were considered for national researches.
- Computers which work at the rate of above 5000 million per second are known as Super computers.
- Super computers are used for weather forecasting and it play a vital/great role in the area of defence.

CONCEPT OF HARWARE AND SOFTWARE:-

HARDWARE:-

- Hardware is the physical part of the computer which can be seen from outside of the computer.
- The hardware work on electricity and are electronic devices.
- The main parts of the computer hardware are C.P.U, input and output device.

C.P.U (Central Processing Unit):-

- CPU is the brain of the computer
- CPU requires one or more printed circuit boards.
- Personal Computers used a single chip which is called the microprocessor.
- It is the combination of the control unit and ALU and the primary memory.
- It consist of 3 types
    i. ALU – Arithmetic logic Unit
    ii. CU – Control unit
    iii. MU – Memory unit

ALU:-

- It actually performs the arithmetical and logical instructions within the CPU

CU:-

- It controls all inout and output of the computer commands from the programs in the primary memory.
- The control unit is comparable to the central nervous system of the human body.

MU:-

- This unit is used to store data and program before and after processing.
- Primary memory is divided into 2 parts:- **RAM, ROM**

Input Devices:-

- Input devices are used to feed data and information to the computer.
- There are different types of input devices :-
- Such as:- **i.** keyboard
    ii. Mouse
    iii. MICR – Magnetic ink character reader
    iv. OMR – Optical market reader
    v. OCR – Optical character reader
    vi. Light Pen
    vii. Joystick
    viii. Track Ball
    ix. Voice input

x. Scanner

xi. Punch Card

Keyboard:-

- Keyboard is a device that enables input to the computer,
- Its layout is very similar to that of a type writer.
- It normally consists of 101 to 109 keys in the computer keyboard.
- It contains 5 type of keys Alphabet keys (A-Z), Numerical key (0-9), function key (F1-F12), Special characters (!@#$%^etc.), special function keys (delete, shift etc.)
- **Shift:-** used to enter a capital letter.
- **Spacebar:-** used to a capital letter.
- **Ctrl:-** used in conjunction with keys to provide added functionality on keyboard.
- **Alt:-** it also works like *Ctrl* key unlike *Ctrl* it has different functionality.
- **Tab:-** used to change position between tabs.
- **Back space:-** used to delete a single character from the cursor.
- **Caps Lock:-** used to toggle between capital letters.
- **Delete:-** used to delete a file or document.
- **Home:-** used to go to the beginning.
- **End:-** used to go to the end of the file.
- **Page-up:-** used to go to the previous page.
- **Page-down:-** used to go to the next page.
- **Esc:-** Escape is used to negate the current program.
- **PrtSc:-** Print screen is used to print.

Mouse:-

- It is also a primary input device.
- It is a pointing device that look like a small box with round wheel.
- It can be used to select, move icons, etc.

M.I.C.R:-

- Magnetic Ink Character Reader(MICR) is widely used in banks to process the tremendous value of checks being return each day.

- Processing is fast because checks can be feed directly into the input device.
- It contains Magnetic iron oxide.
- It is used to read and short checks and deposites.

OMR:-

- Optical Mark Reader is used to read the answer sheets.
- It is an input device used to read marks in a paper form.
- It is used in objective text market, survey population and order form.

OCR:-

- Optical Character Reader is an input device used to read any text either in handwriting or printed form.
- It is used to read the character from the document.
- It is an improvement over OMR.
- It is expensive at used in situation where the large quantities of document can be entered in computer.

Light Pen:-

- It is a small input device used to select and display object on screen.
- It functions with a light sensor.
- When the pen pointed directly at the light pen
- It is also useful for a graphics.

Joystick:-

- It is a vertical stick that moves the graphic cursor.
- It is movable in all directions.
- It consists of spherical ball, which moves with in the socket and has a stick mounted on it.
- It is mainly used for playing.

Voice Input:-

- This device do nothing more than convert human language into machine language.
- A microphone and telephone is to convert human speech to electronic signal.

- The voice linked to a system may be microphone, telephone or radio.

Scanner:-

- It is an electronic device used to scan a document or a paraghraph.
- It converts the data into digital mode.
- The data are captured by the computer memory.
- Scanner are of 2 types i.e. **(a)**Contact **(b)**Laser.

Output Devices:-

- An output device is an electro mechanical device that accepts data from the computer and translates it into a form that can be understood by the outside world.
- The processed data stored in the memory of the computer.
- The output device are used to get results.