UNIT 01

Dr. Md.Tabrej Khan

Computer Skill & General Awareness

Course descriptions

- **Title:** Computer Skill & General Awareness
- **Lecturer: Dr. Md. Tabrej Khan**
- **Email: tabrejmlkhan@gmail.com**
- **Class time: 3:00 – 4:00 Sat**
- **Distribution of course evaluations:**

Credit	Theory marks		Practical		Assignment marks	Total
	Max	Min	Max	Min		
2	35	20	15	8	----------	50

End Semester Examination (ESE)

Computer Skill & General Awareness	**2 Hours Duration**	**35 Marks**

AISECT UNIVERSITY™

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Recognized by UGC

Programme: Ph.D (Course Work) **Subject Code: .....**

Subject: Computer Skill & General Awareness **Theory Max. Marks: 35**

Course Group: Common to all Subjects **Theory Min. Marks: 20**

Course Objective: The objective of the course is to enable Ph.D. scholar to understand about the basic knowledge of Computer and its uses in Research.

	Course Content	Methodology Adopted
UNIT - I	**Concept of Computer-** Brief history of computer, Generation of Computer, Characteristics of Computer, Major Areas of computer and their applications.	ICT based class room teaching, Group Presentations and white/ green board (traditional) as per requirement of the topic
UNIT - II	**Components of Computer-** CPU, Input-Output Devices, Memory Types, Software & Hardware.	ICT based class room teaching, Individual Presentations and white/ green board (traditional) as per requirement of the topic
UNIT - III	**Operating System -** Overview of Operating System, types of operating system, Software classification.	ICT based class room teaching, Individual Presentations and white/ green board (traditional) as per requirement of the topic
UNIT - IV	**Data Processing-** Data processing tool & techniques, Use of LATEX.	ICT based class room teaching, Individual Presentations and white/ green board (traditional) as per requirement of the topic
UNIT - V	**Introducing WWW** -Use of Internet, Website, Web Browser, Search Engine, E-Mail etc.	ICT based class room teaching, Group Presentations and white/ green board (traditional) as per requirement of the topic

Practical:-

1. Creating different type of file, folder, working with file, save, save as, cut, copy, paste, moving file & folder.
2. Creating documents using MS-Office, new file, fonts, formatting, page layout, colors etc.
3. Creating PPT using MS-Office slide, inserting new slide, visualization slide, fonts and

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Books

background etc.

Reference Book: -

- Computer fundamental by P.K. Saha.
- Computer fundamental by V.Rajaraman.
- Computer fundamental by K.Nitin Nayak.
- Office XP by Sanjay Sexena.

UNIT 1

- Concept of Computer
- Brief history of computer
- Generation of computer
- Characteristics of computer
- Major areas of computer and their application

WHAT IS A COMPUTER?

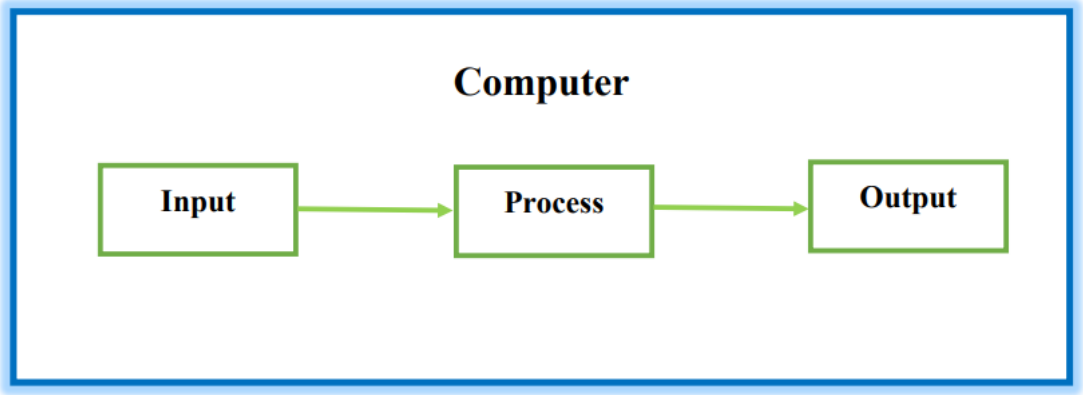
The word **“Computer”** is derived from the word “compute". It means to **“calculate".** We all are familiar with calculations in our day-to-day life. We apply mathematical operations like addition, subtraction, multiplication, division, etc and many other formulae for calculations. Simple calculations take less time. But complex calculations take much longer time. Another factor is accuracy in calculations. So man explored with the idea to develop a machine, which can perform this type of arithmetic calculation faster, and with full accuracy. This gave birth to a device or machine called “computer".

DEFINITION OF A COMPUTER

"A computer is an electronic device, which can be programmed to perform highspeed mathematical or logical operations. Computer accepts, stores, correlates, manipulates and processes information in binary format and display the results in a human understandable language."

Concept of Computer

To put it simply, a computer is an electronic device that is designed to work with information.



The Computer...

- 1. Takes in the INPUT information, then.
- 2. PROCESS the information, and then.
- 3. Displays the OUTPUT results.

Brief history of computer

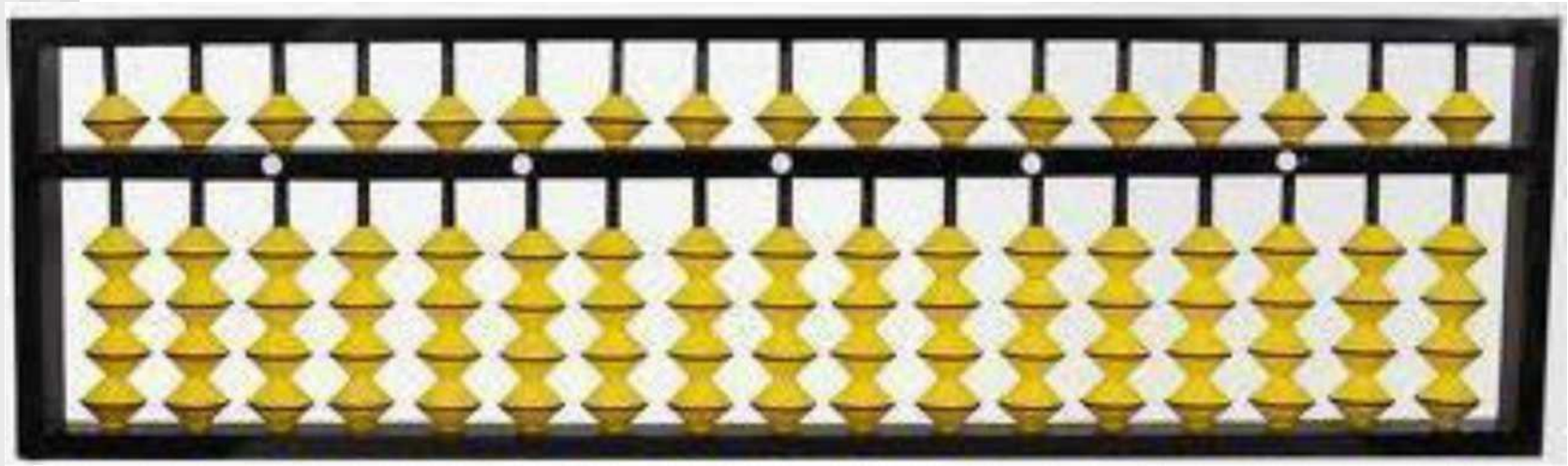
- History of computer could be traced back to the effort of **man to count large numbers**. This process of **counting of large numbers generated various systems of numeration** like **Babylonian system of numeration**, **Greek system of numeration**, **Roman system of numeration and Indian system of numeration.** Out of these the Indian system of numeration has been accepted universally. It is the basis of modern decimal system of numeration (0, 1, 2, 3, 4, 5, 6, 7, 8, 9). '
- Later you will know how the computer solves all **calculations based on decimal system**. However, you will be surprised to know that the **computer does not understand the decimal system** but it ***uses binary system of numeration*** (0 and 1) for processing.

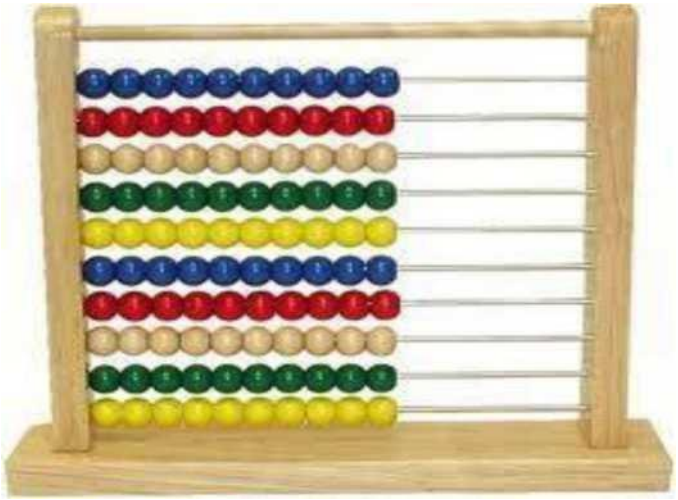
(a) Calculating Machines

Let us briefly know some of the path-breaking inventions in the field of computing devices.

It took generations for early man to build *mechanical devices* for counting large numbers. The first calculating device called **ABACUS**, was developed by the **Egyptian and Chinese** people. The word ABACUS means calculating board. It consists of sticks in horizontal positions on which are inserted sets of pebbles. A modern form of ABACUS is as shown in the fig. It has a number of horizontal bars each having ten beads. Horizontal bars represent units, tens, hundreds, etc.

Abacus





(b) Napier’s bones

English **mathematician John Napier** built a mechanical device for the purpose of multiplication in **1617** AD. The device was known as Napier"s bones.

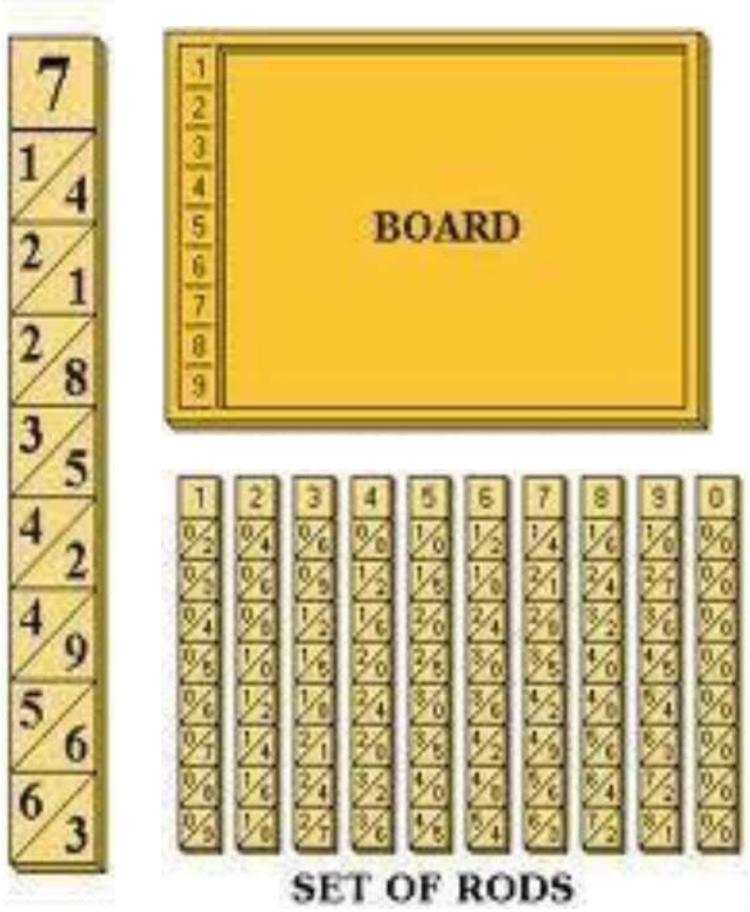
7 x 1 =

7 x 2 =

7 x 3 =

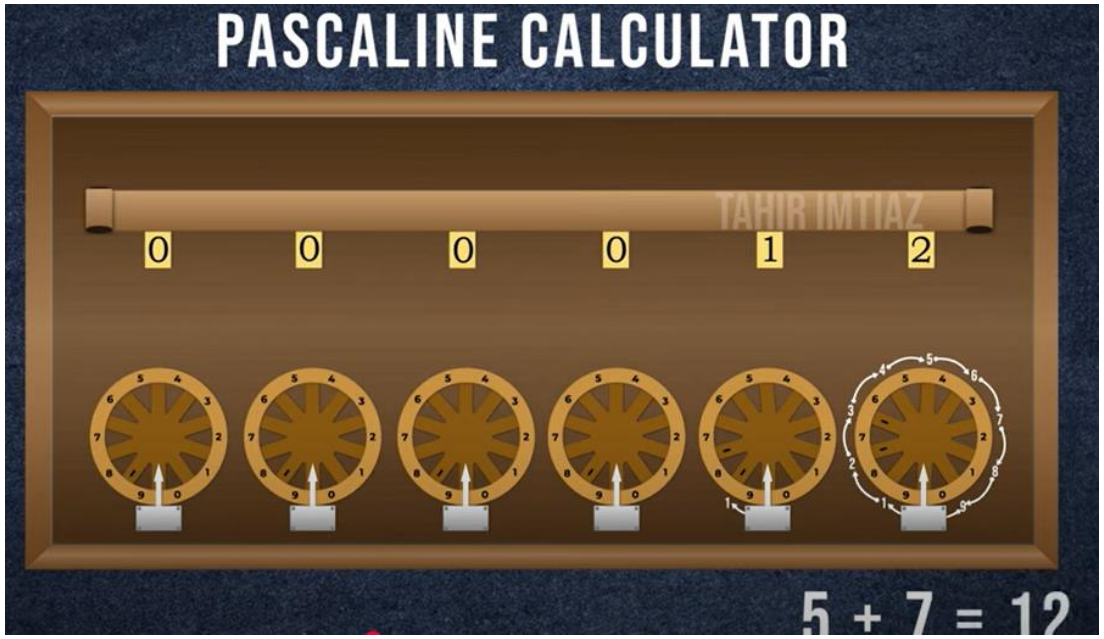
7 x 4 =

7 x 5 =



(C) Pascal's Adding and Subtraction Machine

You might have heard the name of **Blaise Pascal**. He developed a machine at the age of 19 that could add and subtract. The machine consisted of wheels, gears and cylinders.

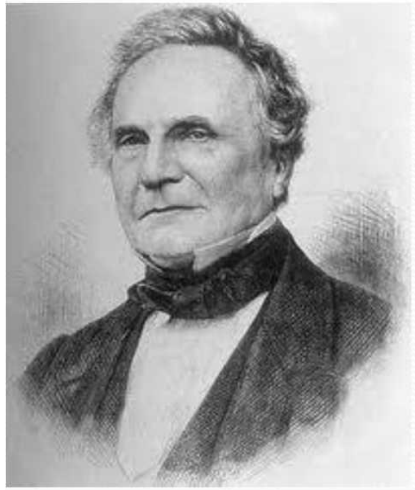


(d) Leibniz's Multiplication and Dividing Machine

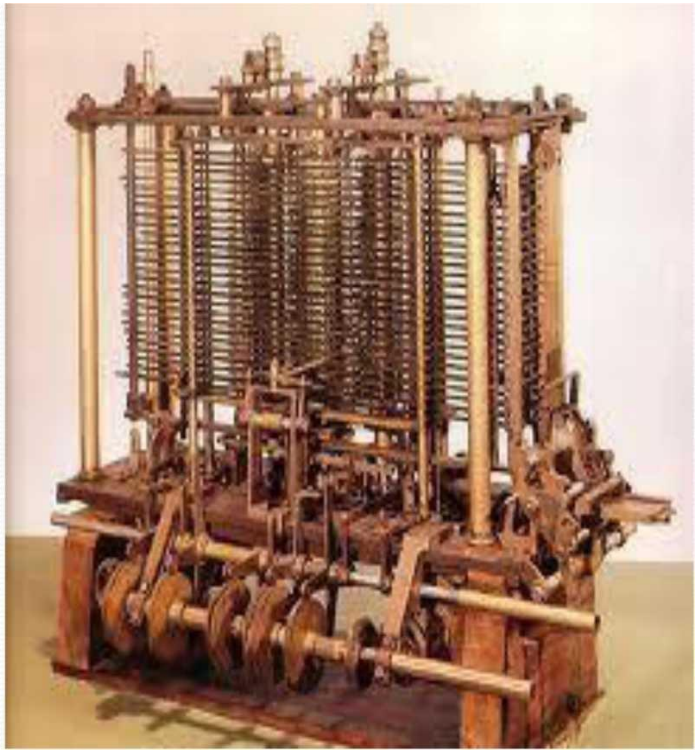
The German philosopher and mathematician **Gottfried Leibniz** built around **1673** a mechanical device that could both multiply and divide.

(e) Babbage's Analytical Engine

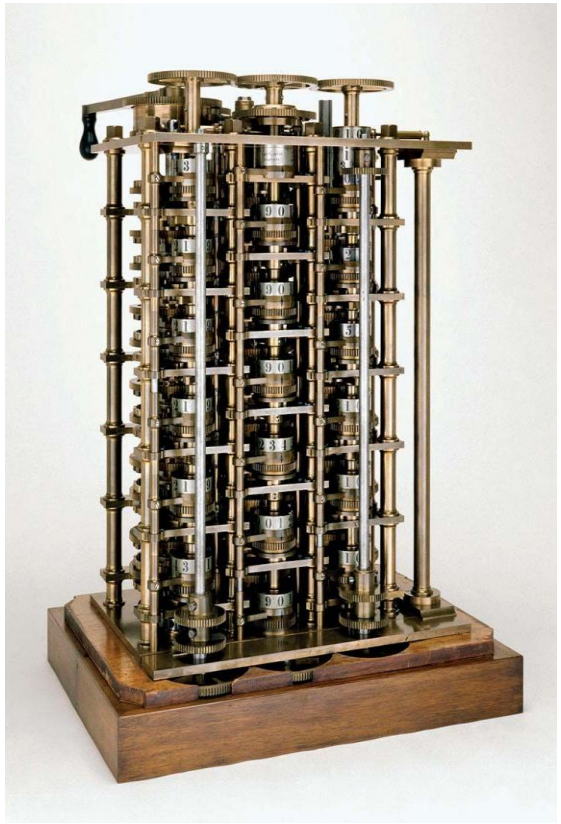
It was in the year **1823** that a famous English man **Charles Babbage** built a mechanical machine to do complex mathematical calculations. It was called **difference engine**. Later he developed a general purpose calculating machine called **analytical engine**. You should know that Charles Babbage is called the ***Father of computers***



Charles Babbage



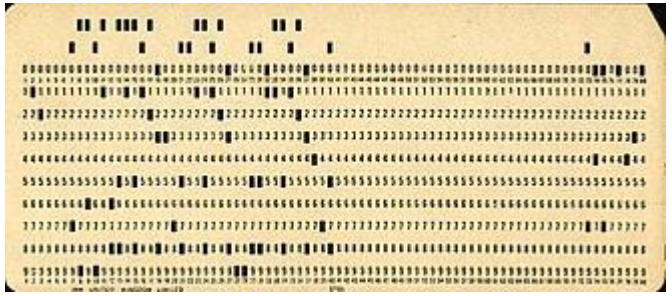
Babbage's Analytical Engine (1837)



Babbage's difference Engine (1822)

Tabulating Machine

The Tabulating machine was an electro-mechanical machine invented by Herman Hollerith. It was developed to process data for the **united state Census of 1890**. it was assist in counting and recording the given information in lesser time. It used punched cards to record and store data



(f) Mechanical and Electrical Calculator

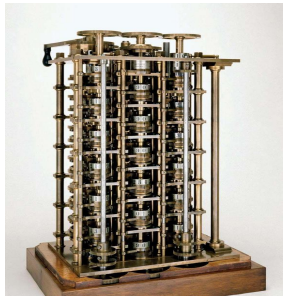
In the beginning of 19th century the mechanical calculator was developed to perform all sorts of mathematical calculations and it was widely used till 1960. Later the routine part of mechanical calculator was replaced by electric motor. It was called the electrical calculator.

Question (Match the columns) https://forms.gle/DFSt1tAD6CVyXD6D8

1. 

2 

3 

4 

a. Blaise Pascal

b. Charles Babbage

c. Herman Hollerith

d. John Napier

ENIAC

- Full form of ENIAC is – Electronic Numeric Integrator And Calculator was invented by John Mauchly and J. Presper Eckert .
- It was the first electronic digital computer.
- 18000 vaccum tubes were the main part of this computer.

ENIAC

1951- UNIVAC -1

- Full form of UNIVAC is Universal Automatic Computer
- It was the first commercial electronic computer.
- It was developed by J. Presper Eckert and John Mauchly in 1951

UNIVAC I

Generations of Computers

(a) First Generation Computers (1946-59)

First generation computers used Thermion valves or **Vacuum tubes**. These computers were large in size and writing programs on them was difficult. Some of the important computers of this generation were:

Followings were the major drawbacks of first generation computers.

1. They were quite bulky.
2. The operating speed was quite slow.
3. Power consumption was very high.
4. It required large space for installation.
5. They had no operating system.
6. The programming capability was quite low.

(a) <u>Second Generation Computers (1959-64)</u>

Around 1959 an electronic device called **Transistor** replaced the bulky vacuum tubes in the first generation computer. A single transistor contained circuit produced by several hundred vacuum tubes. Thus the size of the computer got reduced considerably. Transistors therefore provided higher operating speed than vacuum tubes. They had no filament and require no heating. Manufacturing cost was also very low.

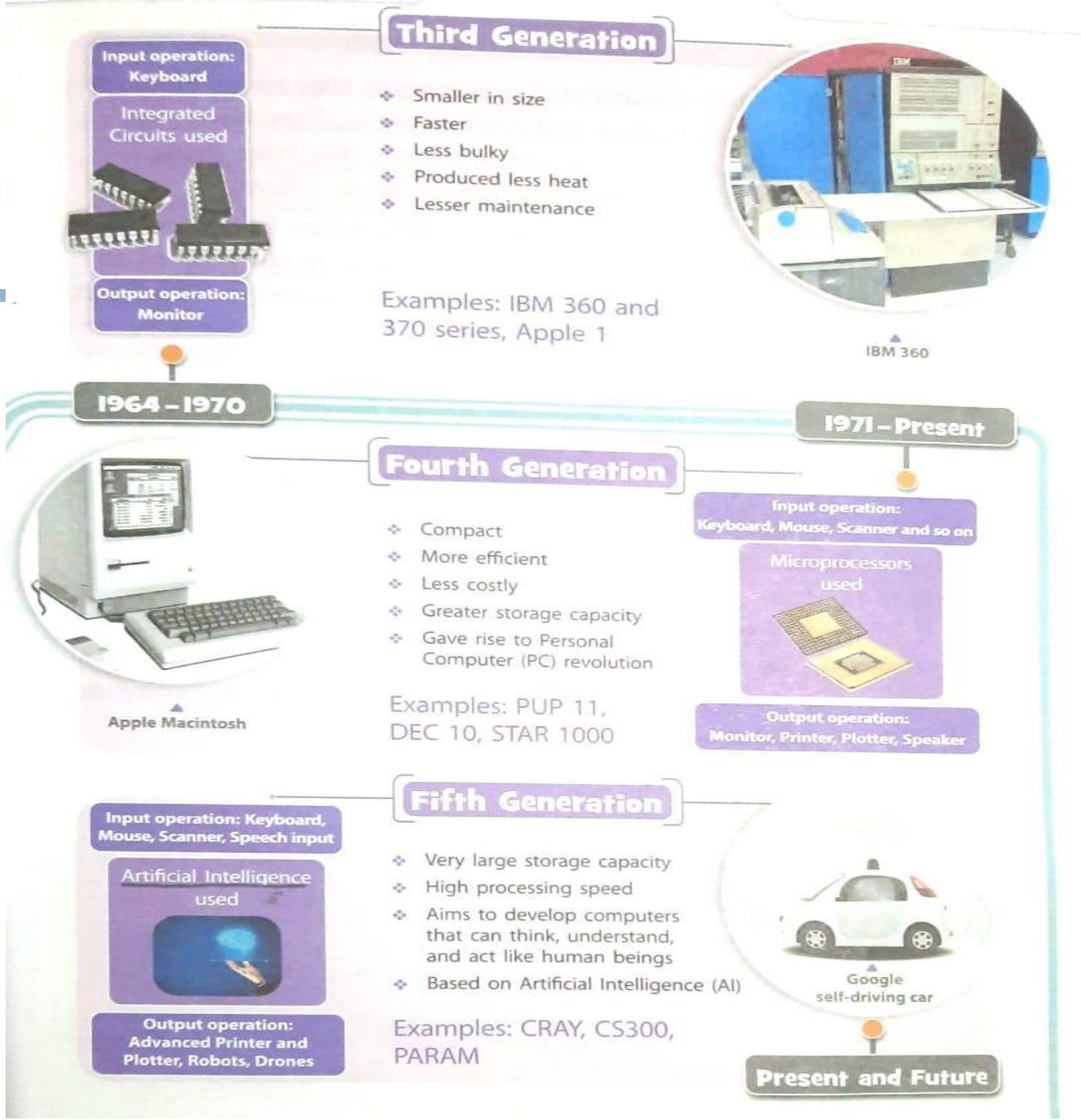
It is in the second generation that the concept of Central Processing Unit (CPU), memory, programming language and input and output units were developed. The programming languages such as COBOL, FORTRAN were developed during this period.

(c) Third Generation Computers (1964-71)

The third generation computers were introduced in 1964. They used **Integrated Circuits (ICs).** These ICs are popularly known as Chips. A single IC has many transistors, resistors and capacitors built on a single thin slice of silicon. So it is quite obvious that the size of the computer got further reduced. Some of the computers developed during this period were IBM-360, ICL-1900, IBM-370, and VAX-750.

(c) Fourth Generation Computers (1971 onwards)

The present day computers that you see today are the fourth generation computers that started around 1975. It uses **Large Scale Integrated Circuits (LSIC)** built on a single silicon chip called microprocessors. Due to the development of microprocessor it is possible to place computer's central processing unit (CPU) on a single chip. These computers are called microcomputers. Later **Very Large Scale Integrated Circuits (VLSIC)** replaced LSICs. These integrated circuits are so advanced that they incorporate hundreds of thousands of active components in volumes of a fraction of an inch.



Fifth Generation Computers

The computers, which can think and take decisions like human beings have been characterized as Fifth generation computers and are also referred as thinking machines. The speed is extremely high in fifth generation computer. Apart from this they can perform parallel processing. The concept of **Artificial Intelligence** has been introduced to allow the computer to take its own decision. It is still in a developmental stage.

A lot of research and development work is going on in this area in United States and Japan but it will take some time before such machines are produced for use by the industry.

CHARACTERISTICS OF A COMPUTER

1. Speed

As you know computer can work very fast. It takes only few seconds for calculations that we take hours to complete. You will be surprised to know that computer can perform several million (1,000,000) of instructions and even more per second. Therefore, we determine the speed of computer in terms of microsecond (10-6 part of a second) or nano-second (109 part of a second). From this you can imagine how fast your computer can perform.

2. Accuracy

Suppose someone calculates faster but commits a lot of errors in computing, then such a result is useless. There is another aspect, suppose you want to divide 15 by 7. You may work out up to 2 decimal places and say the quotient is 2.14. I may calculate up to 4 decimal places and say that the result is 2.1428. Someone else may go up to 9 decimal places and say the result is 2.142857143.

But a computer can give up to 100 decimal places within a fraction of second and that too accurately. Hence, in addition to speed, the computer provides very high level of accuracy or correctness in computing.

3. Diligence

A computer is free from tiredness, lack of concentration, fatigue, etc. It can work for hours or days together very attentively without creating any error.

If millions of calculations are to be performed, a computer will perform every calculation with the same accuracy. Due to this capability it is better than human being in routine and repetitive types of work.

4. Versatility

It means the capacity to perform completely different type of work. You may use your computer to prepare payroll slips. Next moment you may use it for inventory management or to prepare electricity bills or prepare accounts, etc. Therefore computer is highly versatile.

5. Power of Memory or Storage

Computer has the power of storing huge amount of information or data. Information can be stored and recalled as long as you require it, for any number of years. It depends entirely upon you, how much data you want to store in a computer and when to use or retrieve these data. It will not fade away like human memory as years pass.

The computer has an in-built memory where it can store a large amount of data. You can also store data in secondary storage devices such as floppies and CDs, which can be kept outside your computer and can be carried to other computers.

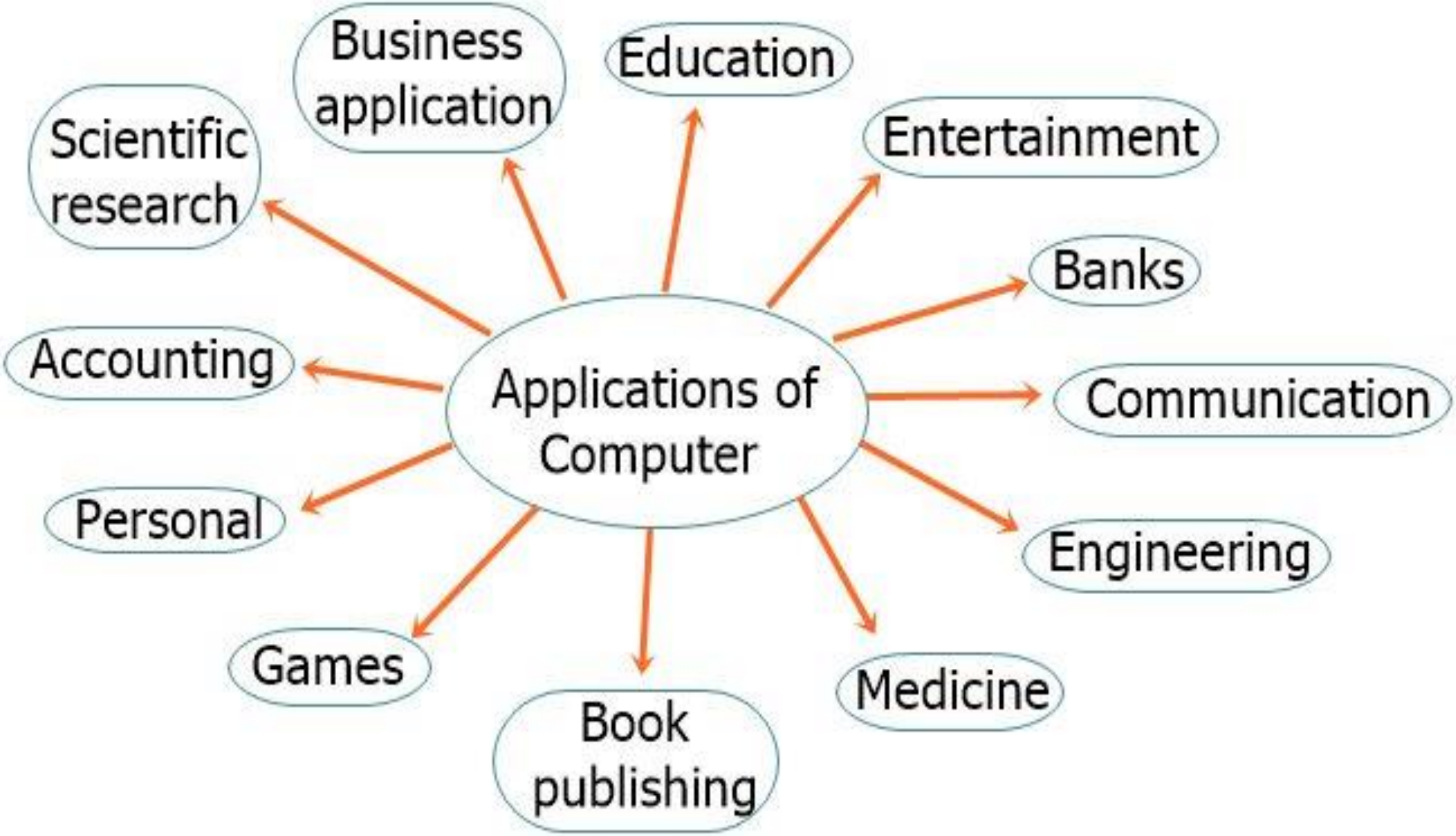
6. No Feelings

Computers do not have feelings or emotion, taste, knowledge and experience. Thus a computer does not get tired even after doing long hours of work. It does not distinguish between users and different kinds of work being done by it

APPLICATIONS OF COMPUTERS IN VARIOUS FIELDS

Computers have their application or utility everywhere. We find their applications in almost every sphere of life-particularly in fields where computations are required to be done at a very fast speed and where data is so complicated that the human brain finds it difficult to cope up with. As you must be aware, computer now-a- days are being used almost in every department to do the work at a greater speed and accuracy.

Some of the prominent areas of computer applications are in Tourism, Banks, Industries, Transportation, Education, Entertainment and so on...


Applications of Computer
Business application
Education
Entertainment
Scientific research
Banks
Accounting
Communication
Personal
Engineering
Games
Medicine
Book publishing

UNIT 02

Dr. Md.Tabrej Khan

Computer Skill & General Awareness

UNIT 2

- Components of computers –

CPU, Input Device, Memory Types, Software & Hardware

CLASSIFICATION OF COMPUTERS

Differences in certain computer characteristics have led to the development of major computer classifications based on the type of electronic signal and memory size.

Types of computers based on electronic signal they transmit are:-

(i) Analog Computers: Works with real-world, continuous signals.eg Speedometer in a car

(ii) Digital Computers: Performs tasks using logic circuits, Desktop and laptop computers

(iii) Hybrid Computers :Hospital ICU machines (monitoring patient vital signs in real time)

Types of computers based on memory size are:-

1. **Micro Computers:-** Microcomputer is at the lowest end of the computer range in terms of ***speed and storage capacity***. Its CPU is a microprocessor. The first microcomputers were built of **8-bit**

microprocessor chips. The most common microcomputer is a personal computer (PC). The PC supports a number of input and output devices. An improvement of 8-bit chip is 16-bit and 32-bit chips.

Examples of microcomputer are **IBM PC, PC-AT**

Mini Computers

2. **Mini Computers:-** This is designed to support more than **one user at a time**. (various users can work at the same time) It possesses **large storage capacity** and operates at a high speed than a microcomputer. This type of computer is generally used for processing large volume of data in an organization. They are also used as **servers in Local Area Networks (LAN).**

Mainframe Computers

3. **Mainframe Computers:-** These types of computers are generally **32-bit computers**. They operate at **very high speed**, have very **large storage capacity** and can handle the workload of **many users**. They are generally used in **centralized databases**. They are also used as controlling nodes in Wide Area Network (WAN). Example of mainframes are DEC, ICL and **IBM 3000 series**.

Super Computers

4. **Super Computers:-** This is the **fastest** and **most expensive machines**. It has high processing speed compared to other computers. They also have **multiprocessing technique**. One of the ways in which supercomputers are built is by interconnecting **hundreds of microprocessors**.

Supercomputer is mainly used for ***weather forecasting, biomedical research, remote sensing, aircraft design*** and other areas of science and technology. Examples of supercomputers are CRAY YMP, CRAY2, NEC SX-3, CRAY XMP and **PARAM from India.**

ENTIFY THE MODELS OF COMPUTERS

Tower: The system box is placed vertically adjacent to monitor.

Tower Model Computer

Desktop

Desktop: It is not designed for portability. The expectations with desktop system are that we will set the computer at permanent location. Most desktop offer more power, storage versatility for less cost than their portable.

Desktop Computer

Laptop

Laptop: There are also called **note books**. Laptops are portable computers that integrate the display, keyboard, pointing, device or track ball, processors, memory and hard drive all in battery operated package slightly larger than an average hard cover book

Laptop Computer

Palmtop Computer

4) **Palmtop:** There are also called as personal digital assistants (PDA"s), palmtop are tightly integrated computers. They often **use flash memory** instead of a **hard drive for storage**. These computers do not have keywords but relay on **touch screen technology** for user input.

Palmtop Computer

CONCEPTS OF HARDWARE AND SOFTWARE

Computer hardware is the **collection of physical elements** that comprise computer system. Computer hardware refers to the **physical parts or components** of computer such as monitor, keyboard, hard disk, mouse, etc.

"Hardware refers to objects that you can actually see, touch, and feel" like disks, disk drives, display screens, keyboards, printers, mother boards, and chips.

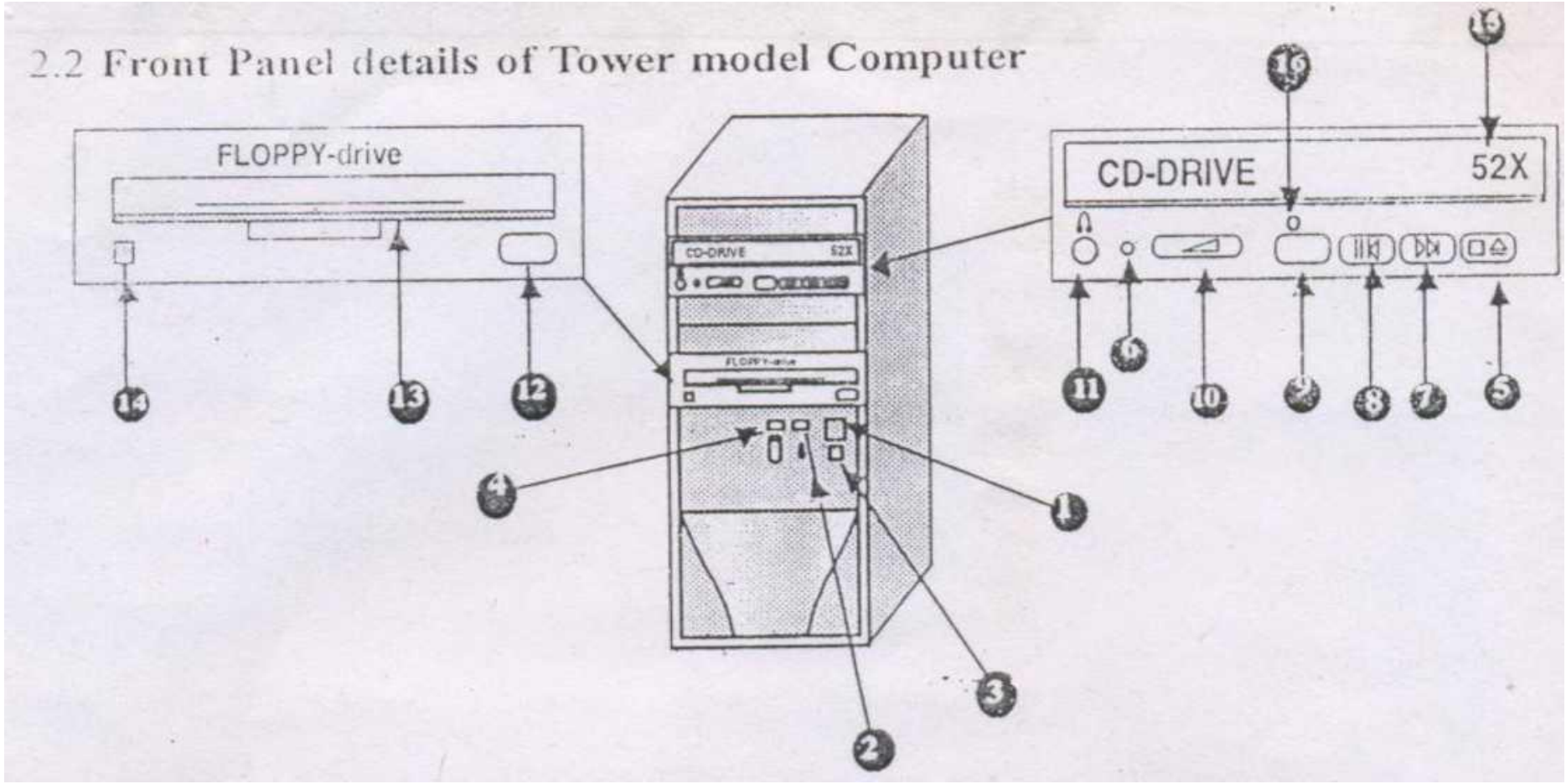
Computer software

Computer software or just software, is a **collection of computer programs** and related data that provides the **instructions** for telling a computer what to do and how to do it. In other words, software is a **set of programs**, **procedures**, **algorithms** and its **documentation** concerned with the operation of a data processing system.

"***Software refers to programs which we cannot touch, cannot see and cannot feel by our senses***". Software exists as ideas, concepts, and symbols, but it has no substance.

A combination of hardware and software forms a usable computing system.

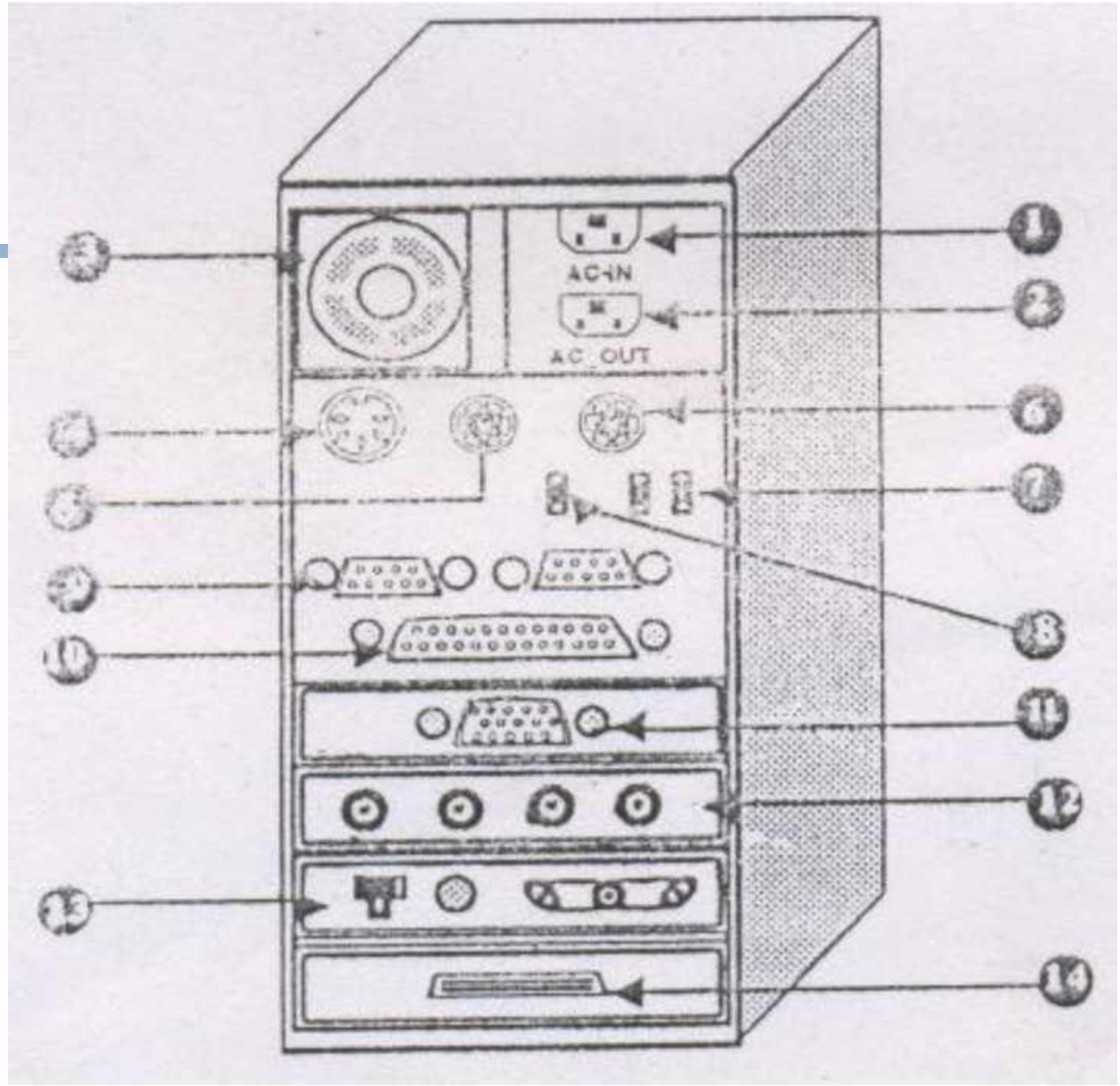
Front Panel details of Tower model computer



Front Panel details of Tower model computer

1. Power on Switch.
2. Power on (LED) indicator.
3. Reset Switch.
4. Hard Di sk Activity indicator.
5. CD-Open / Close / Stop button.
6. CD-Drive Activity indicator.
7. Play / Skip button.
8. Previous Track button.

9. Turbo button.
10. Head Phone Volume controller.
11. Head Phone Jack.
12. Floppy Disk Eject button.
13. Floppy Disk Insertion slot.
14. Floppy Disk Activity button.
15. CD-R/W Speed.
16. Emergency Eject hole.



PC Back Panel details

1. AC-Power in (From Main or UPS)
2. AC-Power out (To Monitor)
3. Exhaust Fan.
4. Keyboard Port(For AT2 Keyboard connector)
5. Keyboard port (For PS2 Keyboard connector)
6. Mouse Port(For PS2 Mouse connector)
7. USB Port (2 No"s for Inkj et Printer)
8. Fire wall port

9. Serial Port (COM1 and COM2 for Mouse / Modem Connector)
10. Parallel Port (LPT1 for printer connection)
11. Video Port (For Monitor)
12. Multimedia Ports. (For mic, speaker, line-in connection)
13. Network Ports (RCA- JACK / BNC for network cable connection)
14. SCSI ports (For connecting external SCSI hard disk)

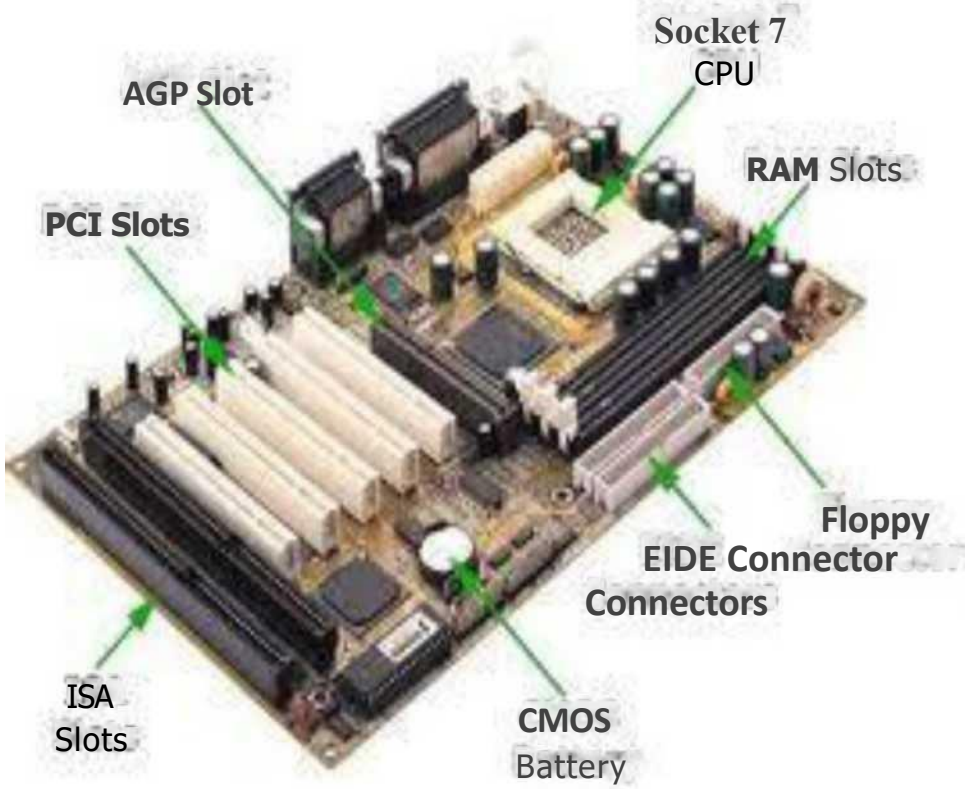

Practice
Connecting The Cables.

PRACTICE CONNECTING THE CABLES INTO THE BACK PANEL OF COMPUTER

PHYSICAL COMPONENTS OF COMPUTER

Mother Board: It is also called as system board / panel board / main board. It is a large **printed circuit board (PCB)** inside a system unit. It holds the majority of crucial components of the system providing connectors for other peripherals.

Motherboard



Motherboard

C.P.U.

R.A.M.

Hard Disk Drive