Speed16 Academy

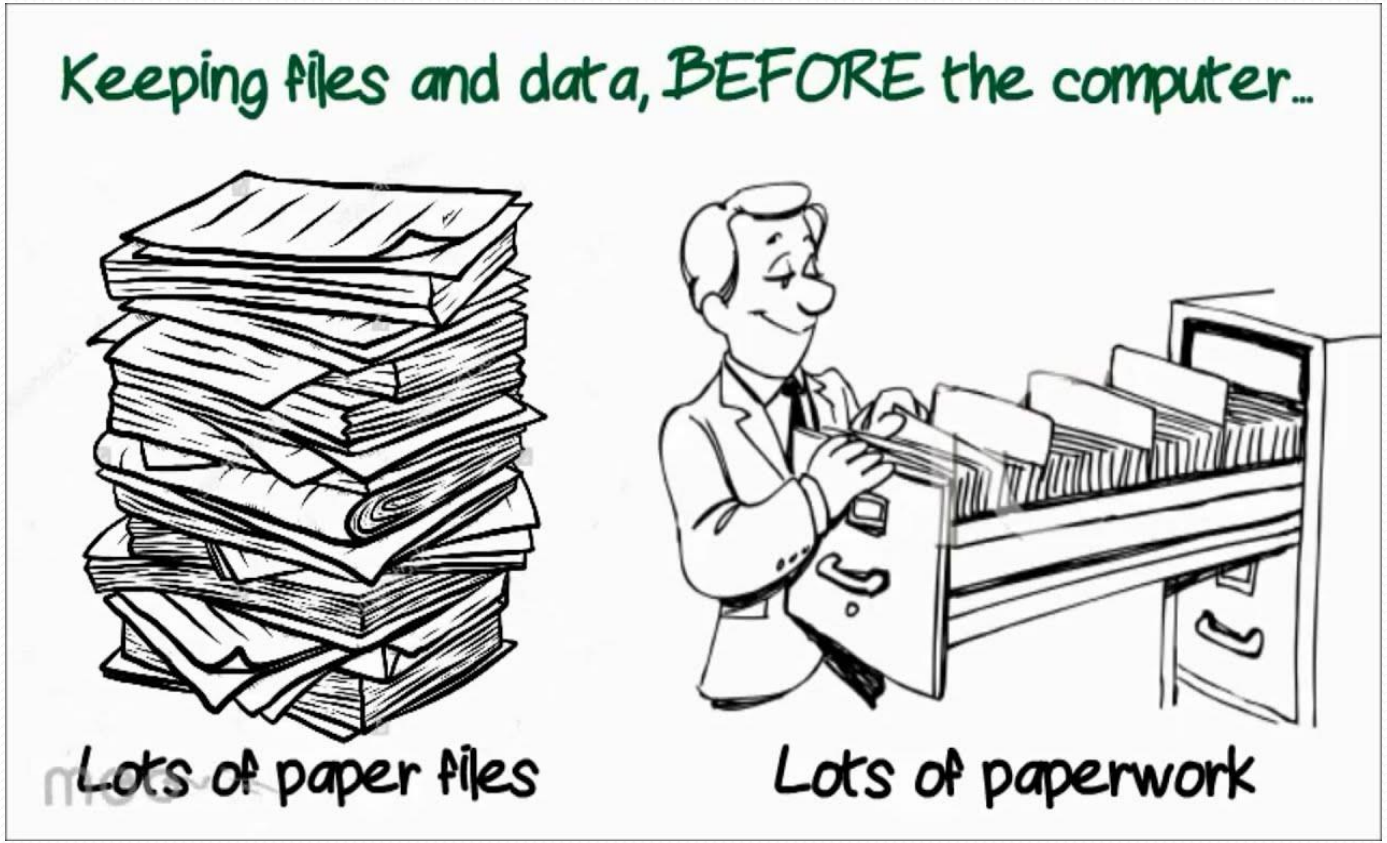
- **Vedic Maths & Python (Paperback, eBook, Video Course, Workbook & Online Interactive Training)**
- **www.Speed16.com**
- **+91-97640-58-654**
- **info@speed16.com**
- **Direct Whatsapp (https://wa.me/919764058654)**

Introduction to Computers

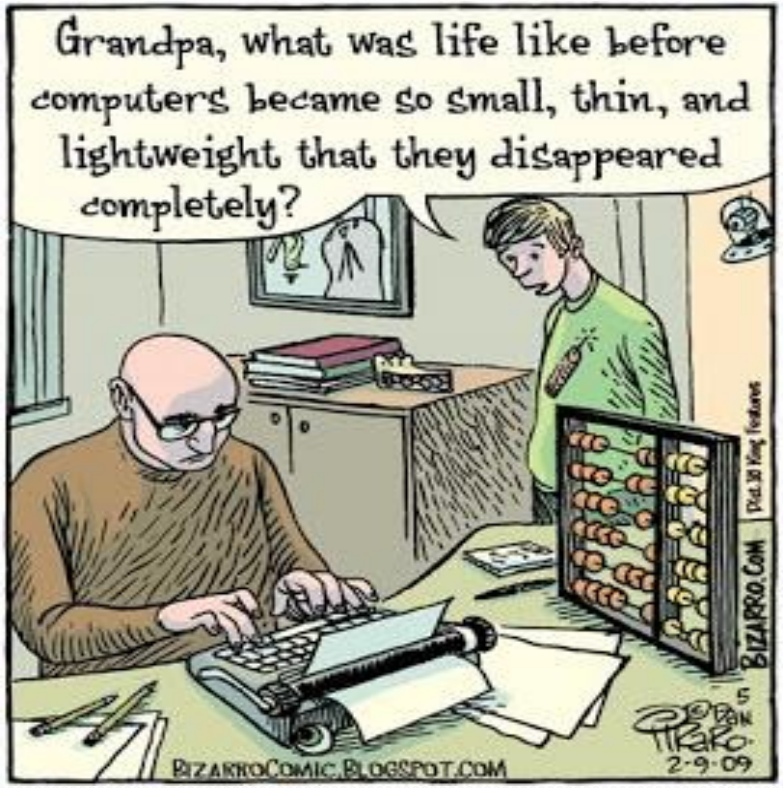
Agenda

1. Life Before Computers
2. What is Computer
3. History of Computers
4. Parts of Computers
5. Applications Areas of Computers
6. Limitations of Computers

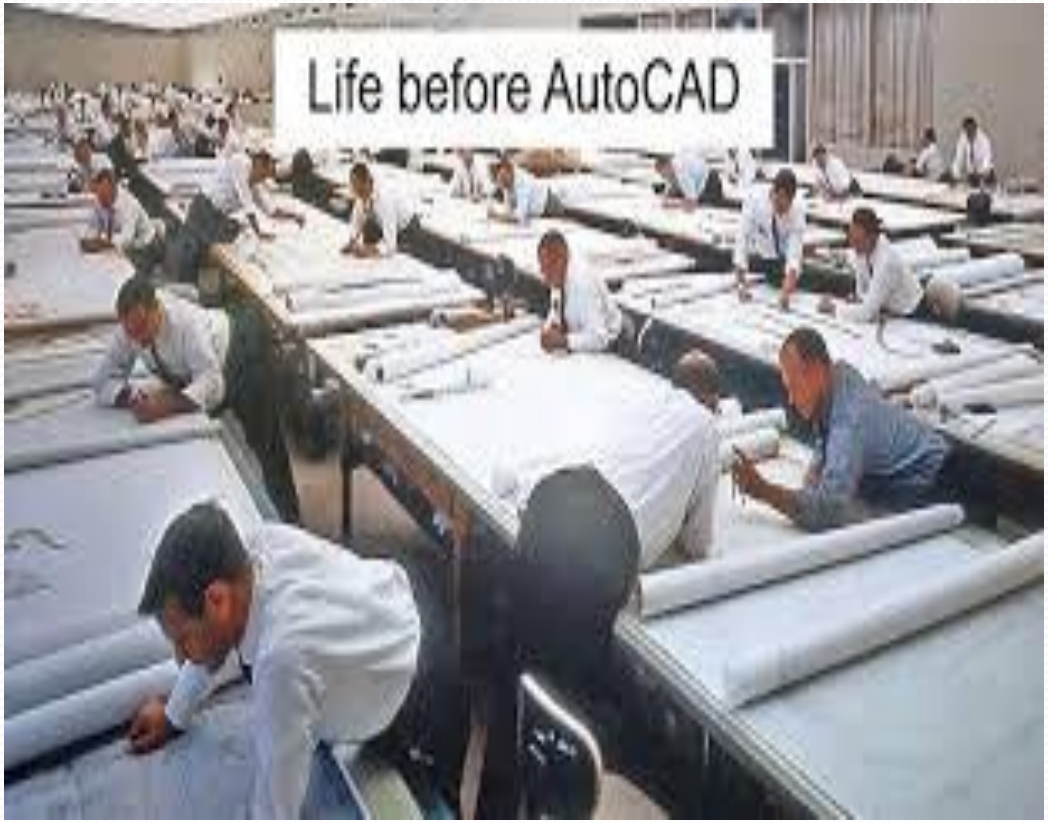
Life Before Computers



Life Before Computers



Life Before Computers



Life Before Computers

Life Before Computers

Life Before Computers

What is Computer?

- A computer is an electronic device that stores, retrieves and processes data.
- Computers exist in a variety of sizes and configurations.
- Computers can be programmed with instructions.
- A computer consists of hardware and software.

What is Computer?

The computer

first, Accepts **data** such as raw facts, figures & symbol

then, Processes data into **information**

(Data that is organized, meaningful & useful)

finally, Produces and stores results

What is Hardware & Software?

- **Hardware:** The physical components of the computer are called hardware of computer.
- **Ex.** Monitor, Keyboard, mouse, DVD etc
- **Software:** Software consists of well-organized instructions and code written by computer programmers in any of the computer programming language.
- **Ex.** Operating System, Banking software, Train ticket reservation software, etc.

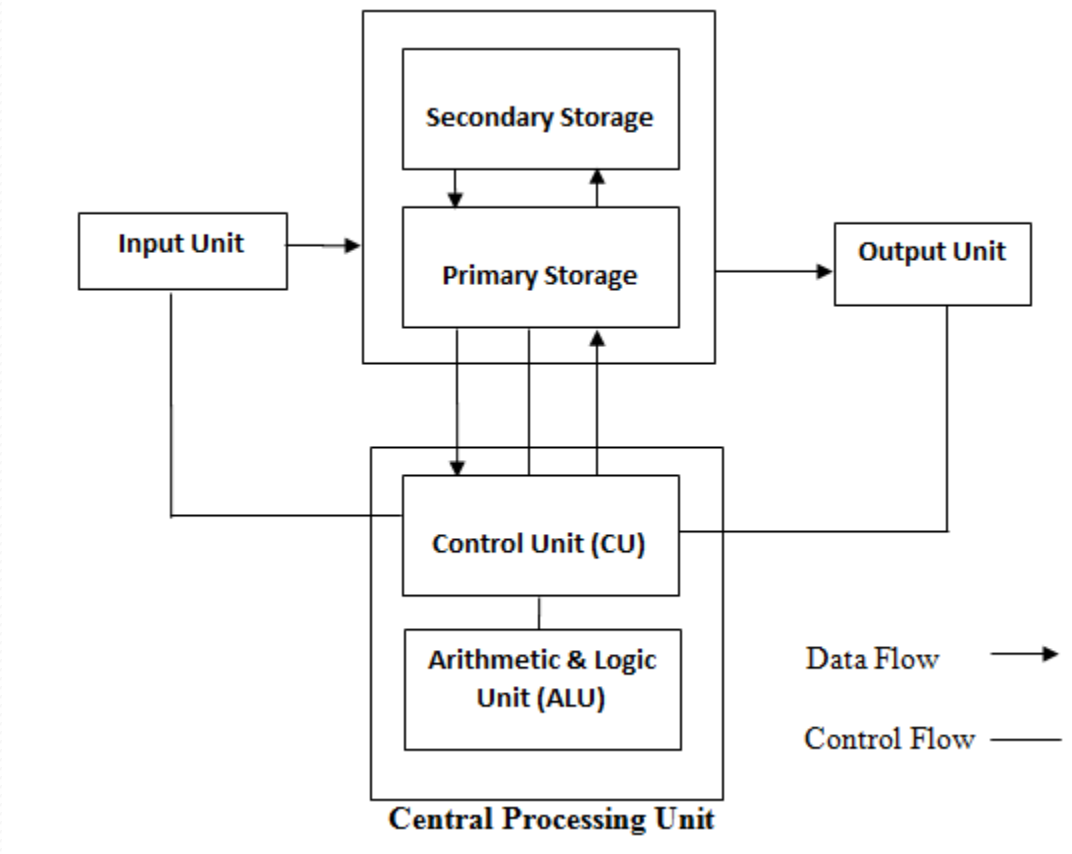
History of Computers

- 2000 years ago.----- invention of abacus
- the basic idea of computing develops in the **1200's**
- It was a manually-operated calculating device which was invented by John Napier (1550-1617) of Merchiston.
- Blaise Pascal invented Pascaline, a hand powered adding machine in 1642.
- In the 1694 true multiplying calculator appears in Germany developed by Gottfried Liebnitz.

History of Computers

- Thomas of Colmar created mechanical calculator that could add, subtract, multiply, and divide.
- In the **early 1820s**, it was designed by **Charles Babbage** who is known as "**Father of Modern Computer**". It was a mechanical computer which could perform simple calculations. It was a steam driven calculating machine designed to solve tables of numbers like logarithm tables.

Block Diagram of a Computer



Input Unit

- Computers need to receive data and instructions to solve any problems.
- These inputs are given from outside world to computers using input devices.
- Various input devices includes keyboard, mouse, scanner, joy stick, microphone, Bar Code Reader, Optical Mark Reader (OMR), Optical Character Reader (OCR), Magnetic Ink Card Reader(MICR used in banks), Track ball etc.

Output Unit

- The output unit provides results of the computation to the outside world.
- Various output devices are Monitors, Printers, Speakers, Projectors, Graphic plotter etc.


CD/DVD drive
(storage)
floppy disk drive
(storage)
hard disk drive
(storage)
PC video camera (input)
monitor
(output)
screen
pointer
modem
(communications)
speaker
(output)
speaker
(output)
system unit
(processor, memory,
and storage)
keyboard (input)
mouse
(input)
scanner (input)
printer
(output)
microphone
(input)
card reader
(storage)
digital camera

Central Processing Unit (CPU)

- **Central Processing Unit (CPU) [Processor]**
- It is the brain of the computer.
- All fundamental computing takes place in the processor.
- The CPU is a microprocessor chip plugged into a special socket on the computer's motherboard.
- CPU speed is based on clock frequency and is measured in Hz (MHz or GHz).
- Performance of CPU is based on the size of RAM, cache size and bus speed.

Parts of CPU

- **CPU consists of three parts.**
- 1. **Arithmetic Logic Unit (ALU):** Arithmetic calculations are performed here
- 2. **Control Unit (CU):** Decodes and executes instructions. Controls other units.
- 3. **Registers:** Stores data and result. It speeds up the operation.

Arithmetic Logic Unit (ALU):

- ALU is an electronic circuit.
- Input data provided by user through keyboard or any other devices are stored in primary storage.
- ALU performs actual processing on inputs.
- ALUs major operations includes addition, subtraction, division, multiplication, comparison, logical operations etc.
- The processed data after processing is stored back in storage.

Control Unit (CU)

- **Control Unit (CU):** Decodes and executes instructions. Controls other units.
- Control unit is responsible for coordinating most of the computer system activities.
- It is not going to execute any instructions. It tells what to do to other parts of computer system
- Control Unit controls communication within ALU and memory unit with the help of electronic signals.
- CPU and I/O devices are communicated using control signals

Registers

- Registers are fast standalone storage locations that hold data and instructions temporarily.

Some of the registers are

- Program Counter (Instruction Pointer):
- Instruction Register:
- Data Register (DR):
- Memory Address Register (MAR)
- Memory Buffer Register (MBR):
- Accumulator:
- General Purpose Registers:

Storage (Memory) Unit

- The storage unit holds data and instructions.
- The storage unit is divided into two types

1. Primary memory (Main memory)
2. Secondary memory

Primary Memory

- **Primary Memory (Main Memory) (Volatile Memory)**
- The programs that are running and their data are stored in primary memory.
- Primary memory is closely connected to processor.
- **Volatile (Temporary):** Contents of primary memory will be vanished when power is turned off.
- The contents of primary memory will be stored into secondary memory after completion of the processing.

Primary Memory (Contd..)

- Primary memory is physically made up of Random Access Memory (RAM)
- The cost of RAM is more and storage capacity is limited as compared to secondary storage.
- Primary memory is connected to secondary memory through bus and controller.
- RAM is categorized into DRAM (Dynamic RAM), SRAM (Static RAM)

Secondary Memory

- **Secondary Memory (Non Volatile Memory):** To store data and instructions permanently secondary memory is used. The speed is slow as compared to primary memory as it is not directly connected with processor. The cost is cheaper. Storage capacity is more. Ex. Hard Disks
- Secondary memory deals with Read Only Memory (ROM). ROM is used to store data and program (instruction) which is not going to change.

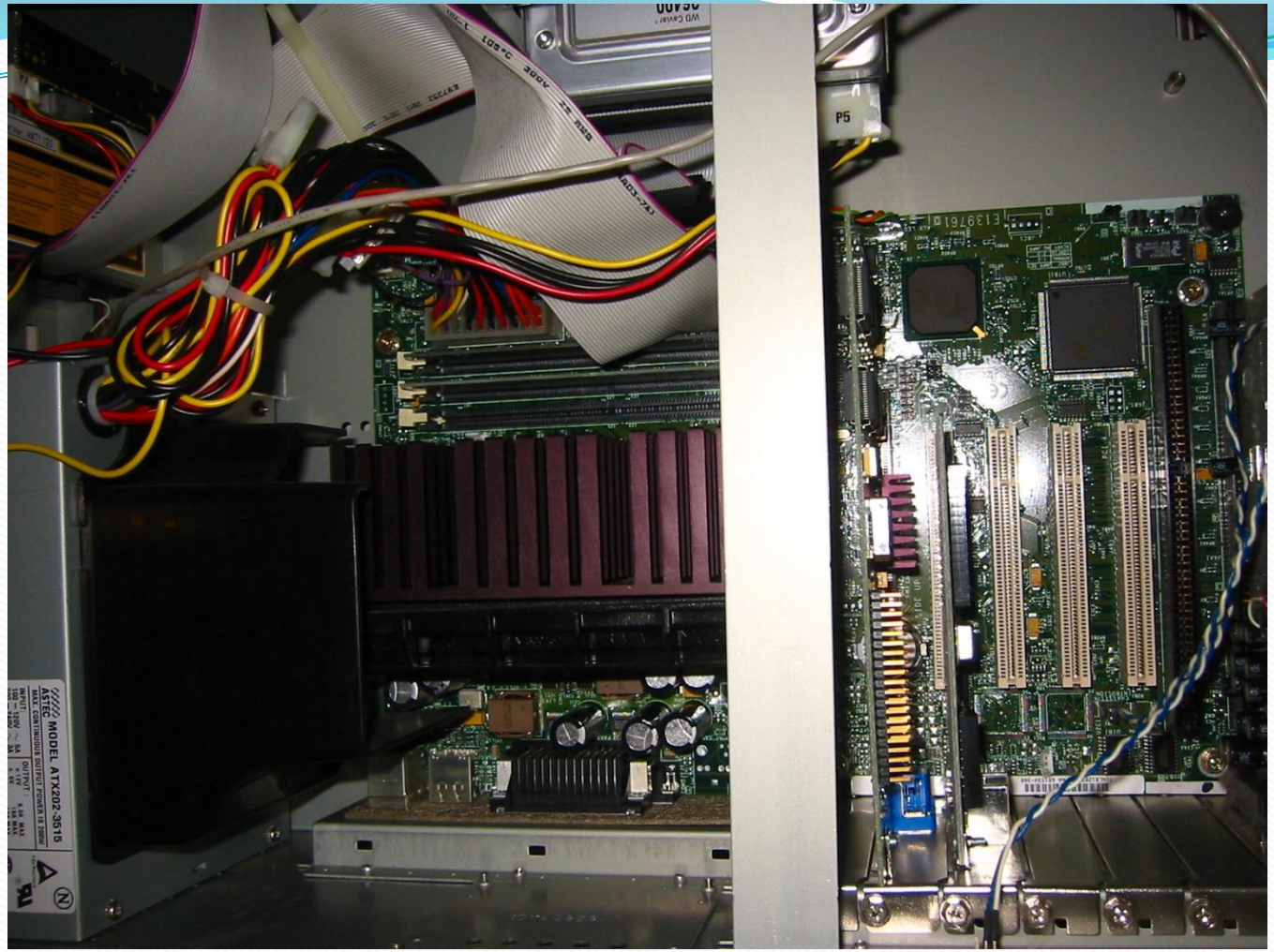
Secondary Memory

The variants of ROM are:

- PROM: Programmable Read Only Memory
- EPROM: Erasable Programmable Read Only Memory
- EEPROM: Electrically Erasable Programmable Read Only Memory

Difference

Parameters	Primary Memory	Secondary Memory
Speed	Fast	Slow
Cost	Expensive	Cheap
Storage Capacity	Less	More
Connection with processor	Closely Connected	Directly Not connected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Application Areas

- Personal and Home Uses
- Business and Industry
- Education
- Government Organizations
- Military
- Healthcare
- Science, Technology, Architecture
- Astronomy, Astrophysics, Aerodynamics
- Travel, Entertainment etc.

Personal & Home Uses

- Computers allow people with disabilities to do normal activities.
  - Shopping online
  - Playing games* **(bad practice)**
  - Work from home
  - Entertainment such as listening to music, watching videos etc.
  - Enable communication through the use of (electronic mails) e-mails , chats etc.

Why Is a Computer So Powerful?

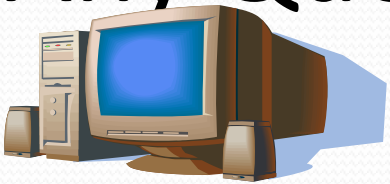
- What makes a computer powerful?
  - Speed
  - Reliability
  - Accuracy
  - Storage
  - Communications

Limitations of Computers

- **Can’t Think**
- **Can’t Feel**

The End..

Any Questions?



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