The Central Processing Unit (CPU)

- The computer does its primary work in a part of the machine we cannot see, a control center that converts data input to information output. This control center, called the central processing unit (CPU), is a highly complex, extensive set of electronic circuitry that executes stored program instructions. All computers, large and small, must have a central processing unit

The Control Unit

The Arithmetic/Logic Unit

Registers:

C p u

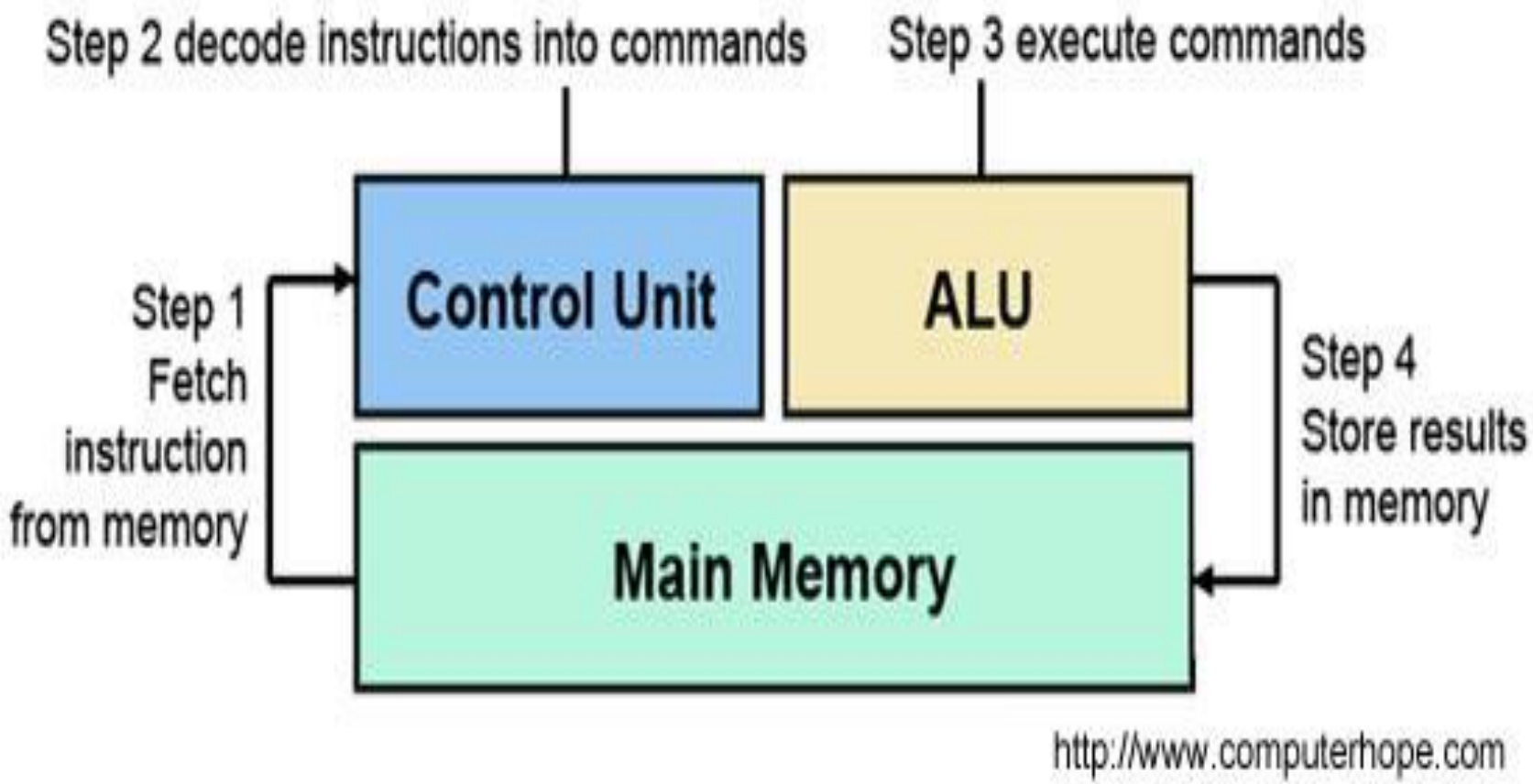
Memory and Storage

- Memory is also known as primary storage, primary memory, main storage, internal storage, main memory, and RAM (Random Access Memory); all these terms are used interchangeably by people in computer circles. Memory is the part of the computer that holds data and instructions for processing
- How do data and instructions get from an input device into memory? The control unit sends them. Likewise, when the time is right, the control unit sends these items from memory to the arithmetic/logic unit, where an arithmetic operation or logical operation is performed. After being processed, the information is sent to memory, where it is hold until it is ready to he released to an output unit

ALU

- **ALU** is one of the many components within a computer processor. The ALU performs mathematical, logical, and decision operations in a computer and is the final processing performed by the processor. After the information has been processed by the ALU, it is sent to the computer memory

Machine Cycle



A **control unit**

- A **control unit** is circuitry that directs operations within the computer's processor by directing the input and output of a computer system. The processor then controls how the rest of the computer operates (giving directions to the other parts and systems). A control unit works by gathering input through a series of commands it receives from instructions in a running programs and then outputs those commands into control signals that the computer and other hardware attached to the computer carry out.

Register

Register are used to quickly accept, store, and transfer data and instructions that are being used immediately by the CPU.

. When We Gives Some Input to the System then the I**nput will be Stored into the Registers** and When the System will gives us the Results after Processing then the Result will also be from the Registers. So that they are used by the **CPU for Processing the Data** which is given by the User. Registers Perform:-

1) **Fetch:**

2) **Decode**

3) **Execute**

Intel Pentium 4 Processor

The Pentium 4 is Intel’s more recent and fastest generation of CPUs, with processing speeds over 3 GHz.

450 MHz to

1 GHz

Intel Pentium III Processor

Launched in 1999, Pentium 3 CPUs are still found in some new computers.

1.06 to

2 GHz

Intel Celeron Processor
Intel’s Celeron CPU is an inexpensive processor designed for people on
budget. Celeron processors are very similar to Pentium processors, but
they have less built-in memory.
500 MHz to
3 GHz
Intel Xeon Processor
Don’t expect to see any Xeon-based computers at your local computer
store—it’s designed for high-end servers.
850 MHz to
1.67 GHz

AMD Athon Processor

The Athlon processor is equivalent to Pentium processors—only it’s less expensive.

1.5 GHz to 1.8 GHz

AMD Sempron Processor

The Sempron CPU is AMD’s answer to Intel’s Celeron processor. It has less built-in memory and is designed for people on a budget

RAM	ROM
Random-access memory	**Read-only memory**
Main memory	**Low-level memory**
Necessary to process information (example: work with a file).	**Necessary to perform the most basic functions (example: start the computer).**
Volatile: If not saved, data disappears when you shut off the computer's power. It's temporary	**Nonvolatile: Data remains even when you shut off the computer's power. It's permanent.**
Often discussed when buying a computer	**Seldom mentioned when buying a computer**
You can read from and write to it. Comparable to a notepad.	**You can read from it, but you can't write to it. Comparable to a novel.**

Printer Basics:

A printer is an output device that puts text and graphics on paper. Using the printer is often the last step in creating something on a computer, whether it's a letter, spreadsheet, or digital photograph.

Resolution

A printer's resolution helps determine the quality of the images it can produce. Higher

resolution means higher quality images. Printer resolution is measured in dots per inch

(dpi). Generally, 600-dpi resolution works great for text documents, while you will

probably want 1200 dpi or better resolution for printing images. See Figure 2-24 for a

good illustration of varying resolutions.

Speed

A printer's speed determines how quickly it can print pages. Speed is measured two

ways: in characters per second (cps) or in pages per minute (ppm). Either way you want a

higher number if you want to have a faster printer. Printers usually slow down quite a bit

when printing pages with a lot of complicated graphics, or color images

Memory

Laser printers have their own memory, or RAM, just like a computer. This memory is used to store pages before they are printed. Memory is important for printing complex or high-resolution images. Most laser printers have anywhere from 2 MB to 8 MB of memory.

Types of Printers:

Inkjet printers are easily the most popular and inexpensive type of printer out

there. If you have a printer for your home computer, chances are it’s an InkJet

printer. InkJet printers create images by spraying ink onto a page. The

inexpensive InkJet printer gets its ink from very expensive InkJet cartridges.

Most InkJet printers can print in color, and their speeds vary from 2 to 16 pages per minute (ppm).

Laser printers have blazing speed—anywhere from 4 to 20 pages per minute (ppm), great resolution—anywhere from 300 to 1,200 dots per inch (dpi), and recently have become relatively inexpensive. Laser printers are great for businesses and people who need to produce large amounts of text documents or correspondence.

Laser printers use the same technology as photocopy machines to create black

and white images on paper. Laser printers use powdered black ink, called toner,

just like photocopy machines do. When the toner cartridge runs out, you have to

replace it with a new toner cartridge. Toner cartridges cost a lot more than

InkJet cartridges do, but they also last a lot longer.

A color laser printer works just like an ordinary laser printer, except that it can

print in color, of course. Color laser printers are quite expensive and the color

toner cartridges for them are even costlier.

As its name implies, a multifunction printer can perform more than one task.

Multifunction printers can usually operate as a fax machine, copier, and scanner

in addition to their traditional printing duties.

Popular in the 1980’s, noisy dot-matrix printers have gone the way of the

dinosaurs, except in businesses that need to print on carbon copies.

Dot matrix printers usually use a type of paper with holes punched along each

side called continuous form paper, and loads it through something called a

tractor feed. Dot-matrix printers range in speed from 25 to 450 characters per

second (cps), or 1 to 18 pages per minute (ppm).

Resolution is measured differently with dot-matrix printers. Instead of using dot

per inch (dpi) dot matrix resolution is measured by how many little pins are on

the dot-matrix print head. Dot-matrix printers are available with 9-pin (terrible

quality) and 24-pin (higher quality) print heads.

Plotter

Don’t expect to find a plotter at your local computer store. Plotters are special,

very expensive printers that are used to create posters and blueprints.

Operating Systems

1. Controls Your Computer's Hardware

2. Runs Your Computer's Programs

3. Organizes Files

Word Processing:

1. Create Letters and Documents
2. Format Text
3. Create Tables
4. Add Images
5. Perform Mail Merges

Databases :

1. **Store Information**
2. **Find Information**
3. **Analyze and Print Information**
4. **Manage Information**
5. **Share Information**