Computer Fundamentals

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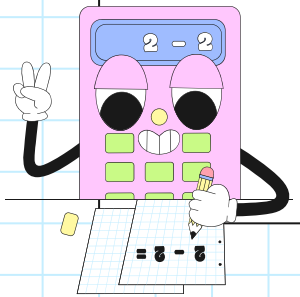
01

An Introduction to Computers

Introduction to computers, computers' components, computers' types and its usage in society



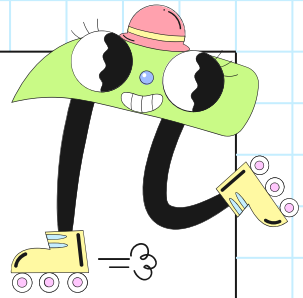
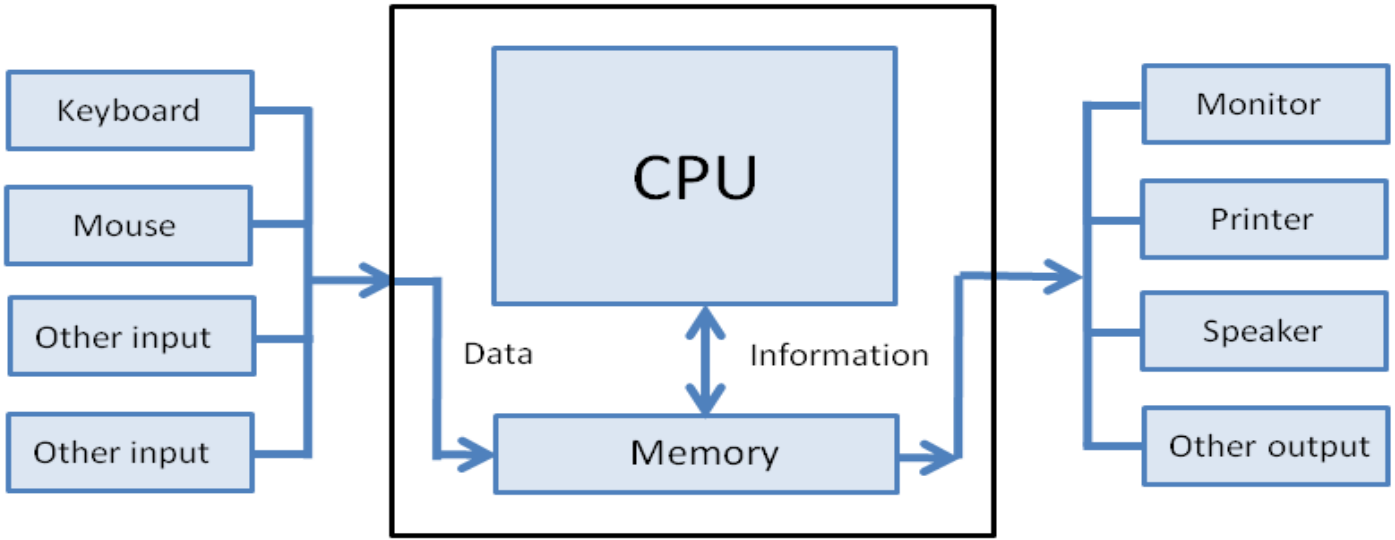


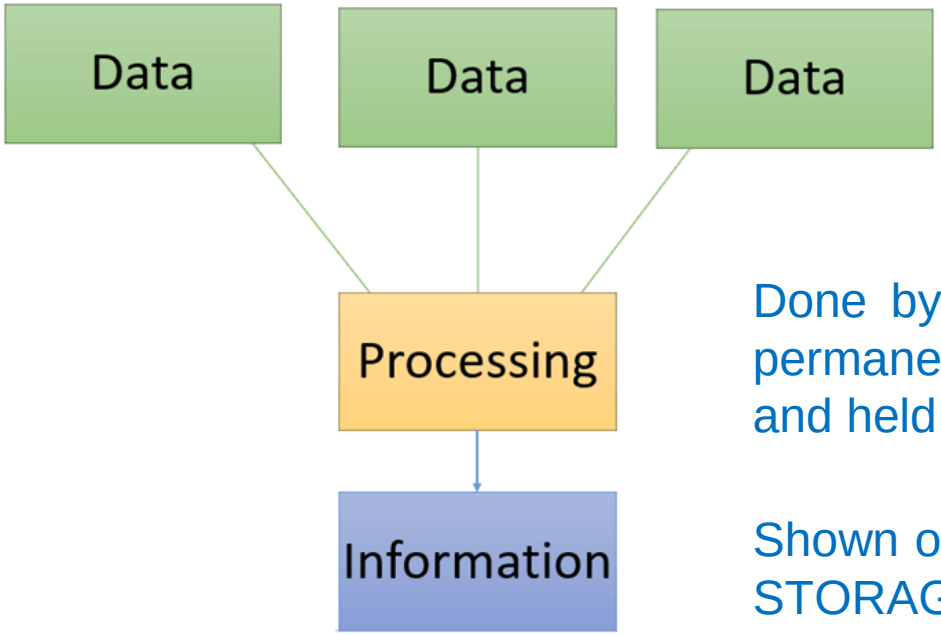
Table of contents

Table of contents

Hardware


Keyboard
Mouse
Other input
Other input
CPU
Data
Information
Memory
Monitor
Printer
Speaker
Other output

Data, Program and Information



Must be LOADED on memory RAM.

Done by a PROGRAM which is permanently stored on a storage and held temporary on RAM.

Shown on SCREEN, PRINTERS, STORAGES, …

Data, Program and Information

Data

- A collection of facts or statistics
- Unorganized
- Without context
- Can be quantitative (numerical) or qualitative (descriptive)
- Examples: number of website visitors, individual customer survey responses, product price

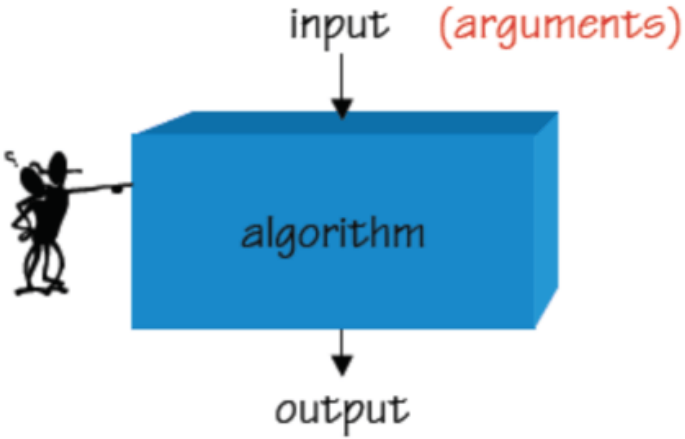
Information

- The result of analyzing and interpreting data
- Organized
- Has context
- Can be used to help make decisions
- Examples: website traffic changes, customer sentiment based on survey results, product price comparison

Data, Program and Information

What is an Algorithm?

An algorithm is a sequence of instructions that one must perform in order to solve a well formulated problem.



Computer Generations

- **First Generation (1940s-1950s):** Used vacuum tubes for processing and magnetic drums for storage. They were large, expensive, and unreliable.
- **Second Generation (1950s-1960s):** Replaced vacuum tubes with transistors, making them smaller, faster, and more reliable. Magnetic core memory was also introduced, which was faster and more reliable than magnetic drums.
- **Third Generation (1960s-1970s):** Used integrated circuits, which allowed for even smaller and faster computers. They also introduced magnetic disk storage and operating systems.

Computer Generations

- **Fourth Generation (1970s-1980s):** Saw the introduction of microprocessors, which made personal computers possible. They also introduced graphical user interfaces and networking.
- **Fifth Generation (1980s-Present):** The fifth generation of computers is still ongoing, and is focused on artificial intelligence and parallel processing. This generation also saw the development of mobile computing and the internet.

Components of Computers

Components of Computers

The physical parts of a computer

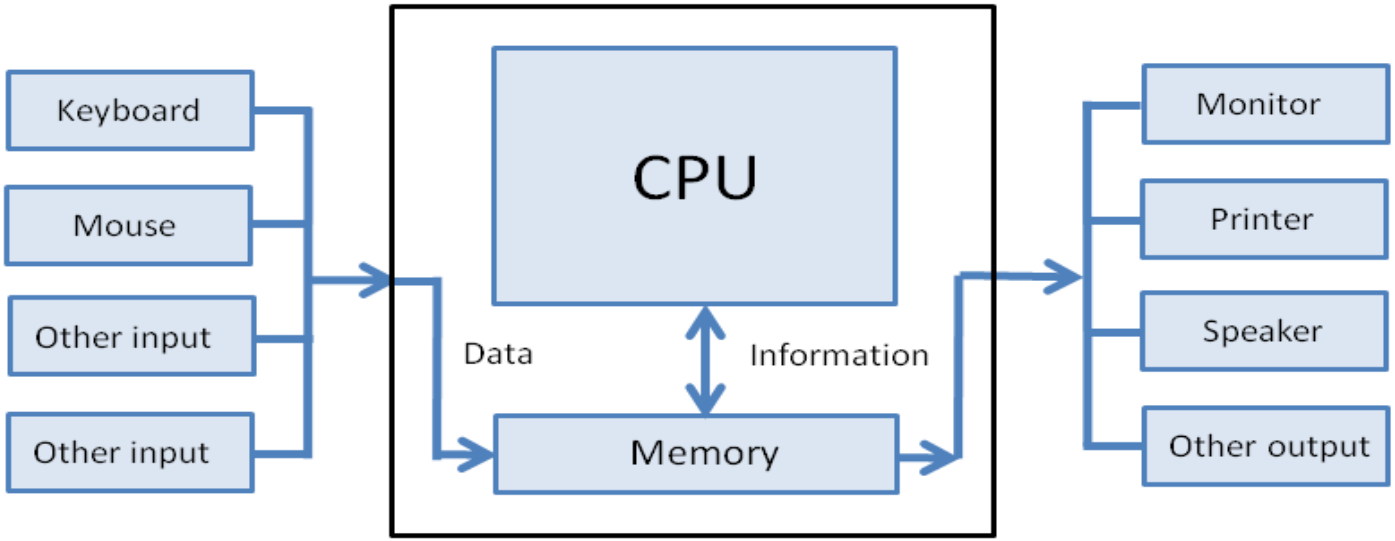
– Internal hardware

- Located inside the main box (system unit) of the computer

– External hardware

- Located outside the system unit
- Connect to the computer via a wired or wireless connection

Components of Computers



Components of Computers

Input Devices: Used to input data into the computer

– Keyboards, mice, scanners, cameras, microphones, touch pads, touch screens, fingerprint readers, etc.

Processing Devices: Perform calculations and control computer's operation

– Central processing unit (CPU) and memory

Output Devices: Present results to the user

– Monitors, printers, speakers, projectors, etc.

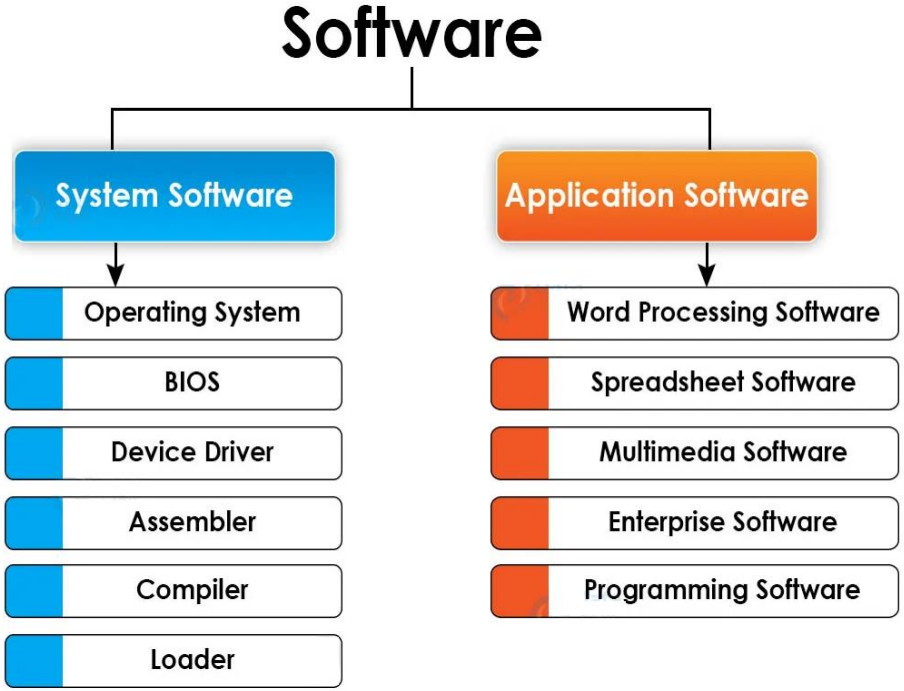
Storage Devices: Used to store data on or access data from storage media

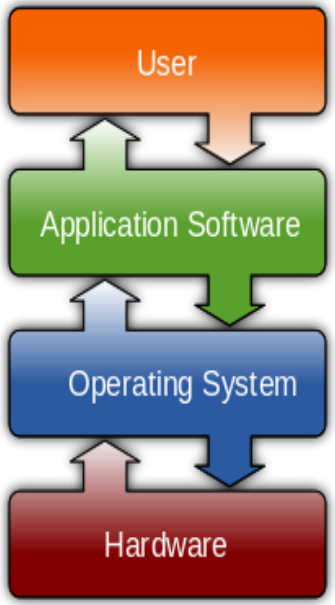
– Hard drives, CD/DVD discs and drives, USB flash drives, etc.

Communication Devices: Allow users to communicate with others and to electronically access remote information

– Modems, network adapters, routers, etc.

Software


Software
System Software
Application Software
Operating System
BIOS
Device Driver
Assembler
Compiler
Loader
Word Processing Software
Spreadsheet Software
Multimedia Software
Enterprise Software
Programming Software


User
Application Software
Operating System
Hardware

Types of Computers

Microcomputer

Minicomputer

Personal computer

Supercomputer

Laptop

Tablet

Types of Computers

Following are 6 basic categories of computers.

- Embedded computers
- Mobile devices
- Personal computers
- Servers
- Mainframe computers
- Supercomputers

Embedded computers

An integral component of most embedded systems, is a combination of hardware and software that is designated to perform a highly specific function.

Mobile Devices

A general term for any type of handheld computer. These devices are designed to be extremely portable, and they can often fit in your hand.

Tablet Computers

Portable, however, they provide a different computing experience.

Tablet computers don't have keyboards or touchpads. Instead, the entire screen is touch-sensitive.

Tablet computers can't necessarily do everything traditional computers can do.

E Readers

Similar to tablet, except they are mainly designed for reading e-books. Notable examples include the Amazon Kindle, Barnes & Noble Nook, and Kobo.

Most e-readers use an e-ink display, which is easier to read than a traditional computer display. You can even read in bright sunlight, just like if you were reading a regular book.

Smart Phones

A more powerful version of a traditional cell phone: phone calls, voicemail, text messaging.

Smartphones can connect to the Internet over Wi-Fi or a cellular network. We can it for the same things you would normally do on a computer.

Personal Computers: Desktop

Designed for regular use at a single location on or near a desk or table due to its size and power requirements.

The main component is the system unit, which is the case that houses the computer's critical parts, such as its processing and storage devices.

Personal Computers: Workstations

Designed for technical or scientific applications. It has more power and features than a standard desktop PC.

Popular among scientists, engineers, and animators who need a system with greater-than-average speed and the power to perform sophisticated tasks.

Have large, high-resolution monitors and accelerated graphics-handling capabilities, making them suitable for advanced architectural or engineering design, modeling, animation, and video editing.

Personal Computers: Laptop

Often called a notebook, is a small, portable PC.

Laptops are suitable for mobile use.

Laptops can be powered either from an internal battery or by an external power supply from an AC adapter.

Servers

A medium-sized computer (minicomputer) with special software and equipment used to host programs and data for a small network.

Users connect via a network with a computer, thin client, or dumb terminal.

Servers' Types

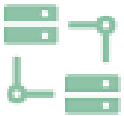
Web server

Mail server

Application server

Database server

DNS server



Proxy server

DHCP server

File server

Gaming server

Print server

Mainframe Computers

Large, powerful systems used in organizations such as hospitals, universities, large businesses, etc.

Each user accesses the mainframe's resources through a device called a terminal (dumb terminal or intelligent terminal).

The largest mainframes can handle the processing needs of thousands of users at any given moment.

Mainframes usually operate 24 hours a day.

Supercomputers

The most powerful computers. These systems can process huge amounts of data, and can perform nearly two quadrillion calculations per second.

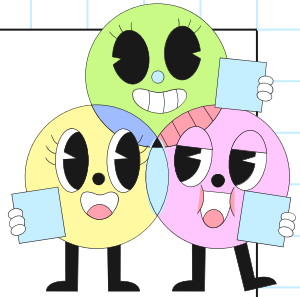
Actively used in the mapping of the human genome, forecasting weather, etc.

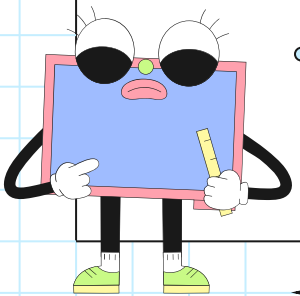
It can cost several million dollars each.

Titan is one of the fastest computers in the world.

Computers in Society

Home work






Thank you