Computer Science

Introduction

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In this bite sized module

- What is Computer Science?
- What is Computer System?
- What is Computation?
- Types of Computing
- Computer Organization
- Hardware and Software
- Operating System

What is Computer Science?

- **Computer Science** is the study of the foundations of information and computation.

- It is the scientific and **practical approach** to computation and its applications.

What is a Computer System?

- It is **capable** of performing computations and making logical decisions. (2 + 2 = 4)

- It is a machine that can **transform data** into useful information.

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What is Computation?

- **Computation** is a type of calculation that follows a well defined model
  - Example: An Algorithm
  - A + B = C
  - 2 + 2 = 4

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Types of Computing

- **3 popular types** of computing:

  - Personal Computing
  - Client/Server Computing
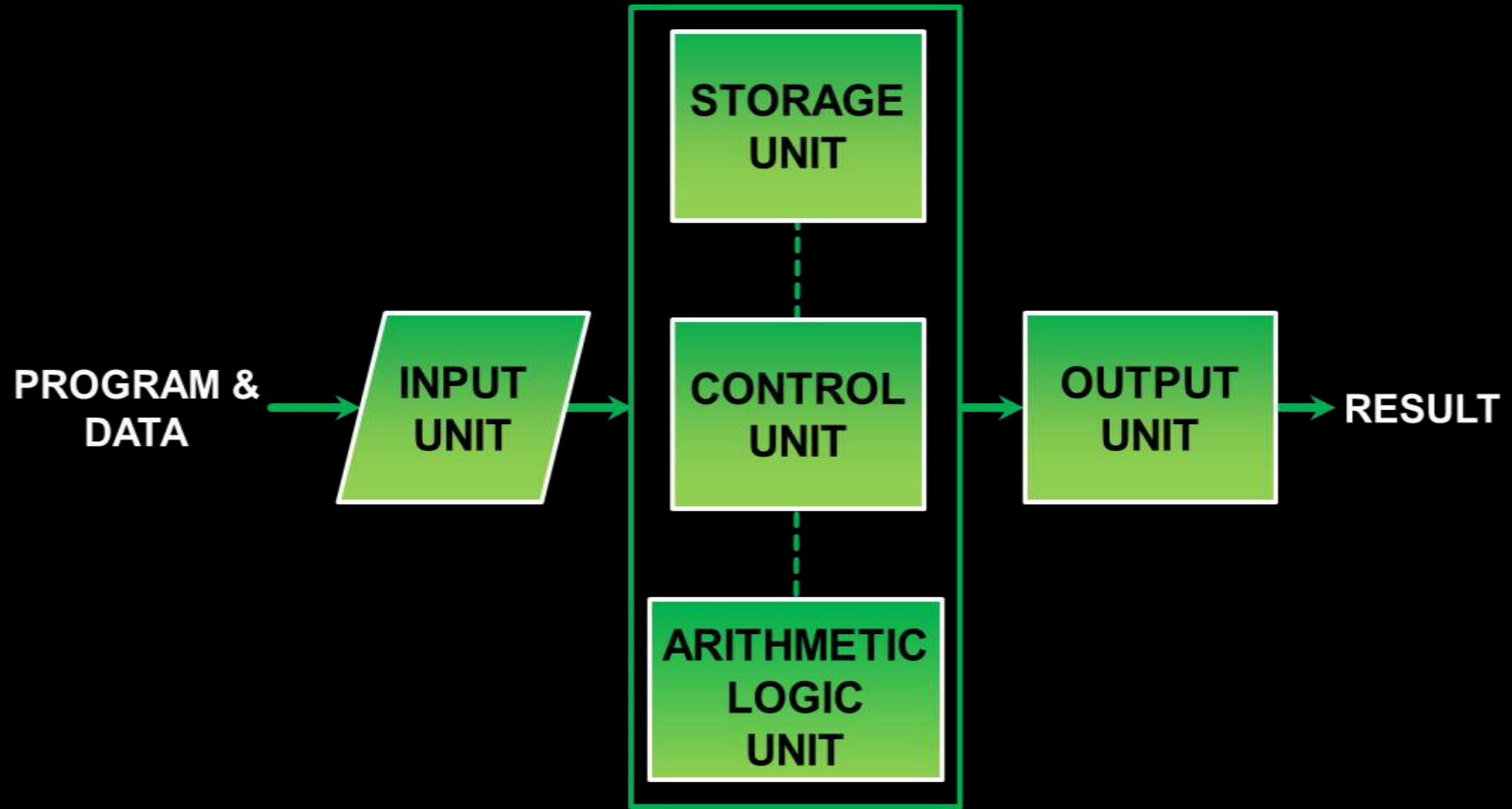 - Cloud Computing

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- **Personal Computing:** General-purpose computer.

- **Client/Server Computing:** Responds to request across a computer network to provide a network service. Example: Loading cnn.com on a web page.

- **Cloud Computing:** A shared pool of computing resources accessible over a network. Pay as you go model.

Advantages of Computer Science

- It is the **fastest** medium of communication.

- Arithmetic problems can be **easily** solved.

- Computers make it possible to receive, supply and process **large volumes** of data at very high speeds.

How Computer Works?

- A Computer is an electronic machine that:

  - Accepts information and stores it until the information is needed.
  - Processes the information according to the instructions provided by the user.
  - Finally returns the result to the user.

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Types of Computer

- Personal computer
- Smartphone
- Mainframe computer
- Super computer
- Cloud computer (Amazon Web Services AWS, Microsoft Azure, Google Cloud GC)

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Personal Computer

- A microcomputer designed for individual use, as by a person in an office or at home or school.

Smartphone

- A small, pocket sizes, single-user computer based on a microprocessor.

Mainframe

- A powerful multi-user computer capable of supporting **many hundreds or thousands of users simultaneously**.

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Supercomputer

- An extremely **fast computer** that can perform hundreds of millions of instructions per second.

Cloud Computing

- **AWS**: Amazon Web Services provides on-demand delivery of IT resources via the Internet with pay-as-you-go pricing.

- **Microsoft Azure**: Microsoft Azure is an open, flexible, enterprise-grade cloud computing platform

- **Google Cloud**: Google Cloud Platform is a cloud computing platform by Google that offers hosting on the same supporting infrastructure that Google uses internally for end-user products like Google Search and YouTube. Cloud Platform provides developer products to build a range of programs from simple websites to complex applications

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Cloud Computing: IaaS, SaaS and PaaS

- **SaaS: Software as a service** is a software licensing and delivery model in which software is licensed on a subscription basis and is centrally hosted. Also referred to as "**on-demand software**". SaaS is typically accessed by users using a thin client via a web browser.

- **IaaS: Infrastructure as a Service** (IaaS) is a form of cloud computing that provides virtualized computing resources over the Internet. IaaS is one of three main categories of cloud computing services, alongside Software as a Service (SaaS) and Platform as a Service (PaaS).

- **PaaS: Platform as a Service**, often simply referred to as PaaS, is a category of cloud computing that provides a platform and environment to allow developers to build applications and services over the internet. PaaS services are hosted in the cloud and accessed by users simply via their web browser.

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Computer Organization

- Different parts of computer are:
  - Input
  - Output
  - Memory
  - Arithmetic Logic Unit (ALU)
  - Control Unit

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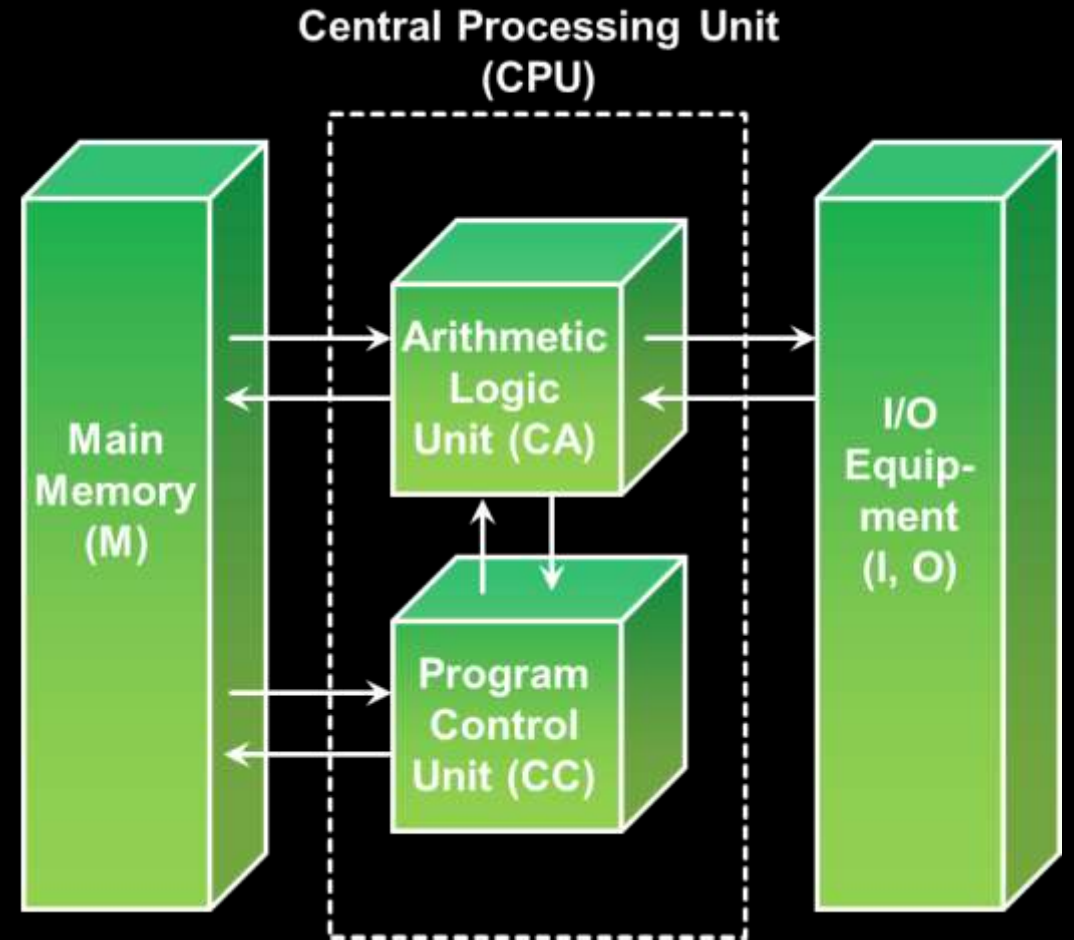
Hardware and Software

- **Hardware** includes **physical parts** of computer.
  - **Example:** CPU, Keyboard, Mouse, etc.

- **Software** includes an **interface** between the user and the computer.
  - **Example:** Windows, Linux, Mac OS, etc.

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Operating System

- A Software that manages computer hardware.

- Provides the user interface to the computer.

- Controls all machine activities and manage resources.

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Thank you

- For questions please email Team@WAGmob.com