

Introduction

Do U know?

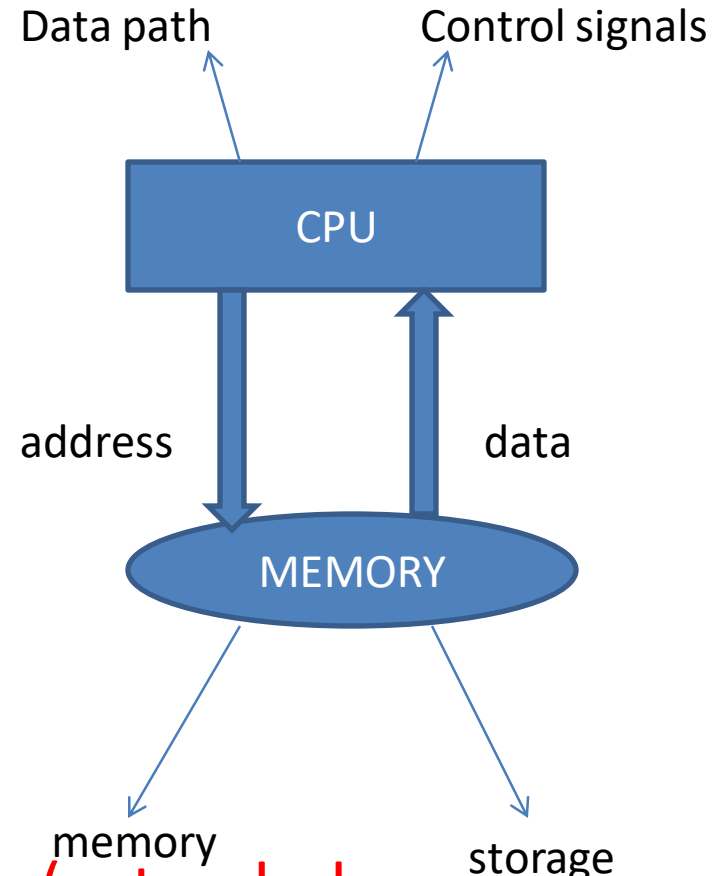
- Nobel prize related to computer system?
- Who is the latest prize winner?
- What is Moor's law?
- What is Principle of Equivalence of Hardware and Software?
- Who is Von Neumann?
- What is multiple core device?
- Is processor and core are differ?

Fundamental Aspects

- Differentiate Computer Organization and Architecture.
- C.O:-
 - User's point of view
 - Study from s/w point of view
 - Eg. Car, How can be used? Drive?
- C.A:-
 - Designer's point of view
 - Study from h/w point of view
 - Eg. Car, How can be implemented? Repair?

Root of computing

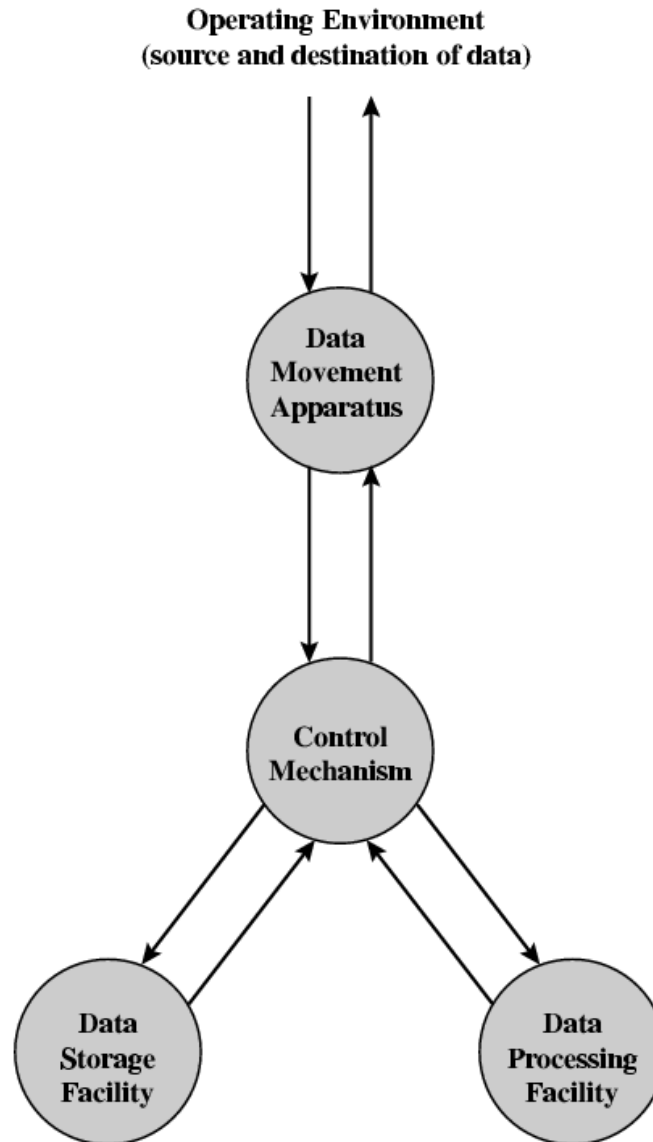
- Started with numbers.
- Processing the numbers.
- Any computing system,
 - Processor- process data
 - Memory- store data
 - I/O- user interacts with system (extended memory for real data)



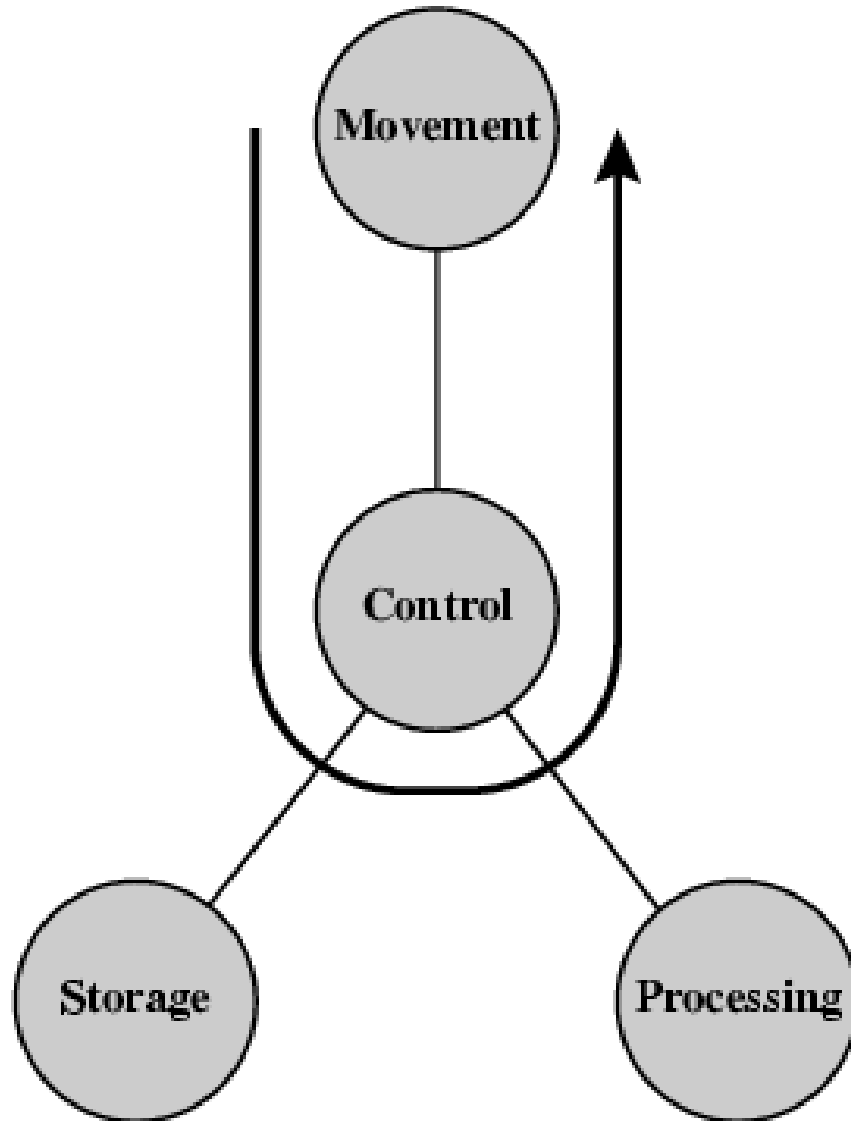
Structure and Function

- **Structure**:- The way in which the components are interrelated.
 - CPU:- Registers, ALU, Control unit, Buses
 - Memory
 - I/O
- **Function**:- Function is the operation of individual components as part of the structure
 - Data processing
 - Data storage
 - Data movement
 - Control

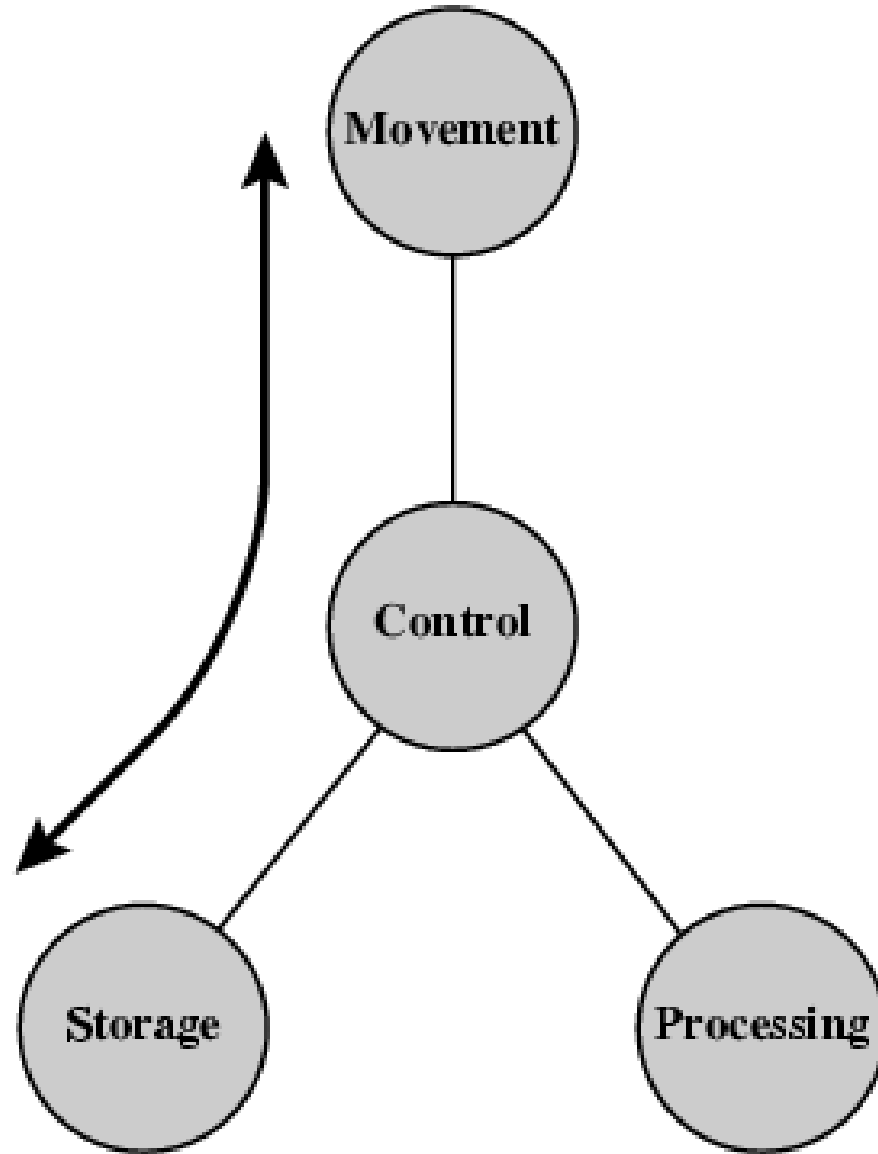
Functional view



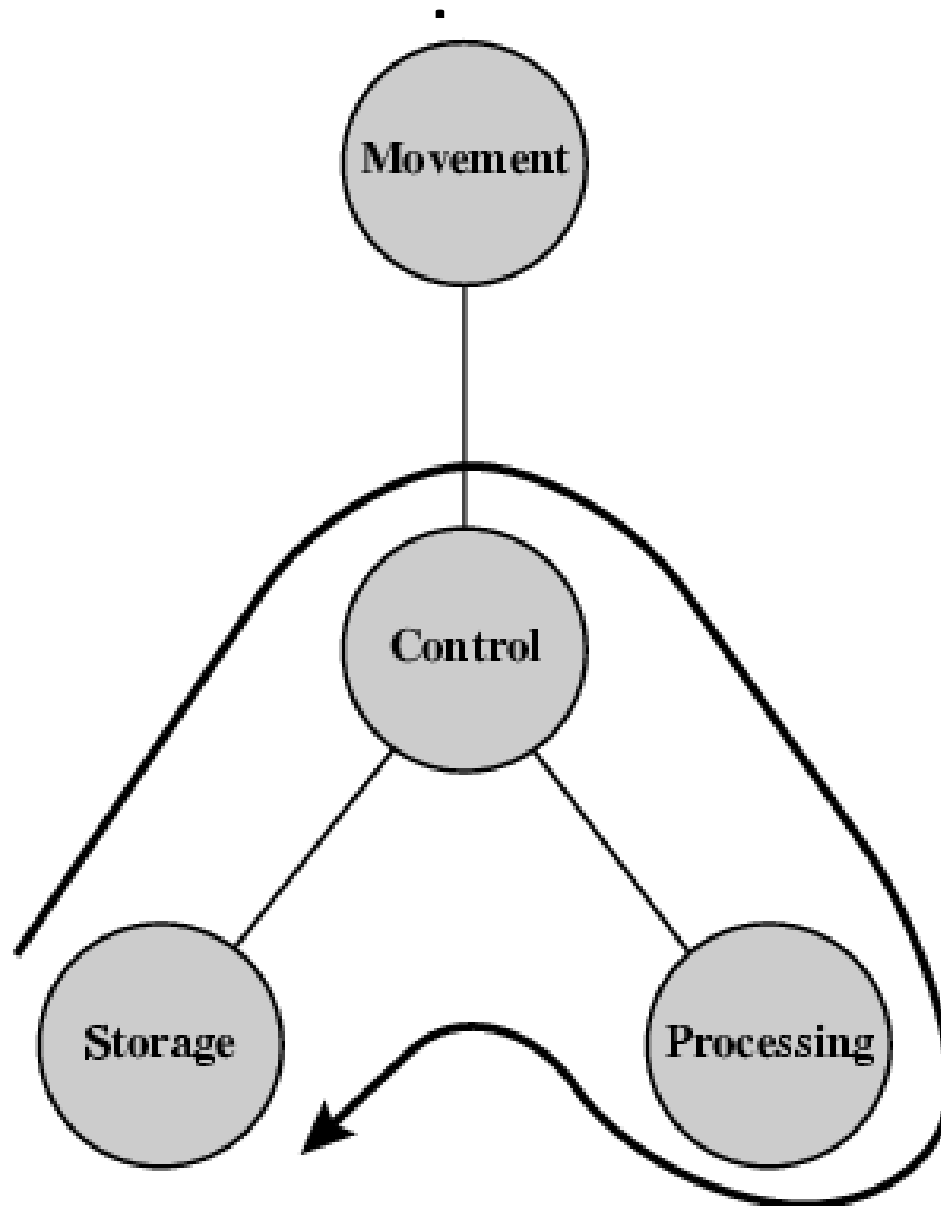
Operations (1) Data movement



Operations (2) Storage

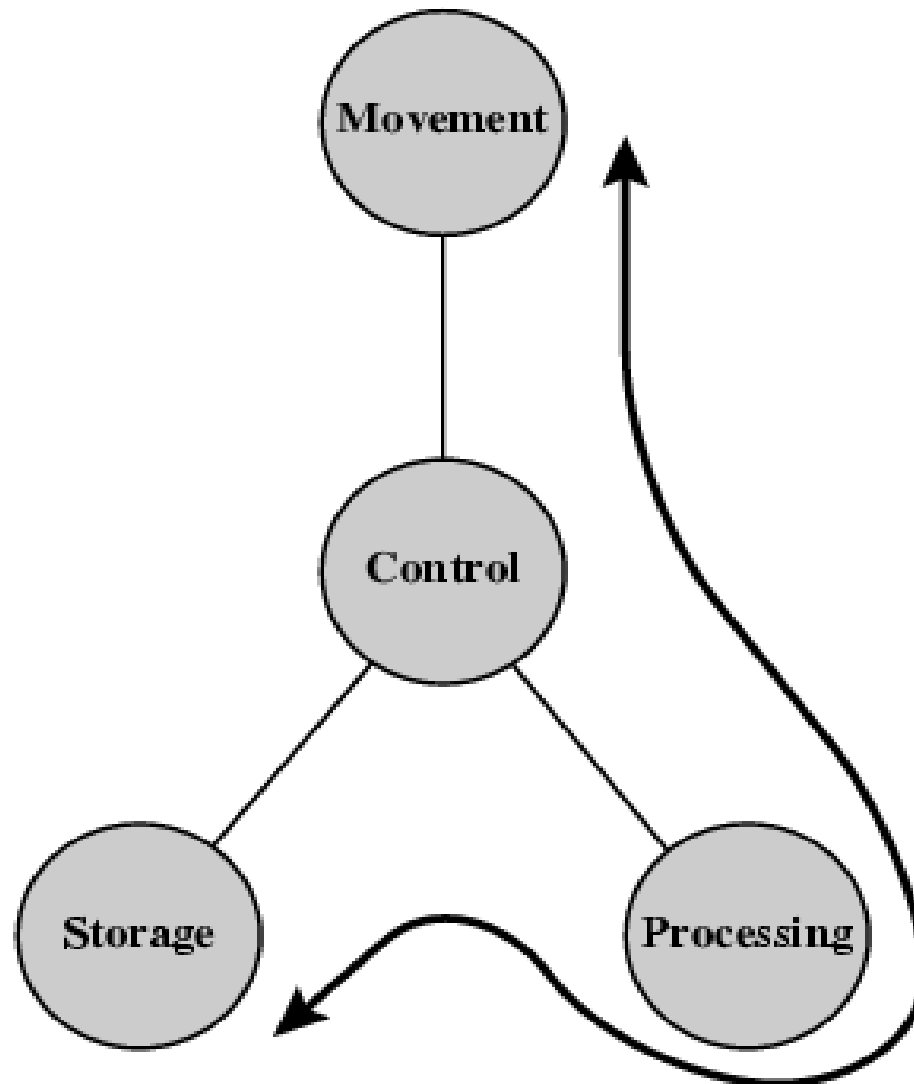


Operation (3) Processing from/to

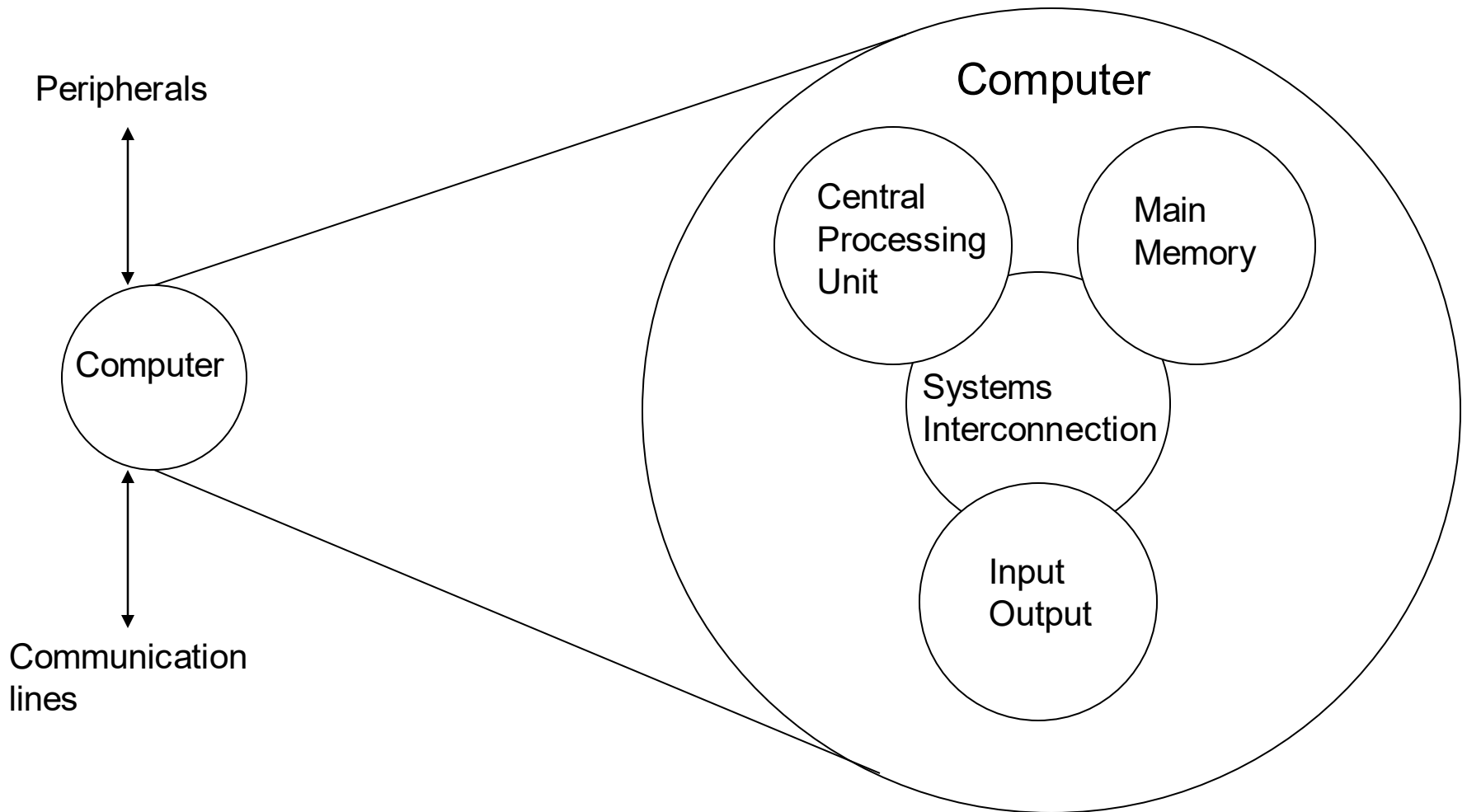


Operation (4)

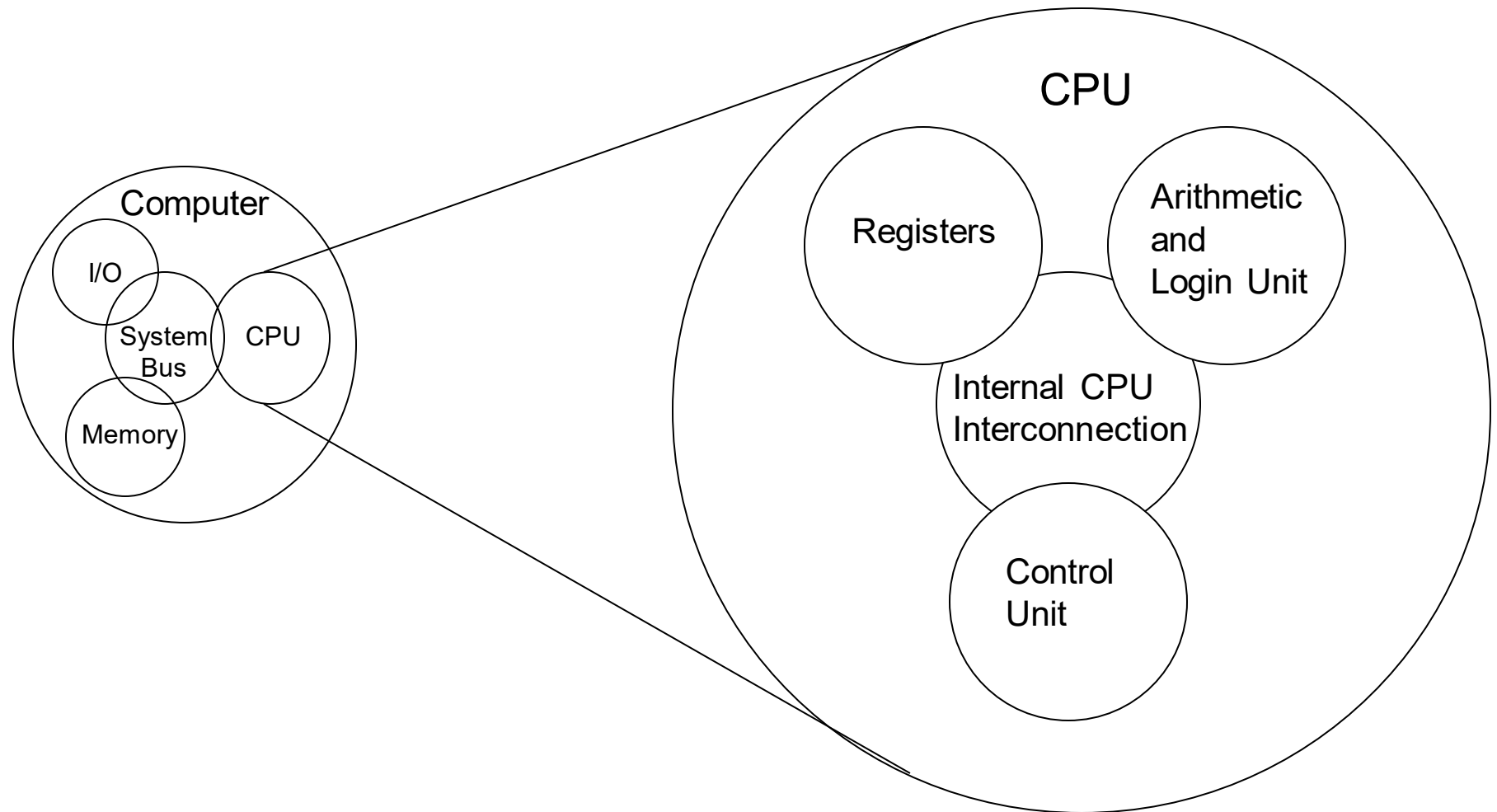
Processing from storage to I/O



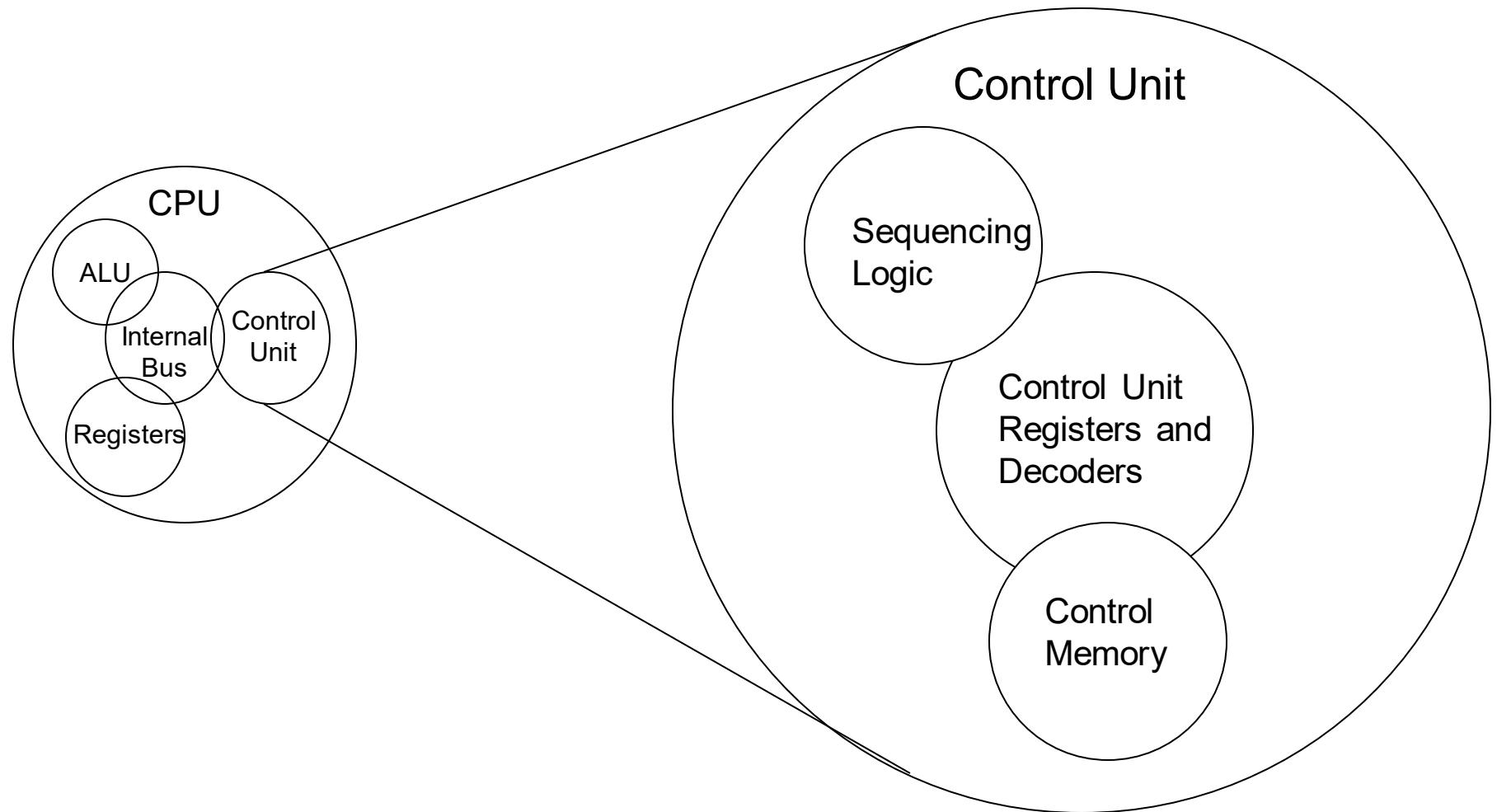
Structure - Top Level



Structure - The CPU

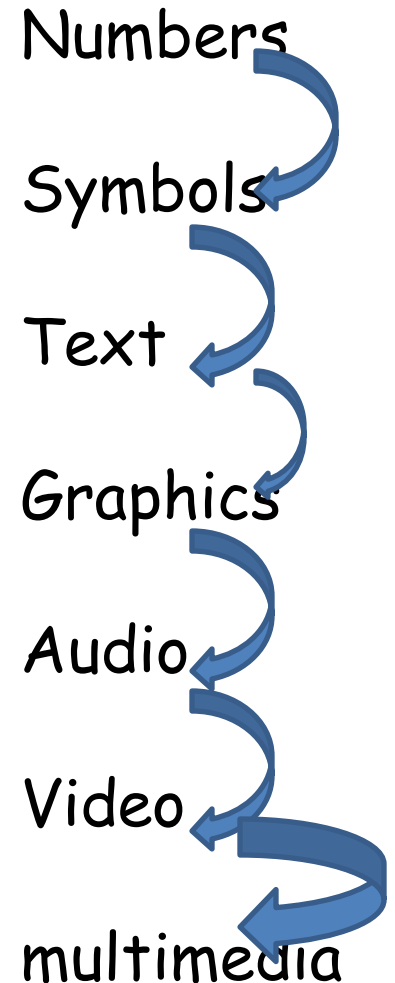


Structure - The Control Unit



Computing and Communicating

- Computing
 - Numbers → Arithmetic processing
 - Symbols → Logic processing
 - ALU → core of CPU.
- Communicating
 - Line communication
 - Voice communication
 - Voice + coded data



H/W and S/W

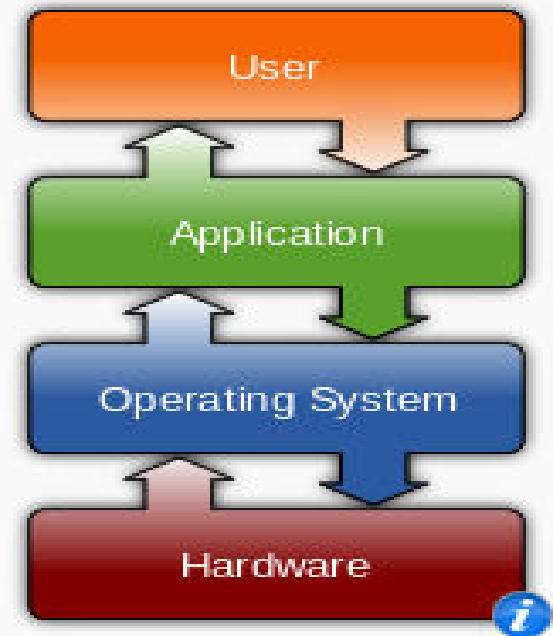
- H/W:- core of the system, hard to understand.
 - S/W:- soften the hard aspects of the system.
 - LLL
 - ALL
 - HLL
 - Translator:- Compiler, Interpreter, Assembler
- ? What is device driver?
- ? Differentiate System S/W and Application S/W.
Give some eg.
- ? Example for each translators.

Operating System

- Manages computer hardware resources.

- Provide platform for Application software.

- It's a system software.



- Interface between application and the hardware.

? What are the popular modern operating systems?

? Is single processor with multiple OS possible?