CS -01

PROBLEM SOLVING METHODOLOGIES AND PROGRAMMING IN C

By Rachel

UNIT 1- PART 1

INTRODUCTION OF C LANGUAGE

TOPIC 1

INTRODUCTION OF COMPUTER LANGUAGES

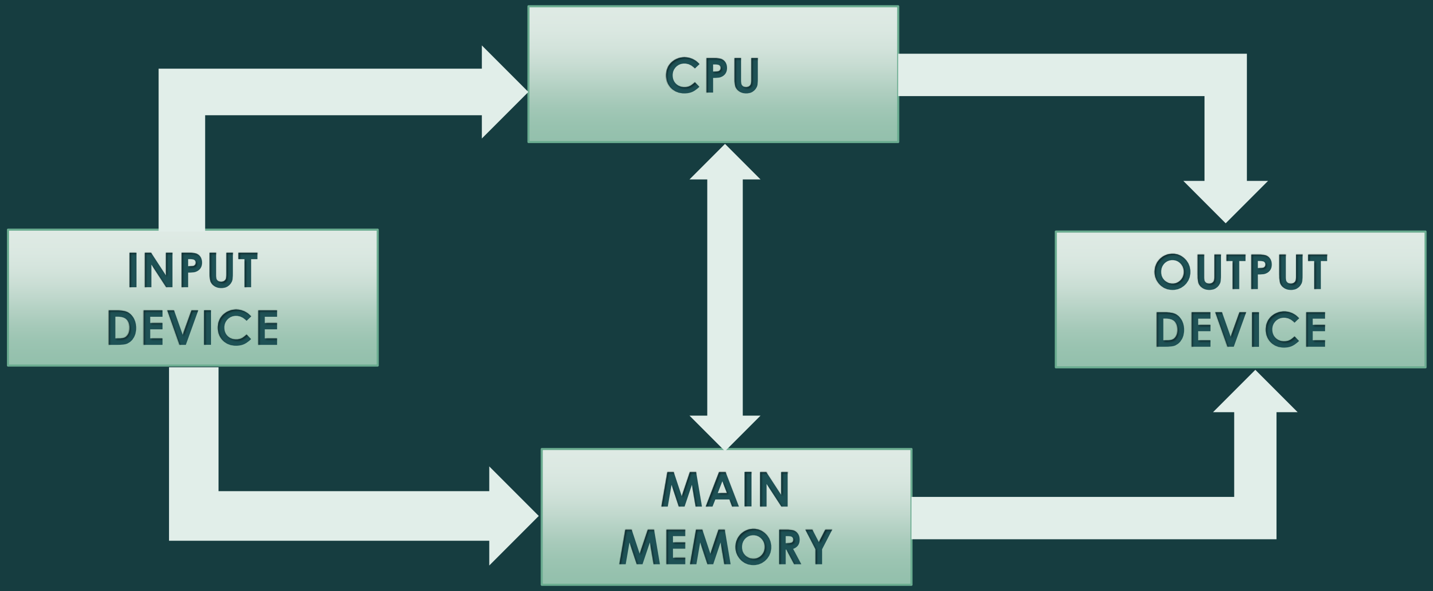
What is Computing?

- Computing is an operation that involves processing of data by making use of a computer.
- Different components are used to perform computations.

What Is a Computer?

- A Computer is an electronic device which is used to perform various computations involving arithmetic and logical operations.

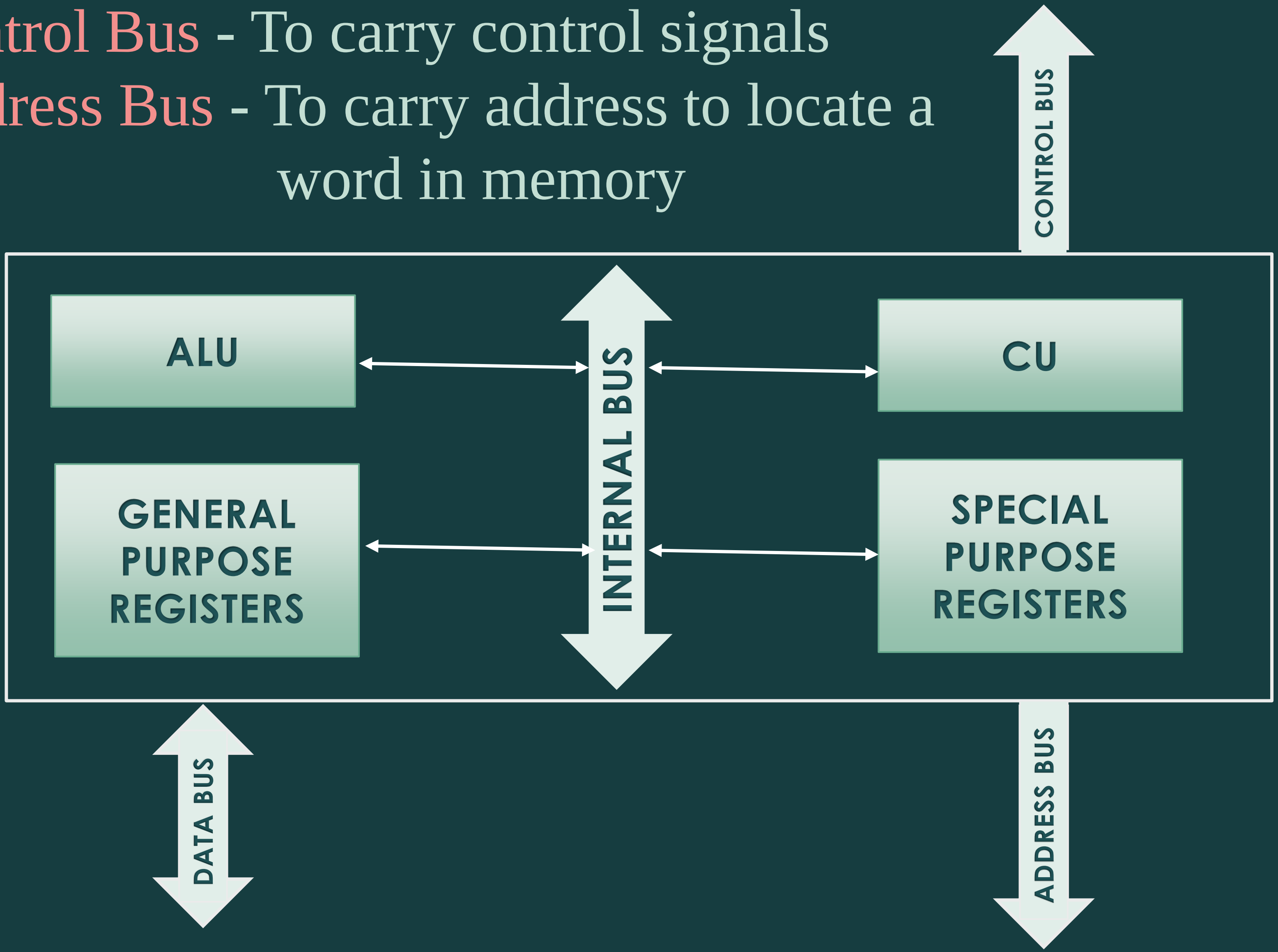
Components Of a Computer



1. Central Processing Unit

- CPU - It is an unit in which all processing activities take place
- ALU - For performing arithmetic and logical operations (addition, subtraction, comparison)
- CU - It is the brain of a computer and it generates control signals
- Registers - They hold special data or instructions

- Internal Bus - Enables the units in CPU to interact
- Data Bus - To carry data and information
- Control Bus - To carry control signals
- Address Bus - To carry address to locate a word in memory



2. Input Devices

- Used to input data or instructions to the computer.
- Examples : keyboard, mouse, scanner, reader

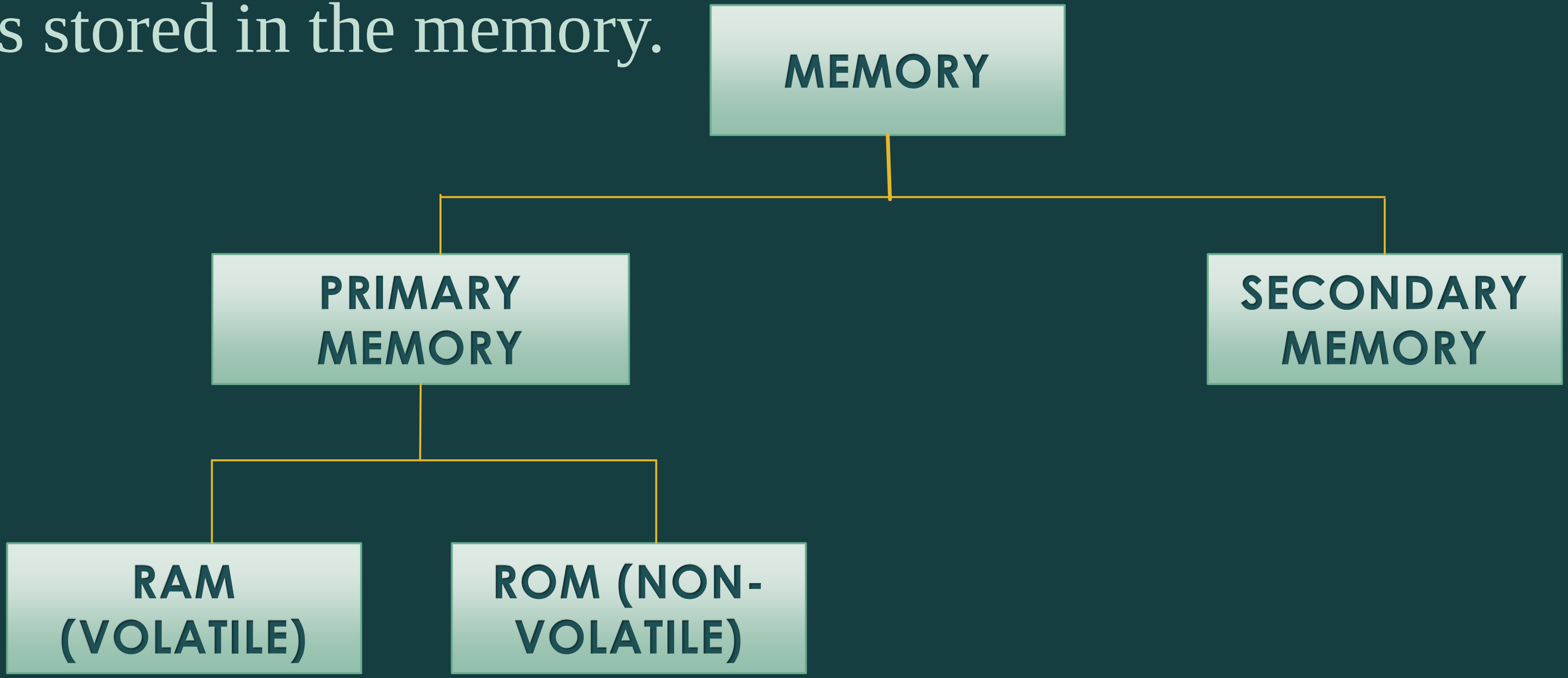
3. Output Devices

- Used to convey messages to the users.
- Examples : monitor, printer, speaker, plotter

Input and Output devices are sometimes known as peripheral devices.

4. Memory

- It is the storage unit for data storage purpose.
- These units are of varying speeds and volatility.
- Access speed is the time taken to store or retrieve data from the memory.
- Volatility is the duration of time or the conditions under which data is stored in the memory.



Concept of

Hardware and Software

Concept of Hardware and Software

- Hardware - Refers to all hard parts of a computer that are touchable. It consists of bare machinery.

- Software - Refers to instructions, commands and programs. It is classified as System software and Application software.

1. System Software

- Operating System - It is an interface between hardware, software and user.(Linux, Windows, Unix). It takes care of processor(CPU) management, memory management, device management and file management.
- Translators - It translates a program written in one programming language into another. Compiler, assembler and interpreter are most used translators.

- Compiler - It translates a program written in high level language(HLL) like C, C++, Java into machine language.
- Assembler - It translates a program written in assembly language to machine language. Assembly language uses mnemonics such as ADD, SUB, etc… Machine language uses binary operation codes

- Linker - It links together the object codes and forms executable code which is stored in secondary memory. It can be loaded to main memory when required for execution.
- Loader - It loads executable program from secondary memory to designated area of the main memory. Absolute loaders, relocatable loaders and direct linking loaders are examples. Boot strap loader loads memory resident portion of an operating system into the main memory immediately after the computer is switched on.

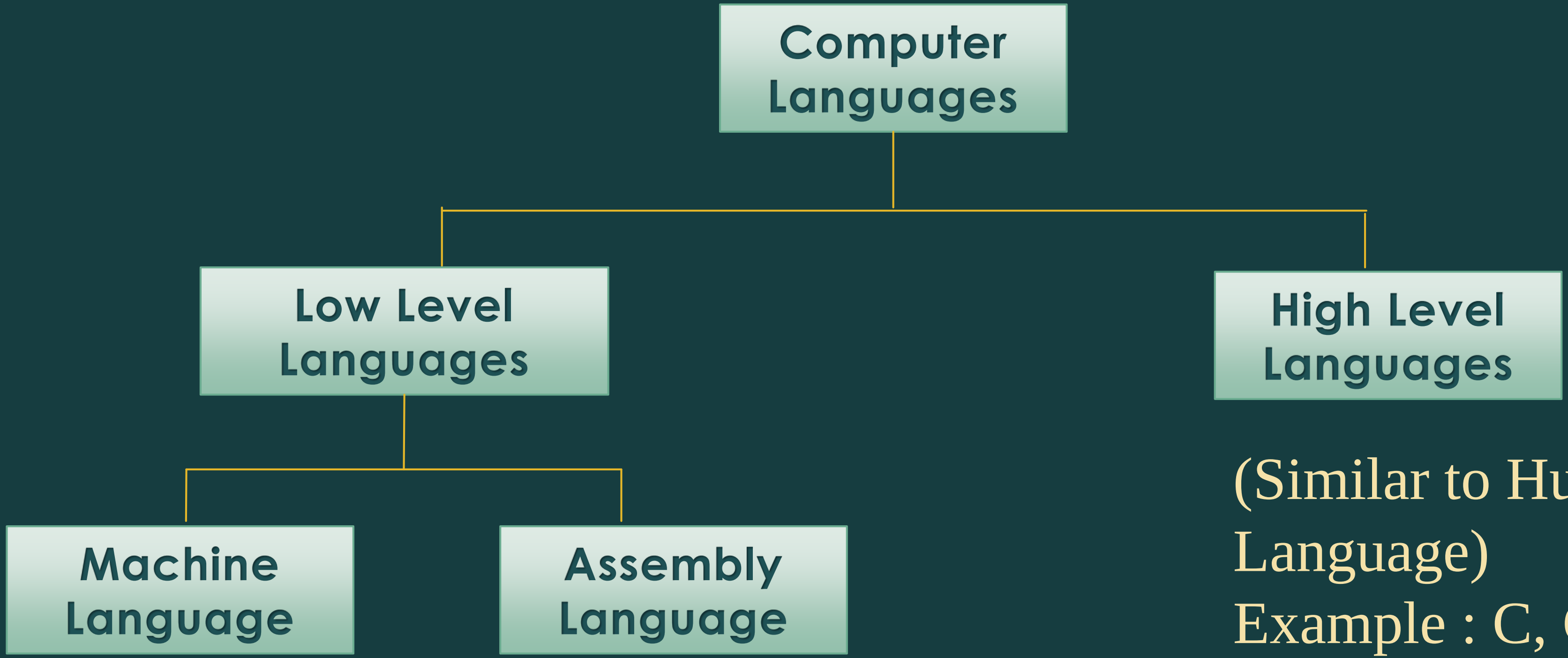
2. Application Software

- They perform a specific activity and aid users in many ways.
- Word processing softwares, image editing, spreadsheet packages, database softwares and accounting softwares are examples.

Types of

Computer Languages

Types of Computer Languages



Computer Languages

Low Level Languages

High Level Languages

Machine Language

Assembly Language

(Machine understandable form)
Example : 0's and 1's

(Use mnemonics to create programs)
Example : ADD A, SUB B

(Similar to Human Language)
Example : C, C++, Java, Python, Pascal

TOPIC 2

INTRODUCTION OF PROGRAMMING CONCEPT

What is programming?

- Programming refers to a technological process of telling a computer which tasks to perform in order to solve problems.

What is programming concept?

- Programming concept is the description of supported operations which involves syntax and semantics.

Types of programming concept

1. Sequence - the order in which instructions should be processed
2. Selection - determines which path a program takes when it is running
3. Iteration - the repeated execution of a selection of code when a program is running

Importance of programming concept

- Helps developers develop their problem-solving skills
- By understanding the fundamental building blocks of programming, such as variables, loops and functions, developers can break down complex problems into manageable pieces
- Enhancing skills of developers to collaborate with other developers