DISMAS OMBUYA

COMPUTER ORG AND ARCHITECTURE - BBIT 216

Computer Architecture refers to those attributes of a system that hv a direct impact on the logical execution of a program: e.g ē Instruction set, number of bits used to rep various data

Types of computer architecture

- ✓ I/O Mechanisms
- ✓ Memory addressing techniques

Computer Architecture deals with ISA - ISA here stands for "Instruction set Architecture".
ISA is defined as the abstract image of computing system that is seen by a machine language (or assembly language) Programmer.

Computer Organization - refers to the operational units & their interconnections that realize the architectural specifications. Example s things that r transparent to the programmer:
. Control signals . Interfaces . Memory

Organization is how features are implemented.
For technical point of view it deals with HSA. HSA
"Hardware System Architecture"

Why study Computer Org. and architecture;

i) Design better programs
ii) Optimize program behavior
iii) Evaluate computer system performance
iv) Understand time, space and price tradeoffs

Computer org is abt looking at the computer with all its levels

Level 6 - User (Executable Programs)
5 - High level language (C++, Java, Fortran)
4 - Assembly language (Assembly code)
3 - System software (O.S, library code)
2 - Machine (Instruction set Architecture)
1 - Control (Microcode or Hardwired)
0 - Digital logic (Circuits, Gates etc)

The Computer / The Computer level Hierarchy

Check out e Slides Pg 15

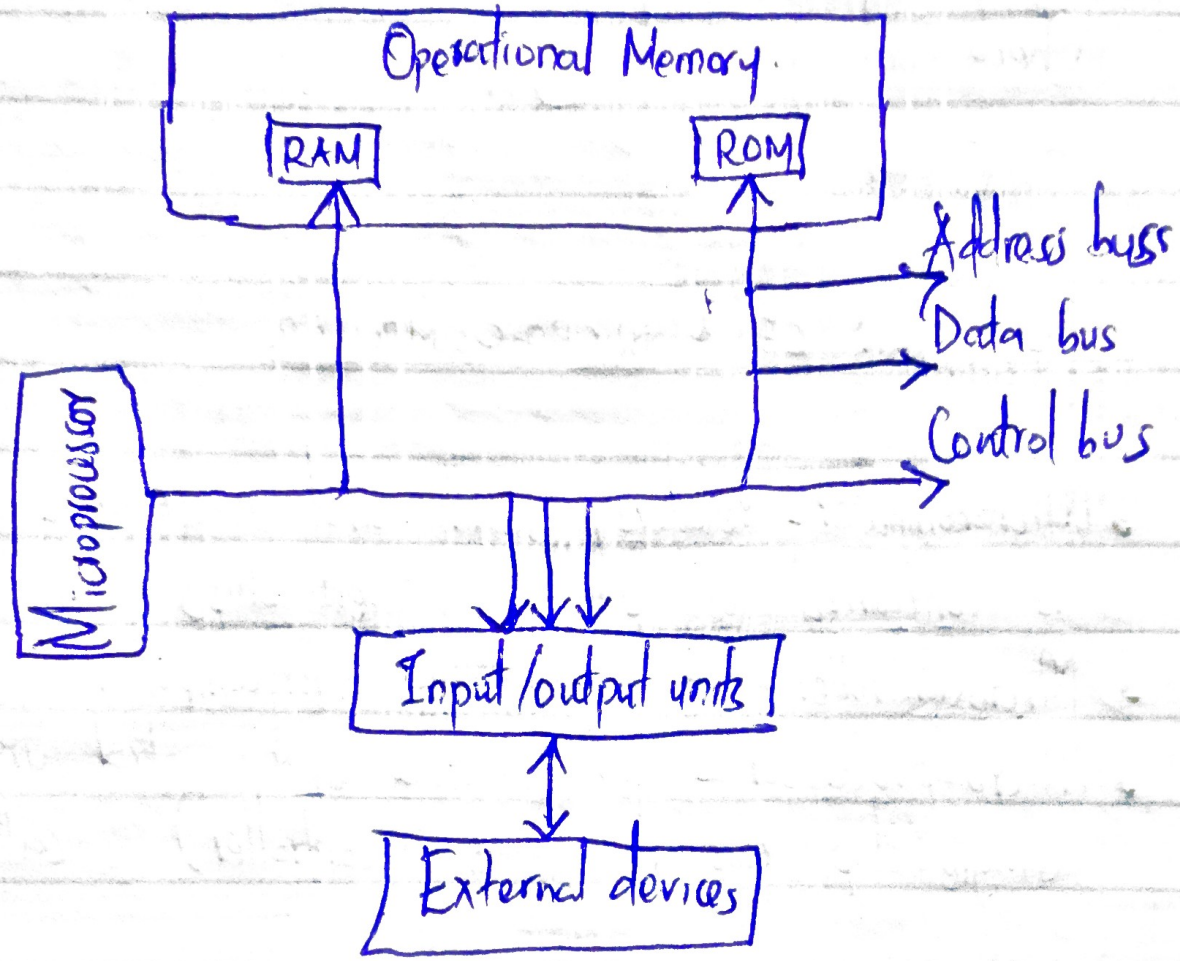
DEFINITION OF A MICRO-COMPUTER

- Microcomputer - relatively small and inexpensive computer that is contained on one or a few chips
- Microcontroller - A single-chip microcomputer
- Micro-processor - The processor and control unit part of the single-chip computer (= Microcontroller) is called microprocessor

- A Microcomputer is a computer built on the basis of a microprocessor implemented as an integrated circuit.

Why we study Microcomputers
Embeded systems use micro-controllers or micro-computers

Basic Architecture of Microcomputer system



Beside RAM and ROM memories, more input/output units are connected to the microprocessors.
These input/output units include:

- parallel input/output controller (parallel I/O)
- Parallel serial input/output " - (Serial I/O)
- Serial interface interrupt controller (handler)
- Timer/counter controller
- Direct Memory Access (DMA) controller

The 8085 Microprocessor Architecture

Launched by Intel team in 1976 with help of NMOS technology

Its Configuration -

8-bit data bus

16 bit address bus

16 bit program counter

16 bit stack pointer

Six 8 bit registers