Subject.....

Date.....

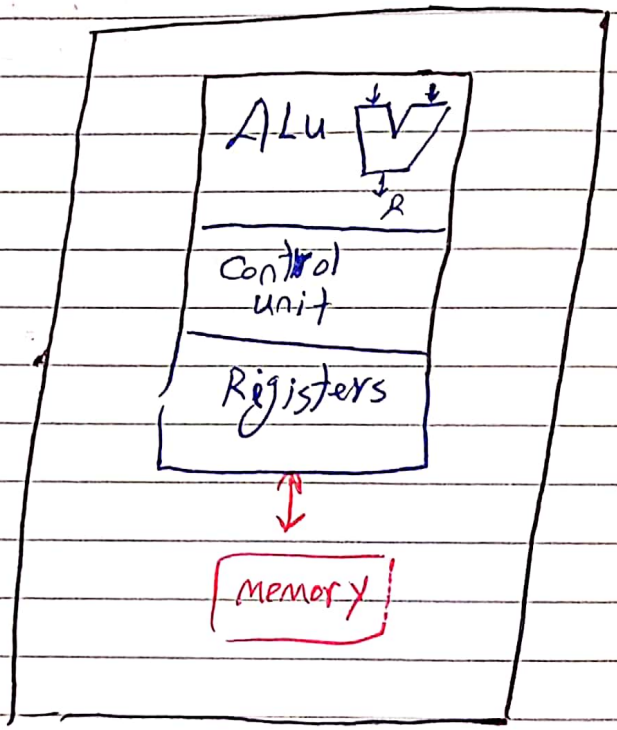
unit6 _ Lesson 1
assigment :
mcu Fundamentals.

Q1: definations

1) micro-processor:

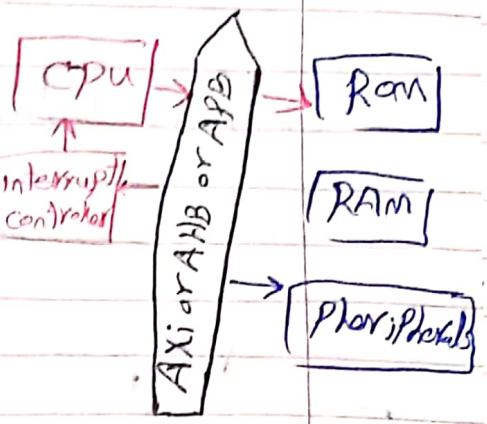
it's an IC which can perform arithmetic and logical operations.

it only consist of a cpu



[2] micro-controller:

it's an IC which consists of a cpu and other components like RAM, Rom and other I/O ports



[3] Embedded system:

it's a special purpose Computer system designed to perform one or few dedicated tasks.

[4] mechatronic system:

it's a system composed of mechanical parts + electrical parts + software (electronics)

mechatronic system = mech. + elect. + electro

[5] n-bit processor

means that the Data bus of the processor has an N Lines.

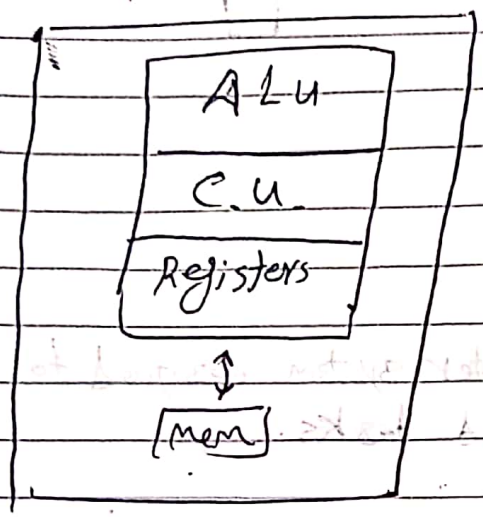
Subject.....

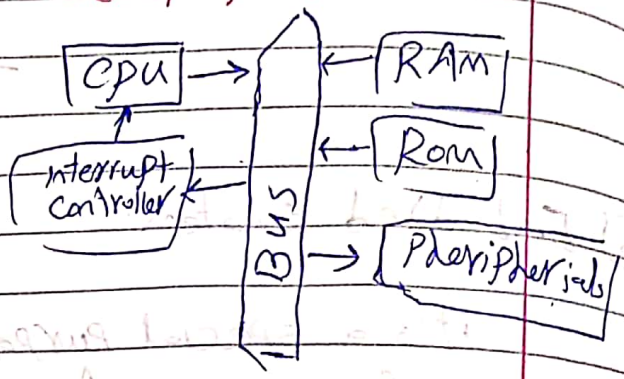
Date.....

Q2/ Comparison

- Compare between micro-processor Vs micro-controller.

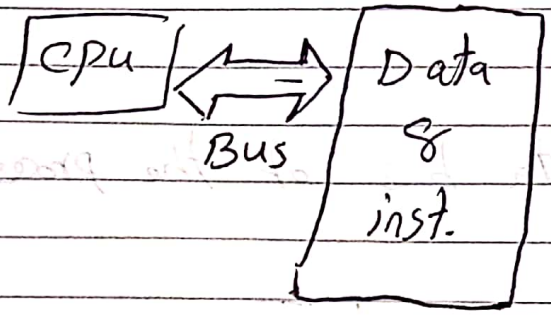
micro-processor	micro-controller
it only consist of a CPU	Consists of CPU, RAM, Rom and I/O ports

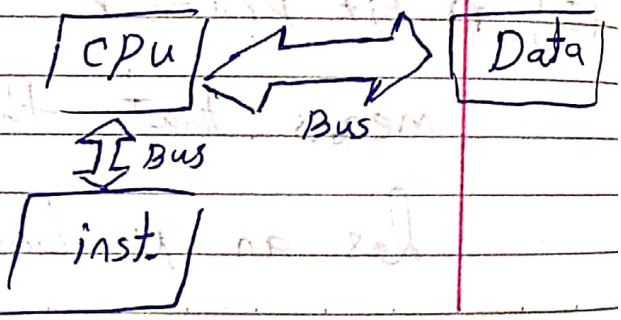




- Compare between Von-Neuman Vs Harvard arch.

Von-Neuman	Harvard arch.
The same memory and bus are used for Data & instructions	Stores instructions & data in separate memory units using different buses





Subject.....

Date.....

types of Rom:

Masked Rom

it's contents are only programmed by the IC-manufacturer.

cheaper ↓

PRom

it can be programmed only once.

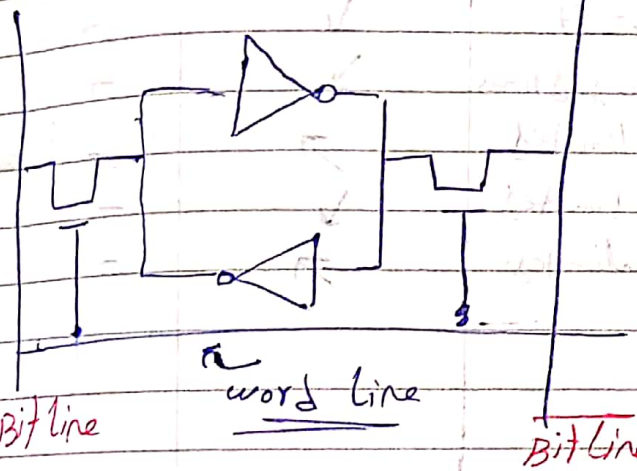
EPRom

it can be programmed many times.

it's content can be erased using (U.V.)

types of RAM

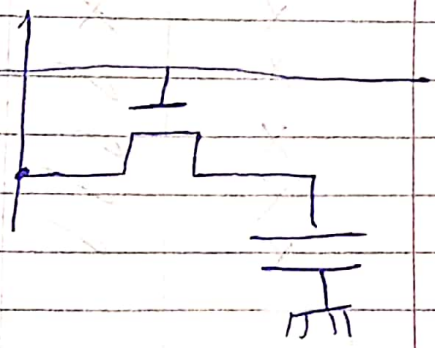
SRAM



performance
price
complexity

when the power is lost The data will be lost.

DRAM



needs to be recharged at least once at every 200msec

Subject.....

Date.....

(Q6) why Rom is Read only although i can write on it?

it's read only as i can't modify any thing on it at run time.

I can write on it to modify the program inst or constant data values.

(Q7)

type	Volatile	writable	Erase size	max erase cycle	Cost per bit	speed
SRam	✓	✓	BYte	unlimited	high ↑	↑↑
D Ram	✓	✓	BYte	unlimited	Low ↓	↑
masked Rom	X	X	Can't	Can't	very low ↓↓	↑
P Rom	X	X	Can't	Can't	↓	↑
E Rom	X	✓	all memory	thousand times	↓	↑
E^2 Rom	X	✓	byte	limited	↑	↑ fastest
Flash	X	✓	block	Limited	↓	↑
NV Ram	X	✓	Byte	unlimited	↑	↑