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Lab : Programming Skill development

Batch : E11

Assignment: 6

Q1. Write a note on microprocessor and microcontroller. Draw block diagram of PIC 18, memory.

Answer:

(A) Microprocessor:

- (i) Microprocessor is suited to programming and processing information in computer system.
- (ii) Microprocessor is processing intensive. has powerful addressing modes, instructions to perform complex operations and manipulate large volumes of data.
- (iii) Microprocessor usually requires external circuitry to interface I/O devices.
- (iv) Microprocessor has very wide bus widths, large memory address spaces ($>4\text{Cr}$ bytes) and lots of data (Data bus: 32, 64, 128 bits wide).

(B) Microcontroller

- (i) Is suited to control of I/O devices requiring a minimum component count.
- (ii) Microcontroller is ~~ade~~ used to control inputs and outputs. Hence, instructions are ^{to} set/clear bits, boolean operations.
- (iii) It has extremely compact instructions, many implemented in one byte.
- (iv) It has built-in input-output control module, event timing counting.
- (v) It has narrow buses, Relatively small memory address spaces (K-bytes) & less data (Data bus of 8, 16 bits wide).

(c) Block Diagram of PIC18

MC/R/V _{PP}	= 1	40 = RB7 / PGD
RA0/AN0/CVREF	= 2	39 = RB6 / PGC
RA1/AN1	= 3	38 = RB5 / PGM
RA2/AN2/VREF	= 4	37 = RB4
RA3/AN3/VREF ⁺	= 5	36 = RB3/CANRX
RA4/TOCK1	= 6	35 = RB2/CANTX/INT2
RA5/AN4/SS/LVDIN	= 7	34 = RB1/INT1
RE0/AN5/AD	= 8	33 = RB0/INT0
RE1/AN6/NR/COUT	= 9	32 = VDD
RE2/AN7/CS/COUT	= 10	31 = VSS
VDD	= 11	30 = RD7/PSP7/PID
VSS	= 12	29 = RD6/PSP6/PIC
OSC1/C/K1	= 13	28 = RD5/PSP5/P1B
OSC2/CLKO/RA6	= 14	27 = RD4/PSP4/ECCP1
RC0/T1OSO/T1CK1	= 15	26 = RC7/RX1/DT
RC1/T1OS1	= 16	25 = RC6/TX/CK
RC2/CCP1	= 17	24 = RC5/ECCP/SSD
RC3/SCK/SCL	= 18	23 = RC4/SD1/SDA
RD0/BSP0/CINT	= 19	22 = RD3/PSP3/CIN
RD1/PSP1/CIN-	= 20	21 = RD2/PSP2/CIN

(d) Block Diagram of Memory:->

(P.T.O.)

(c) BLOCK DIAGRAM OF MEMORY

00h		000h	
0000 Bank 0	Access RAM	000h	Access Bank low GPR
FFh	GPRS	000h	
0001 Bank 1	GPRS	000h	
FFh		000h	
0010 Bank 2	GPRS	000h	Access Bank high GPR
FFh		000h	
0011 Bank 3-13	GPRS	000h	
FFh		000h	
1110 Bank 14	GPRS	000h	
FFh		000h	
1111 Bank 15	Unused SFRs	000h	
FFh		000h	