Experiment Number 2

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Subject ::	Embedded System Lab	CODE ::	CSD-333

1. Aim :

To study and analysis the Instruction Set of PIC18.

2. Task :

- Move working register to file register using instruction set .

3A. Theory :

- PIC WREG and ALU using literal value:

    - MOVLW

        * MOVLW K ; move literal value K into WREG
        * MOVLW 25H ; move value 25H into WREG (WREG=25H)

    - ADDLW

        * ADDLW K ; add literal value K to WREG
        * ADDLW 34H ; add value to W (W= W+34H)

- File Registers of PIC18:

    - MOVWF

        * MOVLW 55H ; WREG =55H
        * MOVWF PORTB ; copy WREG to PORTB (PORTB =55H)

– ADDWF fileReg,d :

  * ADDWF 16H,W ; Add the contents at 16H location with W and store it in WREG (W=W+content at 16H)

– ADDWFC filereg,d:

  * ADDWFC 5H,F ; Add the contents of 005 location with W and carry (F=W+005H+C)

– ANDWF filereg,d:

  * ANDWF 5H,W ; It will perform AND operation the contents of WREG and file register and store in W (W=W*content at 5H , * is AND operation)

– IORWF filereg,d:

  * IORWF 5H,W ; It will perform OR operation with the contents of WREG and file register and store in W (W=W+content at 5H , + is OR operation)

– SUBFWB filereg,d:

  * SUBFWB 5H,W ; Subtract file register from WREG with borrow (W=W-F-B)

– SUBWF filereg,d:

  * SUBWF 5H,W ; Subtract file register from WREG (W=W-F)

– SUBWFB filereg,d:

  * SUBWFB 5H,W ; Subtract WREG from file register with borrow (W=F-W-B)

– XORWF filereg,d:

  * XORWF 5H,W ; It will perform XOR operation with the contents of WREG and file register and store in W

– COMFfilereg,d:

  * COMF 05H,F ; Complement file register

– DECF filereg,d:

  * DECF 05H,F ; Decrement file register

- DECFSZ filereg,d:
  * DECFSZ 05H,F ; Decrement file register and skip if zero
- DECFSNZ filereg,d:
  * DECFSNZ 05H,F ; Decrement file register and skip if not zero
- INCF filereg,d:
  * INCF 05H,F ; Increment file register
- INCFSZ filereg,d:
  * INCFSZ 05H,F ; Increment file register and skip if zero
- INCSNZ filereg,d:
  * INCFSNZ 05H,F ; Increment file register and skip if not zero
- INCSNZ filereg,d:
  * INCFSNZ 05H,F ; Increment file register and skip if not zero
- MOVF filereg,d:
  * MOVF 05H,F ; Move file Registers
- NEGF filereg,d:
  * NEGF 05H,F ; Negative file register (Find 2's complement)
- RLCF filereg,d:
  * RLCF 05H,F ; Rotate file register left with carry
- RLNCF filereg,d:
  * RLNCF 05H,F ; Rotate file register left with no carry
- RRCF filereg,d:
  * RRCF 05H,F ; Rotate file register right with carry
- RRNCF filereg,d:
  * RRNCF 05H,F ; Rotate file register right with no carry
- SWAPF filereg,d:
  * SWAPF 05H,F ; Swap nibbles in file register
- BTG filereg,d:
  * BTG 05H,F ; Bit Toggle file register

- MOVFF filereg,filereg:
    * MOVFF 05H,04H ; Copy value from file register to file register
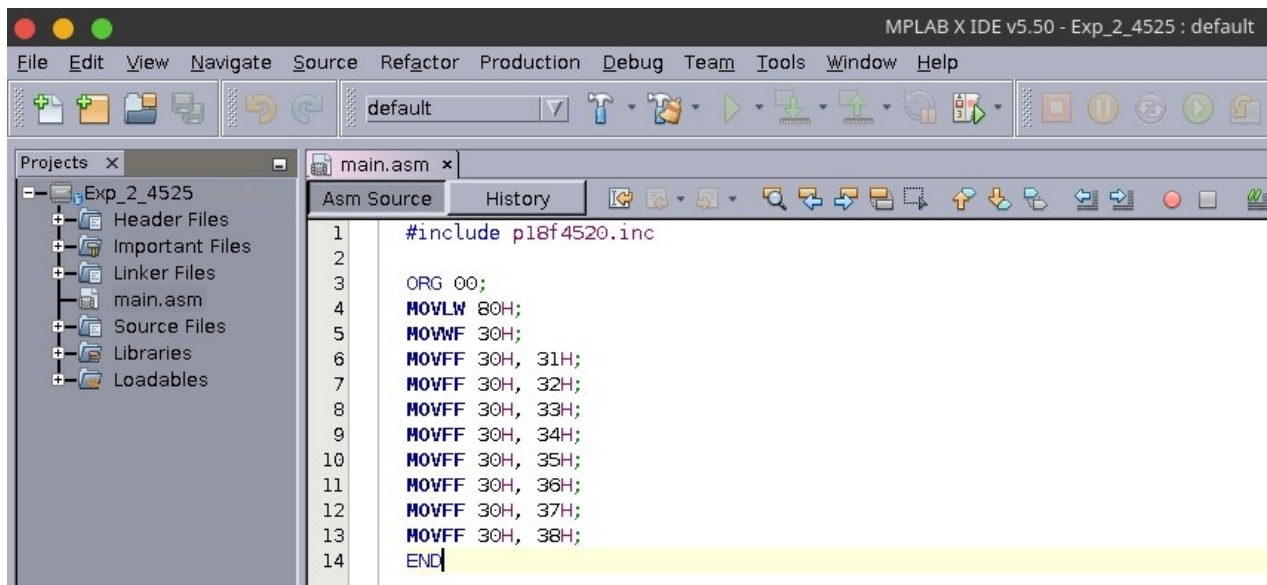- CLRF; clear file register

3B. Algorithm :

- Create a new asm file.

- Write the header file

- Write the starting location

- Move the literal value to the working register

- Move the working register to file register

- Move the file register to file register again and again until you move the working register to 38H.

4. Source Code :

```
#include p18f4520.inc

ORG 00;
MOVLW 80H;
MOVWF 30H;
MOVFF 30H, 31H;
MOVFF 30H, 32H;
MOVFF 30H, 33H;
MOVFF 30H, 34H;
MOVFF 30H, 35H;
MOVFF 30H, 36H;
MOVFF 30H, 37H;
MOVFF 30H, 38H;
END
```

5. Observations :

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Learning Outcomes :

- Learnt about the instruction set of PIC controller

- Learnt about the implementation of some basic PIC commands.

- Learnt new concepts of PIC controller.

S. No.	Parameters	Marks Obtained	Maximum Marks
1.			
2.			
3.			