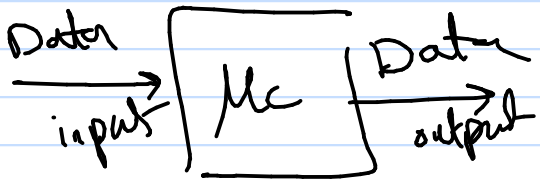
<< lab 4 >>

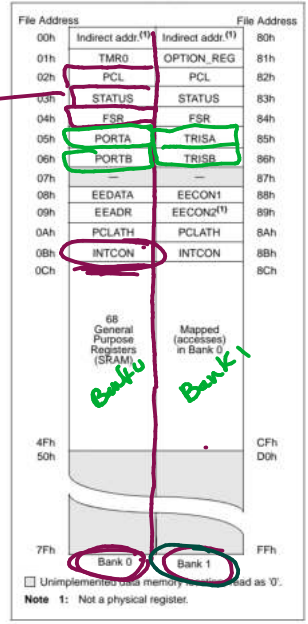
Input & output



PORTA → TRISA

PORTB → TRISB

FIGURE 2-2: REGISTER FILE MAP - PIC16F84A



CLRF TRISA

PORTA

MovLW 0XFF

MovWF TRISA

TRISA

0000 1111

PortA

1111

input

output

bit RP0

status

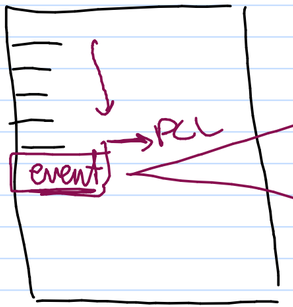
0 Bank0

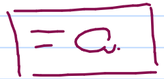
Bank1

set=1 BSF status, RP0; Bank1

clear=0 BCF status, RP0; Bank0

« Interrupts »





1. Finish the current Event
2. save PCL value
3. loading the new PCL (004)
4. clear the flag
5. performe the instruct
6. Return from interrup and PCL)
7. Return Back at

REGISTER 2-3: INTCON REGISTER (ADDRESS 0Bh, 8Bh)

R/W-0	R/W-0	R/W-0	R/W-0	R/W-0	R/W-0	R/W-0	R/W-x
GIE	EEIE	T0IE	INTE	RBIE	T0IF	INTF	RBIF
bit 7							bit 0

External Inter

bit 7 **GIE**: Global Interrupt Enable bit
1 = Enables all unmasked interrupts
0 = Disables all interrupts

bit 6 **EEIE**: EE Write Complete Interrupt Enable bit
1 = Enables the EE Write Complete interrupts
0 = Disables the EE Write Complete interrupt

bit 5 **T0IE**: TMR0 Overflow Interrupt Enable bit
1 = Enables the TMR0 interrupt
0 = Disables the TMR0 interrupt

bit 4 **INTE**: RB0/INT External Interrupt Enable bit
1 = Enables the RB0/INT external interrupt
0 = Disables the RB0/INT external interrupt

bit 3 **RBIE**: RB Port Change Interrupt Enable bit
1 = Enables the RB port change interrupt
0 = Disables the RB port change interrupt

bit 2 **T0IF**: TMR0 Overflow Interrupt Flag bit
1 = TMR0 register has overflowed (must be cleared in software)
0 = TMR0 register did not overflow

bit 1 **INTF**: RB0/INT External Interrupt Flag bit
1 = The RB0/INT external interrupt occurred (must be cleared in software)
0 = The RB0/INT external interrupt did not occur

bit 0 **RBIF**: RB Port Change Interrupt Flag bit
1 = At least one of the RB7:RB4 pins changed state (must be cleared in software)
0 = None of the RB7:RB4 pins have changed state

Legend:			
R = Readable bit	W = Writable bit	U = Unimplemented bit, read as '0'	
- n = Value at POR	'1' = Bit is set	'0' = Bit is cleared	x = Bit is unknown

TRISB, 0 → BSF

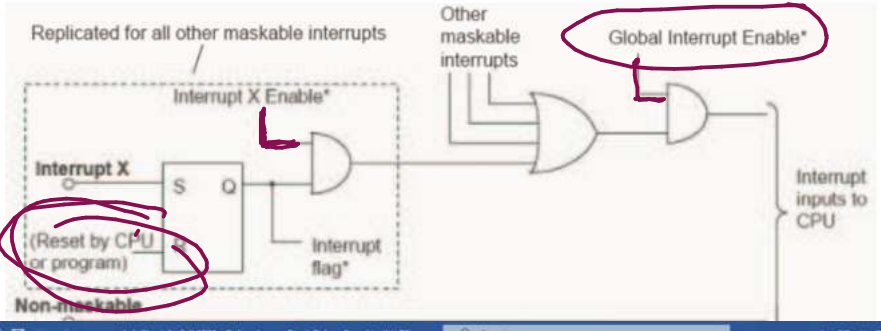
BSF INTCON, GIE
BSF INTCON, INTE

org x004
Retfie
GoTo ISR

ISR
Interrupt service Routine

BCF INTCON, INTF

RETFIE



3. Interrupts

Program 3: Write the following program in the source code file (**Note that this program requires the Delay.inc include file**):

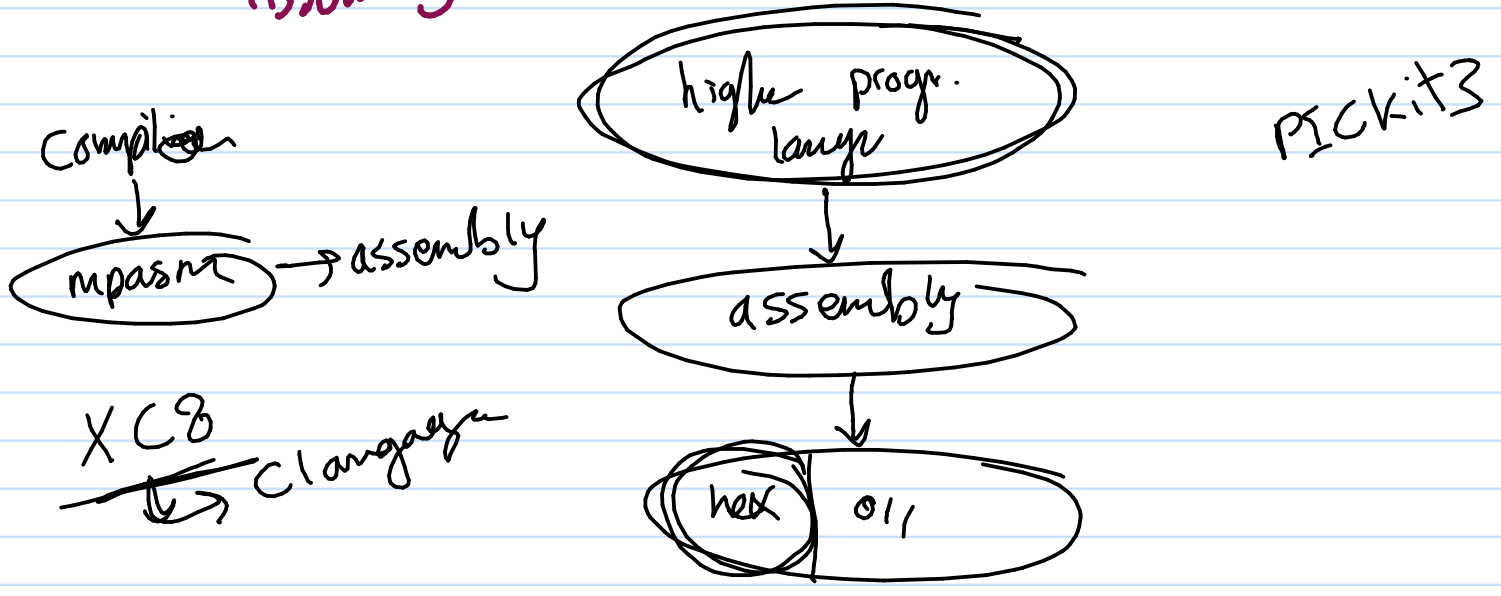
```
        BSF     STATUS, RP0     ; Bank 1
        CLRF    TRISA           ; PortA output
        BSF     TRISB, 0        ; RB0 -> input (interrupt)
        BSF     INTCON, GIE     ; Enable Interrupts in General
        BSF     INTCON, INTE    ; Enable External Interrupt
        BCF     STATUS, RP0     ; Bank 0
LOOP    CLRF    PORTA
        GOTO    LOOP

ISR     BCF     INTCON, INTF    ; Clear External Interrupt Flag
        COMF    PORTA           ; complement A
        CALL    delay500ms
        RETFIE
```

Code 3 – Program 3

MPLAB

Assembly

C code



lab 4