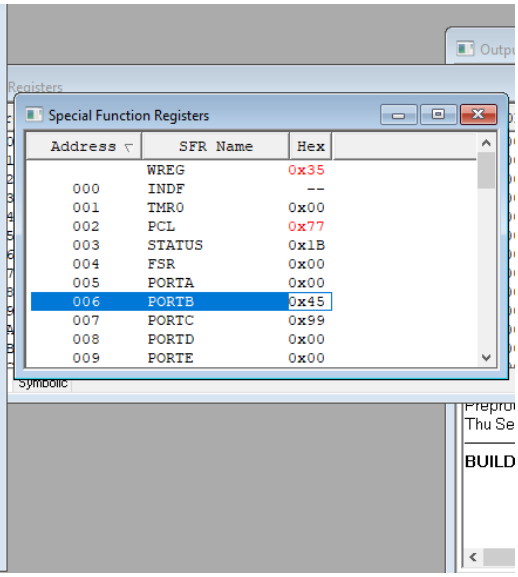
Lab 5

Task1

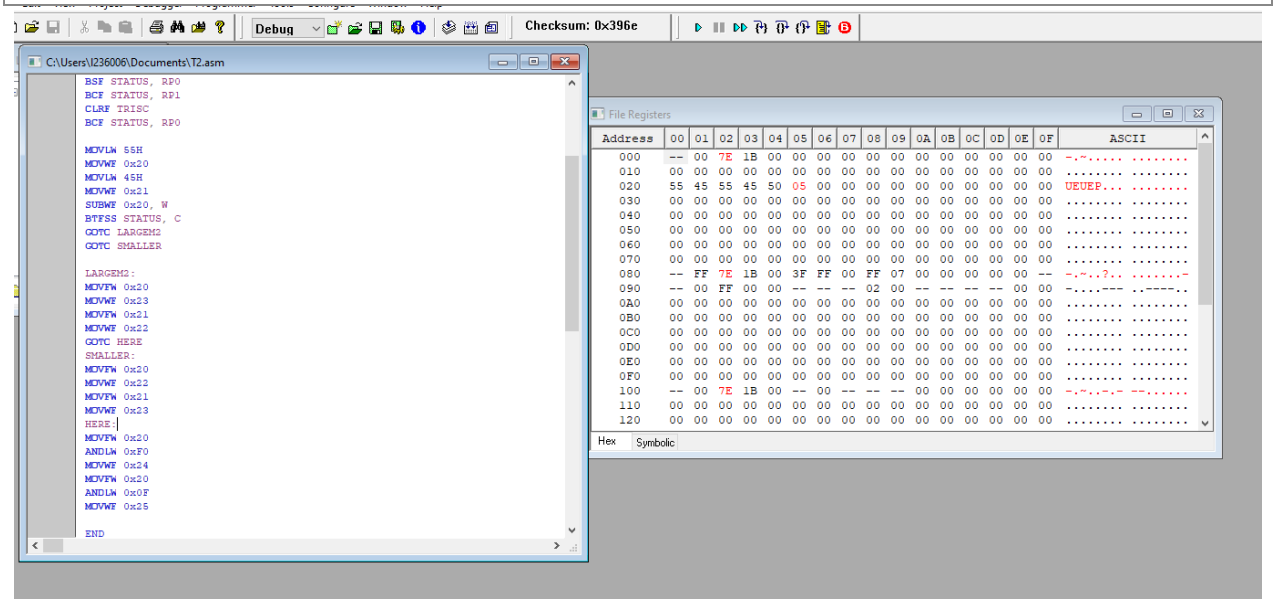
```
ORG 0x00
GOTO MAIN

MAIN:
    BANKSEL TRISB
    CLRF    TRISB
    CLRF    TRISC
    BANKSEL PORTB
    CLRF    PORTB
    CLRF    PORTC

    MOVLW   0x45
    MOVWF   PORTB

    MOVLW   0x45
    SUBWF   PORTB, W
    BTFSS   STATUS, Z
    GOTO    NOT_EQUAL

EQUAL:
    MOVLW   0x99
    MOVWF   PORTC
    GOTO    LAST

NOT_EQUAL:
    CLRF    PORTC

LAST:
  END
```



TASK2

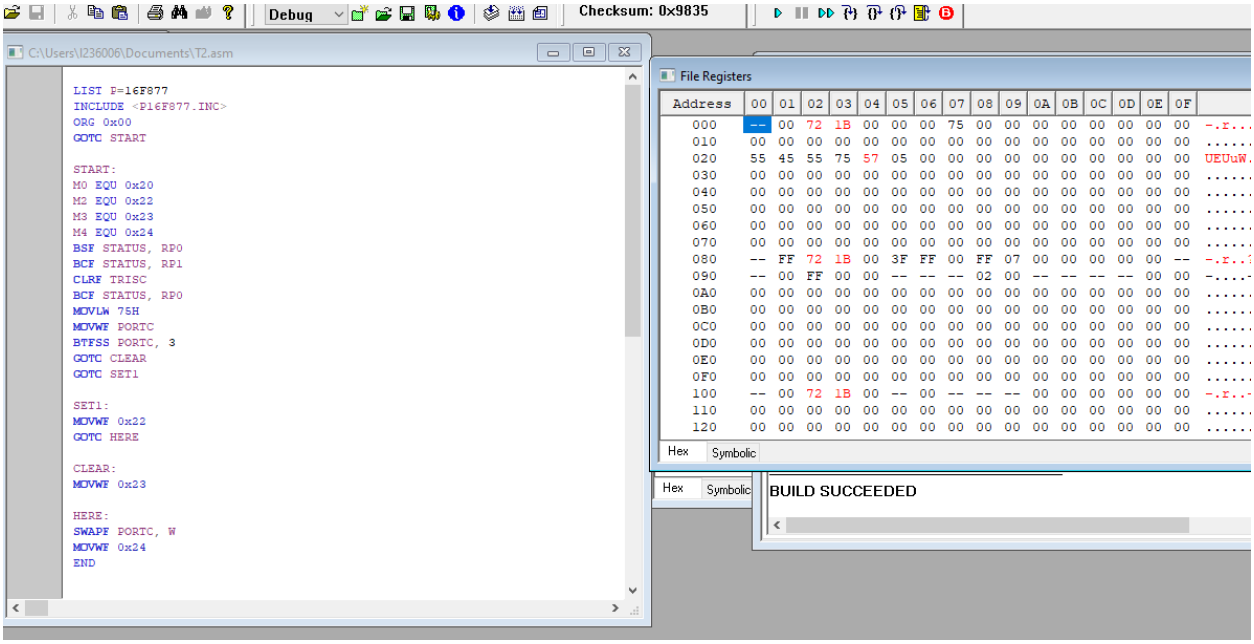
```
        LIST    P=16F877
        INCLUDE <P16F877.INC>

        ORG     0x00
        GOTO    MAIN

 ;=========================
 ; Main Program
 ;=========================

MAIN:
        BANKSEL TRISC
        MOVLW   0XFF
        MOVWF   TRISC           ; Set PORTC as input
        BANKSEL PORTC

        MOVF    PORTC, W
        MOVWF   0x20            ; Copy PORTC to 0x20
        MOVF    PORTC, W
        MOVWF   0x21            ; Copy PORTC to 0x21

        SUBWF   PORTC, W        ; W = PORTC - 0x21 (compare)
        BTFSS   STATUS, C       ; If Carry = 1 → W >= PORTC, skip next
        GOTO    TWENTYONE
        GOTO    LARGERNUM

;-------------------------
; Larger Num Case
;-------------------------

LARGERNUM:
        MOVF    0x20, W
        MOVWF   0x22            ; Store larger number at 0x22
```

```
         MOVF    0x21, W
        MOVWF   0x23            ; Store smaller number at 0x23
        GOTO    NIBBLE

;-------------------------
; Twenty-One Case
;-------------------------

TWENTYONE:
        MOVF    0x21, W
        MOVWF   0x22            ; Larger

        MOVF    0x20, W
        MOVWF   0x23            ; Smaller
        GOTO    NIBBLE

;-------------------------
; Nibble Separation
;-------------------------

NIBBLE:
        MOVF    0x20, W
        ANDLW   0x0F
        MOVWF   0x24            ; Lower nibble

        MOVF    0x20, W
        ANDLW   0xF0
        MOVWF   0x25            ; Upper nibble

        END
```



TASK3

```
          LIST P=16F877
          INCLUDE <P16F877.INC>
          ORG 0x00
          GOTO START

   NUM EQU 0x20
   M2 EQU 0x22
   M3 EQU 0x23
   M4 EQU 0x24

START:

        BSF STATUS, RP0
        BCF STATUS, RP1
        MOVLW 0xFF
        MOVWF TRISC         ; set PORTC as input
        BCF STATUS, RP0     ; place cursor here, fire all 8-bit number, donot hit apply button

        MOVF PORTC, W       ; when cursor moves here you see the number at PORTC
        MOVWF NUM           ; store number at 0x20

        BTFSS NUM, 3        ; test bit 3
        GOTO CLEAR
        GOTO SET1

SET1:

        MOVF NUM, W
        MOVWF M2           ; if bit3 set → store in 0x22
        GOTO HERE

CLEAR:

        MOVF NUM, W
        MOVWF M3           ; if bit3 clear → store in 0x23

HERE:

        MOVF NUM, W
        SWAPF NUM, W
        MOVWF M4           ; store swapped nibble at 0x24

        END
```


Debug
Checksum: 0x9835
C:\Users\I236006\Documents\T2.asm
LIST P=16F877
INCLUDE <P16F877.INC>
ORG 0x00
GOTC START
START:
M0 EQU 0x20
M2 EQU 0x22
M3 EQU 0x23
M4 EQU 0x24
BSF STATUS, RP0
BCF STATUS, RP1
CLRF TRISC
BCF STATUS, RP0
MOVLW 75H
MOVWF PORTC
BTFSS PORTC, 3
GOTC CLEAR
GOTC SET1
SET1:
MOVWF 0x22
GOTC HERE
CLEAR:
MOVWF 0x23
HERE:
SWAPF PORTC, W
MOVWF 0x24
END
File Registers
Address 00 01 02 03 04 05 06 07 08 09 0A 0B 0C 0D 0E 0F
000 -- 00 72 1B 00 00 00 75 00 00 00 00 00 00 00 00 -.r.
010 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 .....
020 55 45 55 75 57 05 00 00 00 00 00 00 00 00 00 00 UEUuW.
030 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 .....
040 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 .....
050 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 .....
060 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 .....
070 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 .....
080 -- FF 72 1B 00 3F FF 00 FF 07 00 00 00 00 00 -- -.r..
090 -- 00 FF 00 00 -- -- -- 02 00 -- -- -- -- 00 00 -....-
0A0 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 .....
0B0 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 .....
0C0 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 .....
0D0 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 .....
0E0 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 .....
0F0 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 .....
100 -- 00 72 1B 00 -- 00 -- -- -- 00 00 00 00 00 00 -.r..-
110 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 .....
120 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 .....
Hex
Symbolic
Hex
Symbolic
BUILD SUCCEEDED