EE 2004
Week 7 Tutorial
Solution

1. Indirect addressing mode: Use of the file select registers (FSR)

Write a program to copy the contents in data memory block from address 0x020 to 0x07F to the data memory block starting from address 0x130 to 0x18F by using FSRs.

```
                        LIST  P=18F4520   ;directive to define processor
                        #include <P18F4520.INC> ;processor specific
                                                ;variable definitions

;-----------------------------------------------------------------------
Block1StartingAddress equ 0x020
Block2StartingAddress equ 0x130

                        ORG         0x000000
                        goto Initialize

                        ; Part I: You put something in file reg 020 to 07F
                        ; to test the code you have written in Part II.
                        ; If you were asked this question in exam, you do
                        ; not need to include Part I.
Initialize:       lfsr 0, Block1StartingAddress ; Fill 0XFF into address
                                                ;ranges 020 to 07F
LoopInitialize:   movlw 0XFF
                        movwf POSTINC0
                        movlw 0x7F
                        cpfsgt FSR0L; if [FSR0L] > 7F, skip next line and
                                    ;enter Part II.
                        bra LoopInitialize

                        ; Part II: Copy contents in 020:07F to 130:18F

                        lfsr 0, Block1StartingAddress
                        lfsr 1, Block2StartingAddress;
Copy:             movff POSTINC0, POSTINC1
                        movlw 0x7F
                        cpfsgt FSR0L
                        bra Copy
Over:             bra $
            END
```

2. Table lookup

Define an array with starting address 0x000500 in the program memory to store your student ID number. Each digit of your student ID number is stored in a byte. Then, write a program to copy the content from the program memory to the data memory starting from 0x040.

```
                    LIST  P=18F4520  ;directive to define processor
                    #include <P18F4520.INC>;processor specific
                                    ; variable definitions

;-----------------------------------------------------------------
COUNT equ 0x00
                    ORG        0x0000
;-----------------------------------------------------------------
;Start of main program

Main:       movlw upper ID; identify upper byte part of the starting
                          ; address of the array labelled ID
            movwf TBLPTRU
            movlw high ID; identify high byte part of the starting
                          ; address of the array labelled ID
            movwf TBLPTRH
            movlw low ID; identify low byte part of the starting
                          ; address of the array labelled ID
            movwf TBLPTRL
            movlw 0x08
            movwf COUNT, A
            lfsr 0, 0x040
Loop: tblrd*+
            movff TABLAT, POSTINC0
            decfsz COUNT, F, A
            bra Loop

            bra $

            org 0x000500
ID db 0x0, 0x1, 0x2, 0x3, 0x4, 0x5, 0x6, 0x7

          END
```