

EE461 Microprocessor-based Digital Design

Spring 2007

Subroutines, Functions, and Branches

Assignment 7

1. Write a subroutine named `Assignment7` that will take the least significant two bits of register `x` (location `2216`) and copy them to bits 6 and 5 of a second register `y` (location `2316`). Your program should leave the contents of register `x` unchanged. It should also leave bits 7 and 4-0 of register `y` unaffected. You may use additional registers for temporary storage. If you do so, indicate by the use of `equ` directives the meaning of the symbols you use. You may use MPLAB to test your program. You will receive a bonus of one letter grade if your solution does not use any `goto` instructions.

```
x equ H'22' ; A memory location for x
y equ H'23' ; A memory location for y
temp equ H'24' ; Scratch space
mask equ B'01100000' ; Mask designating
                        ; bits 6 and 5
...
Assignment 7
    swapf    x,W ;Bits 1 and 0 move to
              ; positions 5 and 4
    movwf   temp ; Save it
    rlf    temp,W ; Bits 5 and 4 are now
              ; in positions 6 and 5
    andlw   mask ; Retain bits 6 and 5
    movwf   temp ; and save result
    movf    y,W ; Get y
    andlw   ~mask ; Zeroize bits 6 and 5
    iorwf   temp ,W ; Merge the two words
    movwf   y ; and save the result in y
    return
```