TEJ 4M0 TUTORIAL #6: MORE ON STATUS BITS! Name:

**Objective:**

To observe the changes of the WREG and GPR registers, STATUS bit Z, DC and C when using various instructions (be able to use your resources (i.e. instruction set sheet) to find answers)

**Procedure:**

1. For each **Sample Code** below, record the binary contents of the WREG and i registers, then record the status of the Z, DC and C bits for each block of code below. If a bit is not affected by the instruction, then record a N/A (“not affected”). The first one has been done for you. DO NOT use MPLAB to find the answer for you. Do this with only a pencil in hand (and a brain in head!)

2. Now that you have tried each **Sample Code**, verify your answers using MPLAB SIM. Code each

sample separately and "Step Into" with *MPLAB SIM* /*Watch* window. Ensure you have the

STATUS register open so that you can view the Z, DC and C bits.

3. **Be sure to add the 'goto $' and 'end' lines of code.**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **Part** | **Sample Code** | **WREG** | **i** | **Z bit** | **DC bit** | **C bit** |
| a | clrf i  movlw 140 addlw 140 | b 0001 1000 | 0000 0000 | 0 | 1 | 1 |
| d 24 | 0 |
| h 0x18 | 0x00 |
| b | movlw 0x15 movwf i movlw 0x71 andwf i, w | b 0000 0001 | 0001 0101 | 0 | N/A | N/A |
| D 1 | 21 |
| H 0x01 | 0x15 |
| c | movlw b'10001’  movwf i clrf i | B 0001 0001 | 0000 0000 | 0 | 1 | 0 |
| D 17 | 0 |
| H 0x11 | 0x00 |
| d | bsf i, 3 movlw d'8' addwf i,f | B 0000 1000 | 0001 0000 | 0 | 0 | 0 |
| D 8 | 16 |
| H 0x08 | 0x10 |
| e | clrf i  movlw d'15' xorlw 0x0F iorlw 0x0F bsf i, 7  btfss STATUS, Z  addwf i,w | B 1000 1111 | 1000 0000 | 0 | 0 | 0 |
| D 143 | 128 |
| H 0x8F | 0x16 |
| f | bsf STATUS, Z bsf STATUS, DC bcf STATUS, C | B 0000 0000 | N/A | 1 | 1 | 0 |
| D 0 | N/A |
| H 0x00 | N/A |
| g | movlw 0x01 movwf i  loop: rlf i,f addwf i,w btfss i,6 goto loop | B 0001 1011 | 0100 0000 | 0 | 0 | 0 |
| D 27 | 64 |
| H 0x1B | 0x40 |

**Conclusions:** What kind of programming structure (i.e. selection, looping) is part e? part g?

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