**Chapter 7. Problems**

*"All programming problems should include design pseudo code either as a separate design document on embedded comments in the code."*

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1S. Assuming PICmicro Oscillator is running at 8 MHz, what is the time required to perform the following task:

```
MOVLW   0x25
ADDWFC  0x80
BSF     0x82
```

Solution

| **Instruction** | **# Inst Cycle** |
|---|---|
| MOVLW 0x25 | 1 |
| ADDWFC 0x80 | 1 |
| BSF 0x82 | 1 |

Execution Time = 3 Inst. Cycle x 4 Osc. Cycle / Inst. Cyle x $10^{-6}$/8 Seconds=1.5 x $10^{-6}$ Seconds

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1U. Assuming PICmicro Oscillator is running at 8 MHz, what is the time required to perform the following task:

```
MOVLW   0x25
ADDWFC  0x80
BSF     0x82
```

Solution

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2S. Assuming PICmicro Oscillator is running at 2 MHz, what is the time required to perform the following task:

```
        MOVLW   0x25
        ADDWFC  0x80
        BSF     0x82
        MOVLW   253
Loop:   INCF    0x90
        BRA     Loop
```

Solution

Infinite loop → Execution time = Infinite.

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2U. Assuming PICmicro Oscillator is running at 8 MHz, what is the time required to perform the following task:

```
        MOVLW   0x10
        ADDWF   0x80
        BCF     0x81
        MOVLW   122
Loop:   DECF    0x90
        BRA     Loop
```

Solution

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3U. Design a performance benchmark for a Gaming System. The benchmark should include a definition of each desired attributes and code that simulate the performance of these attributes on PICmicro.

Solution

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4U. Design a performance benchmark for MPLAB Assembler. The design should include definition of desired attributes and code that simulate the performance of these attributes on PICmicro.

Solution

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5U. Write a problem statement that requires the knowledge you have acquired from this chapter to solve. Show your complete problem statement and solution.

Solution