

ECE 376 - Homework #2

Assembler, Flow Charts, Binary Inputs. Due Wednesday, September 8th, 2021

Please make the subject "ECE 376 HW#2" if submitting homework electronically to Jacob_Glower@yahoo.com (or on blackboard)

Assembler Coding

1) Convert the following C code to assembler (8-bit operations)

```
unsigned char A, B, C;  
  
C = 2*A + 3*B + 4;
```

2) Convert the following C code to assembler: (16-bit operations)

```
unsigned int A, B, C;  
  
C = 2*A + 3*B + 4;
```

3) Convert the following C code to assembler

```
unsigned char A, B, C;  
  
if( B > 10 )  
    C = A + 2;  
else  
    C = A + 5;
```

4) Convert the following C code in to assembler

```
unsigned char A, B, C;  
  
while( B > 0) {  
    if(B > 10) {  
        C = A + 2;  
    }  
    else  
        C = A + 5;  
}
```

Flow Charts & Counters

5) The flow chart below turns your PIC into a rigged voting machine

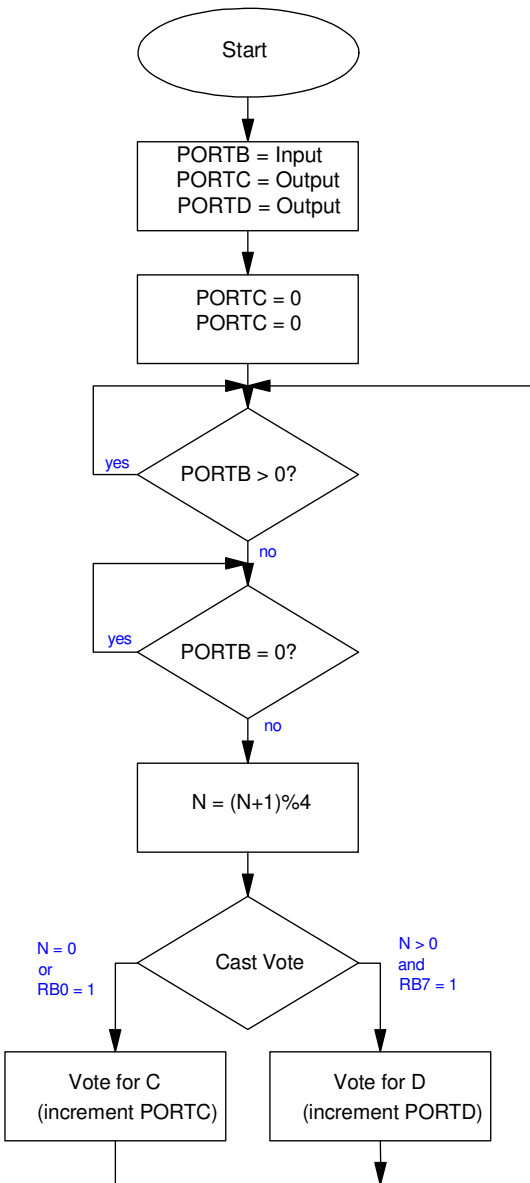
- When you press RB0, one vote is cast for Candidate C
- When you press RB7, one vote is cast for Candidate D
- Every 4th vote always goes to Candidate C

Write the corresponding assembler code.

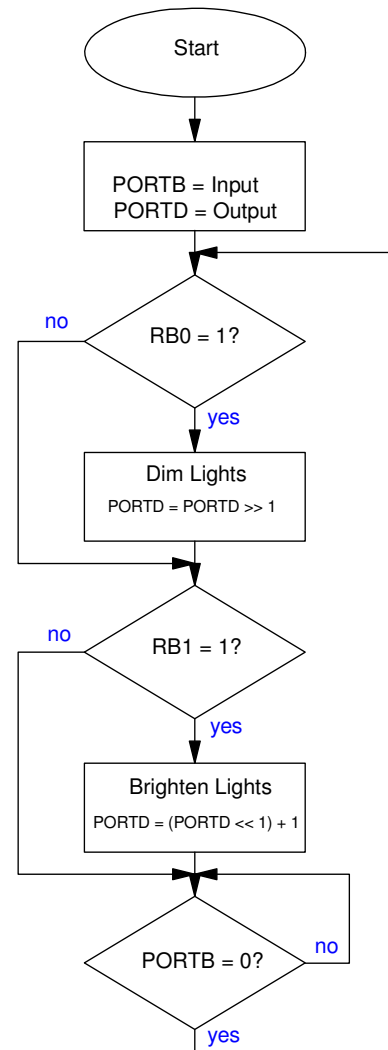
6) The flow chart below turns your PIC into an electronic flashlight

- RB0: Make the light dimmer
- RB1: Make the light brighter

Write the corresponding assembler code



Problem #5



Problem #6

Binary Inputs

A thermistor has the following temperature - resistance relationship:

$$R = 1000 \exp\left(\frac{3905}{T+273} - \frac{3905}{278}\right) \Omega$$

where T is the temperature in degrees C.

7) Design a circuit which outputs

- 0V when $T < 5C$
- 5V when $T > 5C$

8) Design a circuit which outputs

- 0V when $T < 0C$
- 5V when $T > 5C$
- No change for $0C < T < 5C$