NAME: _____ STUDENT #: _____

EECE 259: Introduction to Microcomputers **QUIZ 4 – Practice** **Apr 1, 2011**

Write a **C program** to control the speed of a heart pacemaker. The main program continuously reacts to an 8-bit oxygen sensor connected to SW[7:0], but the reading is only valid when SW9=1. The heart should beat faster by 10ms if the oxygen value drops below 0x60, or slower by 10ms if the value raises above 0xA0; otherwise it stays the same. Control the pacemaker using counter interrupts as follows:

- Every 10ms, the counter raises an interrupt and calls **cntrISR()**.
- To generate one heart beat, the pacemaker must output a '1' on LEDG0 for a duration of only 10ms.
- Start with a normal heart rate of 60bpm, where a pulse is sent every 100 interrupts (1000ms).
- The new heart rate should not take effect immediately – it should wait until the next heart beat.
- The oxygen sensor sends a new value at any time, but no more frequently than 1 per heart beat.

```
#include "259macros.h"
volatile unsigned int *pCOUNTER_STATUS;   //write clrs irq, write 1 to enable irqs

/* global variables */
int _____;

int _____;

int _____;
```

```
int main(...)
{
      initInterrupts();
      counterEnableIRQ(________,cntrISR);



      while(1) {









      }
}
```

```
/* ISR should be called every 10ms */
void cntrISR()
{
/* remember: no waiting in here */









}
```