EE 354
Hour Exam 3 Review 1

1. The ARM Cortex M0 is running at 48 MHz. how long does it take the following loop to run?
   TMR16B1PR = 1;
   TMR16B1MR0 = 4096;
   TMR16B1MCR |= 1;        //Set interrupt flag on match
   TMR16B1TCR = 1;         //Start Timer1
   while((TMR16B1TCR & 0x01) == 0);

2. The register TMR16B1MR0 is set up for PWM with a 1024 base count. Suppose the variable \( x_1 \) ranges from \(-1 \leq x_1 \leq 1\) and we use the following statement to load the match register:
   \[
   TMR16B1MR0 = (\text{int})((x_1 + 1.5) * 100);
   \]
   What is the duty cycle range for the PWM signal?

3. Suppose the lower 8-bits of Port 0 are connected to 8 LEDs where a 0 turns the LED on and a one turns it off. Write a program to blink the LEDs, one at a time, as fast as possible.

4. Write a function which accepts a float called \( x \) and a char array called \( c[] \). Take the float to be a positive number less than 1000.00. Your subprogram should fill the character array with the ASCII code corresponding to the digits in the float plus a decimal point, and return it to the calling program. You can assume that there will always be two places after the decimal and you need not eliminate leading zeros.
5. Assume a char array has been created which can store 400 8-bit characters. Write a program for the ARM processor to input 400 numbers from the AD0.0 and store the most significant 8-bits of each input in the array. The program has been started for you below.

You need not set up the A to D converter or GPIO. Assume that this has been done and you need to write the main program loop. You may also take the array to have been defined as

```c
char data[400];
```

6. Write a function called Swap which returns a void but accepts two ints as parameters. Your function should swap the two integers and return them to the calling program.

7. Write a function called Max which returns the maximum value of an integer array which is passed as a parameter. Assume the array size is also passed as a parameter.