1. The ARM STM32F407VG is running at 16 MHz. how long does it take the following loop to run?

```
RCC_APB1ENR |= 2; //Enable peripheral timer for timer 3 (bit 1)
TIM3_CR1 |= (1 << 7);
TIM3_CR1 |= (1 << 3);
TIM3_PSC = 7;
TIM3_ARR = 1000000;
TIM3_CR1 |= 1;
while((TIM3_CR1 & 1) != 0);
```

2. The D/A converter outputs voltages from 0 to 3 volts. If $x = 4.2$ is an internal floating point variable what voltage does the following produce.

```
DAC_DHR12R1 = (int)((x + 3)/15) & 0xFFF;
DAC_SWTRIGR |= 0x1;       //Start the D/A conversion
```

3. Suppose the lower 8-bits of GPIOA 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. You may assume that the port control registers have been set up.

4. Write a function which accepts a float called x and a char array called buffer[]. 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. Name you function Float2ASCII.

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

```
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.