

Exercise 6 – Due Thursday 10/24 before noon

In TinyOS we have the **TimerMilli** component if we need a one-time or recurring alarm clock. Make a similar component in C. For this exercise use the **cSkeleton** application in the cs450 directory as your starting point.

- A) In the **MSP430F1611 User Guide**, read the following pages well enough to complete the rest of the exercise:

12-1 to 12-19

12-20 to 12-25 (cursorily)

Note: Most is a repetition of the TimerA module, covered in Exercise 3.

- B) Write the two functions:

```
void startTimer(uint8_t channel, uint16_t msec, uint8_t repeat, void (*callback)(void))  
void stopTimer(uint8_t channel)
```

where **channel** is one of the **6** Capture/Compare registers on **TimerB**, **msec** is the countdown in binary milliseconds (i.e., 1024 binary milliseconds equals 1000 normal milliseconds), **repeat** is 0/1 if the timer is a one-time/repeating timer, and **callback** is the function to be called when the timer fires.

- C) Use the following function as the callback-function:

```
void callBackFunction()  
{  
  printf("Hello World! %6u\n\r", TBR >> 5);  
}
```

and evaluate the difference between calling it **directly** from the ISR or **indirectly** in the main()-function. Use a repeating timer and intervals in the range 1-10 millisecond with 1 millisecond increments.

- D) Upload your C file to Blackboard with all the above implemented together with a PDF explaining your findings from the evaluation.