Exercise 4 – Due Thursday 10/10 before noon

After the past weeks assignments we now have the internal clock stabilized and printf and LEDs for debugging. In the concurrent project, we are using the external flash, however, the internal flash is similarly capable of being written to during normal execution, with the exception that overwriting an application running from flash has to be done with care. In this week's exercise we will make the basic write and erase drivers for the internal flash. 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:

   5-1 to 5-9, 5-14 to 5-16, 5-17 to 5-21 (cursorily)

B) Use the **_BIC_SR(GIE)** function to disable the general interrupt and **_BIS_SR(GIE)** to enable it again. To limit the wearing of the TelosB, restrict your evaluation to only use the **Information Memory Segment B** and **A** (0x1000 and 0x1080).

   1. Write the function **void eraseFlash(uint8_t* address)** where **address** is pointing within the flash segment that is to be erased.
      i. Disable the general interrupt.
      ii. **FCTL2**. Use the SMCLK as clock source and divide it down to 333 kHz.
      iii. **FCTL3**. Clear the LOCK bit.
      iv. **FCTL1**. Set the ERASE bit.
      v. **address**. Write any value to the space pointed to.
      vi. **FCTL3**. Set the LOCK bit.
      vii. Enable the general interrupt.

   2. Write the function **void writeFlash(uint8_t* address, uint8_t* buffer, uint16_t length)** where **address** is pointing to the start address in flash to be written to, **buffer** is pointing to the start address to be copied from, and **length** is the number of bytes being written.
      i. Disable the general interrupt.
      ii. **FCTL2**. Use the SMCLK as clock source and divide it down to 333 kHz.
      iii. **FCTL3**. Clear the LOCK bit.
      iv. **FCTL1**. Set the WRT bit.
      v. **address**. Copy length bytes from the buffer to the flash.
      vi. **FCTL1**. Clear the WRT bit.
      vii. **FCTL3**. Set the LOCK bit.
      viii. Enable the general interrupt.

C) Upload your C file to Blackboard with all the above implemented and the answer to the following question: Why didn't we program a **readFlash** function?