This assignment should be completed by Wednesday, March 16th. Note: there is nothing to hand in for this assignment. In this homework assignment, you will explore:

- Serial EEPROMs
-  \( \text{I}^2\text{C} \)

The required reading for this assignment is available on the course web site.

1. Read pages 1-8, 12, 13 of Microchip Application Note AN536 "Basic Serial EEPROM Operation" and skim the rest.

2. Read Microchip Application Note AN551 "Serial EEPROM Solutions vs. Parallel Solutions".

3. Read the first 4 pages of Fairchild Application Note AN-794 "Using an EEPROM - I\(^2\)C Interface".

4. Read the data sheet for the NM24C16 Serial EEPROM.
   (a) Why is a dummy write required prior to a random read?
   (b) Why is acknowledge polling (ACK polling, or busy polling) used with serial EEPROMs?
   (c) During a page write operation, what happens if more than 16 bytes of data are sent to the EEPROM from the master?
   (d) During a page write operation, what happens if 16 bytes of data are sent to the EEPROM from the master, but the transfer starts at an address in the middle of a page?
   (e) During a sequential read from an NM24C16, what happens if 2050 bytes are read starting at address 0?

5. Read Microchip Application Note AN709 "System Level Design Considerations When Using I\(^2\)C Serial EEPROM Devices".
   (a) How can an internal EEPROM reset be forced by using software?
   (b) Why would this be important?

   (a) What data rates are supported by I2C?
   (b) If two devices start communicating simultaneously, is the transmission lost due to bus contention? Briefly describe how bus arbitration works.
   (c) What determines the minimum and maximum values of the pull-up resistors used on SCL and SDA?

7. [Optional] Review the Maxim application note "Comparing the I2C Bus to the SMBus".
   - What are the major differences between I\(^2\)C and SMBus?