EE 308 – Homework 10

Due Apr. 4, 2012

For all problems below assume your are using a MCS12DP256 chip with a 24 MHz bus clock and a 8 MHz oscillator clock.

1. The Microchip MCP23016 provides 16 general purpose I/O lines over the IIC bus. Download the MCP23016 datasheet:
   `http://ww1.microchip.com/downloads/en/DeviceDoc/20090C.pdf`

   (a) How do you set the address for te MCP23016? What range of addresses can the chip have? How many chips can be used on a single IIC bus?

   (b) How many registers does the chip have?

2. Write a C function `unsigned char iic_receive(void)` which receives all but the last two bytes of a read sequence three or more bytes long, and returns the character read from the slave device. (See the lecture notes from March 31 for a detailed list of what this function should do.)

3. Write a C function `unsigned char iic_receive_m1(void)` which receives the next to the last byte of a read sequence two or more bytes long, and returns the character read from the slave device. (See the lecture notes from March 31 for a detailed list of what this function should do.)

4. Write a C function `unsigned char iic_receive_last(void)` which receives the last byte of a read sequence two or more bytes long, and returns the character read from the slave device. (See the lecture notes from March 31 for a detailed list of what this function should do.)

5. Write a C function `void iic_swrcv(void)` which switches the I^2C bus from transmit to receive, and starts the serial clock for the reception of the first byte from the slave.