4357. Embedded Firmware Essentials
Homework #3
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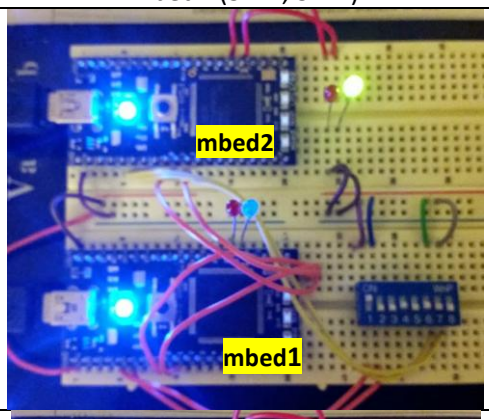
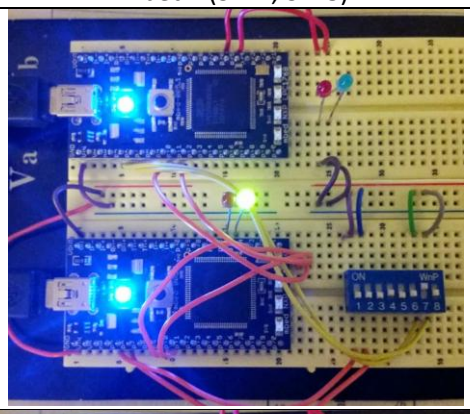
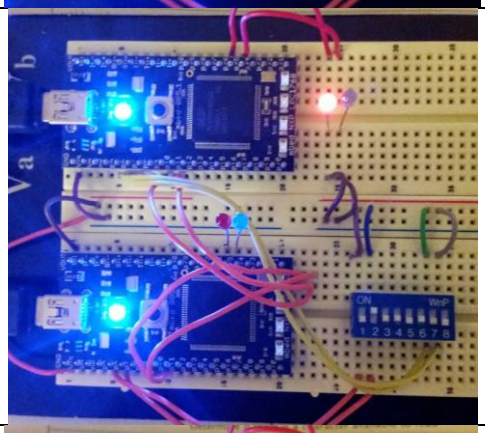
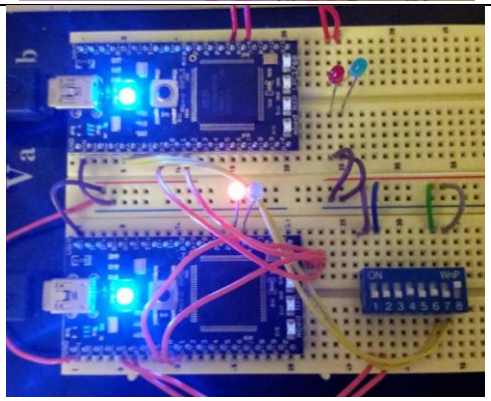
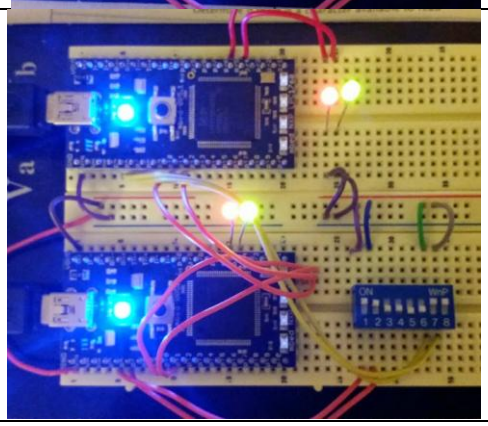
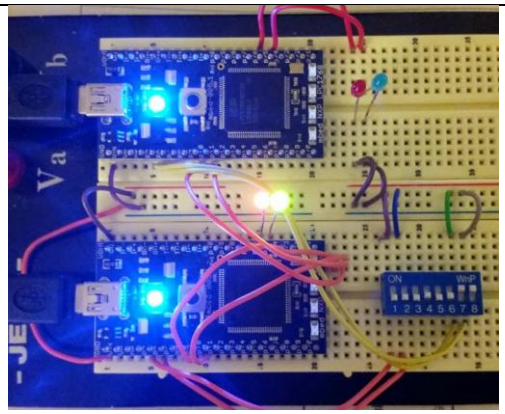
Source

```
//
// example 7.9
// Async communication

#include "mbed.h"

Serial async_port(p9, p10);
DigitalOut red_led(p25);
DigitalOut green_led(p26);
DigitalOut strobe(p7);
DigitalIn switch_ip1(p5);
DigitalIn switch_ip2(p6);

char switch_word;
char recd_val;

int main()
{
      async_port.baud(9600);

      while (1) {
            switch_word = 0xa0;
            if (switch_ip1 == 1)
                  switch_word |= 0x01;
            if (switch_ip2 == 1)
                  switch_word |= 0x02;

            strobe = 1;
            wait_us(10);
            strobe = 0;
            async_port.putc(switch_word);

            if (async_port.readable() == 1)
                  recd_val = async_port.getc();
            //
            red_led = 0;
            green_led = 0;
            recd_val &= 0x03;

            if (recd_val == 1)
                  red_led = 1;
            if (recd_val == 2)
                  green_led = 1;
            if (recd_val == 3) {
                  red_led = 1;
                  green_led = 1;
            }
      }
}
```

Pictures working with program for bidirectional data transfer between two mbed UARTs

mbed1 (SW1, SW2)	mbed2 (SW7, SW8)
	
	
	

mbed – Serial class

```
Serial(PinName tx, PinName rx, const char *name  = NULL)
void attach(T* tptr, void(T::*)(void) mptr, IrqType type = RxIrq)
void baud(int naudrate)
void format(int bits = 9, Parity parity = SerialBase::None, int stop_bits = 1)
int readable()
void send_break()
void set_flow_control(Flow type, PinName flow1 = NC, PinName flow2 = NC)
```

Total spent hours: 4.5 hours

- mbed hardware setting and testing (SPI, I2C, UART): 1.5
- mbed library review: 2
- Report: 1