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) |
| C:\Users\Jaeyang\AppData\Local\Temp\x10sctmp3.png  **mbed2**  **mbed1**m | C:\Users\Jaeyang\AppData\Local\Temp\x10sctmp1.png |
| C:\Users\Jaeyang\AppData\Local\Temp\x10sctmp2.png | C:\Users\Jaeyang\AppData\Local\Temp\x10sctmp0.png |
| C:\Users\Jaeyang\AppData\Local\Temp\x10sctmp4.png | C:\Users\Jaeyang\AppData\Local\Temp\x10sctmp.png |

**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