**Project presentation**

Our Goal: to make action depending on the data we received from the master micro controller using SPI communication protocol, actually the master micro controller not sending a random data, it receives the data from mobile using UART as communication protocol, Bluetooth module, and mobile application.

**What we used:**

1. Two atmega32 AVR micro controllers.
2. Bluetooth module.
3. Female to female wires.
4. Mobile application.

**Used Drivers:**

1. UART. To send data from mobile to micro.
2. SPI. To send data from master kit to slave kit.
3. DIO. To turn on/off LEDS
4. EXTI. To create interrupt

**Project Explanation**

Master part:

First we connect the mobile with Bluetooth module so we can use the mobile application to send data by UART.

The AVR will receive the sent data in UART receive pin which is Rx (PORTD, PIN0),

Now we can store the sent data in a local variable and send it by SPI to the other AVR (slave one).

To make sure the sent data were sent properly we made some actions depending on it, like if it is equal to one turn on led and if it is equal to zero turn off the led.

Slave part:

After we receive the data were sent by master with SPI communication protocol now we can use this data to make some actions.

If the data equals two the three LEDS will turn on, and it it equals three the three LEDS will turn off.

Last but not least if the data equals to one the SPI interrupt will be enabled, and that will make the micro execute the ISR whenever he receives a data (any data), so after you send -1- as data no matter what you send next the slave will execute the ISR.

I made the ISR a toggle function and call it by a function that takes a pointer to function to make another global pointer to function in (.c) point at it so we can execute the ISR without mentioning it in the main.

**Flow Chart**

**Start**

**Mobile APP**

**Master**

**Check data**

**Sending data to slave SPI.**

**Slave**

**Check data**

**End**

Actually there is no end, we are on while (1) loop but here I do not make accurate chart but it just illustrative chart. Thank you.