AMIT B28

Smart Home Project

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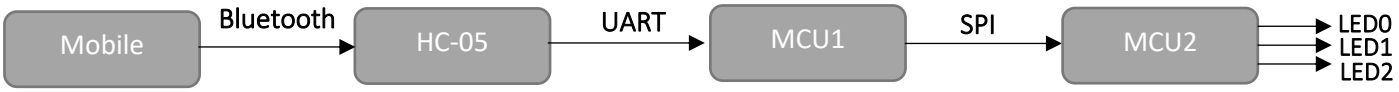
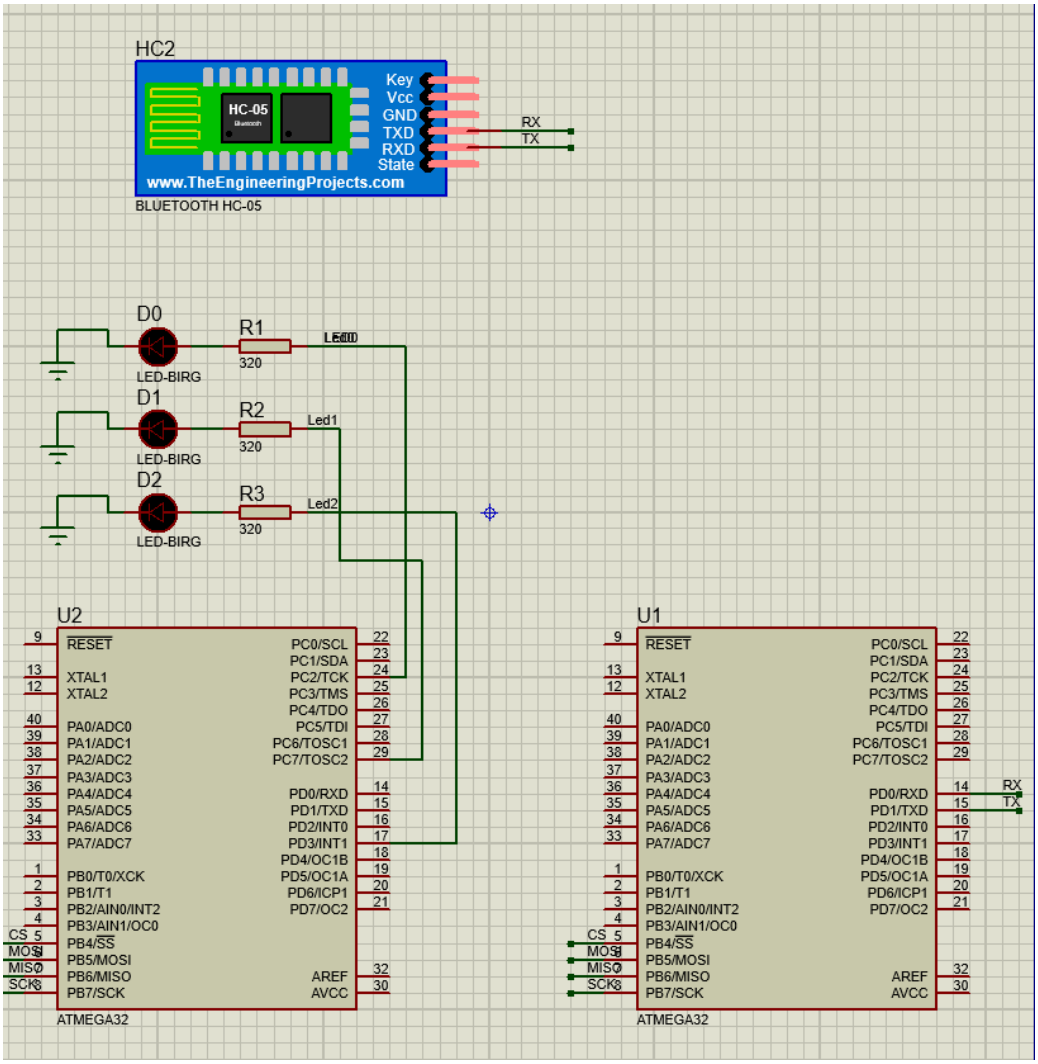
Architecture





- Bluetooth module HC-05 takes commands from the mobile phone and communicates with MCU1 through UART module.
- In the main function the HC-05 module and the SPI module are initialized.
- The HC-05 module mainly depends on the UART module of the microcontroller U1.
- In the super loop of MCU1, the received data from the Bluetooth is stored in a global variable and then sent to U2 through SPI.

```
main                                    int main(void)
//
#include "HC05.h"
#include "SPI.h"
//Main function
uint8_t RECEIVED_DATA;
int main(void)
{
   SPI_Init();
   HC05_Init();

    while (1)
    {
    RECEIVED_DATA = HC05_Receive();
    SPI_Transmit(RECEIVED_DATA);
    }
}
93 %
```

- In microcontroller U2, Leds and SPI are initialized and then according to the received data from microcontroller U1, the leds toggle. Where if 0 is send from the Bluetooth the led number 0 toggles and so on.
- Note that in the simulation video if 00 is sent the led won't turn on as the Bluetooth sends the characters one by one and due to the very high frequency of the microcontroller, the led blink won't be noticed

```
#include "SPI.h"
#include "LED.h"
//Main function
uint8_t RECEIVED_DATA;
int main(void)
{
    SPI_Init();
    LED0_Initialization();
    LED1_Initialization();
    LED2_Initialization();
    while (1)
    {
    RECEIVED_DATA=SPI_Receive();
    switch(RECEIVED_DATA)
    {
        case '0':
        LED0_TGL();
        break;
        case '1':
        LED1_TGL();
        break;
        case '2':
        LED2_TGL();
        break;
    }

    }
}
```

Flowchart for the two MCUs: