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Group: C_43

Smart Home Bluetooth & Air Conditioning Control

Requirements & Descriptions:

- Mobile App Via Bluetooth for the user as a Human Interface App.
- Bluetooth Communication Protocol with the Microcontroller is UART.
- Taking Data from the UART to the Microcontroller as a Master and Sending the Data to another Microcontroller as a Slave 1 by SPI Communication Protocol.
- The user Data will Control the Two LEDs by Slave 1 Microcontroller.
- Taking Data from the Temperature sensor to the Microcontroller as a Master and Sending the Data to another Microcontroller as a Slave 2 by SPI Communication Protocol.
- The Temp sensor Data will Control the Air Conditioner by the Slave 2 Microcontroller.

The Used Components:

- Three Microcontrollers Atmega32.
- HC05 Bluetooth Module UART.
- Two LED "RED & BLUE".
- Three LCD's 16x2.
- Air Conditioner.
- Relay.
- LM35 Temperature Sensor

Application:

The User can type THREE mainly different Characters " a , b , p "

The UART data transfer to the Master Microcontroller if true a flag will be raised by a timer as an interrupt signal if any data is sent and to not stuck the system from completing the cycle, If the User Types " a " The Blue LED will be ON and OFF for the 2nd press for character " a " Same If the User Types Character " b " But for the Red LED , The user can clear the LCD by pressing on character " p " and OFF both LED's if any of them are ON , The First LCD is Attached with the Master Microcontroller and it display's all the Typed Characters and to insure that the pressing instruction has been completed and typed successfully , The 2nd LCD is Attached to the Slave 1 Microcontroller to display the needed Instructions to Control the application .
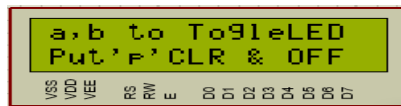
Also the Master Microcontroller will be receving data from the LM35 as Temprature Sensor by ADC moduel signal then transfer the data to Slave 2 by SPI using an internal interrupt Receiving signal in the Slave 2 Microcontroller to control an Air Conditoner , If the Digital reads from the Temprature sensor will be displayed on the LCD and If the Temprature is >= 25 C the A/C will be turned ON and If the Temprature is < 24 C the A/C will be Turned OFF . All of these operations will be displayed on the LCD by it's current Situation Real Time .