

MICROPROCESSOR PROJECT SYNOPSIS

Vth SEM E&C

FINAL REPORT

BLUETOOTH CONTROLLED HOME AUTOMATION SYSTEM USING 8051 MICROCONTROLLER

Electronics and Communication Engineering

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ABSTRACT

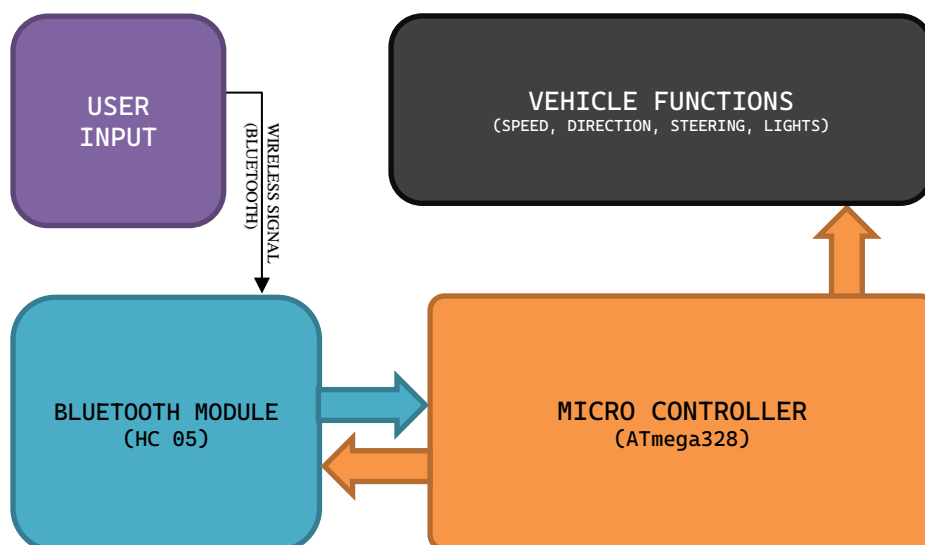
Home automation refers to the automatic control of household features, activities, and appliances using electronic means. This synopsis presents a cost-friendly working model to control your home's electrical devices from anywhere inside the house using only your android smartphone. We will use an 8051 microcontroller with a Bluetooth module to maintain the electrical appliances working in the Android device's Bluetooth range. The model proposed can be used as a cheap alternative to the expensive home automation models present in the market currently.

PROJECT DETAILS

Introduction:

- This project uses 8051 microcontroller to give required outputs based on the input (wireless) received from the user through a Bluetooth module.

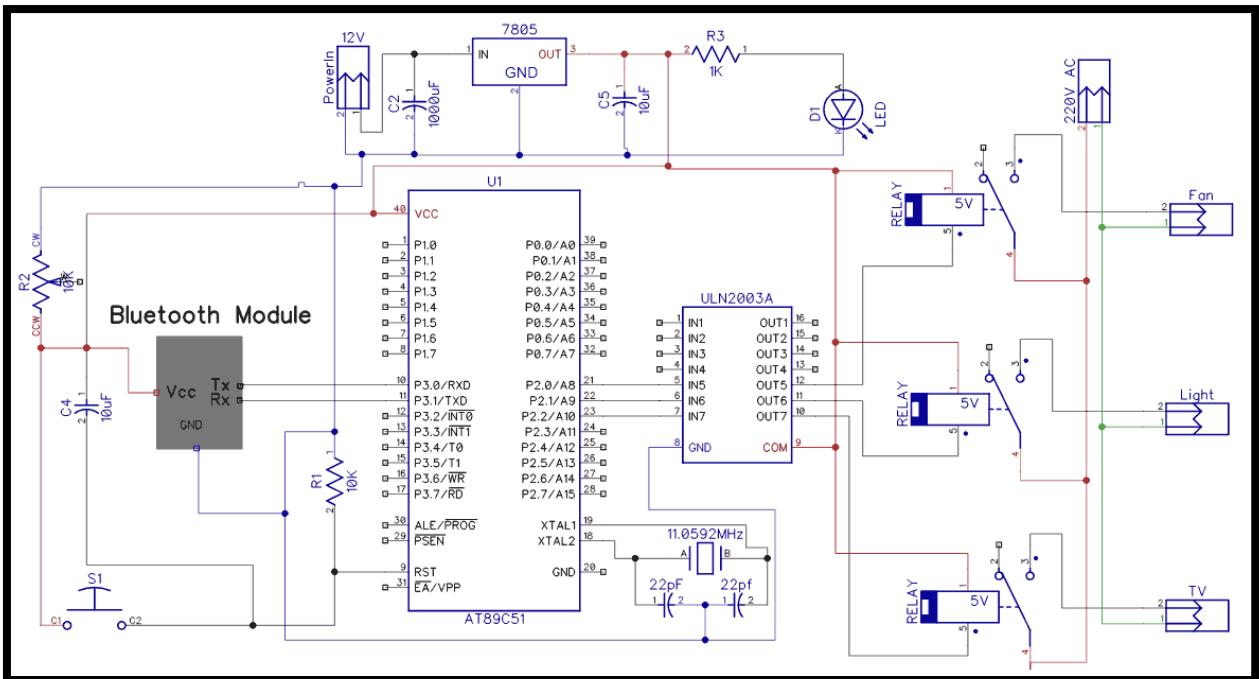
Block diagram:



Software & Hardware requirements:

- Hardware:
 - 8051 microcontroller
 - Bluetooth Module - HC05
 - Relays
 - ULN2003
 - IC 7805
 - Android phone
 - 10uf capacitor
 - 1000uf capacitor
 - 10K resistor
 - 1k resistor
 - Output devices (LEDs, USB female port)
 - Power Supply
 - Connecting wires
 - Universal Programmer
 - Soldering equipments
- Software
 - Bluetooth controller app (Android app)
 - Wellon
 - Keil uVision 5

Circuit diagram:



Working principle:

- **BLUETOOTH MODULE**
 - A Bluetooth android mobile app is used to first define functionality of the inputs sent.
 - Data values will be sent wirelessly via Bluetooth to the receiving module in the circuit.
 - Each data value will be defined a particular functionality
 - E.g., Data value 5 will indicate ON the FAN.
 - Receiver: The Bluetooth module will receive the data from the app and send it to the microprocessor (8051)
 - The module uses UART communication protocol with a default baud rate of 9600bps to communicate with 8051 microprocessor.
 - **8051 MICROPROCESSOR**
 - The microprocessor will read the values from the Bluetooth module and will compare it with the predefined values.
 - If the value matches, it will perform the operation and send an output to the relay module.
 - **RELAYS**
 - The output of microprocessor is read and interpreted by the ULN2003 driver module and switches ON the respective relay.
 - Once the relay is switched ON by the relay module, the respective appliance/device will get powered.
- *From the above process, the user can switch ON and OFF devices from an app that will send a predefined value for the instruction. The value is compared in the microprocessor and the respective relay is switched ON using the relay module.*

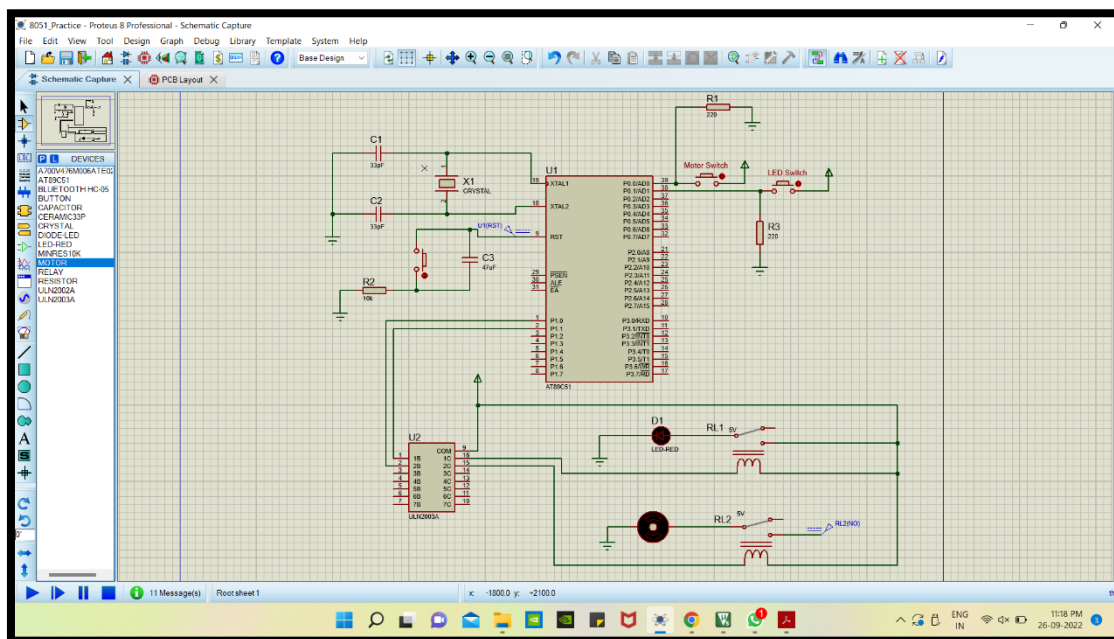
BLUETOOTH APP (CUSTOM BUILT)

- The Bluetooth app built is used to control the relays to turn on/ off the devices. The app has a simple interface to connect to a Bluetooth device and on/off controls for the electrical appliances.
- When we press on of any device it sends that message to the 8051 IC via UART protocol which will in response turn on the pin of the selected device thus powering the appliance on.
- Similarly, to turn off the device we press off in the app which will send the message to the IC to power off the appliance

PORT	ON DATA VALUE	OFF DATA VALUE
2.0	1	2
2.1	3	4
2.2	5	6



SOFTWARE SIMULATION (PROTEUS)



OUTPUT

The values of ON and OFF for a particular device/appliance is predefined. So, when the function is selected in the app, the respective data is sent, and interpreted correctly by the microprocessor. Based on the input, only the respective appliance should turn ON/OFF by the help of the relay module.

REFERENCES

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