PROJECT ON

SMART ROOM CONTROLLING SYSTEM

At

Bengal Institute of Polytechnic (BIP)

By

DEPARTMENT OF ELECTRICAL ENGINEERING

UNDER THE GUIDANCE OF

MR. PRASANTA BAGCHI

MR. SUMAN BANERJEE

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A PROJECT REPORT SUBMITTED IN PARTIAL FULFILLMENT OF THE REQUIREMENTS FOR THE DEGREE OF

POLYTECHNIC DIPLOMA COURSE (ELECTRIC ENGINEERING)

AT THE

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BENGAL INSTITUTE OF POLYTECHNIC (BIP)

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CONTENTS

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ABSTRACT

The main objective of this project is to develop a smart home controlling system using an Arduino board with Bluetooth being remotely controlled by any Android OS smart phone. As technology is advancing so houses are also getting smarter. Modern houses are gradually shifting from conventional switches to centralized control system, involving remote controlled switches. Presently, conventional wall switches located in different parts of the house makes it difficult for the user to go near them to operate. Even more it becomes more difficult for the elderly or physically handicapped people to do so. Remote controlled home automation system provides a most modern solution with smart phones. In order to achieve this, a Bluetooth module is interfaced to the Arduino board at the receiver end while on the transmitter end, a GUI application on the cell phone sends ON/OFF commands to the receiver where loads are connected. By touching the specified location on the GUI, the loads can be turned ON/OFF remotely through this technology. The loads are operated by Arduino board through optoisolators and thyristors using triacs.

. LITERATURE SURVEY

Smart Home Lighting is a challenging one not only to the developer but also to the consumer. Developer has to choose the components as per the customer requirement. Due to all customer demands are not equal hence they have to compromise with the existing products..Though detailed study of Using IOT (Internet of Thing) proposed by Anirban Bhowmik, Sandip Kumar Das, Souvik acharya and Tusharkanti Murmu, it is found that they have used Arduino UNO Module to connect Bluethooth Module to the internet. Through this module they are controlling various devicesw through web page and alsothrough android application. K. Venkatesan and Dr. U Ramachanraiah in their paper they have implemented Zigbee module in Arduino mega through they are controlling the devices. They have used various sensors for various purpose.Also they have provided real time notification, feedback, on web-server in which customes can see what is happening in their home. With the help of logic gates,a Raspberry pi, 555 timer and flipflop also the devices are controlled from web app. Paper propodsed by Shashank Shiva Kumar Jha, Vishwateja Mudiam Reddy, Tapan Pokharna, Naresh Vinay shows how this is operated and controlled.

INTRODUCTION

Nowadays, we have remote controls for our television sets and other electronic systems, which have made our lives real easy. Have you ever wondered about home automation which would give the facility of controlling tube lights, fans and other electrical appliances at home using a remote control? Off-course, Yes! But, are the available options cost-effective? If the answer is No, we have found a solution to it. We have come up with a new system called Arduino based home automation using Bluetooth. This system is super-cost effective and can give the user, the ability to control any electronic device without even spending for a remote control. This project helps the user to control all the electronic devices using his/her smartphone. Time is a very valuable thing. Everybody wants to save time as much as they can. New technologies are being introduced to save our time. To save people's time we are Smart Room Controlling system using Bluetooth . With the help of this system you can control your home appliances from your mobile phone. You can turn on/off your home appliances within the range of Bluetooth.

SYSTEM MANAGEMENT REQUIREMENTS

System should remotely provide monitoring and control and alert functions.

DEPLOYMENTS REQUIREMENTS:

1. **HARDWARE REQUIREMENTS**:

- Arduiino UNO R3
- Bluetooth Module
- 4 Channel Relay 5V
- Jumper wires
- Conecting Wires
- Adapter
- Led Bulb
- Tube light
- Sockets
- Transfarent Box

2. **SOFTWARE REQUIREMENTS :**

- Arduino IDE

3. **LANGUAGE REQUIREMENTS :**

- C / C++

4. **FUNCTIONAL REQUIREMENTS :**

- User should have an interface (Software / Device) through which he can perform all actions.
- Provision to control electric appliances like lights at home.

DESCRIPTION

WHAT IS ARDUINO?

- Arduino is an open source platform used for building an IoT based projects as well as electronic projects. Arduino consists of both a physical programmable circuit board (often referred as a microcontroller) and a piece of software or IDE (Intregrated developmentenvironment) that runs on your computer, used to write and upload computer code to the physical board.
- The Arduino platform has become quite popular with people just starting out with electronics and for good reason. Unlike mostprevious circuit boards, the Arduino does not need a separate piece of hardware (called a programmer) in order to load new code onto the board- you can simply use a USB cable.

Arduino UNO R3

- The Arduino UNO R3 is a microcontroller based on the ATmega328(datasheet). It has 14 digital input / output pins (of which 6 can be used as PWM output) , 6 analog inputs , a 16 MHz crystal oscillator, a USB connection, a power jack, an ICSP header, amd a reset buttom. It contains everything needed to support the microcontroller; simply connect it to a computer with a USB cable or power with a AC – to DC adapter or battery to get started.

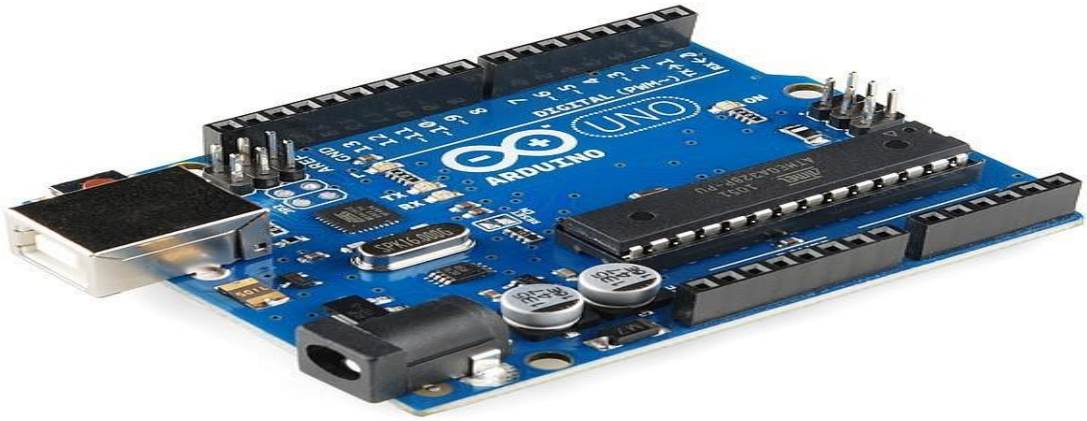


FIG 1:-ARDUINO UNO R3

A view of a Arduino UNO R3

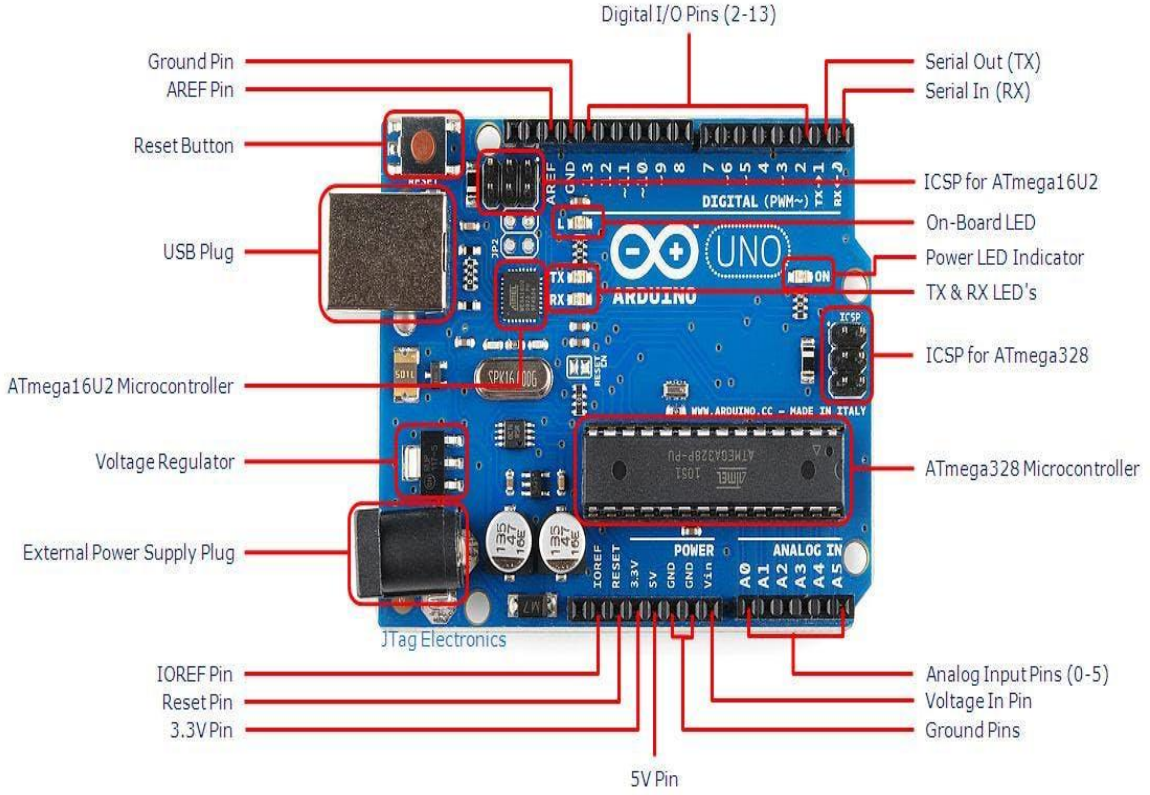


FIG 2:-ELABORATION OF ARDUINO BOARD

The UNO differs from all preceeding boards in that it does not use the FTDI USB to serial driver chip. Instead its features an ATmega16u2 programmed as a USB to serial convertor.This auxiliary microcontroller has its own USB bootloader, which allows advanced user to reprogram it.

ARDUINO UNO SPECIFICATION

- **Microcontroller : ATmega328P**
- **Operating Voltage : 5V**
- **Input Voltage (recommended) : 7 to 12V**
- **Input Voltage (limit) : 6 to 20V**
- **Digital I/O Pins : 14 (of which 6 provide PWM output)**
- **PWM digital I/O Pins : 6**
- **Analog Input Pins : 6**
- **DC current per I/O Pins : 20 mA**
- **DC current for 3.3V Pin : 50 mA**
- **Flash Memory : 32 KB (ATmega328P) of which 0.5 KB used by bootloader**
- **SRAM : 2 KB (ATmega328P)**
- **EEPROM : 1 KB (Atmega328P)**
- **Clock Speed : 16 MHz**
- **LED_ Builtin : 13**
- **Length : 68.6 mm**
- **Width : 58.4 mm**
- **Weight : 25 kg**

Board Pin Configuration

Here are the components that make up the Arduino Board and what each of their functions are –

- **Reset Buttom** - This will restart any code that is loaded to the Arduino Board.
- **AREF** – Stands for “Analog Reference” and is used to set an external reference voltage.
- **IOREF** - This pin is the input/output reference. It provides the voltage reference with which the microcontroller operates.

- **Ground Pin** – There are a few ground pins on the Arduino and they all work the same
- **Digital Input/Output** – Pins 0-13 can be used for digital input or output. Each pin can provide or receive a maximum of 40 mA. These pins are as follow
- **Serial: 0 (RX) and 1 (TX)** - Used to receive (RX) and transmit (TX) TTL serial data. These pins are Technical Pahadi TP connected to the corresponding pins of the ATmega8U2 USB-to-TTL Serial chip
- **External Interrupts: 2 and 3** - These pins can be configured to trigger an interrupt on a low value, a rising or falling edge, or a change in value
- **PWM: 3, 5, 6, 9, 10, and 11** - Provide 8-bit PWM output with the analogWrite() function
- **SPI: 10 (SS), 11 (MOSI), 12 (MISO), 13 (SCK)** - These pins support SPI communication using the SPI library
- **LED:13** - There is a built-in LED connected to digital pin 13. When the pin is HIGH value, the LED is on, when the pin is LOW, it's off
- **USB Connection** – Used for powering up your Arduino and uploading sketches. When connected to the computer, provides 5 volts at 500mA. There is a polarity protection diode connecting between the positive of the barrel jack to the VIN pin, rated at 1 Ampere.
- **ATmega Microcontroller** – This is the brains and is where the programs are stored. The ATmega328 has 32 KB (with 0.5 KB used for the bootloader). It also has 2 KB of SRAM and 1 KB of EEPROM (which can be read and written with the EEPROM library).
- **Power LED Indicator –** This LED lights up anytime the board is plugged in a power source
- **Voltage Regulator** – This controls the amount of voltage going into the Arduino board
- **DC Power Barrel Jack** – This is used for powering your Arduino with a power supply. The barrel jack is usually connected to a wall adapter. The board can be powered by 5-20 volts but the manufacturer recommends to keep it between 7-12 volts. Above 12

volts, the regulators might overheat, and below 7 volts, might not suffice

- **3.3V Pin** – This pin supplies 3.3 volts of power to your projects
- **5V Pin** – This pin supplies 5 volts of power to your projects
- **Ground Pins** – There are a few ground pins on the Arduino and they all work the same
- **Analog Pins** – These pins can read the signal from an analog sensor and convert it to digital. The Uno has 6 analog inputs, labeled A0 through A5, each of which provide 10 bits of resolution (i.e. 1024 different values).

ARDUINO UNO R3 PROGRAMMING

- The programming of an Arduino Uno R3 can be done using IDE software. The microcontroller on the board will come with pre-burned by a boot loader that permits to upload fresh code without using an exterior hardware programme.
- The communication of this can be done using a protocol like STK500.
- We can also upload the program in microcontroller by avoiding the boot loader using the header like the In-Circuit Serial Programming.

Arduino Language

To get the desired output, you need to communicate it to Arduino in form of simple and user-friendly coding.

There are few feeds that are need. It can be said as the language's grammar.

example:-

/* used for stating a comment

*/ used to write a paragraph

// used to write a single line

; statement terminator used at the end

Then there are few variable declarations in this language

example:-

void setup (used to declare all function and settings)

void loop (used for execution of the functions)

pinMode (set the mode of Arduino, input or output)

digitalWrite, digitalRead (standard comments)

delay (command that asks to stop the function)

int – integer (-1, 0, 1, 2…)

float – decimal (1.1, 1.2, 1.3….)

char – character (a, b, c, ….) used in display devices

serial.begin – bits per second

boolean- true or false command

HC – 05 Bluetooth Module

HC-05 Specification:

Bluetooth protocal: Bluetooth Specification v2.0+EDR

Frequency: 2.4GHz ISM band

Modulation: GFSK(Gaussian Frequency Shift Keying)

Emission power: ≤4dBm, Class 2

Sensitivity: ≤-84dBm at 0.1% BER

Speed: Asynchronous: 2.1Mbps(Max) / 160 kbps, Synchronous: 1Mbps/1Mbps

Security: Authentication and encryption

Profiles: Bluetooth serial port

Power supply: +3.3VDC 50mA

Working temperature: -20 ~ +75Centigrade

Dimension: 26.9mm x 13mm x 2.2 mm

Overview:

HC-05 module is an easy to use Bluetooth SPP (Serial Port Protocol) module,designed for transparent wireless serial connection setup.The HC-05 Bluetooth Module can be used in a Master or Slave configuration, making it a great solution for wireless communication.This serial port bluetooth module is fully qualified Bluetooth V2.0+EDR (Enhanced Data Rate)3Mbps Modulation with complete 2.4GHz radio transceiver and baseband. It uses CSR Bluecore 04- External single chip Rluetooth system with CMOS technology and with AFH (Adaptive Frequency Hopping Feature).

Bluetooth Module HC-05:

The Bluetooth module HC-05 is a MASTER/SLAVE module.By default the factory setting is SLAVE.The Role of the module (Master or Slave) can be configured only by AT COMMANDS.The slave modules cannot initiate a connection to another Bluetooth device, but can accept connections.Master module can initiate a connection to other devices.The user can use it simply for a serial port replacement to establish connection between MCU and GPS, PC to your embedded project,etc.

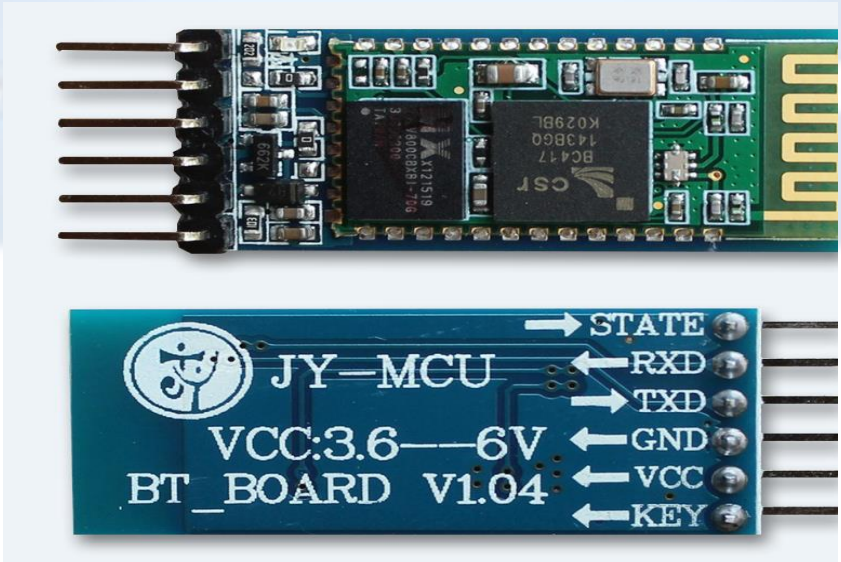


FIG 3:- HC 05 Bluetooth

Pin Description:

The HC-05 Bluetooth Module has 6pins. They are as follows:

ENABLE: When enable is pulled LOW, the module is disabled which means the module will not turn on and it fails to communicate.When enable is left open or connected to 3.3V, the module is enabled i.e the module remains onand communication also takes place.

Vcc: Supply Voltage 3.3V to 5V

GND: Ground pin TXD & RXD: These two pins acts as an UART interface for communication

STATE: It acts as a status indicator.When the module is not connected to paired with any other bluetooth device,signal goes Low.At this low state,the led flashes continuously which denotes that the module is not paired with other device.When this module is connected to/paired with any other bluetooth device,the signal goes High.At this high state,the led blinks with a constant delay say for example 2s delay which indicates that the module is paired.

BUTTON SWITCH: This is used to switch the module into AT command mode.To enable AT command mode,press the button switch for a second.With the help of AT commands,the user can change the parameters of this module but only when the module is not paired with any other BT device.If 39 the module is connected to any other bluetooth device, it starts to communicate with that device and fails to work in AT command mode.

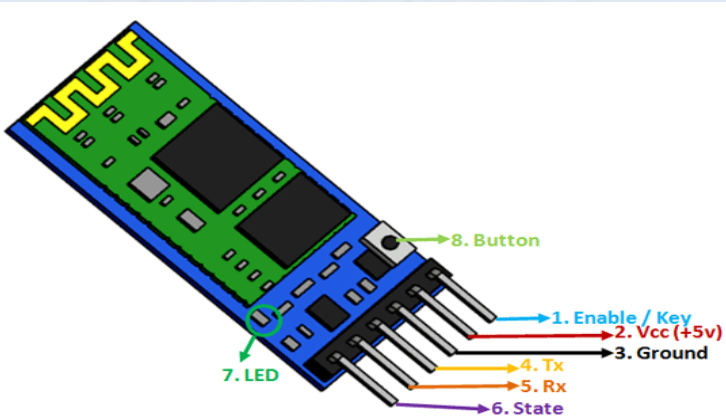


FIG 4:- Pin description of Hc-05 Bluetooth Module

HC-05 Default Settings:

Default Bluetooth Name: ‚HC-05‘

Default Password: 1234 or 0000

Default Communication: Slave

Default Mode: Data Mode

Data Mode Baud Rate: 9600, 8, N, 1

Command Mode Baud Rate: 38400, 8, N, 1

Default firmware: LINVOR

4 Channel 5V Relay Module

The **four-channel relay module** contains four 12V relays and the associated switching and isolating components, which makes interfacing with a microcontroller or sensor easy with minimum components and connections. The contacts on each relay are specified for 250VAC and 30VDC and 10A in each case, as marked on the body of the relays.

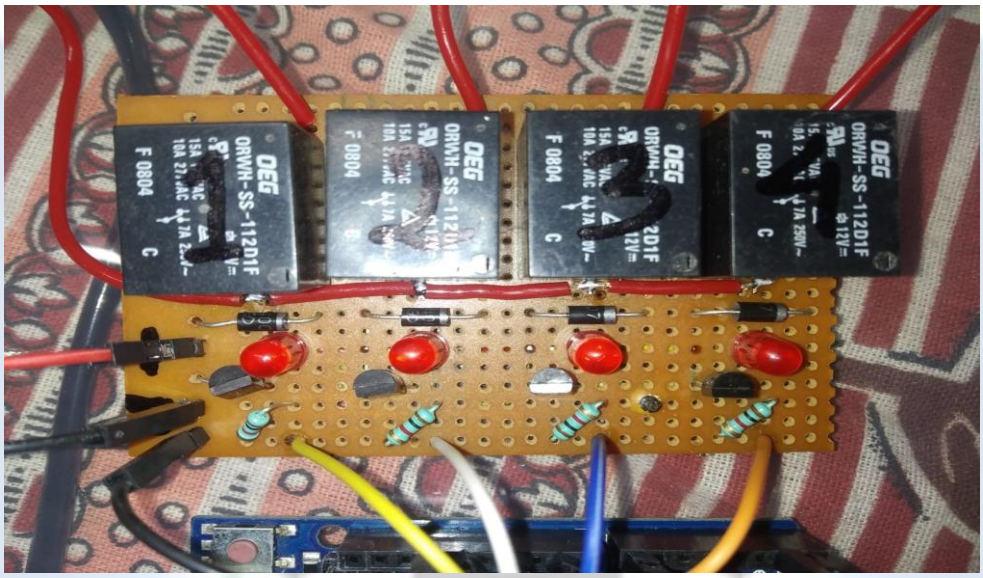


FIG 5:- CHANNEL 5V RELAY MODULE

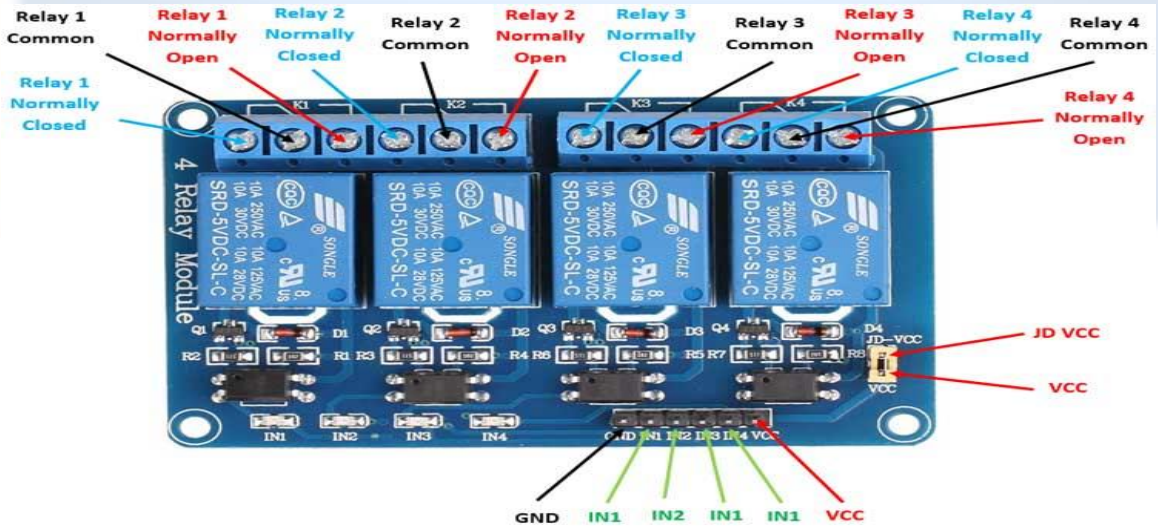


FIG 6 :- DESCRIPTION OF RELAY MODULE

Four-Channel Relay Module Pinout:

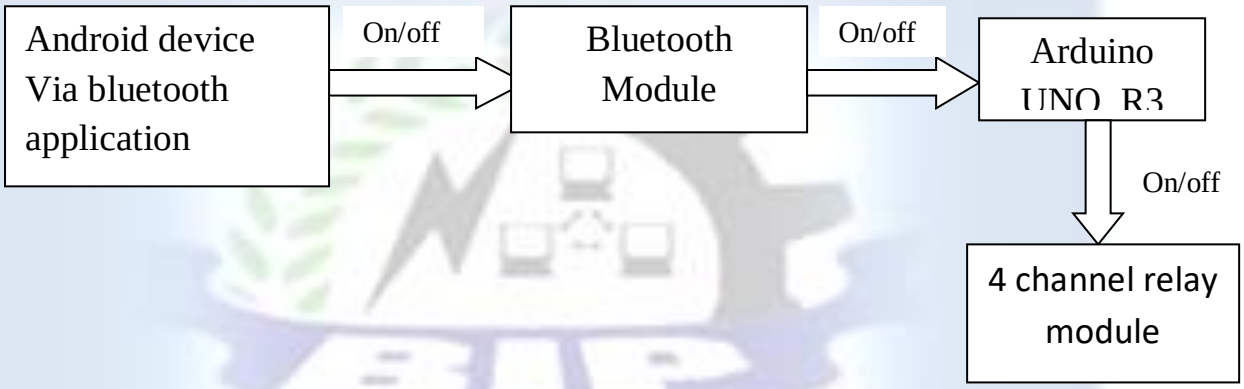
Pin Number	Pin Name	Description
1	GND	Ground Reference for the Module
2	IN1	Input to Active Relay 1
3	IN2	Input to Active Relay 2
4	IN3	Input to Active Relay 3
5	IN4	Input to Active Relay 4
6	Vcc	Power Supply tor the Relay Module
7	Vcc	Power Supply Selection Jumper
8	JD-Vcc	Alternate Power Pin for the Relay Module

Four-Channel Relay Module Specifications:

- Supply voltage – 3.75V to 6V
- Trigger current – 5mA
- Current when the relay is active - ~70mA (single), ~300mA (all four)
- Relay maximum contact voltage – 250VAC, 30VDC
- Relay maximum current – 10A

WORKING PRINCIPLE OF ARDUINO-BLUETOOTH MODULE

In this project, there are four main components used: Android smart phone Bluetooth application, Bluetooth transceiver, Arduino device, and 4 Channel Relay module.



The Android app sends the serial data to the connected. The Bluetooth Module HC-05 by clicking ON button. The Bluetooth device receives the data from the app and sends it through TX pin of Bluetooth module to RX pin of Arduino. The Arduino device read the input data and process it according to program uploaded inside it and generate the output to 4 Chanel Relay Module. When the Bluetooth application's button turns ON, it sets the home light ON, and when the Bluetooth application's button turns OFF, it sets the home light OFF.

CIRCUIT DIAGRAM

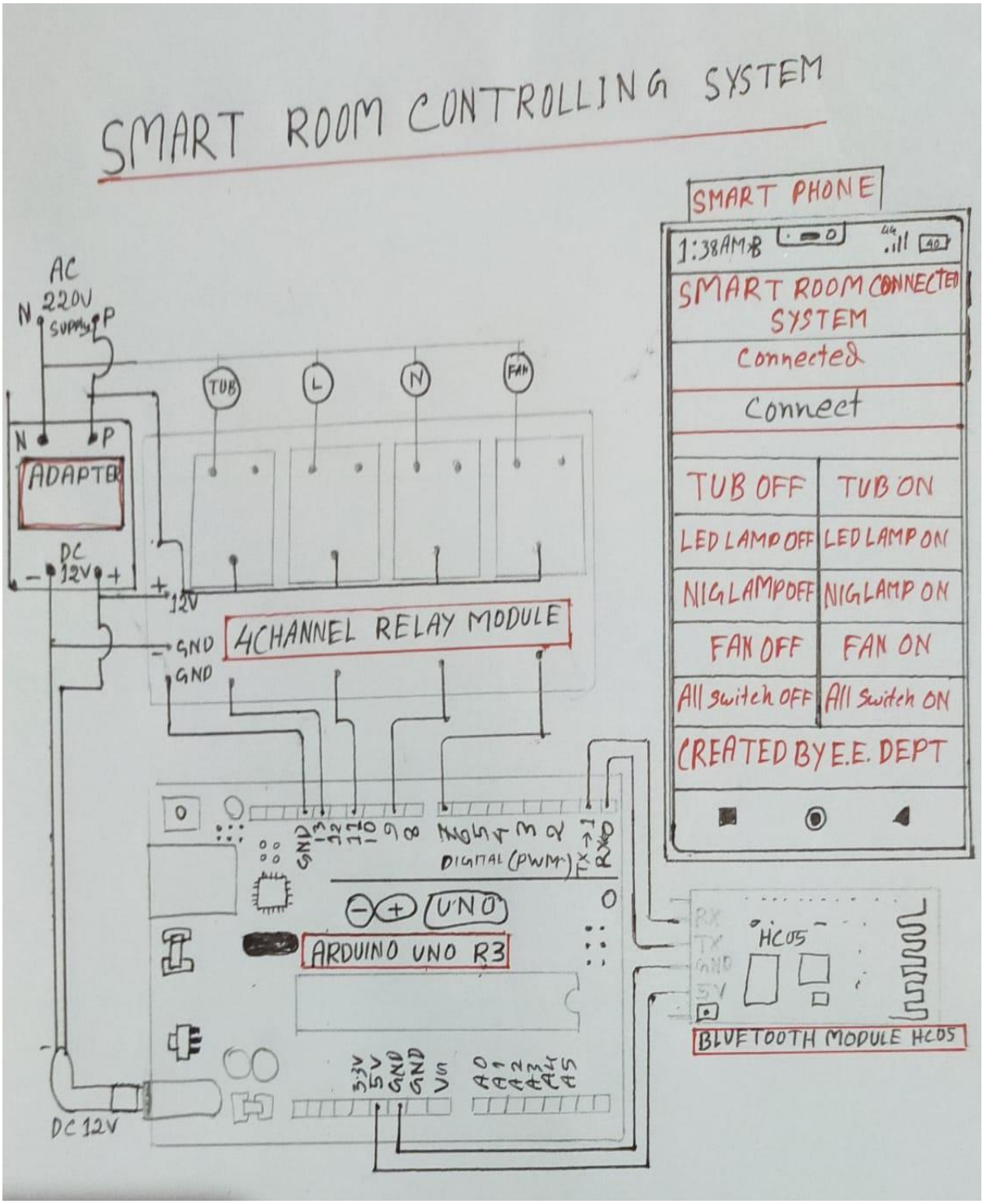


FIG 7 :- CIRCUIT

PROGRAM CODE//

```
String text;
void setup() {
  // put your setup code here, to run once:
     Serial.begin(9600);
     pinMode(13, OUTPUT);
     pinMode(11, OUTPUT);
     pinMode(9,OUTPUT);
     pinMode(7,OUTPUT);
}
void loop() {
  // put your main code here, to run repeatedly:
while(Serial.available())
   {
      delay(10);
      char c = Serial.read();
      text +=c;
   }
 if(text.length()>0)
   {
     if(text == "s1on")
     {
       digitalWrite(13, HIGH);
```

```
  }
  if(text == "s1off")
  {
    digitalWrite(13, LOW);
  }

}
if(text.length()>0)
{
  if(text == "s2on")
  {
    digitalWrite(11, HIGH);
  }
  if(text == "s2off")
  {
    digitalWrite(11, LOW);
  }

}
if(text.length()>0)
{
  if(text == "s3on")
  {
    digitalWrite(9, HIGH);
```

```
  }
  if(text == "s3off")
  {
    digitalWrite(9, LOW);
  }

}
if(text.length()>0)
{
  if(text == "s4on")
  {
    digitalWrite(7, HIGH);
  }
  if(text == "s4off")
  {
    digitalWrite(7, LOW);
  }

}
if(text.length()>0)
{
  if(text == "allon")
  {
    digitalWrite(13, HIGH);
```

```
    digitalWrite(11, HIGH);
    digitalWrite(9,HIGH);
    digitalWrite(7,HIGH);
   }
  }
  if(text.length()>0)
  {
   if(text == "alloff")
   {
    digitalWrite(13, LOW);
    digitalWrite(11, LOW);
    digitalWrite(9, LOW);
    digitalWrite(7,LOW);
   }
  }
  text ="";
}
```

ANDROID APPLICATION FOR SMART LIGHT CONTROL

- Control home electrical system using smart phone with android application and Blue Switch Module.
- Blue Switch Module's outputs to directly drive loads like bulbs, Lamps, Sockets, Television, Fans etc.
- We developed this application from the website of **MIT APP INVENTOR.**

About MIT App Inventor:

MIT App Inventor is an intuitive, visual programming environment that allows everyone even children to build fully functional apps for smartphones and tablets. Those new to MIT App Inventor can have a simple first app up and running in less than 30 minutes.

Phenomenal tool for teaching understanding, basics, troubleshooting and persistence of programming. This is a great starter program for app building. If students have familiarity with Scratch they'll advance faster with MIT App Inventor.

App Inventor is a free, cloud-based service that allows you to make your own mobile apps using a blocks-based programming language.

As such, it is part of an ongoing movement in computers and education that began with the work of **Seymour Papert** and the MIT Logo Group in the 1960s, and has also manifested itself with Mitchel Resnick's work on Lego Mindstorms and StarLogo.

Component Reference:

- User Interface components.
- Layout components.
- Media components.
- Drawing and Animation components.
- Map components.
- Sensor components.
- Social components.

Design of the application:-

\

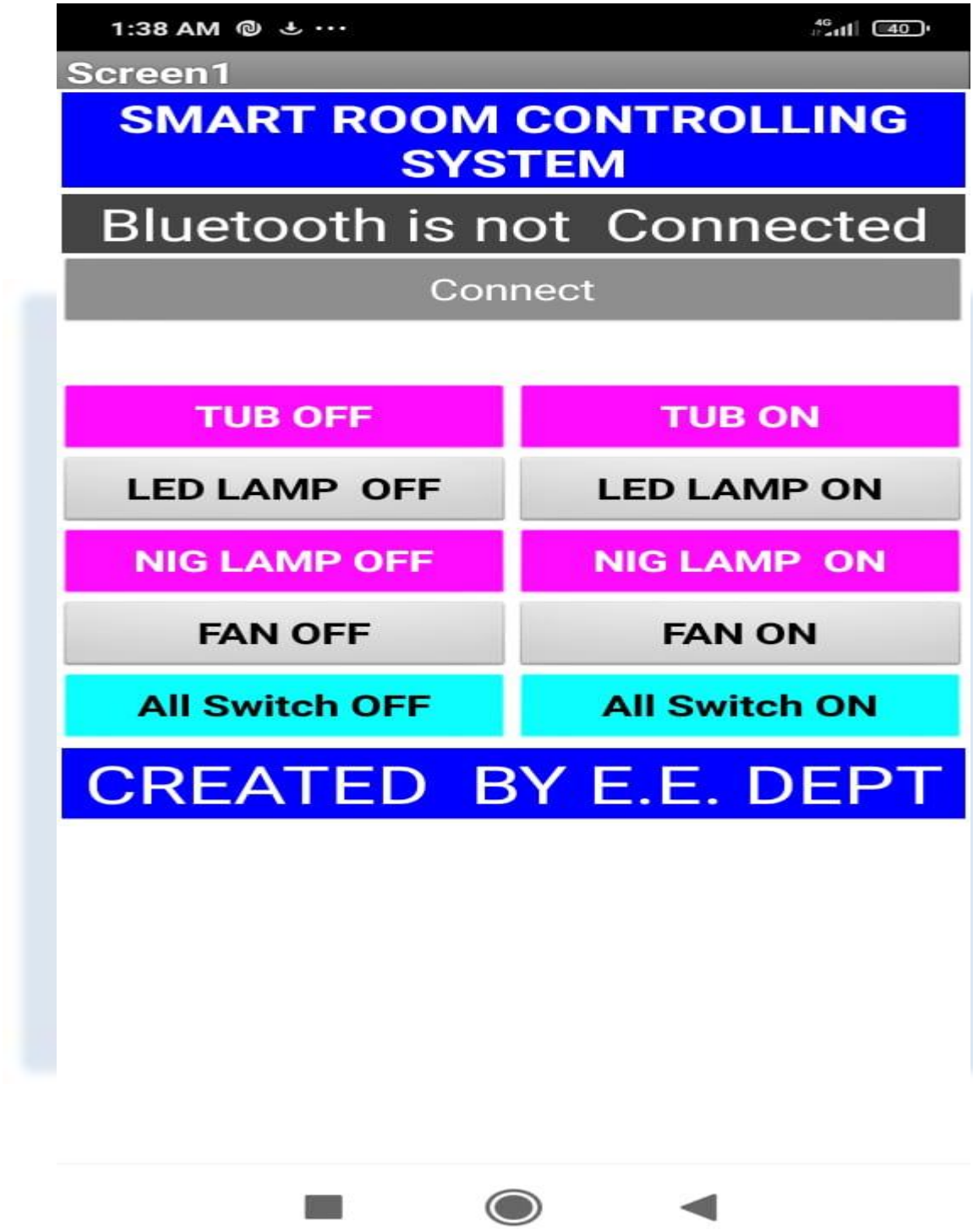


FIG 8:- APPLICATION FOR CONTROL THE LIGHT

Block of the application that helps to develop the application :-

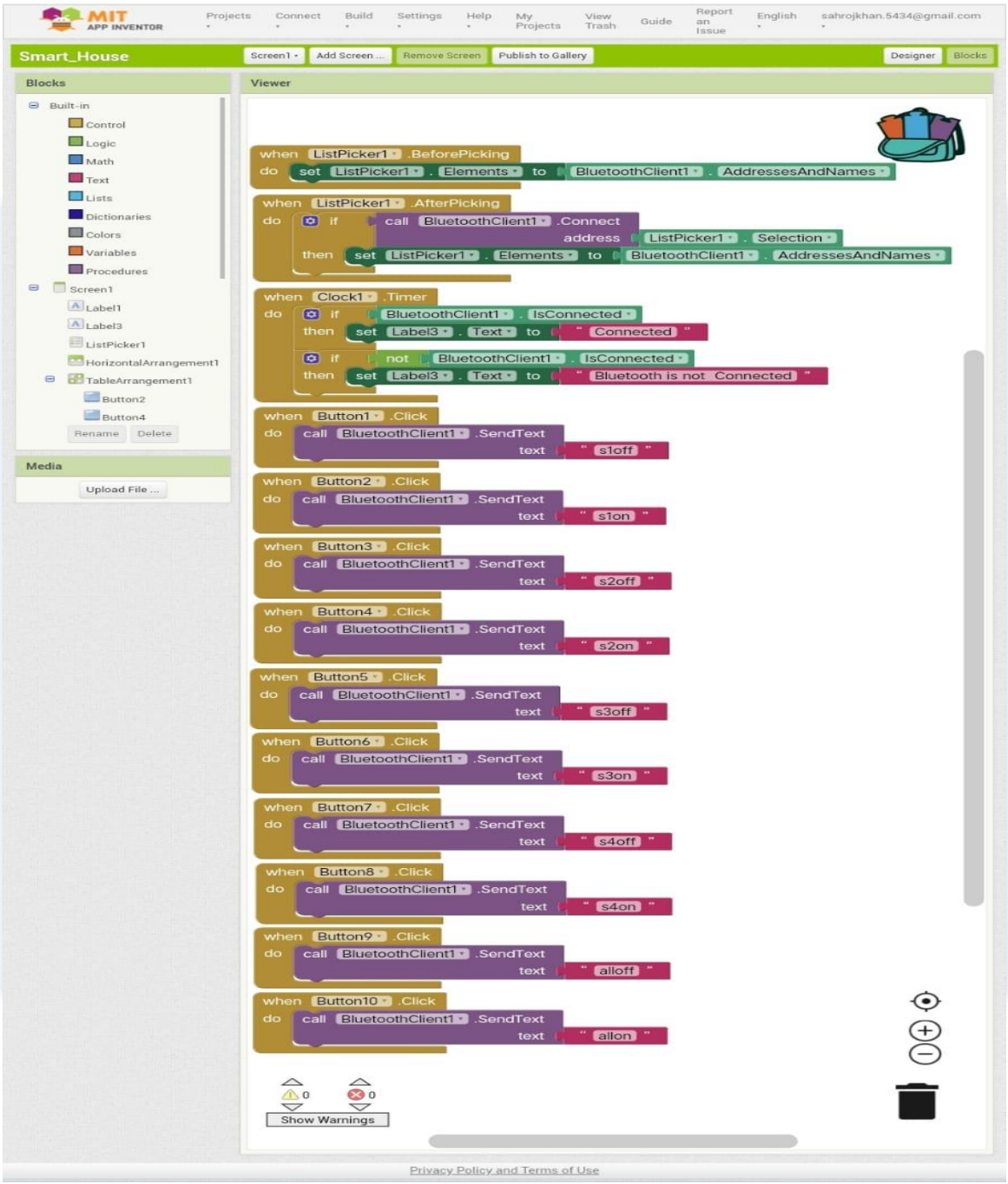


FIG 10:- BLOCK OF THE APP

THE VIEW OF THE PROJECT

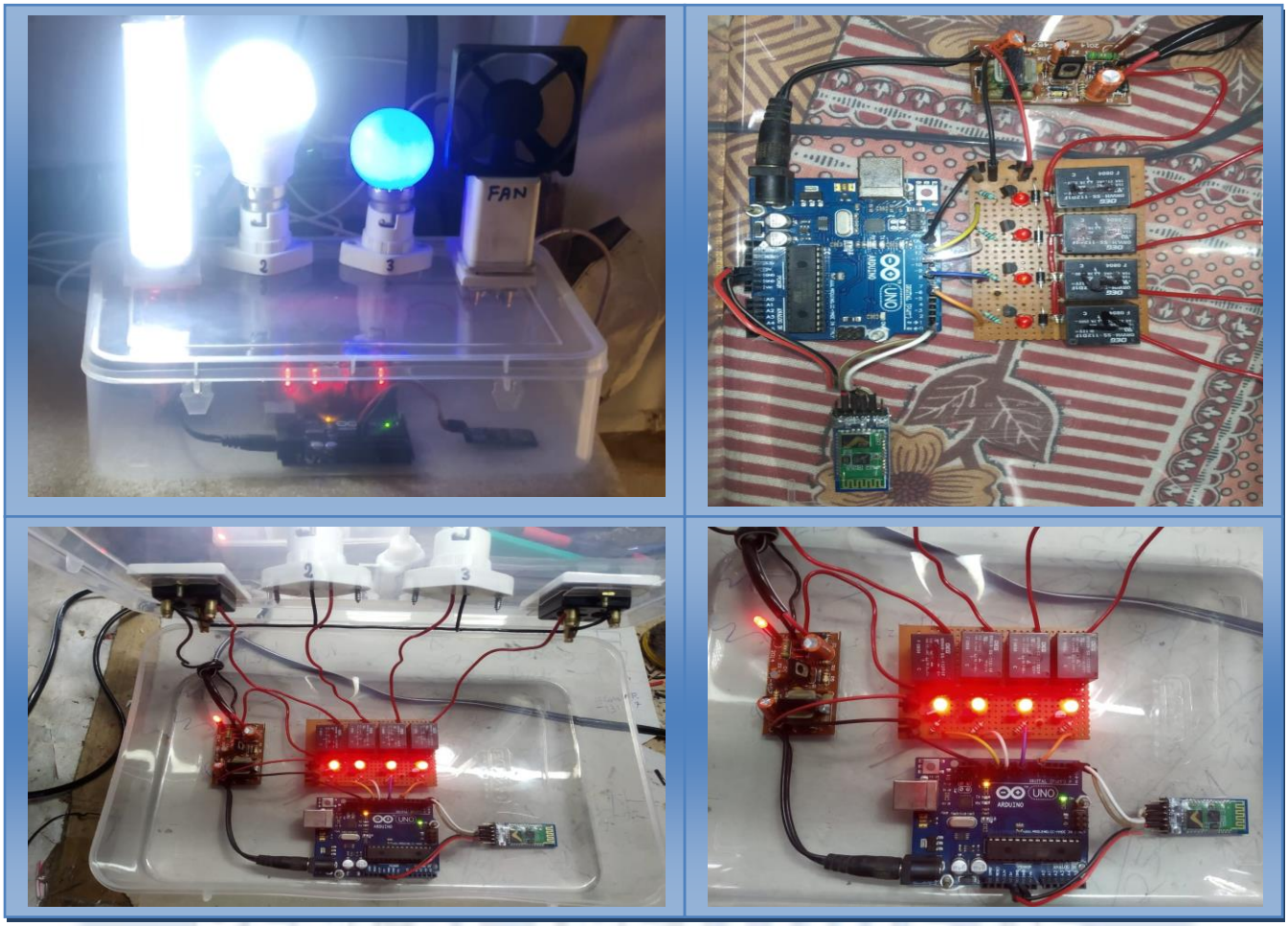


FIG 11:- WHOLE PROJECT

TECHNICAL SPECIFICATIONS FOR THIS PROJECT

- A smartphone or an Android mobile which should have the android app installed in it.
- Bluetooth receiver module – Our project will be connected to the smartphone using Bluetooth technology.
- Controller or the main processing circuit- In this project, Arduino Uno is the main controlling / processing unit.
- Relays to control devices – We have used 12volt relay module. You can buy it online or either you can make it own self.
- Output devices – For the demo purpose, we connected 4 devices to 4 relays (230 v lamp). You can connect any AC/DC devices as your requirement
- The operating range of this project is upto 10m. You can control all the devices smoothly with this range.

ADVANTAGES

- Home automation using Bluetooth and Arduino can prove to be very useful for Elderly/Handicapped people
- A single android smartphone can control multiple devices
- Any android phone can be used, no internet required once the app is downloaded.
- You can control all kind of appliances and devices.
- There is no need for extra training of that person who is using it.
- All the control would be in your hands by using this home automation system.
- There is no time delay for turn on or turn off the connected device.
- This circuit can be used in all conditions.

DISADVANTAGES

- Bluetooth is used in this home automation system, which have a range of 10 to 20 meters so the control cannot be achieved from outside this range
- Application is disconnected after disconnect of the Bluetooth.
- When the new users want to connect, first download application softwareand then configuration must be done.

High power consumption because of bluetooth connectivity

APPLICATIONS

Home Is Where the Smart Is

Every machine-to-machine communication, and you understand you're not the most tech-savvy consumer, it's impossible that you've missed the abundance of home automation products filling the shelves and ads of every home improvement store. Suddenly an ordinary errand for light bulbs will leave you wondering if your lamp could send you a message alerting you that the light bulb needs to be replaced. Furthermore, if your lamp is talking to you, could your refrigerator and sprinkler system be too? Experts say: Yes, the possibilities are endless. If that's the case, where do you begin?

Any day-to-day, repeatable process is automatable with smart home applications. The greater the control and flexibility of these processes, the more energy and cost savings the resident experiences, which are factors anyone who pays utilities strives to moderate. The smart home revolution is likely to be more of an evolution, with the incorporation of one or two home systems at a time, gradually automating our households through smart mobile devices. However, with these elements of efficiency comes the question of ease of use. Will it bring you enjoyment or exasperation? With so many brands and models already available in an evergrowing market, how do you know which is best for you?

Lighting Control: Leaving the Dark Ages and Stepping Into the Light

Smart lighting allows you to control wall switches, blinds, and lamps, but how intuitive is a lighting control system? It turns out, quite; its capabilities are extensive. You're able to schedule the times lights should turn on and off, decide which specific rooms should be illuminated at certain times, select the level of light which should be emitted, and choose how particular lights react through motion sensitivity, as seen with Belkin's WeMo Switch + Motion, which is both affordable and easy to use with its plug-and-play simplicity.

HVAC Regulation: No Longer Burned by Your Heating Bill

As fuel costs rise and the availability and sustainability of our resources becomes a greater concern, heating/cooling our homes efficiently is less a budgetary bonus and more of a necessity. Over the past year, smart thermostats

and automated home heating systems have become more readily available and easily incorporate into any home. Heating and cooling our 46 homes consumes an average of 50% of energy costs yearly, making daily HVAC regulation progressively rewarding. Maintaining a substantial lead among the nearly non-existent competition, the Nest Learning Thermostat, learns your heating and cooling preferences over time, eliminating the need for programming and is accessible from your smartphone app. With automated HVAC you are able to reduce the heat when a room is unoccupied, and increase or decrease it at specific times based on your schedule and occupancy.

Lawn Irrigation Systems: The Grass is Always Greener

A lush and healthy lawn is a source of pride for most homeowners, but the weather doesn't always cooperate and provide the adequate elements for a flourishing landscape. For decades we've relied on sprinkler systems to keep our yards at peak presentation, but at what cost? The average American home spends approximately 30% of their daily water usage on lawn and garden maintenance. Nearly half of that amount is wasted due to inefficiency. If you apply that statistic to the national average, up to 4.5 billion gallons of water is wasted per day through ineffective watering methods. If we reflect upon the monetary impact of this, it results in Americans spending over a thousand dollars a year in water, with a portion of that being waste. The global effects are even greater when you consider the growing concern over climate change and the dramatic decrease in agricultural natural resources. However, sprinkler control systems, like Skydrop, are providing water regulation through real-time communication with local weather data. If a rainstorm develops and deposits two inches of rainwater on your lawn, the automated sprinkler detects the saturation and disables its scheduled watering. Conversely, the system will be alerted to dry conditions and supply the necessary amount of nourishment, without over-watering.

Smart Appliances: What's for Dinner?

Will smart kitchen appliances actually make you a better cook? Maybe. Smart refrigerators, such as LG's Smart ThinQ, allow you to scan grocery store receipts and keep an inventory of your items, and alerts you if an item is about to expire. More impressively, it suggests recipes based on your refrigerator's contents and lets you know when you need to replace items. Smart ovens synch with your smartphone and automatically preheat to the correct temperature

based on a recipe selected from your database. While these appliance options seem a bit superficial and convenience based, there is a conservation factor as well. By automating your kitchen appliance and making them accessible from your smart device, you're able to sever the electricity supplied to unused appliances and reduce your energy consumption and costs. Considering the number of appliances the average household owns; this could save a substantial amount of money over time.

Security Systems: Knock, Knock…

Who's there? The Internet of Things. While efficiency and conservation are certainly IoT benefits, its potential to have improved control over home security is a primary focus. Smart locks, like Kwikset's Kevo, a Bluetooth enabled electronic deadbolt, and various connected home security systems, such as iSmartAlarm, offer a variety of features including door and window sensors, motion detectors, video cameras and recording mechanisms. All of which are connected to a mobile device and accessible via the cloud, thus enabling you to access real-time information on the security status of your home. Naturally, there is a great deal of scrutiny regarding the level of trust in controlling your home's security system via a mobile device, but it begs earnest exploration when weighing the potential benefits and peace of mind it provides homeowners.

FUTURE DEVELOPMENT OF THE PROJECT

- Arduino based device control using Bluetooth on Smartphone project can be enhanced to control the speed of the fan or volume of the buzzer etc.
- Home automation and Device controlling can be done using Internet of Things – IOT technology.
- We can replace Bluetooth by GSM modem so that we can achieve device controlling by sending SMS using GSM modem.

CONCLUSION

The system as the name indicates, 'Home automation' makes the system more flexible and provides attractive user interface compared to other home automation systems. In this system we integrate mobile devices into home automation systems. A novel architecture for a home automation system is proposed using the relatively new communication technologies. The system consists of mainly three components is a BLUETOOTH module, Arduino microcontroller and relay circuits. WIFI is used as the communication channel between android phone and the Arduino microcontroller. We hide the complexity of the notions involved in the home automation system by including them into a simple, but comprehensive set of related concepts. This simplification is needed to fit as much of the functionality on the limited space offered by a mobile device's display. This paper proposes a low cost, secure, ubiquitously accessible, auto-configurable, remotely controlled solution. The approach discussed in the paper is novel and has achieved the target to control home appliances remotely using the WiFi technology to connects system parts, satisfying user needs and requirements. WiFi technology capable solution has proved to be controlled remotely, provide home security and is costeffective as compared to the previously existing systems. Hence we can conclude that the required goals and objectives of home automation system have been achieved. The system design and architecture were discussed, and prototype presents the basic level of home appliance control and remote monitoring has been implemented. Finally, the proposed system is better from the scalability and flexibility point of view than the commercially available home automation systems.

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