

1.INTRODUCTION

1.1 Overview

The Smart home known as House automation, with the use of new technology, to make the domestic activities more convenient, comfortable, secure and economical. Wireless technologies are becoming more popular around the world and the consumers appreciate this wireless lifestyle which gives them relive of the well-known “cable chaos” that tends to grow under their desk.

Now with the embedded Bluetooth technology, digital devices form a network in which the appliances and devices can communicate with each other. Today, home automation is one of the major applications of Bluetooth technology. Operating over unlicensed, globally available frequency of 2.4GHz, it can link digital devices within a range of 10m to 100m at the speed of up to 3Mbps depending on the Bluetooth device class. With this capability of Bluetooth; we propose a home automation system based on Bluetooth technology

According to **Rudolf**, “**the smart home concept is the integration of different services within a home by using a common communication system. It assures an economic, secure and comfortable operation of the home and includes a high degree of intelligent functionality and flexibility.**” The definition is influenced by home automation terminology and does not mention anything about home intelligence.

Implicitly include home intelligence as an automatic control and define a smart home as “**A home or working environment, which includes the technology to allow the devices and systems to be controlled automatically, may be termed a smart home**”

1.2 History of Home Automation

The first home were ideas ,not actual structures .for decades ,science fiction has explored the idea of home automation. home automation came into existence with the invention of electricity.

1901-1920: The invention of home appliances- like refrigerators, washing machine, dishwashers, irons, toaster and garments dryers.

1966-1967: The invention of ECHO IV and Kitchen Computer- the ECHO IV was the first brilliant device. In spite of the fact that it was not industrially sold, the device could register shopping records, control the home's temperature, and turn apparatuses on and off.

2000's: The early 2,000's saw a further ascent in brilliant home innovation, including local tech, home systems administration, and different devices showing up available. A combination of short-range technologies created by Zen-Sys in 2005, this wireless technology creates a mesh network at the user's home and sends signals at the 900 MHz spectrum.

In recent years the Internet of Things (IOT) have enabled shrewd innovation to end up plainly a vital piece of our day by day lives. Everything from refrigerators, to apparatuses, to home security can be controlled with smart home innovation. Home devices, when remotely observed and controlled through the Internet, are an essential constituent of the Internet of Things.

1.3 Block Diagram

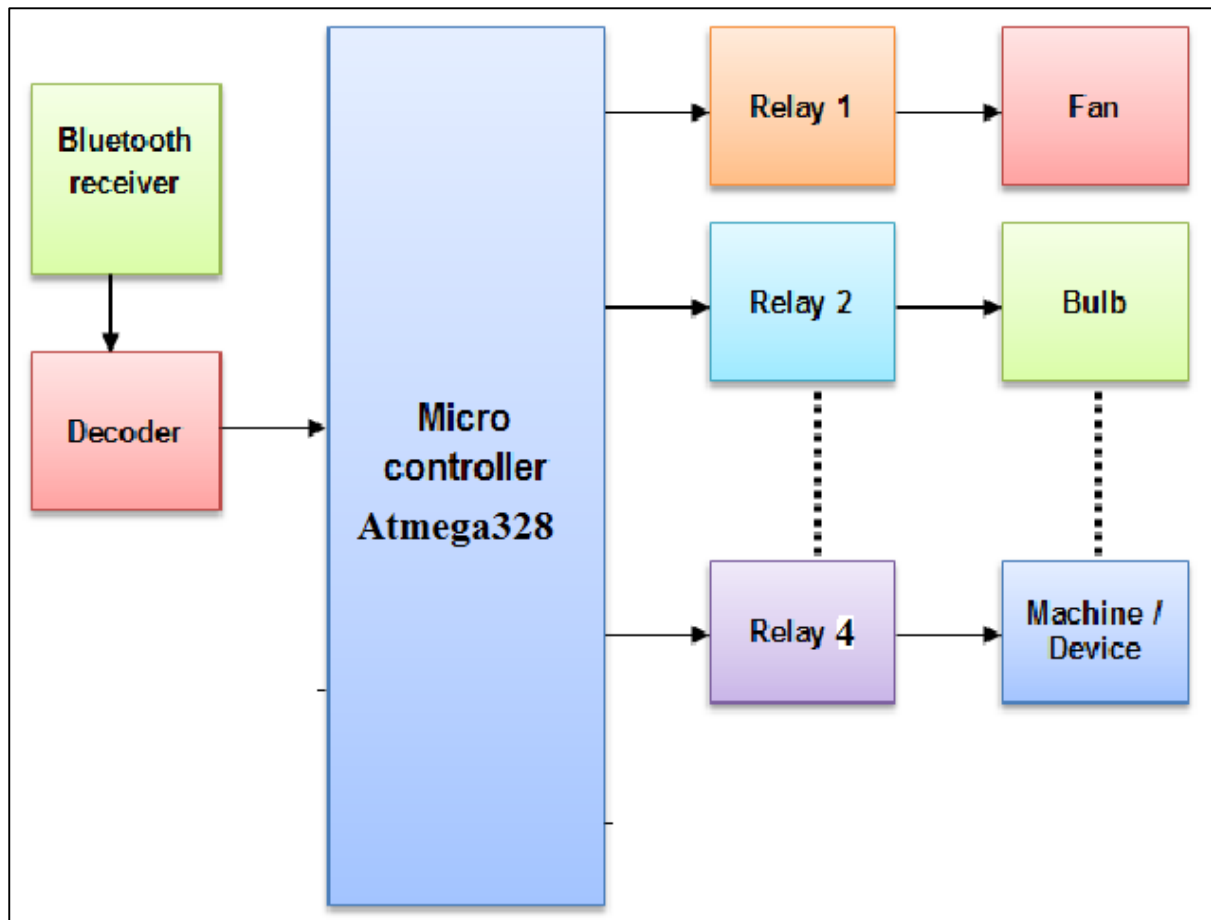


Fig. 1 Block Diagram of HAS

1.4 Description

Now days, 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 remote control ?off- course, yes! But are the available option cost-effective ? if the answer is No ,we have found a solution to it. We have come with a new system called home automation using Bluetooth. This system is super-cost effective and can give the user, the ability to control any device without even spending for remote control. project helps the user to control all electronic devices using his/her smartphone.

The android app sends commands to the controller – Arduino is connected to relays . this relay can be connected to different electronic devises

This project of home automation using Bluetooth and auduino can be used for controlling any AC or DC devices, in the demonstration ,we have used DC fan and DC Bulb .To drive this DC fan and light ,a 9V battery is connected.

1ST Generation: Artificial Intelligence Control:

Here the devices and system are having the capability of interacting with user or the decision making capability .They also contain the voice interaction technique where we feel as like we are communicating with the system.

2nd Generation: Robot Technology

Robot Technology is not a very old concepts.it not only has Artificial Intelligence but also have the power to carry out the tasks that humans cannot perform as rapidly and as easily as the robots can do.

1.5 Features of Home Automation System

In recent years, wireless systems like Remote Control have become more popular in home networking. Also in automation systems, the use of wireless technologies provide several advantages that could not be achieved with the use of a wired network only.

1.6.1 Reduced Installation costs

Installation costs are significantly reduced since no cabling is necessary.

1.6.2 Internet Connectivity

Control devices from anywhere in the world with use mobile phones to control smart home.

1.6.3 Scalable and Expandable

With the Compare of Wireless network is especially useful when, due to New or changed requirements, an extension of the network is necessary.

1.6.4 Security

Easily add devices to create an integrated smart home security system and built-in security ensures integrity of smart home.

2 LITERATURE SURVEY

The literature related to the research topic has been reviewed for last twenty years in order to find out work carried out by various researchers.

There are many systems for remote monitoring and control designed as commercial products or experimental research platforms. It is noticed that most of the research carried out belongs to the following categories

- a. Internet based Monitoring using Servers, GPRS modems, etc. with different approaches.
- b. GSM-SMS protocols using GSM module individually or in combination with Internet Technologies.
- c. Monitoring using Wireless Sensor Networks.
- d. Wireless Monitoring using Bluetooth, Wi-Fi, Zigbee and RF.
- e. Applications have varied widely like Home Automation, Security Systems, Bio-medical applications, Agriculture, Environment, Reservoir, Bridge health monitoring, etc.

In Bluetooth based home automation system the home appliances are connected to the Arduino BT board at input output ports using relay. The program of Arduino BT board is based on high level interactive C language of microcontrollers; the connection is made via Bluetooth. The password protection is provided so only authorized user is allowed to access the appliances. The Bluetooth connection is established between Arduino BT board and phone for wireless communication. In this system the python script is used and it can install on any of the Symbian OS environment, it is portable. One circuit is designed and implemented for receiving the feedback from the phone, which indicate the status of the device.

Many Wireless Technologies like RF, Wi-Fi, Bluetooth and Zigbee have been developed and remote monitoring systems using these technologies are popular due to flexibility, low operating charges, etc. Today Wireless Sensor Network are used into an increasing number of commercial solutions, aimed at implementing distributed monitoring and control system in a great number of different application areas.

(Wijetunge et al., 2008) designed a general purpose controlling module designed with the capability of controlling and sensing up to five devices simultaneously. The communication between the controlling module and the remote server is done using Bluetooth technology. The server can communicate with many such modules simultaneously. The controller is based on ATmega64 microcontroller and Bluetooth communication TDK Blu2i (Class 1) module which provides a serial interface for data communication. The designed controller was deployed in a home automation application for a selected set of electrical appliances.

(Kanma et al., 2003) proposed a home appliance control system over Bluetooth with a cellular phone, which enables remote-control, fault-diagnosis and software-update for home appliances through Java applications on a cellular phone. The system consists of home appliances, a cellular phone and Bluetooth communication adapters for the appliances. The communication adapter hardware consists of a 20MHz 16bit CPU, SRAM and a Bluetooth module. The communication adapter board is connected to the home appliance and to the cellular phone through serial ports. The appliances can communicate with the cellular phone control terminal via Bluetooth SPP.

3 SYSTEM DEVELOPMENT AND METHODOLOGY

3.1 Components used in the system

- Arduino
- 4 channel relay module
- HC-05 Bluetooth Module
- Light bulb, fans
- Power supply(charger)

3.1.1 Arduino



Fig. 2 Arduino

Overview

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

The Uno differs from all preceding boards in that it does not use the FTDI USB-to-serial driver chip. Instead, it features the Atmega8U2 programmed as a USB-to-serial converter.

"Uno" means one in Italian and is named to mark the upcoming release of Arduino 1.0. The Uno and version 1.0 will be the reference versions of Arduino, moving forward. The Uno is the latest in a series of USB Arduino boards, and the reference model for the Arduino platform; for a comparison with previous versions, see the index of Arduino boards.

Memory

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).

The power pins are as follows:

- **VIN.** The input voltage to the Arduino board when it's using an external power source (as opposed to 5 volts from the USB connection or other regulated power source). You can supply voltage through this pin, or, if supplying voltage via the power jack, access it through this pin.
- **5V.** The regulated power supply used to power the microcontroller and other components on the board. This can come either from VIN via an on-board regulator, or be supplied by USB or another regulated 5V supply.
- **3V3.** A 3.3 volt supply generated by the on-board regulator. Maximum current draw is 50 mA.
- **GND.** Ground pins.

Communication

The Arduino Uno has a number of facilities for communicating with a computer, another Arduino, or other microcontrollers. The ATmega328 provides UART TTL (5V) serial communication, which is available on digital pins 0 (RX) and 1 (TX).

Microcontrollers ATmega328

Block Diagram

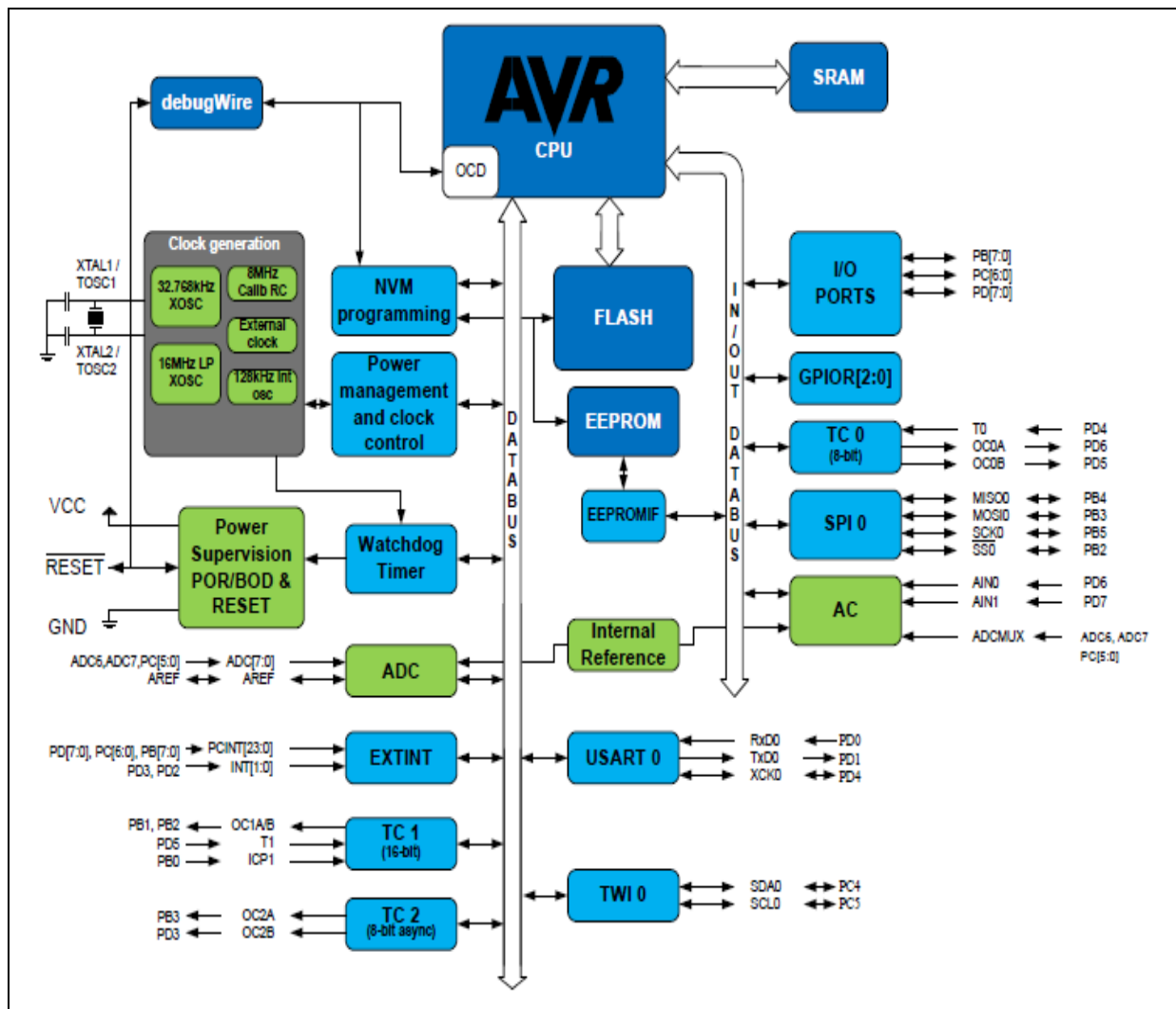


Fig 3 .Block Diagram Microcontrollers ATmega328

Pin Diagram Microcontrollers ATmega328

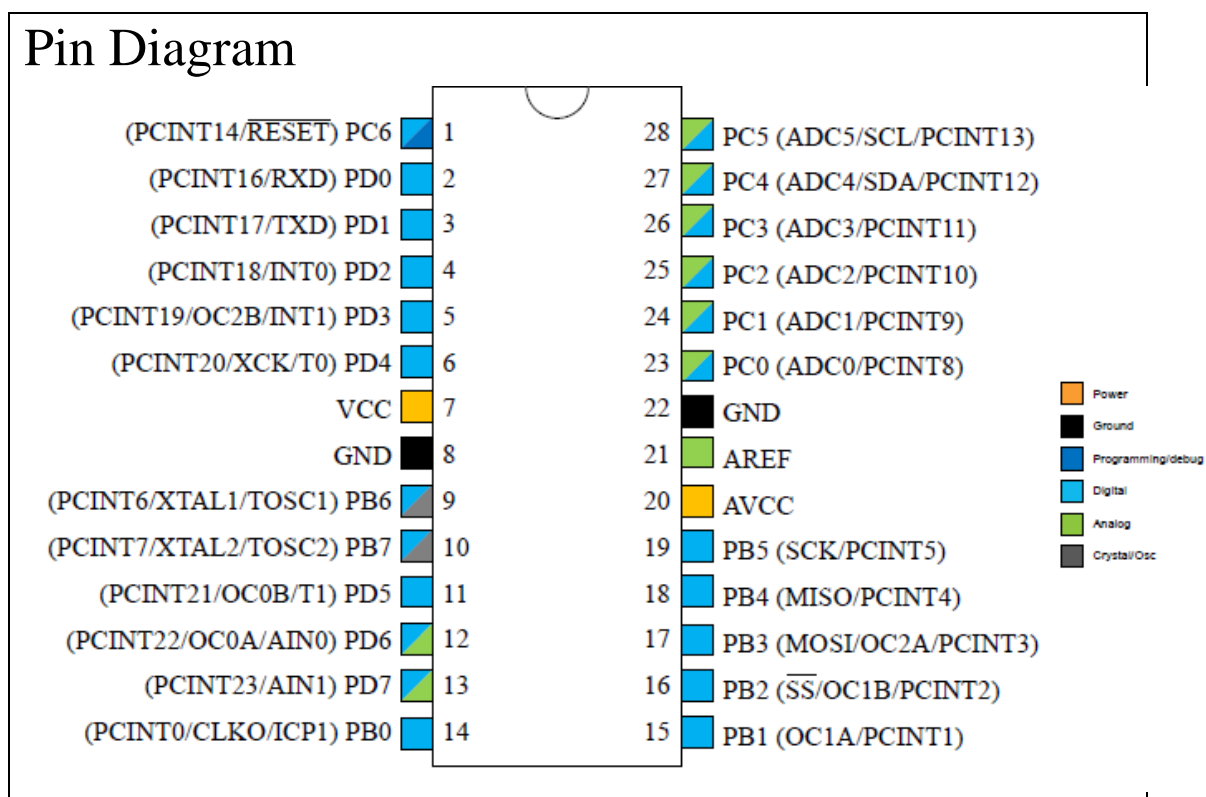


Fig 4.Pin diagram

Pin Description

1. VCC

Digital supply voltage.

2. GND

Ground.

3. Port B (PB[7:0]) XTAL1/XTAL2/TOSC1/TOSC2

Port B is an 8-bit bi-directional I/O port with internal pull-up resistors (selected for each bit). The Port B output buffers have symmetrical drive characteristics with both high sink and source capability. As inputs, Port B pins that are externally pulled low will source current if the pull-up resistors are activated. The Port B pins are tri-stated when a reset condition becomes active, even if the clock is not running.

Depending on the clock selection fuse settings, PB6 can be used as input to the inverting Oscillator

amplifier and input to the internal clock operating circuit. Depending on the clock selection fuse settings, PB7 can be used as output from the inverting Oscillator amplifier.

If the Internal Calibrated RC Oscillator is used as chip clock source, PB[7:6] is used as TOSC[2:1] input for the Asynchronous Timer/Counter2 if the AS2 bit in ASSR is set.

4. Port C (PC[5:0])

Port C is a 7-bit bi-directional I/O port with internal pull-up resistors (selected for each bit). The PC[5:0]

output buffers have symmetrical drive characteristics with both high sink and source capability. As inputs,

Port C pins that are externally pulled low will source current if the pull-up resistors are activated. The Port

C pins are tri-stated when a reset condition becomes active, even if the clock is not running.

5. PC6/RESET

If the RSTDISBL Fuse is programmed, PC6 is used as an I/O pin. Note that the electrical characteristics

Of PC6 differ from those of the other pins of Port C.

If the RSTDISBL Fuse is programmed, PC6 is used as a Reset input. A low level on this pin for longer

Than the minimum pulse length will generate a Reset, even if the clock is not running. Shorter pulses are

Not guaranteed to generate a Reset.

The various special features of Port C are elaborated in the Alternate Functions of Port C section.

6. Port D (PD [7:0])

Port D is an 8-bit bi-directional I/O port with internal pull-up resistors (selected for each bit). The Port D

Output buffers have symmetrical drive characteristics with both high sink and source capability. As inputs,

Port D pins that are externally pulled low will source current if the pull-up resistors are activated. The Port

D pins are tri-stated when a reset condition becomes active, even if the clock is not running.

7. AVCC

AV_{CC} is the supply voltage pin for the A/D Converter, PC [3:0], and PE [3:2]. It should be externally Connected to V_{CC}, even if the ADC is not used. If the ADC is used, it should be connected to V_{CC} through A low-pass filter. Note that PC [6:4] use digital supply voltage, V_{CC}.

8. AREF

AREF is the analog reference pin for the A/D Converter.

9. ADC [7:6] (TQFP and VFQFN Package Only)

In the TQFP and VFQFN package, ADC [7:6] serve as analog inputs to the A/D converter. These pins are powered from the analog supply and serve as 10-bit ADC channels.

3.1.2 4-channel relay module

This is a 5V 4-channel relay interface board, and each channel needs a 15-20mA driver current. It can be used to control various appliances and equipment with large current. It is equipped with high-current relays that work under AC250V 10A or DC30V 10A. It has a standard interface that can be controlled directly by microcontroller.

Principle

From the picture below, you can see that when the signal port is at low level, the signal light will light up and the optocoupler 817c (it transforms electrical signals by light and can isolate input and output electrical signals) will conduct, and then the transistor will conduct, the relay coil will be electrified, and the normally open contact of the relay will be closed. When the signal port is at high level, the normally closed contact of the relay will be closed. So you can connect and disconnect the load by controlling the level of the control signal port.

Features :

- Size: 75mm (Length) * 55mm (Width) * 19.3mm (Height)
- Weight: 61g
- PCB Color: Blue
- There are four fixed screw holes at each corner of the board, easy for install and fix. The diameter of the hole is 3.1mm
- High quality Single relay is used with single pole double throw, a common terminal, a normally open terminal, and a normally closed terminal
- Optical coupling isolation, good anti-interference.
- Closed at low level with indicator on, released at high level with indicator off
- VCC is system power source, and JD_VCC is relay power source. Ship 5V relay by default. Plug jumper cap to use
- The maximum output of the relay: DC 30V/10A, AC 250V/10A

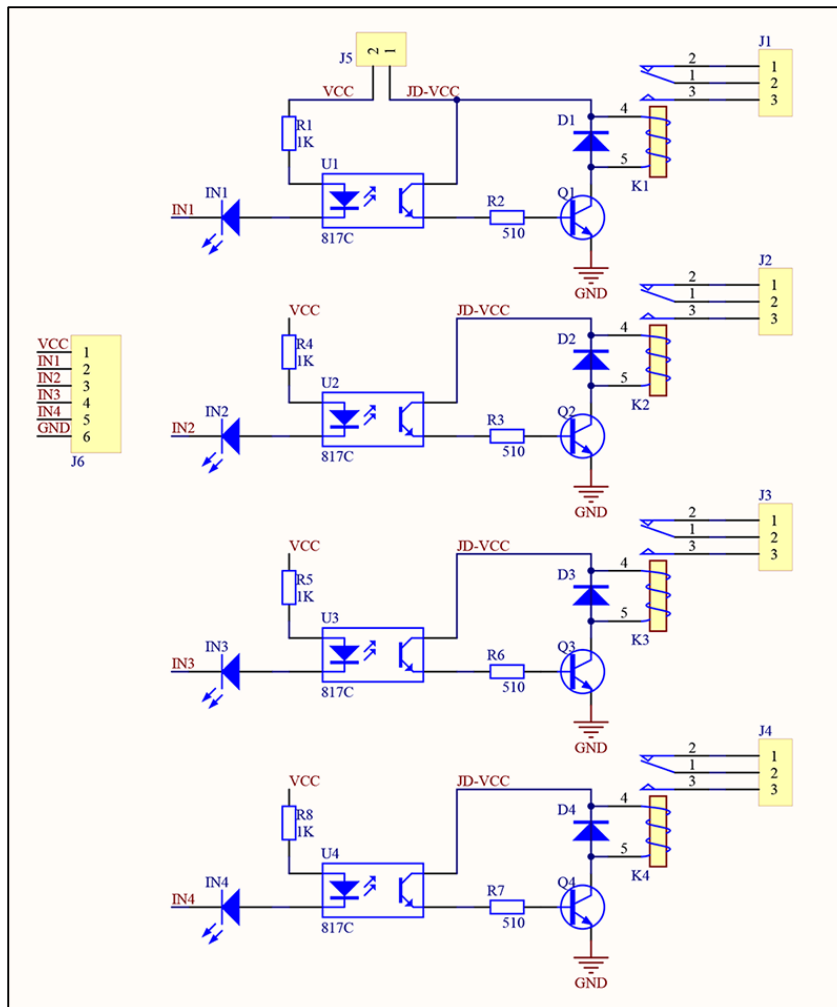


Fig 5 schematic of relay driver

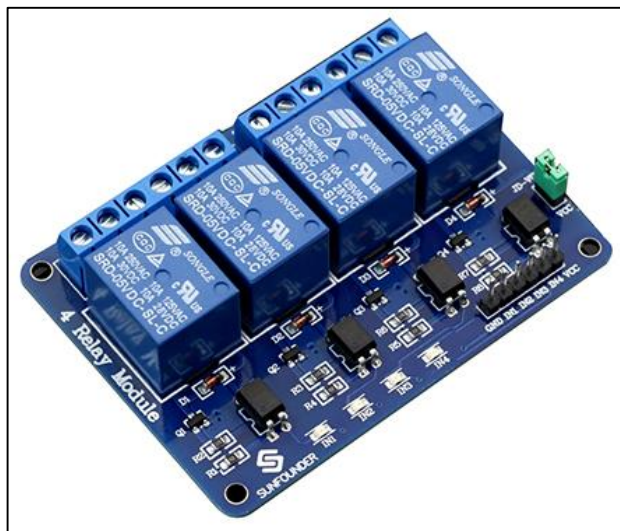


Fig 6 Relay Driver

3.1.3 HC-05 Bluetooth Module

The HC-05 Bluetooth Module has 6 pins- VCC, GND, TX, RX, Key, and LED. It comes pre-programmed as a slave, so there is no need to connect the Key pin, unless you need it change it to Master Mode.

The major difference between Master and Slave modes is that, in Slave mode the Bluetooth module cannot initiate a connection, it can however accept incoming connections. After the connection is established the Bluetooth module can transmit and receive data regardless of the mode it is running in. If you are using a phone to connect to the Bluetooth module, you can simply use it in the Slave mode. The default data transmission rate is 9600kbps.

The range for Bluetooth communication is usually 30m or less. The module has a factory set pin of “1234” which is used while pairing the module to a phone.

Overview

The HC-05 Bluetooth Module [[Product link](#)] can be used in a Master or Slave configuration, making it a great solution for wireless communication. You can use it simply for a serial port replacement to establish connection between MCU and GPS, PC to your embedded project, etc.

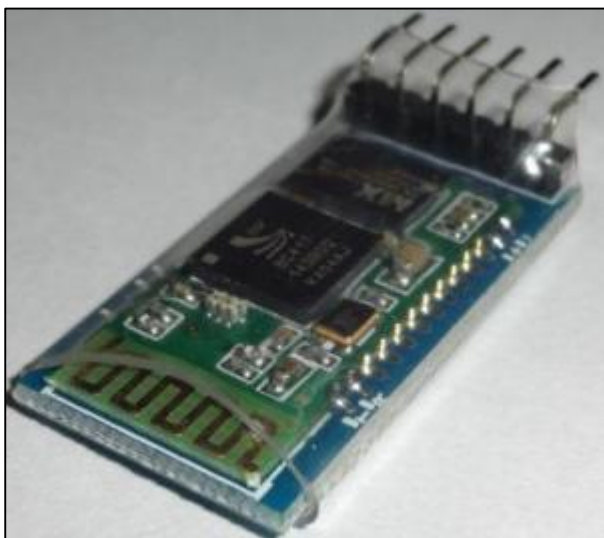


Fig 7 HC-05 Bluetooth Module

Features

- Protocol: Bluetooth Specification v2.0+EDR
- Frequency: 2.4GHz ISM band
- Modulation: GFSK
- Emission power: $\leq 4\text{dBm}$, Class 2
- Sensitivity: $\leq -84\text{dBm}$ 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: $-20 \sim +75$ Centigrade

Pin Connections

HC-05	GND	Vcc	TX	RX	Key	LED
Arduino	GND	3.3V/5V	RX/SoftRx	TX/SoftTx	Pin 9	Not Connected



Fig 8 Bluetooth Connectivity

- The operating frequency for Bluetooth is between 2400 and 2483.5 MHz, or 2402 and 2480 MHz including guard bands 2 MHz wide at the bottom end and 3.5 MHz wide at the top. They usually range from 10-100 meters
- For the communication between mobile phone and microcontroller Bluetooth module is used.
- HC-05 is low power 1.8 V operation and is easy to use with Bluetooth SPP(serial port protocol).
- Serial port Bluetooth module have a Bluetooth 2.0 + EDR (enhanced data rate), 3Mbps modulation with complete 2.4GHZ radio transceiver and base band. Using Bluetooth profile and android platform architecture different type of Bluetooth applications can be developed.

3.1.4 Light bulb, fans



Fig 9 Light bulb, fans

3.1.5 Power supply (charger)

- A device or system that supplies electrical or other types of energy to an output load or group of loads is called a power supply unit
- Here In our project we needed a 5v DC power supply for all electronics involved in the project.
- This requires step down transformer , rectifier, voltage regulator, and filter circuit for generation of 5v DC power

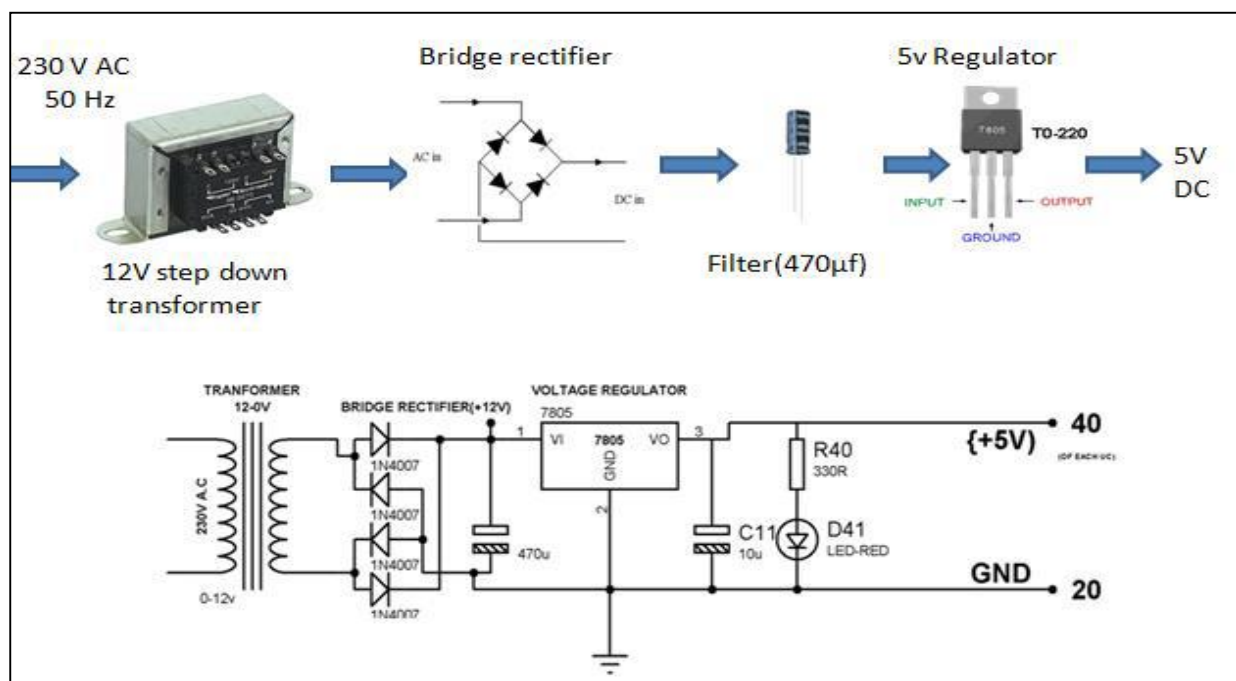


Fig 10 Power supply

Charger



Fig 11 charger

Features

Inno Switch-CH - Industry first AC/DC ICs with isolated, safety rated integrated feedback

- All the benefits of secondary side control with the simplicity of primary side regulation
- $\pm 3\%$ CV, $\pm 5\%$ CC regulation
- Insensitive to transformer variation
- Transient response independent of load timing
- Smaller, lower cost output capacitors
- < 10 mW no-load input power
- Cable voltage drop compensation
- Built in synchronous rectification for high efficiency

3.2 Comparison of Different Home Automation System

System	Cost	Speed	Real time
Bluetooth	Low	High	Yes
Voice Recognition	Low	High	Yes
ZigBee	Low	High	Yes
GSM	High	Slow	No
Internet, Wi-Fi	High	Slow	Yes
EnOcean	Low	High	Yes

3.3 Comparison of ATMEGA 328 and 8051

AT mega 328	8051
It having inbuilt EPROM	It having inbuilt EPROM
It have 16 MHz crystal Oscillator	It have 12 MHz crystal Oscillator
Its has 6 analog pins and 13 digital pins	All Digital pins
It uses lesser no. of clock cycles for instruction execution	It uses more no. of clock cycles for instruction execution
Having ADC	No ADC
Flash mem.32KB	Flash mem. 2KB

Table no.2:Comparison of ATMEGA 328 and 8051

4 ANDROID AND BLUETOOTH CONTROL FOR ARDUINO

APP

- Android is an open-source operating system which mean that any manufacturer can use it in their phone free of charge.
- It was built to be truly open.
- Android is built on the open Linux Kernel .Further more , it utilizes a custom JAVA virtual machine that was designed to optimize memory and hardware resources in a mobile environment

4.1 Android Application on Mobile Phones

- An android app is meant for phones with an android based operating systems. They can be downloaded from the android app Market which is pre-loaded on every android phone.
- Blue control APP and Bluetooth Spp APP are some examples.

4.2 Android Application Operated Bluetooth

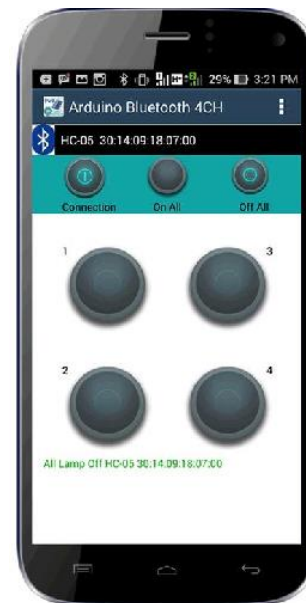
- The Android platform includes support for the Bluetooth network stack, which allows a device to wirelessly exchanged at a with other Bluetooth devices.
- The application frame work provides access to the Bluetooth functionality through the Android Bluetooth APIs.

○ Android Application for Home Automation

1.Control home electrical system using Smartphone with android application and Blue Switch Module.

2.Blue Switch Module's outputs to directly drive loads like bulbs ,Lamps ,Sockets ,Television ,Fans etc.

4.3 Bluetooth control for Arduino app



The description of Bluetooth Control for Arduino

Arduino Bluetooth Relay 4CH App is android application which is used to control 4 channel relay module via Bluetooth with Bluetooth serial communication module support HC-05, HC-06, or HC-07, Using Arduino or AVR

i am test with arduino UNO and serial communication library to connected RX pin 10 and TX pin 11.

you can use arduino uno or arduino leonardo etc...

5 SYSTEM OPERATION

5.1 Working

Now day's people have smartphone with them all time so it is possible to control the home appliances using the smartphone in our pocket by using the smartphone we control the home appliances by seating one place & not moving any where else

For controlling the home appliances by smart phone.we used we used following component Arduino, relay driver, Bluetooth module, and four components etc. we need "Bluetooth controller" app for controlling the appliances first of all we have done our connection as per block diagram and circuit diagram. Then build a program into the Arduino board by using the Arduino connector.

When we supply the Arduino board the all the component i.e. relay driver Bluetooth module starts Blinking. Then we have to connect pair the Bluetooth module with our smart phone, then by opening the Bluetooth controller app check that the Bluetooth module is connected or not connected with our smartphone. There are several switches are provided in Bluetooth controller app. first of all press the connection switch ,as soon as you press these switch red light glow on this switch means now you can enter the inputs provided on Bluetooth controller app. There four switches are provided on this app. Each switch have two function. When we press the switches then device connected at load will glow and if we press same switch again then device connected at load turn off.

Except this four switches another two switches are provided for more efficiency. The name are ON ALL and OFF ALL switch. If we press the ON ALL switch then all devices connected at load turns ON and if we press OFF ALL switch then all devices connected at load turn OFF.

For more security we have provided the password for Bluetooth module means it is highly securable. If we want to change password then it is easy to change.

In this project we can connect any four devices at load as per user choice. The range of Bluetooth module is 10meter means it is perfect to use in our home for those people have any physical disability. It is easy to handle for any people who are educated or uneducated, all people can handle this app easily.

All the connection in our project are easy and simple so that there is no problem of short circuit. The cost of project is very low so all people should purchase these and make India Home Automated Country in world.

5.2 Circuit connections

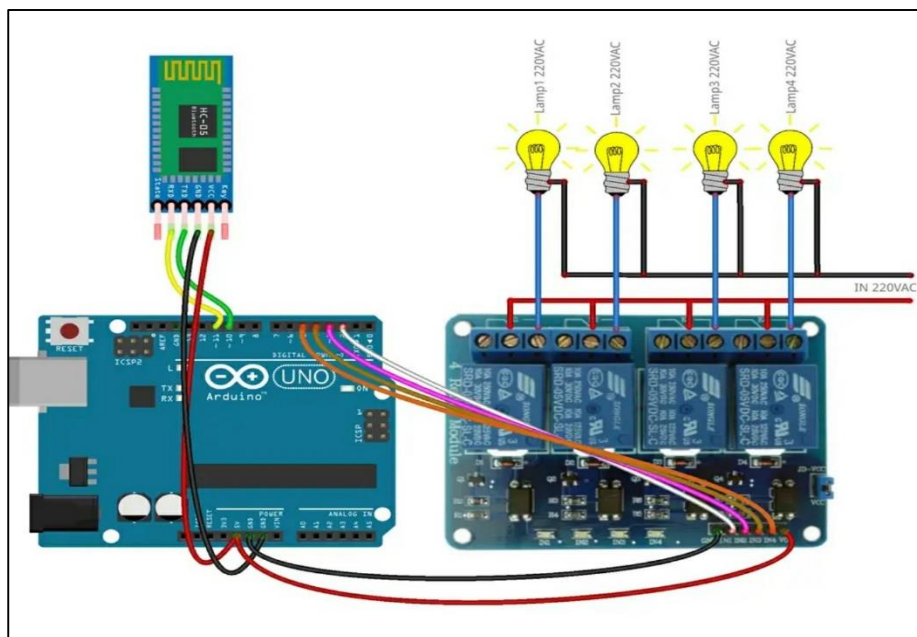
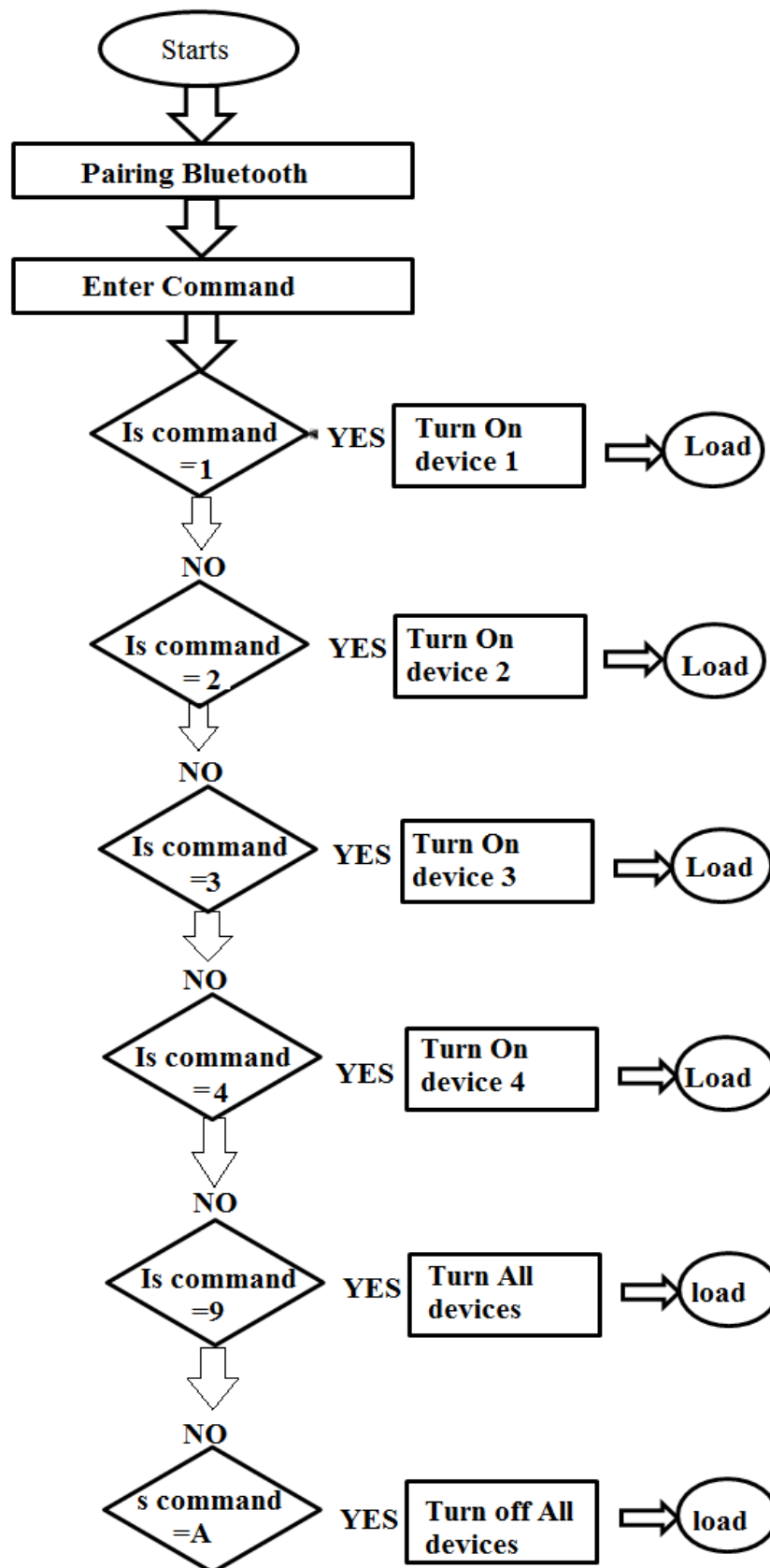
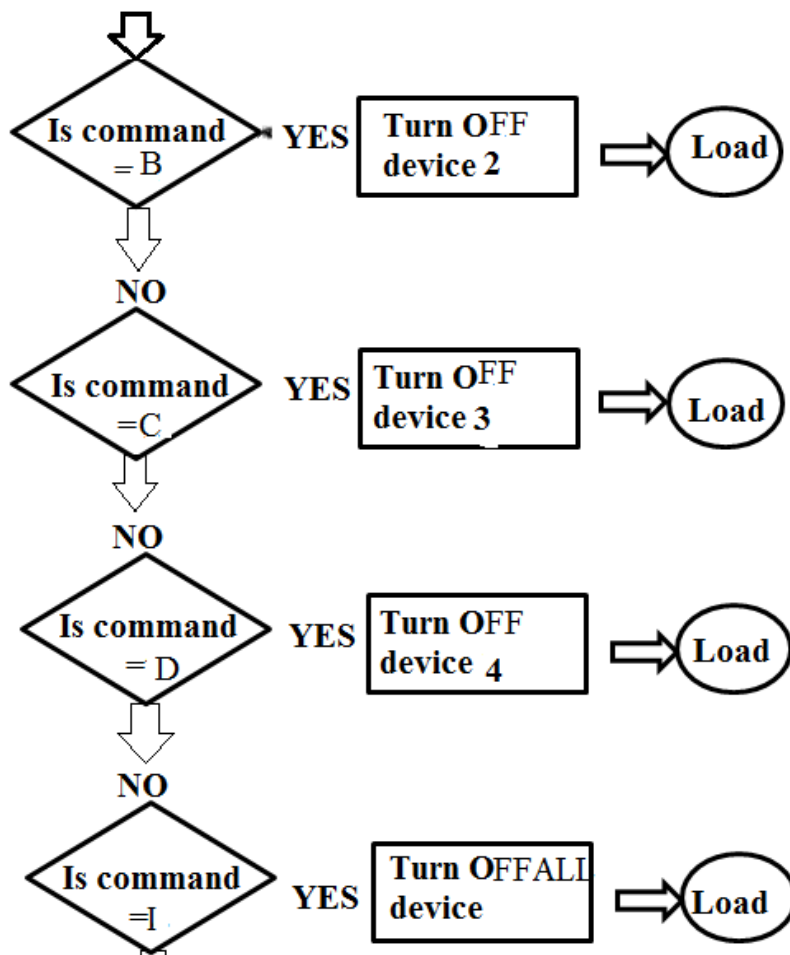


Fig 12 Circuit connections

IN these we connect Bluetooth module to Arduino and 4 channel relay driver is connected to Arduino. The VCC and GND are connected on Breadboard. RX and TX pin of Arduino are connected to TX and RX pin of Bluetooth module. The pin no.2 of Arduino is connected to the IN1 pin of relay driver. The pin no.3 of Arduino is connected to IN2 pin of relay driver. The pin no.4 of Arduino is connected to IN3 pin of relay driver. The pin no.5 of Arduino is connected to IN4 pin of relay driver. The two VCC in the relay driver are connected to the row of Breadboard. In the output side of relay driver we connect the 4 load across the common and normal connected terminals. The relay driver is use as switch for connecting power supply to low. We have used one fan and 3 bulbs as load. You can use any devices for connecting the load. In the relay board there are 4 leads provided checking the connections. It is another facility provided by relay board.

5.3 Flow chart





5.4 Codes

```
int load1=2;
int load2=3;
int load3=4;
int load4=5;
char val;
void setup()
{
  pinMode(load1,OUTPUT);
  pinMode(load2,OUTPUT);
  pinMode(load3,OUTPUT);
  pinMode(load4,OUTPUT);
  digitalWrite(load1,HIGH);
  digitalWrite(load2,HIGH);
  digitalWrite(load3,HIGH);
  digitalWrite(load4,HIGH);
  Serial.begin(9600);
}
void loop()
{
  if(Serial.available()>0)
  {
    val=Serial.read();
    Serial.println(val);
  }
  if(val=='1')
  {
    digitalWrite(load1,LOW);
  }
  else if(val=='2')
  {
    digitalWrite(load2,LOW);
  }
  else if(val=='3')
  {
    digitalWrite(load3,LOW);
```

```
}  
else if(val=='4')  
{  
digitalWrite(load4,LOW);  
  
}  
else if(val=='9')  
{  
digitalWrite(load1,LOW);  
digitalWrite(load2,LOW);  
digitalWrite(load3,LOW);  
digitalWrite(load4,LOW);  
}  
else if(val=='A')  
{  
digitalWrite(load1,HIGH);  
}  
else if(val=='B')  
{  
digitalWrite(load2,HIGH);  
}  
else if(val=='C')  
{  
digitalWrite(load3,HIGH);  
}  
else if(val=='D')  
{  
digitalWrite(load4,HIGH);  
}  
else if(val=='I')  
{  
digitalWrite(load1,HIGH);  
digitalWrite(load2,HIGH);  
digitalWrite(load3,HIGH);  
digitalWrite(load4,HIGH);  
}  
}
```

6 RESULT AND CONCLUSION

6.1 Advantages of HAS

Home automaton has been around for several years, with systems that let you control the lighting, temperature, door locks, window curtains, appliances and much more. Earlier years of automation, its considered a luxury but as smart phones and tablets become increasingly common to every household, home automation is becoming easier to use and dramatically more affordable. Here are the top 5 advantages why you should install home automation in your home.

1. **Safety.** The ability to control small appliances and lighting with your fingertips anywhere you are will add safety in your home. You can make sure appliances are off when its needed to be off and on when its needed to be on.

2. **Security.** The ability to lock the door through your phone is one of the greatest benefits of home automation. This will give you peace of mind knowing that the door is close and not guessing. The fact that you can be alerted each time someone enters your home also allows you to monitor who is entering your home at all times, especially when you are not there.

3. **Convenience.** The ability to control everything with your fingertips is very convenient. You never leave the house without your wallet, keys and your smart phone. With our smart phone always with us, we can easily monitor our home and control everything with just touch of a finger.

4. **Saves Time.** Since we are living in a very fast-paced environment, we don't even have time to worry about our home. With home automation, we can save time going back to our home and make sure everything is order, like if the kids close the door from school or turn on the lights when you get home.

5. **Save Money.** This is the biggest advantage of home automation. With the ability to control the light, whether dimming or turning on/off on specific time will saves homeowner a great ton of money. You can save money through household temperature, with proper automation in window shades and automated thermostat. In addition, you can save gas,

by not driving back home if you forgot to turn off appliances or lock the door.

6.2 Disadvantages of HAS

Cost : Most families are able to purchase smart home products, but that doesn't mean it won't leave a dent in your wallet. You can purchase the products one at a time and it won't seem like too much,\$50 here ,\$300there,but by the time you the smart home system you want ,you will likely have spent a larger sum than you would have if you had purchased non-smart products.

Reliability : A smart home will be extremely reliant on your internet connection .if your connection drops you'll be left with a lot of smart products that wont work .Additionally, wireless signals can possibly be interrupted by other electronic in your home and cause some of your smart products to function slowly or not at all

-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.

-No. of electrical appliances that can be controlled by this circuits is limited

6.3 Application

1) 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 rooms should be illuminated at certain times ,select the level of light which should be emitted.

2) HVAC Regulation: No longer Burned by your heating bill

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.

3) Lawn Irrigation System: The grass is always greener

A lush and healthy lawn is a source of pride for most homeowners ,but the weather doesn't, but the weather doesn't always cooperate and provide the adequate elements for a flourishing landscape. If a rainstorm develops and deposits two inches of rainwater on your lawn ,the automated sprinkler detects two the saturation and disables its scheduled watering. Conversely ,the system will be alerted to dry conditions and the necessary amount of nourishment ,without over-watering

6.4 Future scope

Development of any technology never stops at a point .home automation is an industry that largely started with X10 devices in 1980. Today's, we believe the future of home automation will very much ride the digital age and develop along with the computer and networking systems in the years to come.

Technologies like Google Glass," iver" Android and Wi-Fi, Robotics will play a major role in the development of this field of automation .artificial Intelligence, high speed internet smart phones and remote access to the housing system will lead to convenience and safety of house by security concerns will also arise .Home Automation is the gift of technology to the mankind .proper use and development in this field will fulfill our requirement and make our lives easy ...!!!

6.5 Conclusion

Home Automation is undeniably a resource which can make a home environment automated.

People can control there electrical device via home automation devices and setup controlling actions through mobile.

In future this product may have high potential for marketing.

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Picture Gallery

