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BHUBANANANDA ORISSA SCHOOL OF ENGINEERING,CUTTACK
Government of Odisha

A PROJECT REPORT ON

BLUETOOTH BASED HOME AUTOMATION

Submitted in partial fulfilment of the

Requirement for the diploma in E&TC

Engineering

BHUBANANDA ODISHA SCHOOL OF ENGINEERING
CUTTACK-ESTD.1923
नधर्म ग्लानि जिज्ञासु

DEPARTMENT OF E&TC ENGINEERING

BHUBANANANDA ODISHA SCHOOL OF ENGINEERING,

CUTTACK-753007

2023-2024

ACKNOWLEDGEMENT

We would like to express our special thanks of gratitude to our teacher Mr. Mihir Kumar Mohanty as well as our principle Dr. Hrusikesh Mohanty who gave us the golden opportunity to do this wonderful project on the topic "Bluetooth based home automation" which also helped us in doing a lot of research and we came to know about so many new things we are really thankful to them. Secondly, we would also like to thank our parents and friends who helped us a lot in finalizing the project within the limited time frame.

DEPARTMENT OF E&TC ENGINEERING

BHUBANANANDA ODISHA SCHOOL OF ENGINEERING,

CUTTACK-753007

2023-2024

DECLARATION

We are here declaring that the project report entitled "Bluetooth based home automation" submitted to the BOSE Cuttack is a record of the original work done by us under the guidance of Mr. Mihir Kumar Mohanty and lectures of E&TC Engineering, Bhubananda Odisha School of Engineering, Cuttack.

So, therefore, it is prepared through hard work and research and has not been submitted to institution.

SUBMITTED BY:

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CERTIFICATE

This is to certify that in this project report entitled "Bluetooth based home automation" submitted by the students been carried out under my supervision in partial fulfilment for the Diploma in "Electronic & Telecommunication Engineering". During the session (2023-2024) in E&TC of BHUBANANANDA ODISHA SCHOOL OF ENGINEERING and this work is the original work of the above students.

SIGNATURE OF HOD

SIGNATURE OF GUIDE

ABSTRACT

Bluetooth-based home automation systems have emerged as a prominent solution for enhancing the convenience, security, and energy efficiency of modern homes. Leveraging Bluetooth technology, these systems enable users to control various household devices and appliances wirelessly through smartphones, tablets, or dedicated remote controls. This paper explores the architecture, functionality, and benefits of Bluetooth-based home automation, highlighting its applications, advantages, and potential challenges.

Bluetooth technology, a widely adopted wireless communication standard, offers a range of features suitable for home automation, including low power consumption, reliable short-range communication, and secure data transfer. These characteristics make it an ideal choice for integrating with smart home devices such as lighting systems, thermostats, security cameras, door locks, and home entertainment systems. The core components of a Bluetooth-based home automation system typically include a central hub or gateway, Bluetooth-enabled devices, and a user interface for control and monitoring.

One of the key advantages of Bluetooth-based home automation is its ease of installation and use. Unlike traditional wired systems, Bluetooth solutions do not require extensive rewiring or professional installation, making them accessible to a wider range of users, including renters and those living in older buildings. The plug-and-play nature of Bluetooth devices allows users to set up and expand their home automation systems with minimal technical expertise.

The interoperability of Bluetooth technology also contributes to its growing popularity in home automation. Bluetooth-enabled devices from different manufacturers can often work together seamlessly, thanks to standardized communication protocols. This interoperability not only enhances user convenience but also fosters innovation and competition among device manufacturers, leading to a broader selection of compatible products and features.

CONTENTS

INTRODUCTION

Home automation is revolutionizing how we interact with our living spaces, offering enhanced convenience, security, and energy efficiency. Among various technologies driving this revolution, Bluetooth-based systems stand out due to their simplicity, low power consumption, and ease of integration. This introduction focuses on a practical implementation of Bluetooth-based home automation using widely accessible components: the Arduino Uno, a Bluetooth module, and a relay module.

Overview of Bluetooth-Based Home Automation:
Bluetooth technology facilitates wireless communication between devices within a short range. This capability makes it ideal for home automation, where users can control appliances and systems from their smartphones or other Bluetooth-enabled devices. By using Bluetooth, homeowners can manage lights, fans, security systems, and more, contributing to a smarter, more connected home environment.

System Architecture and Workflow:
The Bluetooth-based home automation system consists of the following primary components and workflow:

User Interface: The user interacts with the system through a smartphone application. The app sends commands via Bluetooth to the Bluetooth module connected to the Arduino Uno.

Bluetooth Communication: The Bluetooth module receives the commands and forwards them to the Arduino Uno through serial communication.

Arduino Processing: The Arduino Uno processes the commands and determines which devices to control. It then sends the appropriate signals to the relay module.

Device Control: The relay module activates or deactivates the connected devices based on the signals received from the Arduino. This could include turning on or off lights, fans, or other appliances.

COMPONENTS REQUIRED

1. ARDUINO NANO (ATmega328P)
2. 8 CHANNEL RELAY MODULE(5v)
3. BLUETOOTH MODULE (HC05)
4. POWER SUPPLY(5V)
5. LOAD (BULB 220V)
6. CONNECTING WIRES FOR DC SIGNAL TRANSMISSION (24 AWG)
7. CONNECTING WIRES FOR AC SIGNAL TRANSMISSION (18 AWG)
8. TWO WAY SWITCHES (6 AMP)
9. MINIATURE CIRCUIT BREAKER (10 AMP)

DESCRIPTION

ARDUINO UNO

Arduino is an open source computer hardware and software company, project, and usercommunity that designs and manufactures single-board microcontrollers and microcontroller kits for building digital devices and interactive objects that can sense and control objects in the physical and digital world. The project's products are distributed as open-source hardware and software, which are licensed under the GNU Lesser General Public License (LGPL) or the GNU General Public License (GPL), permitting the manufacture of Arduino boards and software distribution by anyone. Arduino boards are available commercially in preassembled form, or as do-it-yourself (DIY) kits.

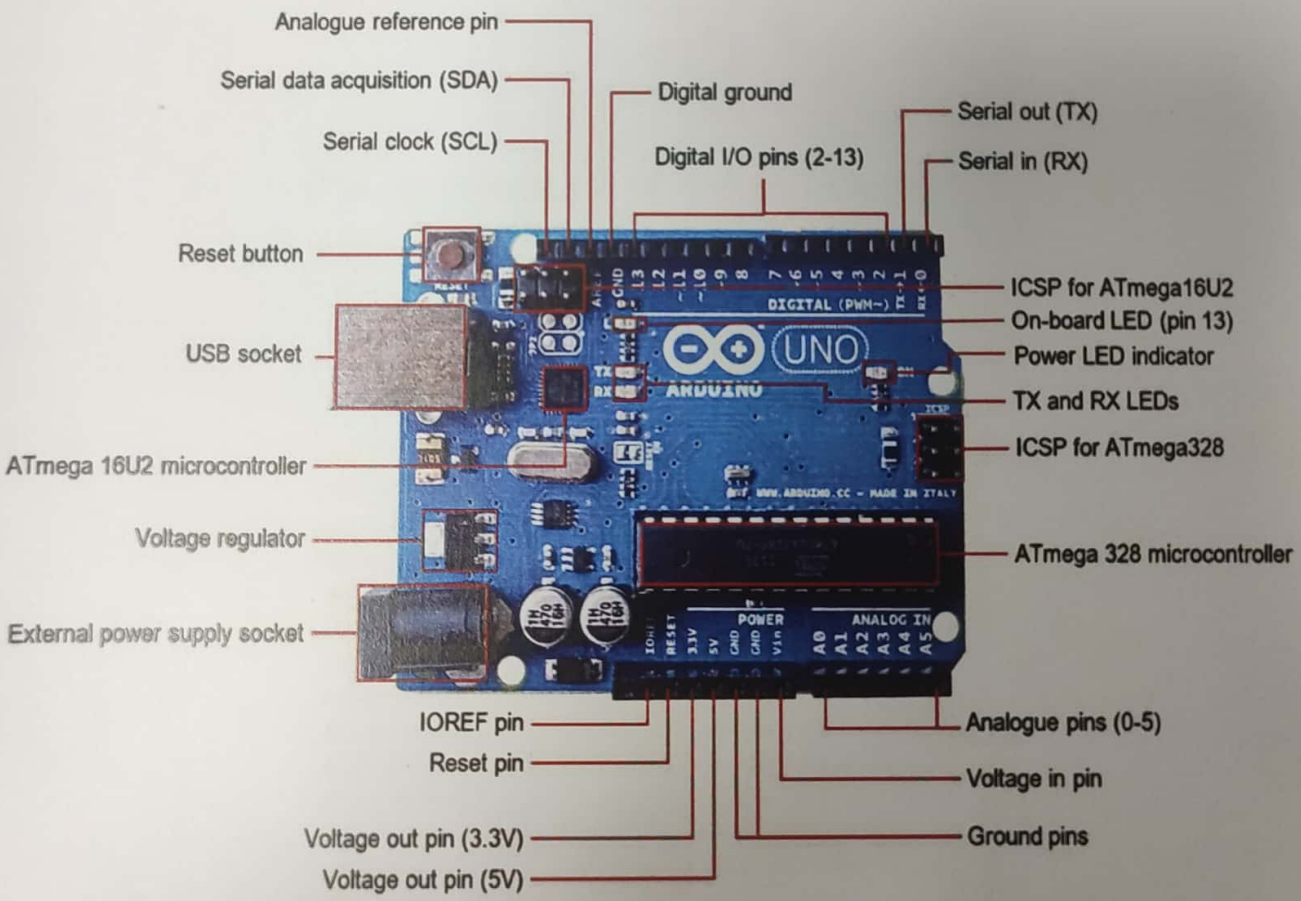
Arduino board designs use a variety of microprocessors and controllers. The boards are equipped with sets of digital and analog input/output (I/O) pins that may be interfaced to various expansion boards or Breadboards (shields) and other circuits. The boards feature serial communications interfaces, including Universal Serial Bus (USB) on some models, which are also used for loading programs from personal computers. The microcontrollers are typically programmed using a dialect of features from the programming languages C and C++. In addition to using traditional compiler toolchains, the Arduino project provides an integrated development environment (IDE) based on the Processing language project.

The Arduino project started in 2003 as a program for students at the Interaction Design Institute Ivrea in Ivrea, Italy, aiming to provide a low-cost and easy way for novices and professionals to create devices that interact with their environment using sensors and actuators. Common examples of such devices intended for beginner hobbyists include simple robots, thermostats, and motion detectors.

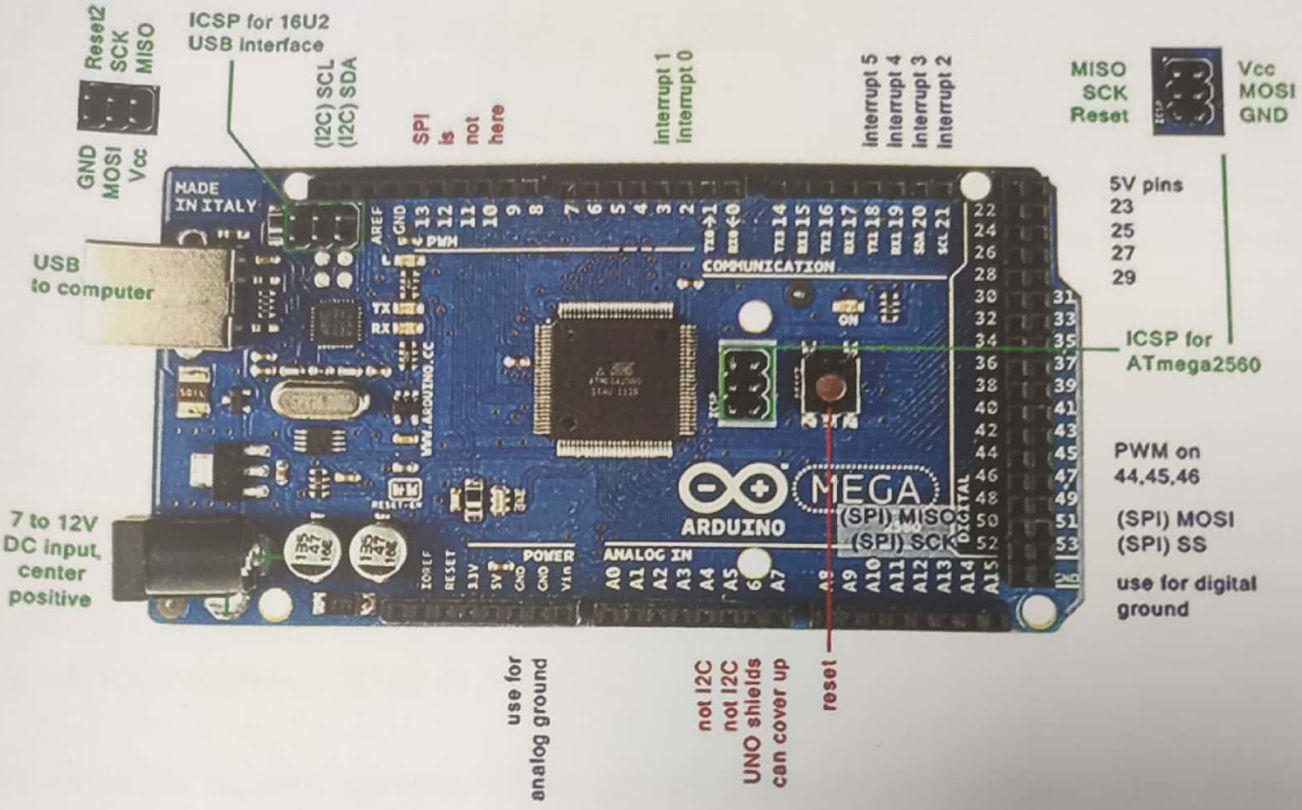
The name Arduino comes from a bar in Ivrea, Italy, where some of the founders of the project used to meet. The bar was named after Arduin of Ivrea, who was the margrave of the March of Ivrea and King of Italy from 1002 to 1014.

FEATURES OF ARDUINO UNO

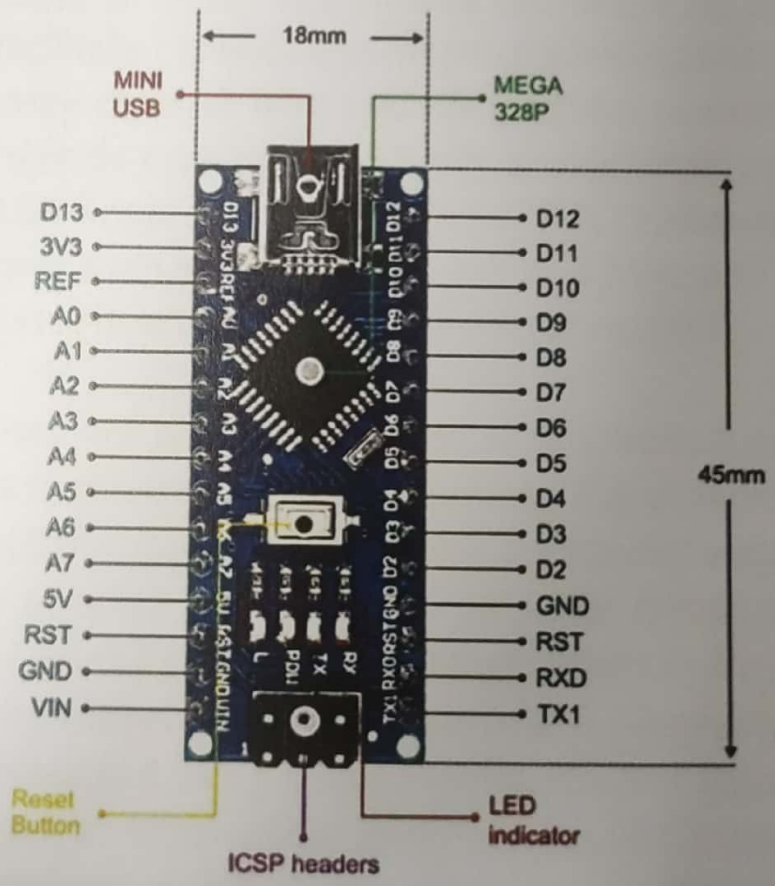
1. Microcontroller: ATmega328
2. Operating voltage: 5V
3. Input voltage: 7-12V
4. Digital I/O pins: 14(of which 6 provide PWM output)
5. Analog input pins: 6
6. DC current per I/O pin: 40mA
7. DC current for 3.3V pin: 50mA
8. Flash memory: 32KB of which 0.5KB used by bootloader
9. SRAM: 2KB(ATmega328)
10. EPROM: 1KB(ATmega328)



(Pin configuration of Arduino Uno)



(Pin configuration of Arduino Mega)



(Pin configuration of Arduino Nano)

ARDUINO HARDWARE PART

Arduino is open-source hardware. The hardware reference designs are distributed under a Creative Commons Attribution Share-Alike 2.5 license and are available on the Arduino website. Layout and production files for some versions of the hardware are also available.

Although the hardware and software designs are freely available under copyleft licenses, the developers have requested the name Arduino to be exclusive to the official product and not be used for derived works without permission. The official policy document on use of the Arduino name emphasizes that the project is open to incorporating work by others into the official product. Several Arduino-compatible products commercially released have avoided the project name by using various names ending in Arduino.

Most Arduino boards consist of an Atmel 8-bit AVR microcontroller (ATmega8, ATmega168, ATmega328, ATmega1280, ATmega2560) with varying amounts of flash memory, pins, and features. The 32-bit Arduino Due, based on the Atmel SAM3X8E was introduced in 2012. The boards use single or double-row pins or female headers that facilitate connections for programming and incorporation into other circuits. These may connect with add-on modules termed shields. Multiple and possibly stacked shields may be individually addressable via an I^2C serial bus. Most boards include a 5 V linear regulator and a 16 MHz crystal oscillator or ceramic resonator. Some designs, such as the LilyPad, run at 8 MHz and dispense with the onboard voltage regulator due to specific form-factor restrictions.

Arduino microcontrollers are pre-programmed with a boot loader that simplifies uploading of programs to the on-chip flash memory. The default bootloader of the Arduino UNO is the optiboot bootloader. Boards are loaded with program code via a serial connection to another computer. Some serial Arduino boards contain a level shifter circuit to convert between RS- 232 logic levels and transistor–transistor logic (TTL) level signals. Current Arduino boards are programmed via Universal Serial Bus (USB), implemented using USB-to-serial adapter chips such as the FTDI FT232. Some boards, such as later-model Uno boards, substitute the FTDI chip with a separate AVR chip containing USB-to-serial firmware, which is reprogrammable via its own ICSP header. Other variants, such as the Arduino Mini and the unofficial Board Arduino, use a detachable USB-to-serial adapter board or cable, Bluetooth

ARDUINO SOFTWARE PART

IDE:

The Arduino integrated development environment (IDE) is a cross-platform application (for Windows, macOS, Linux) that is written in the programming language Java. It originated from the IDE for the languages Processing and Wiring. It includes a code editor with features such as text cutting and pasting, searching and replacing text, automatic indenting, brace matching, and syntax highlighting, and provides simple one-click mechanisms to compile and upload programs to an Arduino board. It also contains a message area, a text console, a toolbar with buttons for common functions and a hierarchy of operation menus. The source code for the IDE is released under the GNU General Public License, version 2.

The Arduino IDE supports the languages C and C++ using special rules of code structuring. The Arduino IDE supplies a software library from the Wiring project, which provides many common input and output procedures. User-written code only requires two basic functions, for starting the sketch and the main program loop, that are compiled and linked with a program stub main into an executable cyclic executive program with the GNU toolchain, also included with the IDE distribution. The Arduino IDE employs the program avrdude to convert the executable code into a text file in hexadecimal encoding that is loaded into the Arduino board by a loader program in the board's firmware.

Sketch:

A program written with the Arduino IDE is called a sketch. Sketches are saved on the development computer as text files with the file extension. Arduino Software (IDE) pre-1.0 saved sketches with the extension. A minimal Arduino C/C++ program consist of only two functions:

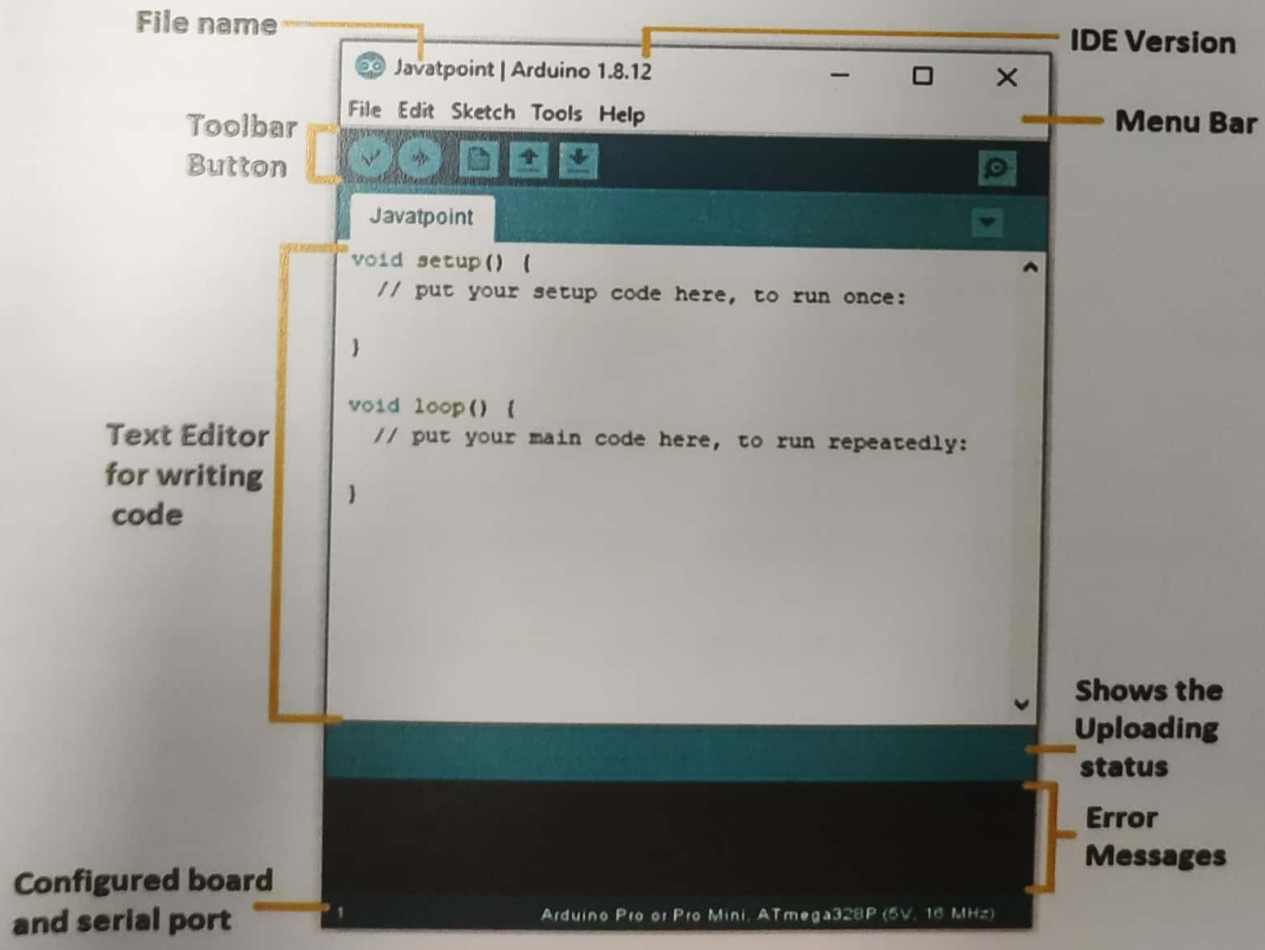
setup:

This function is called once when a sketch starts after power-up or reset. It is used to initialize variables, input and output pin modes, and other libraries needed in the sketch.

Arduino Integrated Development Environment IDE(V1)

The Arduino Integrated Development Environment - or Arduino Software (IDE) - contains a text editor for writing code, a message area, a text console, a toolbar with buttons for common functions and a series of menus. It connects to the Arduino hardware to upload programs and communicate with them.

Programs written using Arduino Software (IDE) are called sketches. These sketches are written in the text editor and are saved with the file extension. The editor has features for cutting/pasting and for searching/replacing text. The message area gives feedback while saving and exporting and also displays errors. The console displays text output by the Arduino Software (IDE), including complete error messages and other information. The bottom righthand corner of the window displays the configured board and serial port. The toolbar buttons allow you to verify and upload programs, create, open, and save sketches, and open the serial monitor.



RELAY MODULE

Relay Module Overview

A relay module is an electronic device used to control high-voltage appliances with low-voltage signals. It acts as an electrically operated switch, allowing a low-power microcontroller like an Arduino to control high-power devices such as lights, fans, and motors safely and efficiently.

Components of a Relay Module

Relay: The main component that acts as an electromechanical switch.
Optocoupler: Isolates the microcontroller from the high voltage circuit.
Transistor: Amplifies the control signal to drive the relay.
Diode: Protects against back EMF generated when the relay coil is de-energized.
Resistors: Used for current limiting and pull-down functions.
LED Indicators: Indicate the status of the relay (ON/OFF).
Terminals: Screw terminals for connecting the load and the power supply.
Control Pins: Pins for connecting to the microcontroller.

8-Channel Relay Module

An 8-channel relay module contains eight individual relays, allowing you to control up to eight different high-voltage devices independently. It is particularly useful in home automation and industrial control applications where multiple devices need to be controlled simultaneously.

Key Features

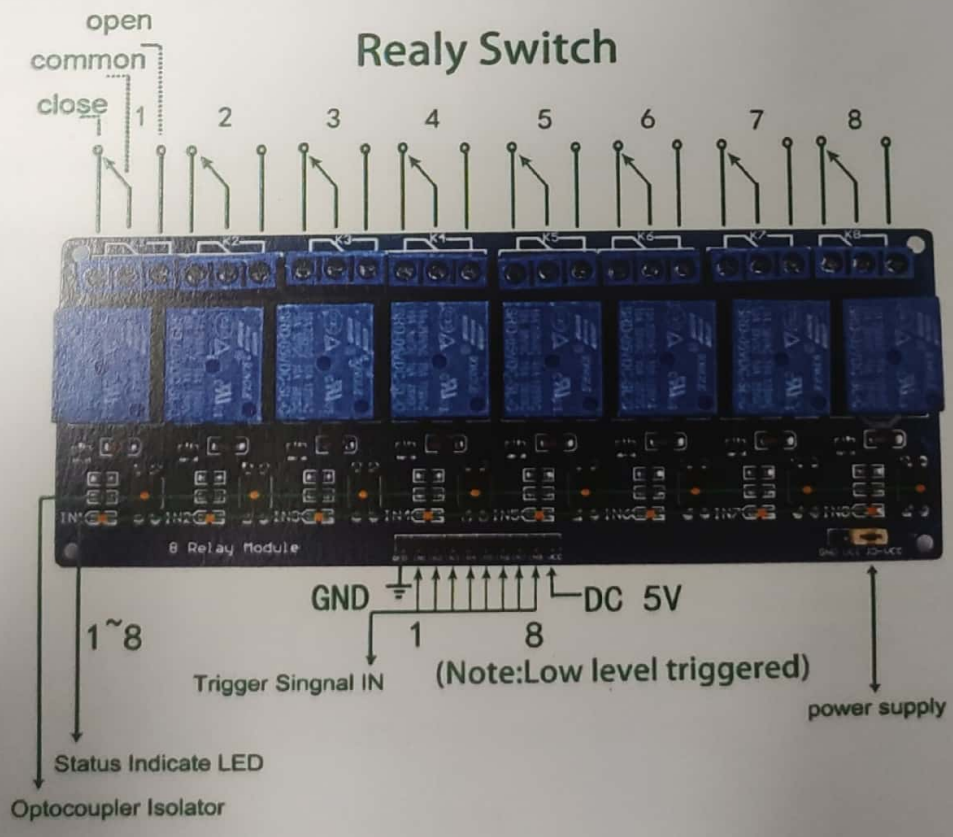
Number of Relays: 8 relays, each capable of handling a separate load.
Control Voltage: Typically 5V for compatibility with microcontrollers like Arduino.
Relay Specifications:
Voltage Rating: Typically supports 250V AC or 30V DC.
Current Rating: Usually around 10A.
Isolation: Optocouplers provide electrical isolation between the control circuit and the high voltage load.
Status LEDs: Each relay has an associated LED that lights up when the relay is active.

Technical Specifications

Operating Voltage: 5V DC (commonly) or 12V DC, depending on the module.
Trigger Current: Typically around 15-20mA per relay.
Relay Type: SPDT (Single Pole Double Throw) or SPST (Single Pole Single Throw) depending on the module.

Pin Configuration
VCC: Power supply pin (5V or 12V depending on the module).
GND: Ground pin.
IN1 to IN8: Control pins for relays 1 to 8. These pins are connected to the output pins of the microcontroller.
NO (Normally Open): The load is connected here if you want it to be off when the relay is not active.
NC (Normally Closed): The load is connected here if you want it to be on when the relay is not active.
COM (Common): Common terminal for the relay contacts.

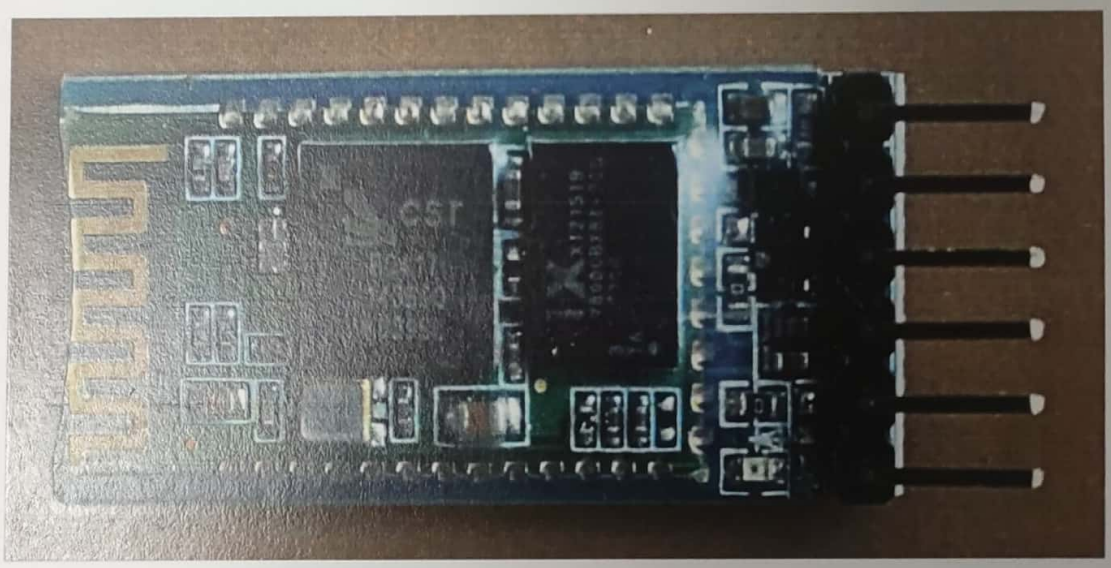
Working Principle
Control Signal: A low voltage signal (typically 5V) from the microcontroller is applied to the control pin.
Optocoupler Activation: The control signal activates the optocoupler, which in turn activates the transistor.
Relay Activation: The transistor energizes the relay coil, creating a magnetic field.
Switch Operation: The magnetic field pulls the relay contacts, switching them from the normally closed (NC) position to the normally open (NO) position or vice versa.
Load Control: This change in the relay contacts either completes or breaks the circuit for the high-voltage load, thus controlling the device.



BLUETOOTH MODULE SPECIFICATION

(HC-05 Bluetooth Module)

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)/160kbps, Synchronous
Authentication and encryption: 1Mbps/1Mbps Security
Profile: Bluetooth serial port
Power supply: +3.3VDC,50mA
Working temperature: 20 degree +75 Centigrade
Dimension: 26.9mm x 13mm x 2.2mm



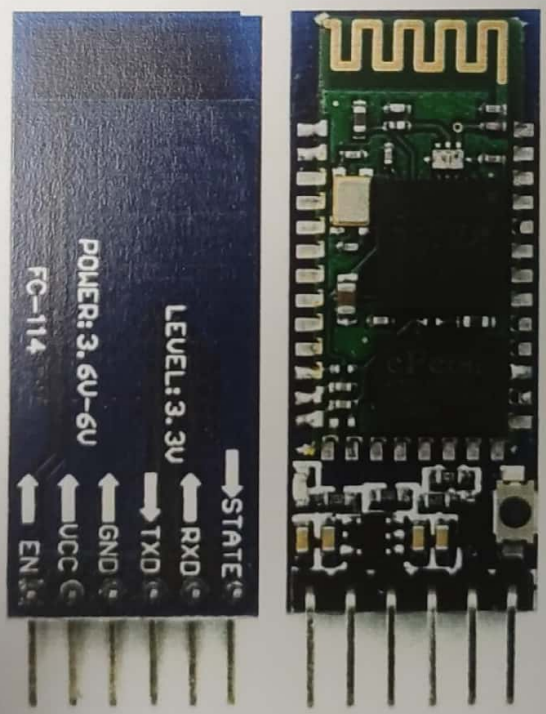
(HC-05 Bluetooth Module)

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 Blue core 04- External single chip Bluetooth 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.



(Bluetooth Module)

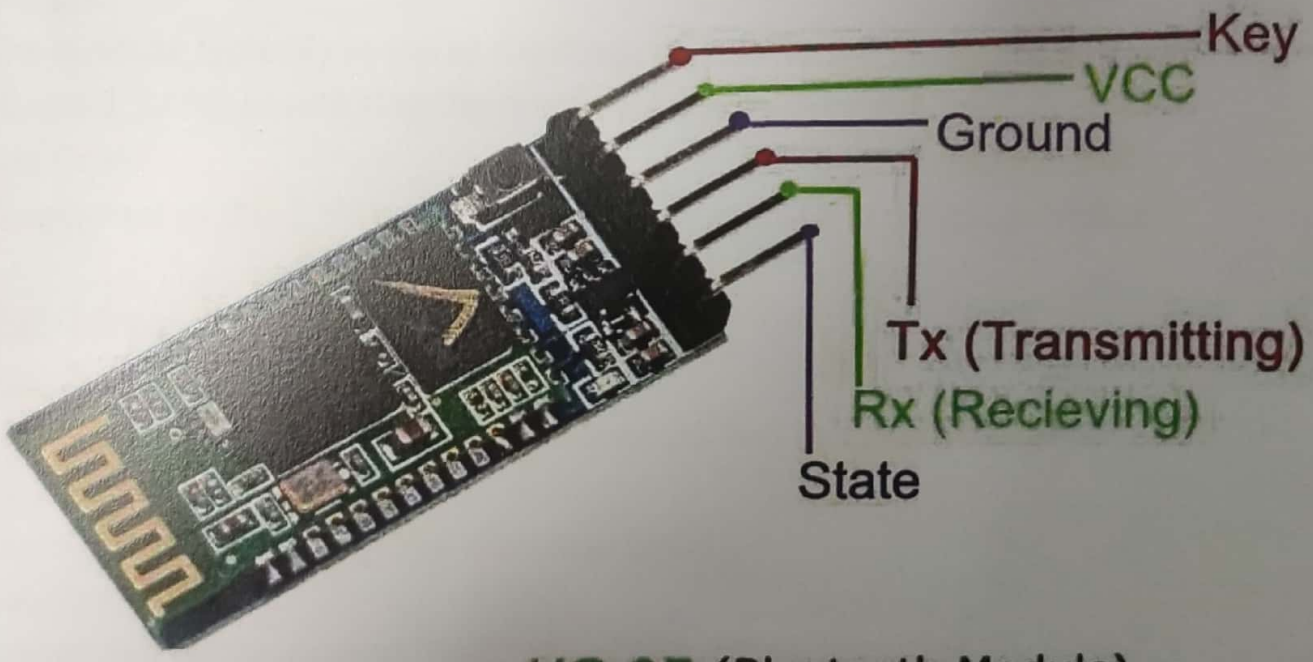
PIN DESCRIPTION OF HC-05 BLUETOOTH MODULE

The HC-05 Bluetooth module is a widely used wireless communication module that enables Bluetooth connectivity in various projects. It is commonly paired with microcontrollers such as Arduino for wireless data transmission.

Pin Layout

The HC-05 module typically has 6 pins:

1. EN (Enable) / Key
2. VCC (Power Supply)
3. GND (Ground)
4. TXD (Transmit Data)
5. RXD (Receive Data)
6. STATE

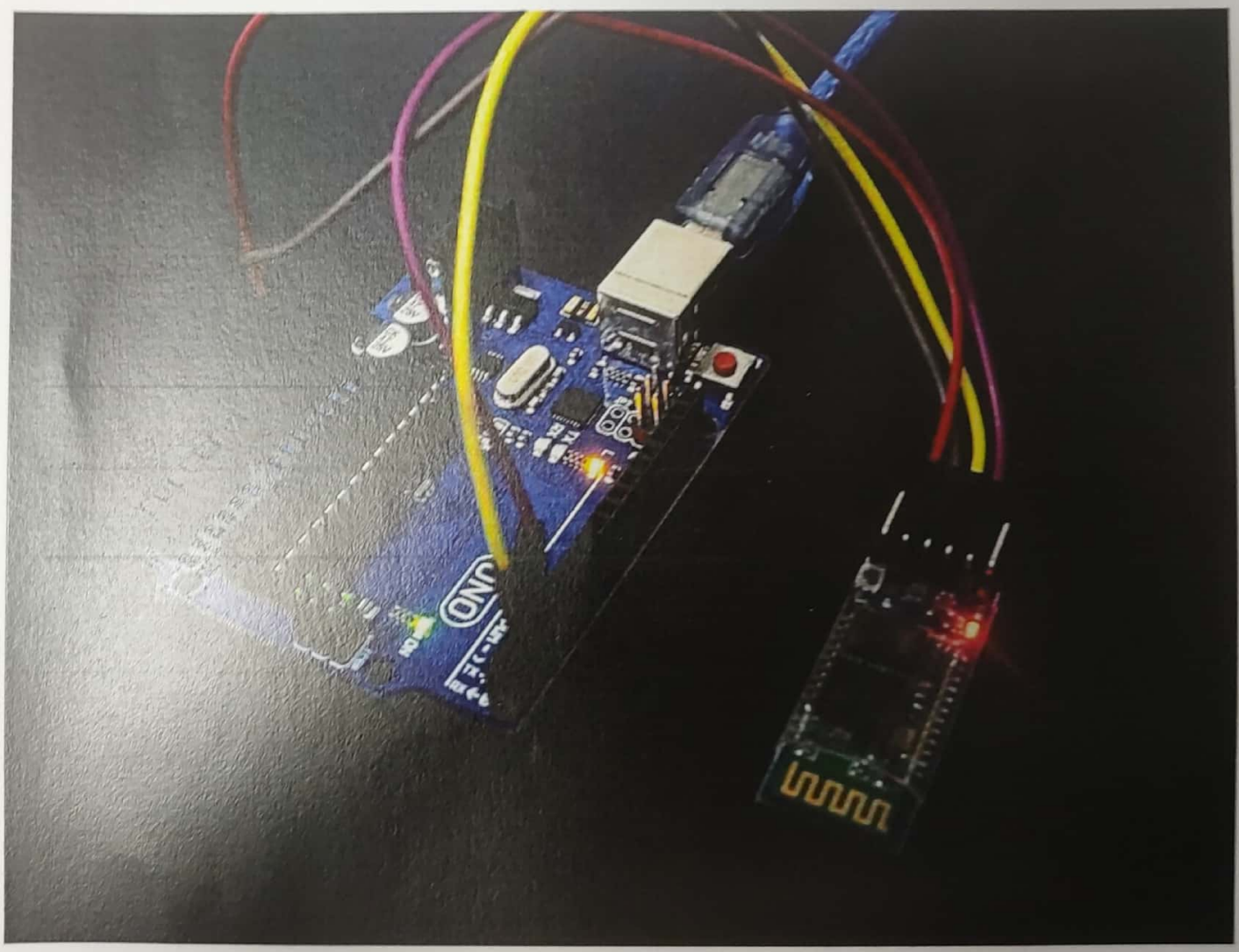


HC-05 (Bluetooth Module)

BASIC CONNECTION EXAMPLE WITH ARDUINO

It's a simple wiring example to connect the HC-05 module to an Arduino Uno.

1. HC-05 VCC to Arduino 3.3V (or 5V, depending on your module's specifications)
2. HC-05 GND to Arduino GND
3. HC-05 TXD to Arduino RX (Pin 0) (use a voltage divider if Arduino operates at 5V)
4. HC-05 RXD to Arduino TX (Pin 1) (use a level shifter if necessary)
5. HC-05 EN (optional, connect to a digital pin if you need to switch modes)



ADVANTAGES

BLUETOOTH-BASED HOME AUTOMATION

Bluetooth technology offers numerous advantages for home automation, making it a popular choice for smart home systems.

1. Low Power Consumption

Efficiency: Bluetooth Low Energy (BLE) is designed to minimize power usage, which is ideal for battery-operated devices.

Long Battery Life: Devices like sensors and smart locks can run for months or even years on a single battery charge.

2. Cost-Effectiveness

Affordable Components: Bluetooth modules and compatible microcontrollers, such as Arduino, are relatively inexpensive.

No Subscription Fees: Unlike some other smart home technologies, Bluetooth does not require subscription services or additional infrastructure costs.

3. Ease of Implementation

Simple Integration: Bluetooth modules are easy to integrate with various microcontrollers and development platforms.

Wide Availability: Many microcontroller development boards, like Arduino and Raspberry Pi, have extensive support for Bluetooth modules.

4. Reliable Short-Range Communication

Stable Connections: Bluetooth provides reliable short-range communication, typically up to 100 meters, which is sufficient for most home automation applications.

Interference Management: Bluetooth uses adaptive frequency hopping to reduce interference from other wireless technologies.

DOWNSIDE

BLUETOOTH-BASED HOME AUTOMATION

While Bluetooth technology offers numerous advantages for home automation, it also has some limitations and potential downsides.

1. Limited Range

Short-Range Communication: Bluetooth typically has a range of up to 100 meters, which might be insufficient for larger homes or properties.

Obstructions: Physical barriers like walls and furniture can further reduce the effective range, causing connectivity issues.

2. Interference and Congestion

Crowded Spectrum: Bluetooth operates in the 2.4 GHz frequency band, which is shared with many other wireless technologies like Wi-Fi, microwave ovens, and cordless phones. This can lead to interference and reduced performance.

Multiple Devices: In environments with many Bluetooth devices, interference and network congestion can become significant problems.

3. Limited Bandwidth

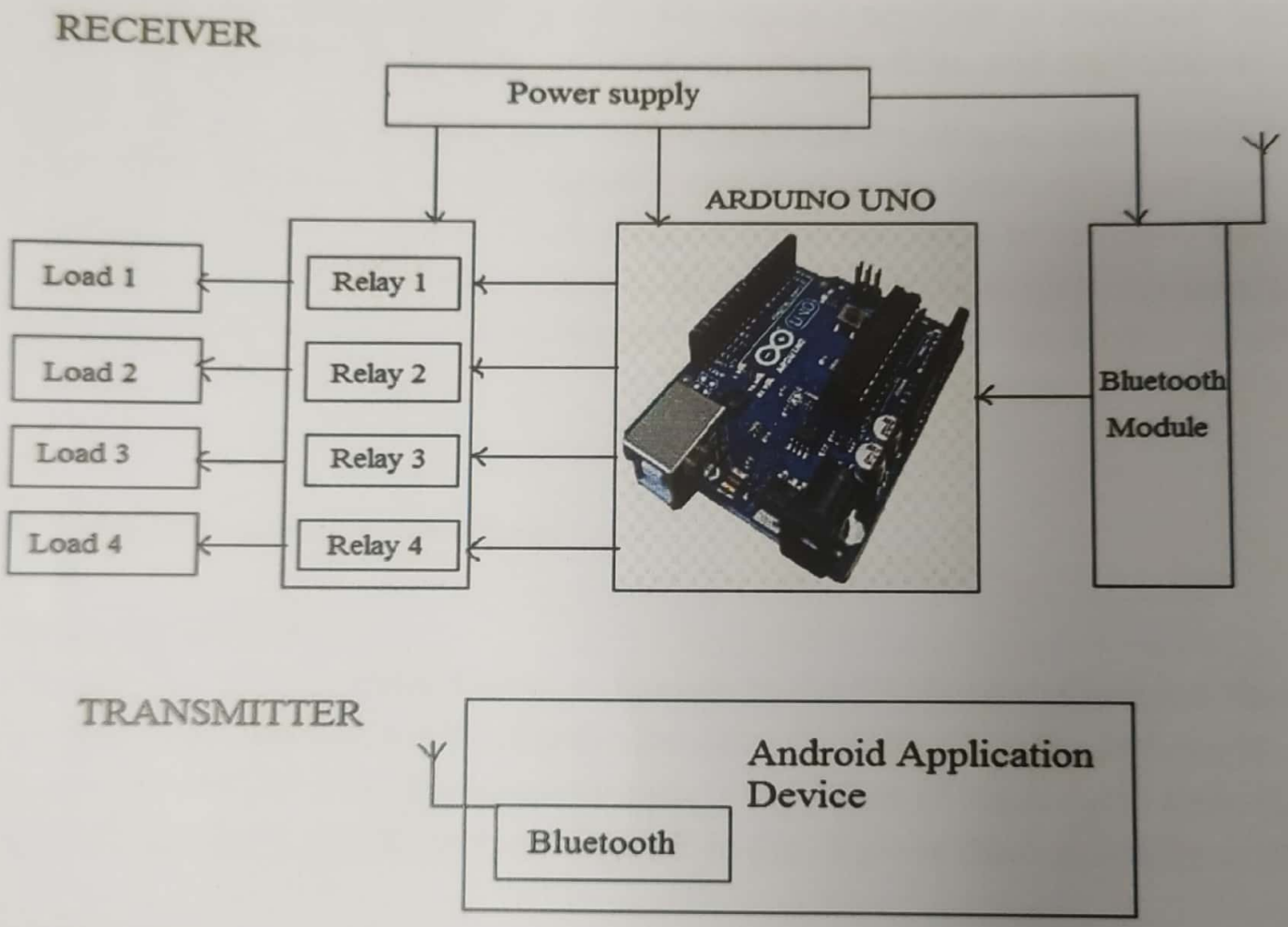
Data Transfer Speed: Bluetooth has lower data transfer rates compared to other wireless technologies like Wi-Fi. This can be a limitation for applications requiring high bandwidth, such as video streaming or large file transfers.

Simple Commands: It's more suitable for simple control commands and small data packets rather than complex data streams.

4. Security Concerns

Potential Vulnerabilities: Although Bluetooth includes encryption and security measures, it is not immune to hacking and unauthorized access. Vulnerabilities such as BlueBorne have demonstrated potential security risks.

BLOCK DIAGRAM



WORKING PRINCIPLE

Bluetooth-based home automation systems revolutionize the way we interact with our living spaces, offering convenience, efficiency, and control at our fingertips. At the heart of this innovation lies the seamless integration of Bluetooth technology with microcontrollers like the Arduino Nano and relay modules. In this comprehensive guide, we'll delve into the working principle of Bluetooth-based home automation, exploring its components, functionalities, and applications.

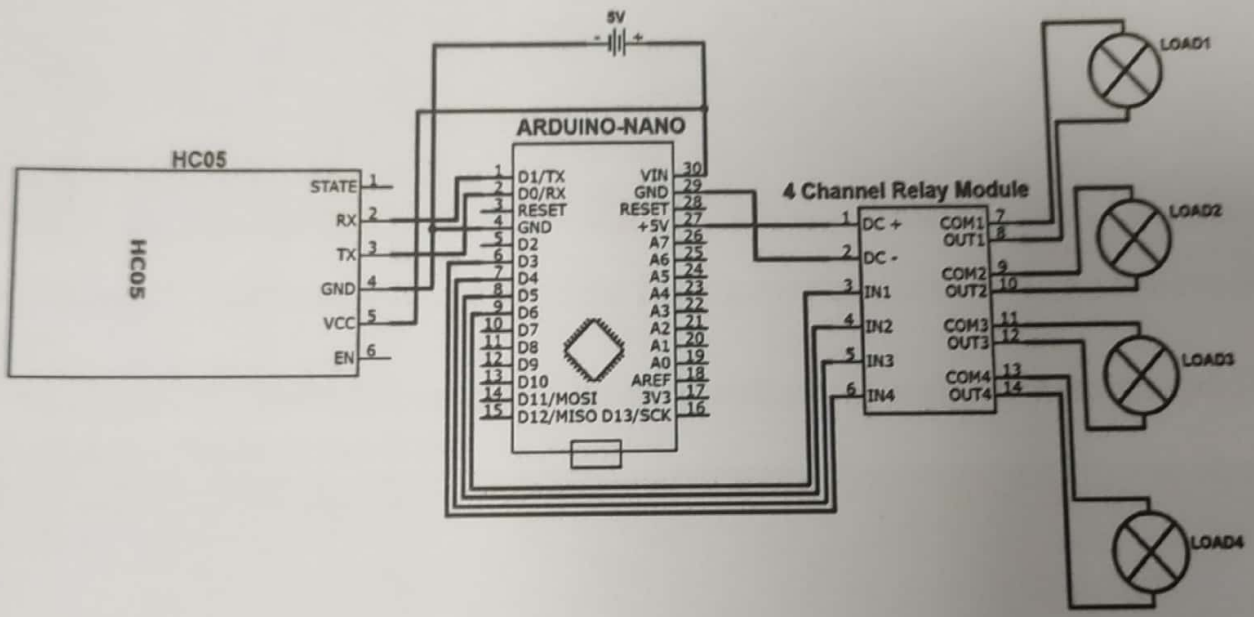
Bluetooth-based home automation systems leverage the ubiquity and versatility of Bluetooth technology to enable wireless communication between smart devices within a home environment. These systems empower users to remotely control various aspects of their homes, including lighting, appliances, security systems, and environmental conditions, using Bluetooth-enabled smartphones, tablets, or other devices.

1. System Setup and Connections:

Bluetooth Module:
Connect the VCC pin of the Bluetooth module to the 5V pin on the Arduino Nano.
Connect the GND pin of the Bluetooth module to the GND pin on the Arduino Nano.
Connect the TX pin of the Bluetooth module to the RX pin of the Arduino Nano (D0).
Connect the RX pin of the Bluetooth module to the TX pin of the Arduino Nano (D1).

8-Channel Relay Module:
Connect the VCC pin of the relay module to the 5V pin on the Arduino Nano.
Connect the GND pin of the relay module to the GND pin on the Arduino Nano.
Connect the IN1 to IN8 pins of the relay module to digital pins D2 to D9 on the Arduino Nano respectively.

CIRCUIT DIAGRAM



APPLICATION

Bluetooth-based home automation offers various practical applications, enhancing convenience, efficiency, and control within a household. Here are some common applications:

Lighting Control: Control the lights in different rooms or areas of your home wirelessly using your smartphone or tablet. This includes turning lights on/off, dimming, or even setting up schedules for automated lighting.

Appliance Control: Turn appliances such as fans, air conditioners, heaters, and coffee makers on/off remotely. This can be particularly useful for preheating your coffee maker before you even get out of bed or turning off forgotten appliances while away from home.

Security System Integration: Integrate Bluetooth-based home automation with your home security system. For example, you can remotely lock/unlock doors, arm/disarm alarms, or even receive alerts if any motion sensors are triggered.

Temperature and Climate Control: Adjust the temperature of your home remotely, whether it's turning on the heating before you arrive or cooling down the house during hot summer days. This can help save energy and create a comfortable living environment.

Smart Irrigation Systems: Automate watering schedules for your garden or lawn based on weather conditions and soil moisture levels. Bluetooth-based home automation can allow you to adjust irrigation settings remotely, ensuring optimal water usage and plant health.

Home Entertainment Control: Control audio and video devices such as TVs, stereos, and media players from anywhere in your home. You can create custom entertainment experiences by integrating lighting control and audio/video playback.

Energy Monitoring and Management: Monitor energy usage in real-time and identify areas where energy is being wasted. Bluetooth-enabled smart plugs and energy monitoring devices can help you track and control energy consumption,

CONCLUSION

In conclusion, Bluetooth-based home automation systems offer a myriad of benefits and possibilities for enhancing the functionality, convenience, and efficiency of modern households. By leveraging the power of Bluetooth technology, these systems enable seamless communication between various smart devices, providing users with greater control over their home environment.

Key takeaways from Bluetooth-based home automation include:

1. Convenience: Users can remotely control a wide range of home devices and systems using their smartphones or tablets, allowing for effortless management of lighting, appliances, temperature, and more from anywhere within the Bluetooth range.
2. Flexibility: Bluetooth-based systems are highly adaptable and can accommodate a variety of automation needs and preferences. Whether it's setting up custom schedules, creating personalized routines, or integrating with voice assistants, users have the flexibility to tailor the system to their specific requirements.
3. Energy Efficiency: By implementing smart energy management strategies, such as scheduling lights and appliances, monitoring energy usage, and optimizing heating and cooling systems, Bluetooth-based home automation can contribute to significant energy savings and reduce environmental impact.
4. Security: Integration with home security systems allows users to enhance the security of their property by remotely monitoring and controlling access points, receiving alerts for suspicious activities, and integrating surveillance cameras for added peace of mind.
5. Integration: Bluetooth-based home automation systems can seamlessly integrate with other smart home technologies and protocols, enabling interoperability between different devices and platforms for a cohesive and interconnected smart home ecosystem.
6. Customization: With the ability to create custom automation scenarios and routines, users can tailor the system to match their lifestyle and preferences, ensuring a personalized and user-centric experience.
7. Scalability: Bluetooth-based home automation systems are scalable, allowing users to start with a basic setup and gradually expand and add more devices and functionalities as needed, without the need for extensive rewiring or infrastructure changes.

Overall, Bluetooth-based home automation represents a versatile and accessible

EVALUATION SHEET

SL NO.	REGISTRATION NO.	NAME	SEMESTER	BRANCH
01.	L22001003001	AMARENDRA SWAIN	6th	E & TC

EVALUATION REPORT

SL NO.	PERFORMANCE	FULL MARK	MARKS REWARDED
01.	SELECTION OF PROJECT ASSIGNMENT	05	5
02.	PLANNING AND EXECUTING OF CONSIDERATION	05	4
03.	QUALITY OF PERFORMANCE	05	5
04.	PROVIDING SOLUTION OF THE PROBLEMS OR PRODUCTION OF FINAL PRODUCT	05	5
05.	SENSE OF RESPONSIBIITY	05	5
06.	SELF EXPRESSION/COMMUNICATION/PRESENTATION SKILL	10	9.5
07.	INTERPERSONAL SKILL/HUMAN RELATION	05	5
08.	REPORT WRITING SKILL	05	5
09.	VIVA VOICE	05	4
	TOTAL	50	47.5

95

SIGNATURE OF EXTERNAL

SIGNATURE OF INTERNAL

EVALUATION SHEET

SL NO.	REGISTRATION NO.	NAME	SEMESTER	BRANCH
01.	L22001003002	DIPAK KUMAR ARUK	6th	E & TC

EVALUATION REPORT

SL NO.	PERFORMANCE	FULL MARK	MARKS REWARDED
01.	SELECTION OF PROJECT ASSIGNMENT	05	5
02.	PLANNING AND EXECUTING OF CONSIDERATION	05	5
03.	QUALITY OF PERFORMANCE	05	5
04.	PROVIDING SOLUTION OF THE PROBLEMS OR PRODUCTION OF FINAL PRODUCT	05	5
05.	SENSE OF RESPONSIBIITY	05	5
06.	SELF EXPRESSION/COMMUNICATION/PRESENTATION SKILL	10	4
07.	INTERPERSONAL SKILL/HUMAN RELATION	05	5
08.	REPORT WRITING SKILL	05	5
09.	VIVA VOICE	05	5
	TOTAL	50	44

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Sanmeet

SIGNATURE OF EXTERNAL

SIGNATURE OF INTERNAL

EVALUATION SHEET

SL NO.	REGISTRATION NO.	NAME	SEMESTER	BRANCH
01.	L22001003003	PABITRA SAHU	6th	E & TC

EVALUATION REPORT

SL NO.	PERFORMANCE	FULL MARK	MARKS REWARDED
01.	SELECTION OF PROJECT ASSIGNMENT	05	5
02.	PLANNING AND EXECUTING OF CONSIDERATION	05	5
03.	QUALITY OF PERFORMANCE	05	5
04.	PROVIDING SOLUTION OF THE PROBLEMS OR PRODUCTION OF FINAL PRODUCT	05	4
05.	SENSE OF RESPONSIBIITY	05	5
06.	SELF EXPRESSION/COMMUNICATION/PRESENTATION SKILL	10	8.5
07.	INTERPERSONAL SKILL/HUMAN RELATION	05	5
08.	REPORT WRITING SKILL	05	5
09.	VIVA VOICE	05	5
	TOTAL	50	45.5

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Saumeet

SIGNATURE OF EXTERNAL

SIGNATURE OF INTERNAL

EVALUATION SHEET

SL NO.	REGISTRATION NO.	NAME	SEMESTER	BRANCH
01.	L22001003004	SADAKANT JENA	6th	E & TC

EVALUATION REPORT

SL NO.	PERFORMANCE	FULL MARK	MARKS REWARDED
01.	SELECTION OF PROJECT ASSIGNMENT	05	5
02.	PLANNING AND EXECUTING OF CONSIDERATION	05	5
03.	QUALITY OF PERFORMANCE	05	5
04.	PROVIDING SOLUTION OF THE PROBLEMS OR PRODUCTION OF FINAL PRODUCT	05	5
05.	SENSE OF RESPONSIBIITY	05	5
06.	SELF EXPRESSION/COMMUNICATION/PRESENTATION SKILL	10	8
07.	INTERPERSONAL SKILL/HUMAN RELATION	05	5
08.	REPORT WRITING SKILL	05	5
09.	VIVA VOICE	05	5
	TOTAL	50	48

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SIGNATURE OF EXTERNAL

SIGNATURE OF INTERNAL

EVALUATION SHEET

SL NO.	REGISTRATION NO.	NAME	SEMESTER	BRANCH
01.	L22001003005	SANJAY RAUT	6th	E & TC

EVALUATION REPORT

SL NO.	PERFORMANCE	FULL MARK	MARKS REWARDED
01.	SELECTION OF PROJECT ASSIGNMENT	05	5
02.	PLANNING AND EXECUTING OF CONSIDERATION	05	5
03.	QUALITY OF PERFORMANCE	05	5
04.	PROVIDING SOLUTION OF THE PROBLEMS OR PRODUCTION OF FINAL PRODUCT	05	4
05.	SENSE OF RESPONSIBIITY	05	5
06.	SELF EXPRESSION/COMMUNICATION/PRESENTATION SKILL	10	8.5
07.	INTERPERSONAL SKILL/HUMAN RELATION	05	5
08.	REPORT WRITING SKILL	05	4
09.	VIVA VOICE	05	4
	TOTAL	50	45.5

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Saraveet

SIGNATURE OF EXTERNAL

SIGNATURE OF INTERNAL