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"VOICE CONTROLLED HOME AUTOMATION USING ARDUINO"

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ABSTRACT

- The development and implementation of a voice-controlled home automation system using an Arduino microcontroller and a Bluetooth module.

- The objective of this project is to design an affordable, user-friendly automation system that allows users to control household appliances via voice commands issued from a smartphone.

INTRODUCTION

- In today's world, technology is making everyday life more convenient, and home automation is a big part of that. Controlling appliances like lights and fans with just your voice makes daily tasks easier and more efficient.

- This project focuses on creating a simple and affordable voice-controlled home automation system using an Arduino and a Bluetooth module.

- The system works by using a smartphone to send voice commands through Bluetooth to an Arduino, which then controls devices connected to it.

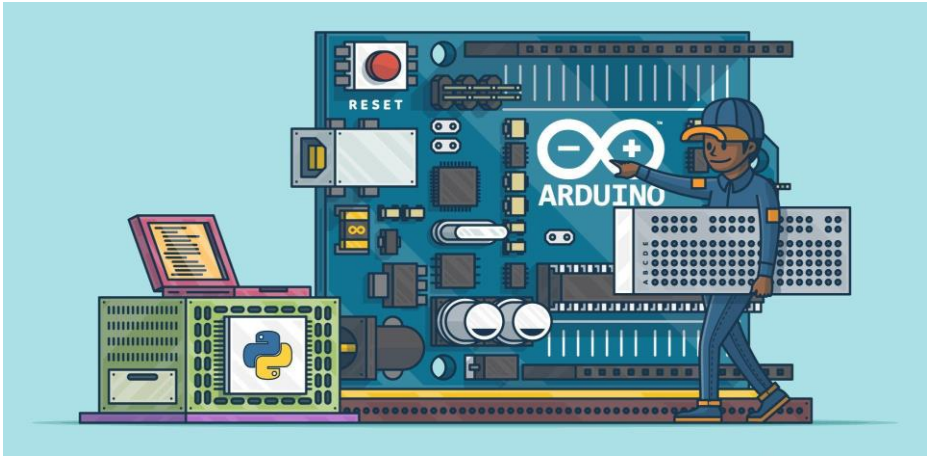
- This presentation explains how the system is built, how it works, and how it can be used to make home automation accessible to everyone.

- Voice commands are converted into text by a smartphone app and transmitted via Bluetooth to the Arduino, which processes the commands to switch appliances on or off.

COMPONENTS REQUIRED:

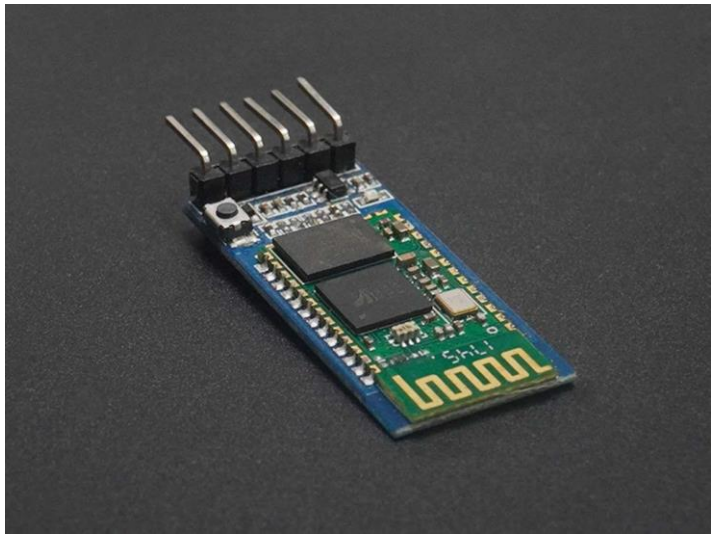
- ARDUINO UNO

The Arduino Uno is a widely-used microcontroller board based on the ATmega328 chip, ideal for beginners and versatile electronic projects.



- BLUETOOTH MODULE HC-05

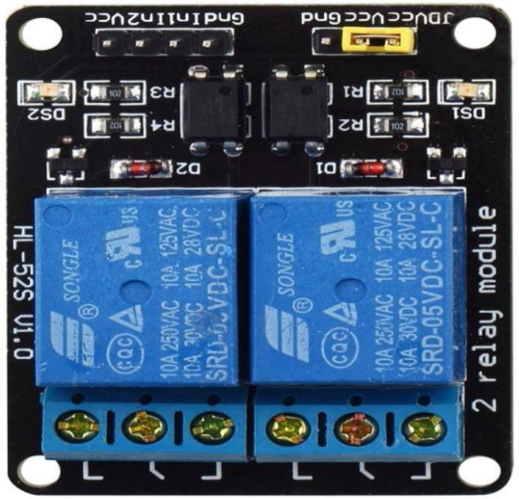
The Bluetooth HC-05 module is a serial communication device commonly used for wireless data transmission between devices, such as microcontrollers and smartphones, in projects like home automation.



COMPONENTS REQUIRED:

- RELAY MODULE

A relay module is an electronic component that allows a microcontroller to control high-voltage devices by switching them on or off using low-voltage signals.



- LIGHT EMITTING DIODE [LED]

An LED (Light Emitting Diode) is a semiconductor light source that emits light when an electric current passes through it, commonly used for indicators and displays in electronic projects

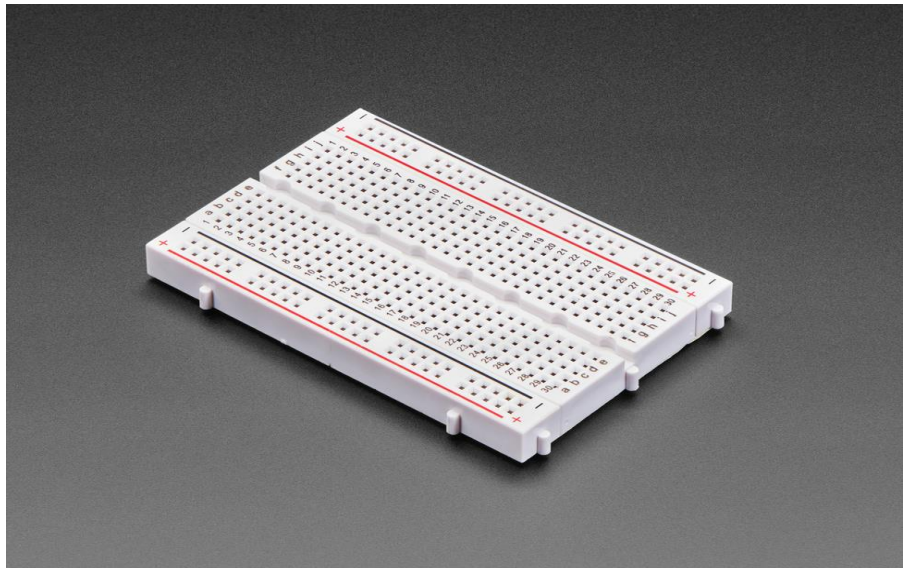
COMPONENTS REQUIRED:

- 9 VOLT BATTERY

A 9-volt battery is a portable power source commonly used in electronic devices and circuits to provide a steady 9 volts of electrical power.

- BREADBOARD

A breadboard is a tool used to build and test electronic circuits without soldering. It has rows and columns of connected holes where you can insert and connect components easily.



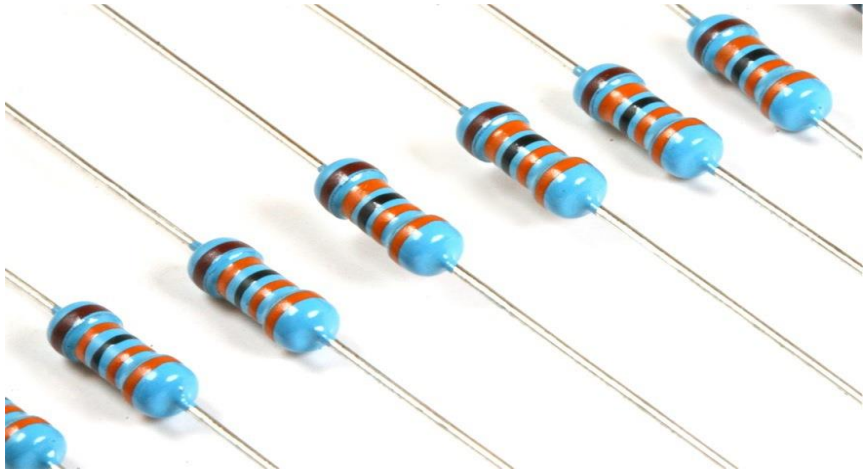
COMPONENTS REQUIRED:

- JUMPER WIRES

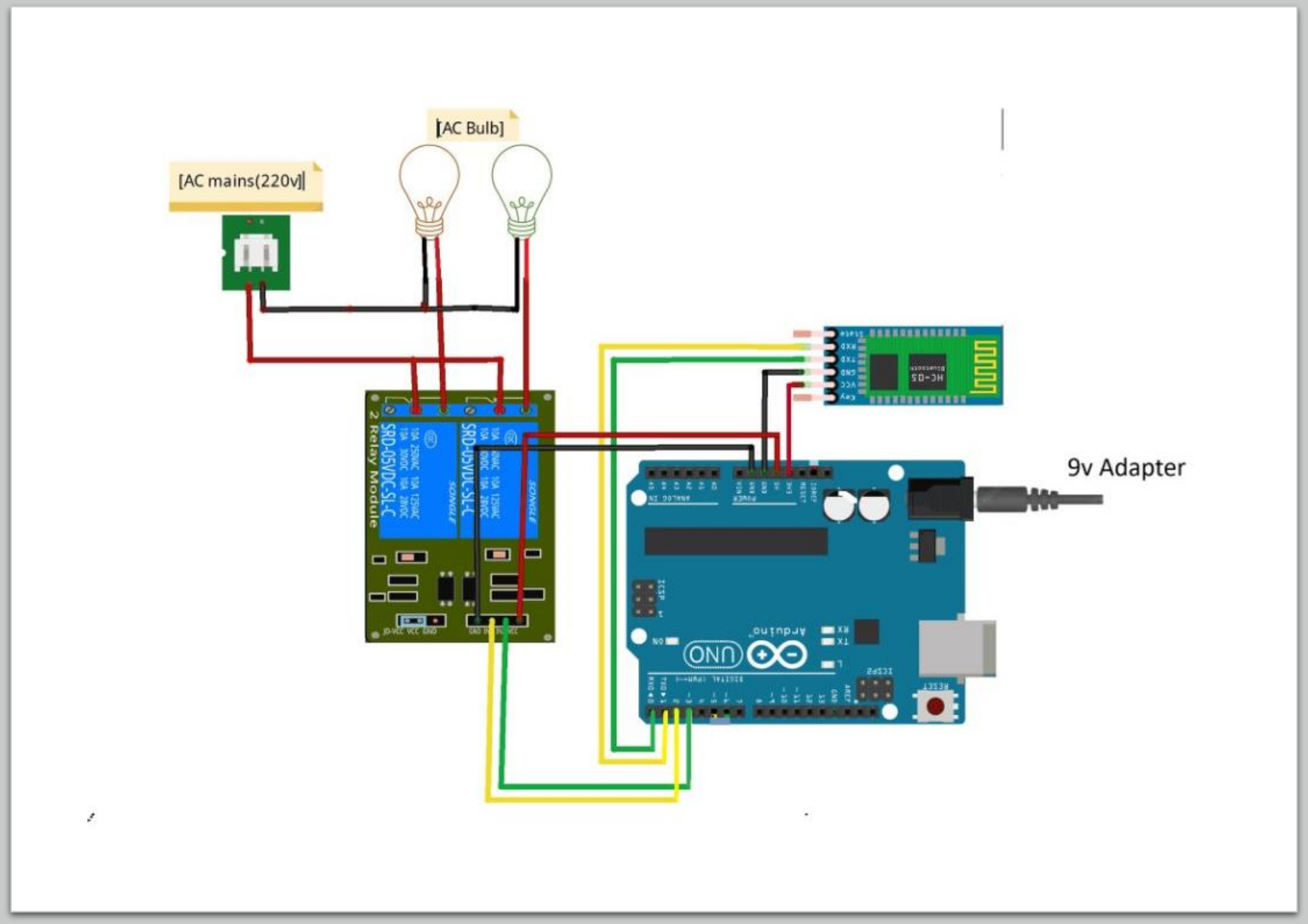
Jumper wires are flexible wires used to make connections between different parts of an electronic circuit on a breadboard or between devices.

- RESISTOR

A resistor is an electronic component that limits or regulates the flow of electrical current in a circuit, providing a specific resistance value.



Circuit diagram



WORKING

1. HC-05 Connections:

TX (Transmit) pin of HC-05 connects to RX (Receive) pin of Arduino.
RX (Receive) pin of HC-05 connects to TX (Transmit) pin of Arduino (with voltage level adjustment if necessary).
GND (Ground) and VCC (Power) are connected to the Arduino's GND and 5V (or 3.3V).

2. Device Control Connections:

Connect control devices (e.g., lights or fans) to the Arduino using relays or MOSFETs to handle higher current.

3. Arduino Code Initialization:

Set up Serial communication for debugging and Bluetooth communication.
Initialize pins connected to home automation devices.

4. Voice Processing:

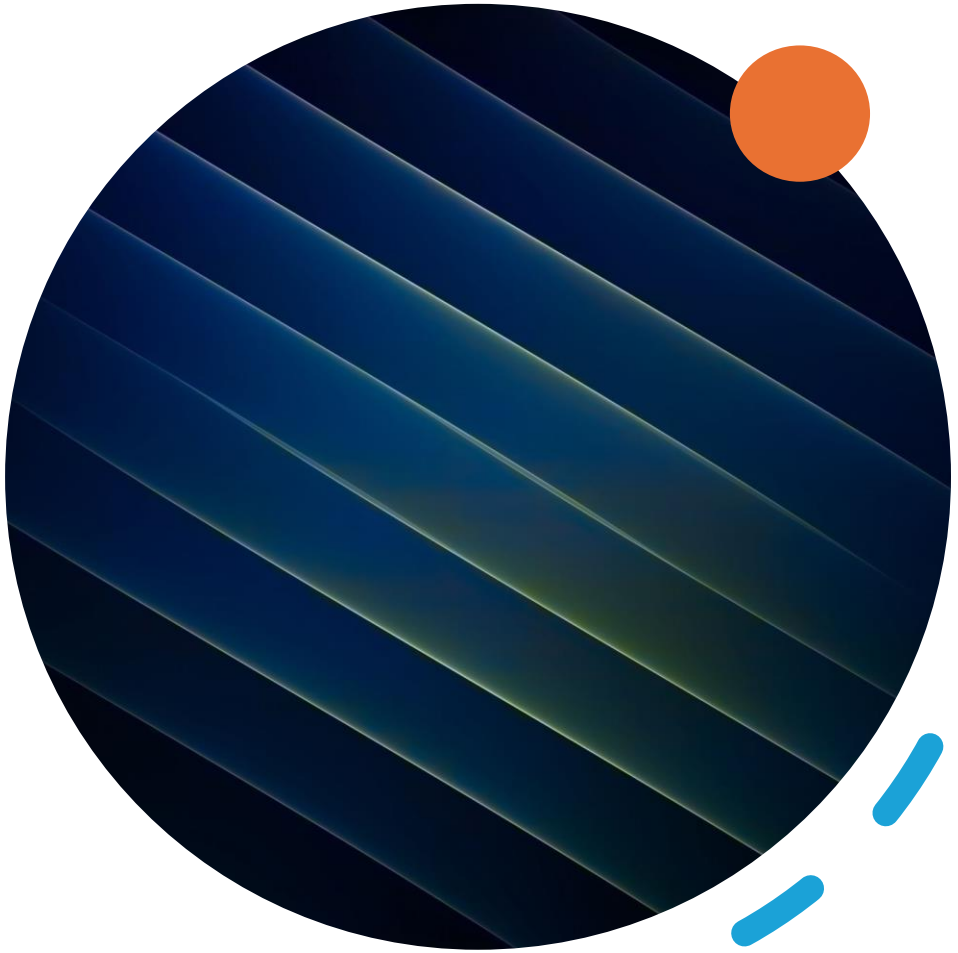
Continuously check for incoming data from the HC-05.
Read and parse the commands.
Perform actions based on the parsed commands (e.g., turning devices on or off).

ADVANTAGES

- Cost-Effective
- Ease of Use
- Low Power Consumption
- Short-Range Communication
- No Need for Additional Infrastructure
- Simple Pairing

APPLICATIONS

- Lighting Control
- Appliance Management
- Home Security
- Entertainment Systems
- Routine Automation



CONCLUSION

voice controlled home automation using Bluetooth offers a promising future for enhancing convenience and efficiency in modern household .

By integrating voice recognition technology with Bluetooth enabled devices, user can effortlessly control various aspects of their home environment through simple local commands .

this technology not only simplifies daily task but also promotes accessibility for individual with mobility impairments.

Furthermore, it's wireless nature eliminates the need for complex wiring making installation easier and more adaptable.

As this field continues to evolve the potential for personalized and seamless home automation experiences grows, promising a future where home are smarter, more responsive ,and more initiative than ever before.

Thank you