

# **CODTECH IT SOLUTIONS**

**Online internship program 2025**

## **Task 2**

### **Task 2:- Home Automation with bluetooth project**

#### ***Objective***

Design and develop a home automation system that allows users to control and monitor various appliances and devices in their home using a Bluetooth-enabled smartphone or tablet.

#### ***Introduction***

Welcome to my Home Automation with Bluetooth project! This innovative system enables users to control and monitor their home appliances remotely using a Bluetooth-enabled smartphone or tablet. With the aim of enhancing convenience, energy efficiency, and safety, this project combines cutting-edge technology with practical functionality.

# ***Components***

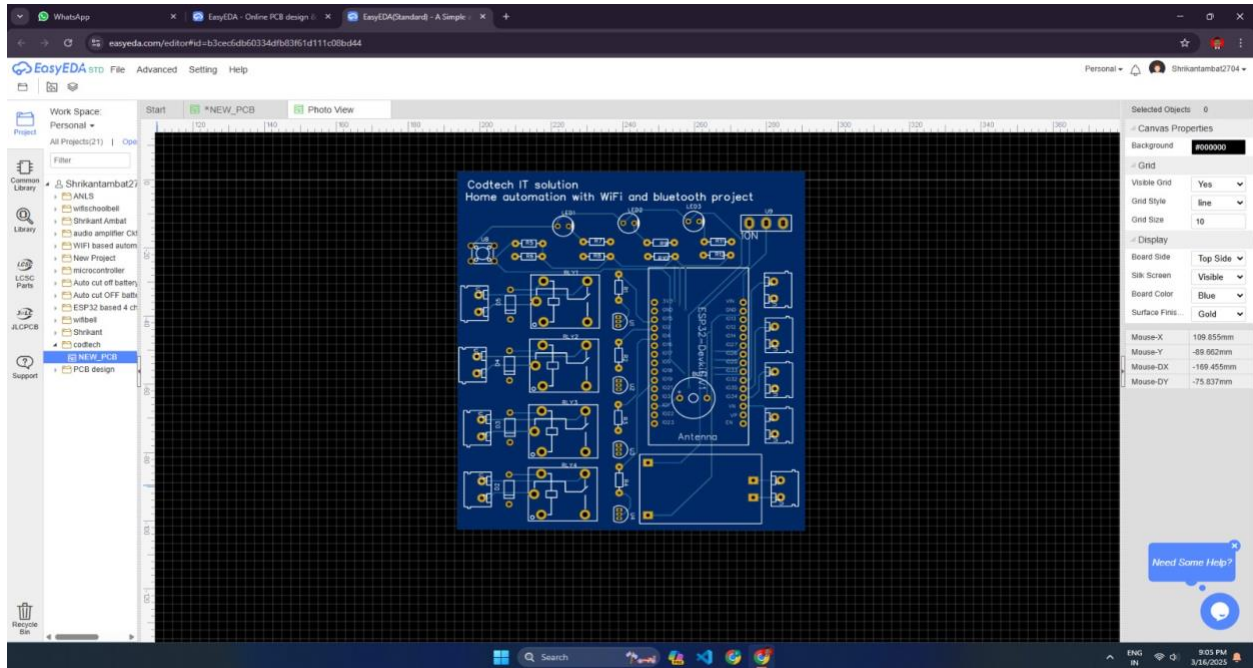
## ***Hardware part***

- 1) ESP-32 development board
- 2) 5 volts Non-latching Relay
- 3) Hi-Link 5 volts Power Supply
- 4) 220V AC to 3.3V DC Power supply
- 5) Couple of resistors –  $10k\Omega$  &  $330\Omega$
- 6) Two pin terminal connectors
- 7) BC547 transistor
- 8) 1N4007 diodes
- 9) Buzzer
- 10) Led's and Push button

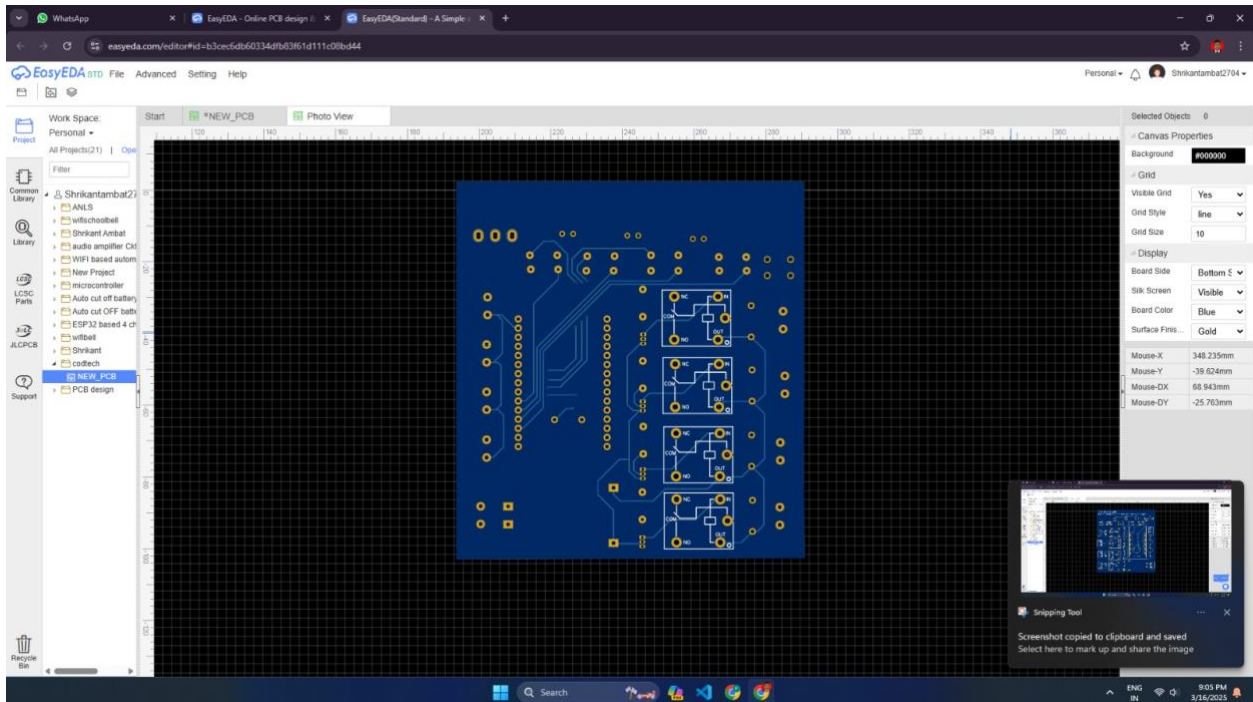
## ***Software part***

- 1) Arduino IDE with ESP Boards
- 2) Blynk IoT Application (can be downloaded from Play-store)

# PCB 3D design (front side)



# Back side



I have designed a 2 layer PCB for this project and the good news is that you can also use the same design or modify it according to your project without any restrictions.

## ***Working***

This projects works with Bluetooth and WiFi simultaneously which means you can control your appliances with phone even without Internet. The Internet part of the project uses Blynk IoT platform which we have set up several times. For the non-internet i.e. Bluetooth part Techiesms team has designed an application containing eight buttons for switching four appliances on or off. Whenever a button is pressed the application sends a number between 1 and 8 depending upon the button. After receiving it the code switches the appliance accordingly and updates the Blynk application too.

# ***Features***

## ***Primary Features:***

**Remote Appliance Control:** Turn ON/OFF lights, fans, air conditioners, and other appliances using your smartphone/tablet.

**Real-time Status Updates:** Receive instant notifications on the status of appliances (ON/OFF).

**Scheduling:-** Schedule appliance operations for specific times of the day.

## ***Additional Features:***

**Energy Monitoring:** Track energy consumption of individual appliances.

**Automated Scenes:** Create custom scenes (e.g., “Movie Night”) that adjust multiple appliances with a single command.

**Voice Control:** Integrate with popular voice assistants (e.g., Alexa, Google Assistant) for hands-free control.

**Security Alerts:** Receive notifications when unusual activity is detected.

**Customizable Interface:** Personalize your smartphone/tablet app with custom icons, colors, and layouts.

## ***Applications:***

### ***Residential Applications:***

**Smart Homes:** Integrate with existing smart home systems for seamless control.

**Apartment Automation:** Ideal for renters who want to automate their living space without major renovations.

**Elderly Care:** Assist seniors with automated lighting, temperature, and security controls.

### ***Commercial Applications:***

**Office Automation:** Enhance workplace productivity with automated lighting, temperature, and security controls.

**Hotel Automation:** Provide guests with a seamless, automated experience.

**Retail Automation:** Create immersive shopping experiences with automated lighting, music, and security controls.

### ***Other Applications:***

**Greenhouses:** Automate temperature, humidity, and lighting controls for optimal plant growth.

**Animal Shelters:** Provide automated care and monitoring for animals.

**Public Spaces:** Enhance public areas like parks, plazas, and museums with automated lighting, sound, and security controls.

<https://play.google.com/store/apps/details?id=cloud.blynk>