



Learn to build a Home Automation Project with Bolt IoT

By Shobhit Kumawat

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- Robotics & IOT Project Engineer at Kitolit pvt ltd
- Worked as Community Manager Intern at Bolt IoT
- 4th year undergraduate from ECE at IIIT Nagpur
- Well-versed in C, Python, HTML, JS, and many more programming languages



@shobhit-kumawat



@sbkmt

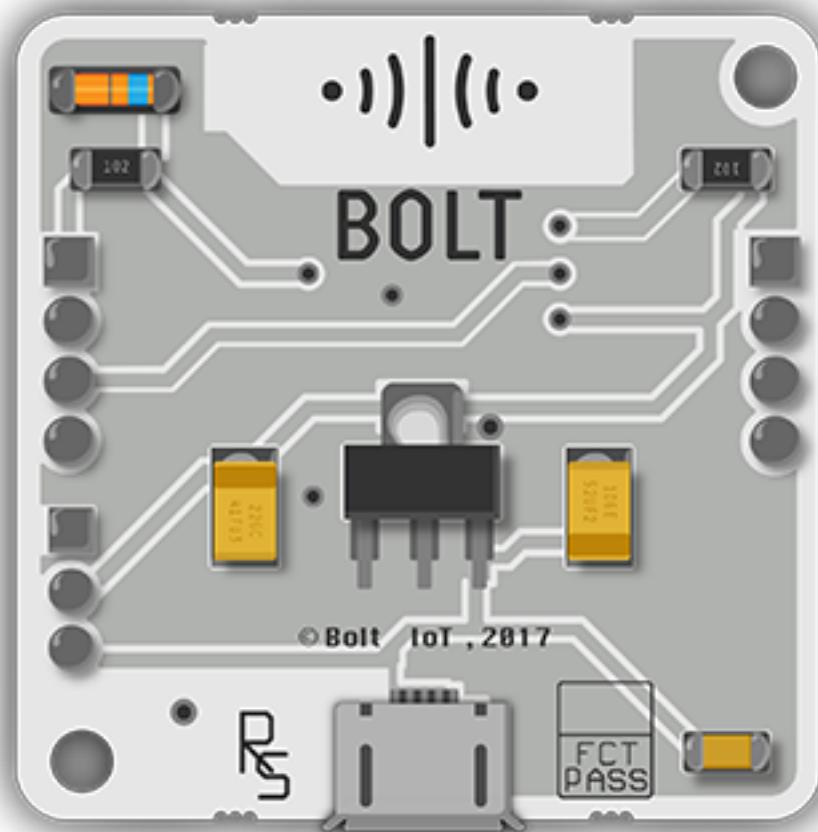


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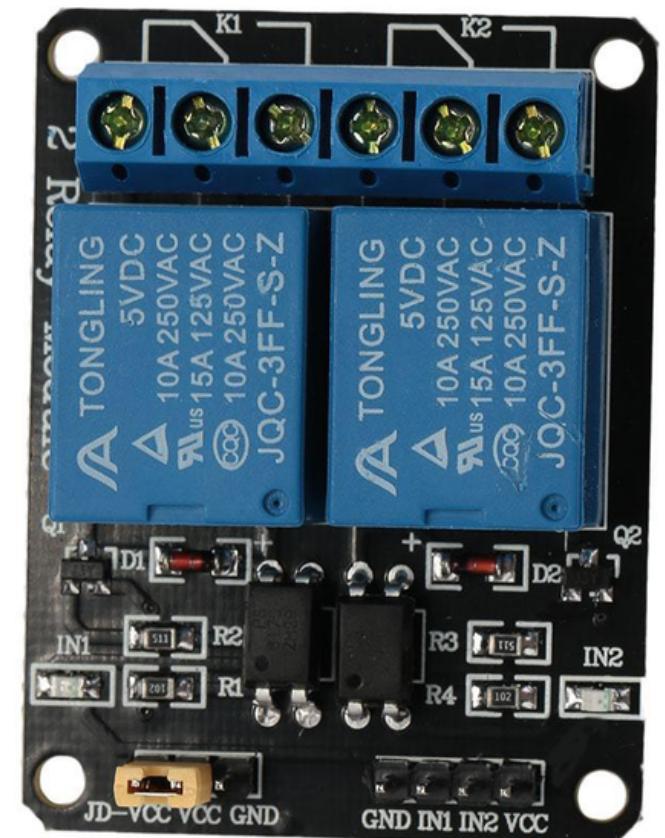
Guidelines for Workshop

- Keep your audio and video on mute.
- If you have any questions during the session then you may note them down and ask them in Q&A Part at the end. :)
- Recording of this session will be made available on
<https://www.boltiot.com/workshops>.
- Link to all Workshop Resources will be provided at the end of this session.

Hardware Required



Bolt Wifi Module



Relay Module



Jumper Wires

Hardware Required



Electrical Wires



LED Bulb

Introduction to Bolt Cloud

The screenshot shows the Bolt Cloud interface. On the left is a dark sidebar with a green header bar containing a logo and the word "Products". Below the header are six items: "Devices" (square icon), "Products" (cabinet icon), "Assets" (mountain icon), "API" (file folder icon), "Docs" (document icon), and "New" (gear and wrench icon). The main area has a light gray background. At the top right are a "TAKE A TOUR" button, a user profile icon, and a three-dot menu icon. In the center, the text "Build your first product" is displayed above a sub-instruction: "Make few selections, fill some forms, set up sensors and go live in minutes." Below this is a white callout box with a green circular icon containing a hammer and screwdriver. The text inside the box says "Build a product on your own." and has a green "BUILD" button at the bottom. A red arrow points from the text "Click to create a new product" to the "BUILD" button. The Bolt Cloud logo is visible in the bottom right corner.

Products

TAKE A TOUR

Devices

Products

Assets

API

Docs

New

Build your first product

Make few selections, fill some forms, set up sensors and go live in minutes.

Click to create a new product

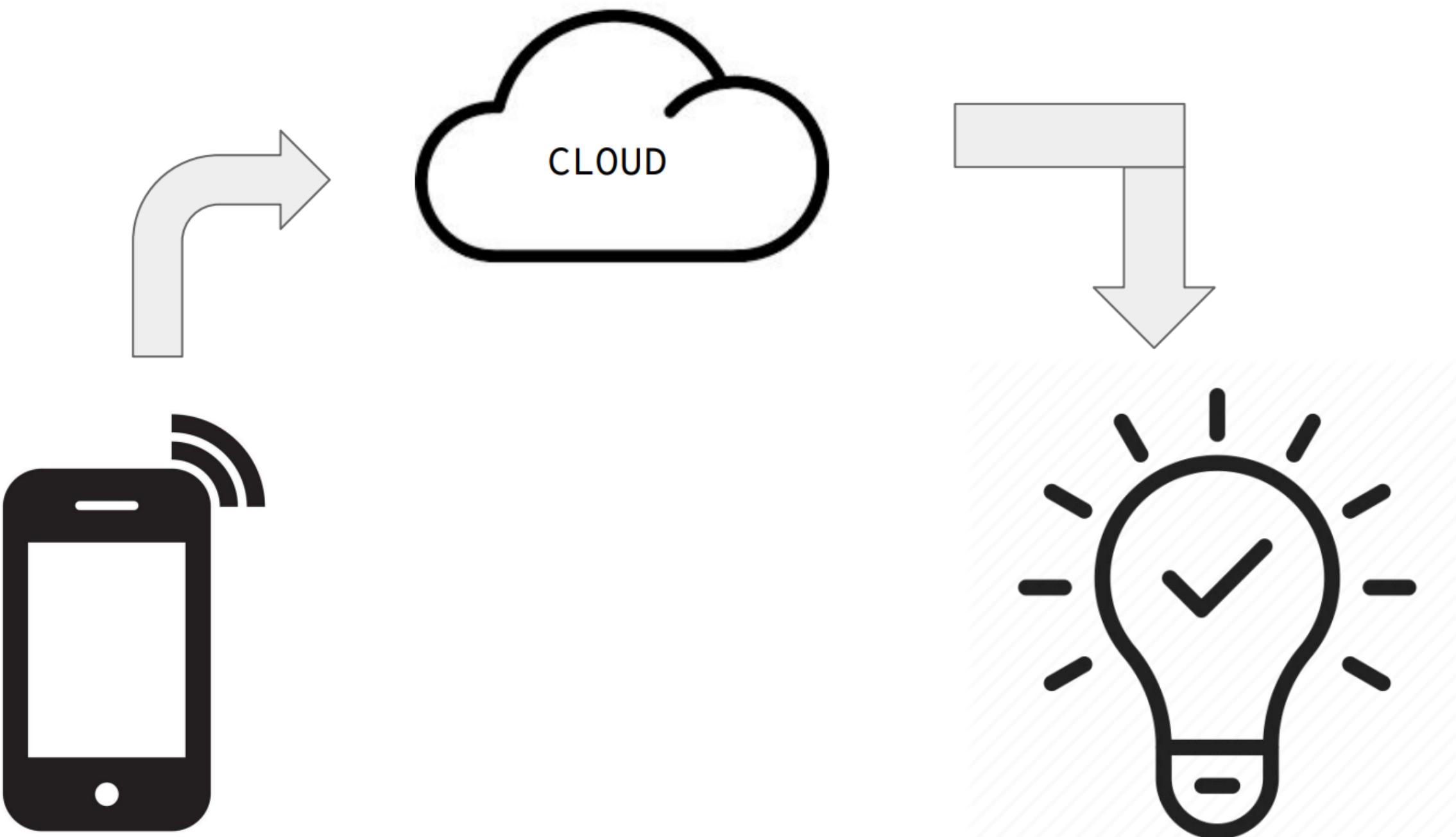
Build a product on your own.

BUILD

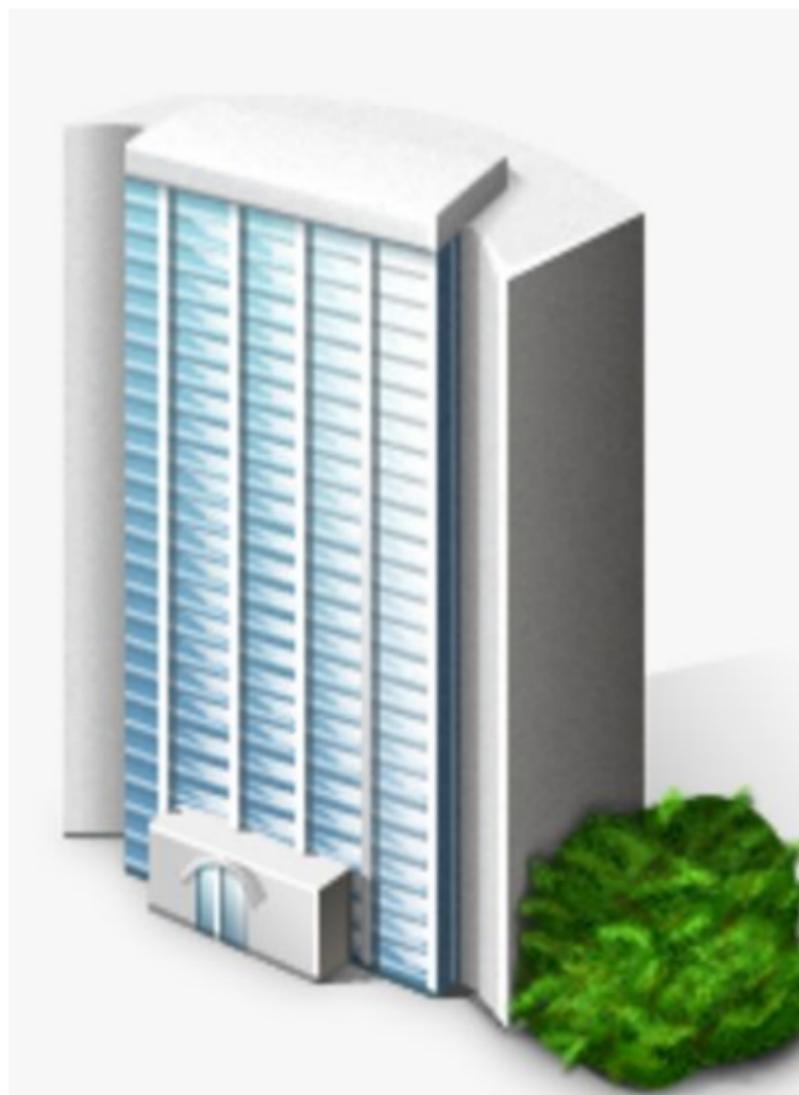
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Understanding Cloud Architecture



Introduction to APIs



DELIVERY = API



YOU

Feedback = Response

Bolt APIs



Log In

Home

Documentation

Search

CTRL-K

API

API Introduction

API Request

> GPIO Commands

> UART Commands

> Utility Commands

Sample Code

API access rules

BOLT CLOUD PRO API

Write Servo Output

Fetch all device data

HARDWARE SPECIFICATIONS

Bolt WiFi Module

INTERFACING CONTROLLERS

Arduino Library

API Introduction

Suggest Edits

The Bolt Cloud API provides an interface for communication between the Bolt devices and any 3rd party system e.g. mobile application, web server, python programs etc. The API contains very intuitive control, monitoring, communication and utility functions for the Bolt Devices connected to your account. The Bolt Cloud API uses HTTP protocol for the communication and uses the HTTP GET and HTTP POST methods. Hence users can execute actions and retrieve information from Bolt devices programmatically using conventional HTTP requests.

Here are a few use cases of the API:

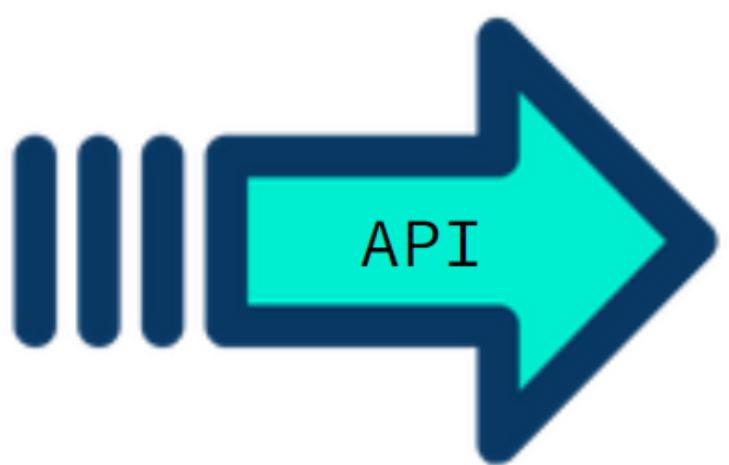
- Use the API in native apps on iOS and Android to control and monitor Bolt devices over the Internet.
- Pull collect sensor data connect to Bolt device, to any other cloud to run your custom AI algorithms and analytics.
- Connect Bolt Cloud to any VPS (Virtual Private Server) and run your code in any language of your choice. Refer sample codes.
- Remote Operating System: Using the API, Bolt devices can work like a board with an OS i.e. similar to Raspberry Pi or Beagle Bone, with the exception of the OS, which in this case, will reside on a remote VPS (Virtual Private Server). The Bolt will receive data from the sensors and push to the VPS with a Linux OS. The processing will take place on the VPS and it will push the commands to control motors, LEDs, and actuators to the Bolt device. You can use all the features of a Linux OS in this kind of a system.



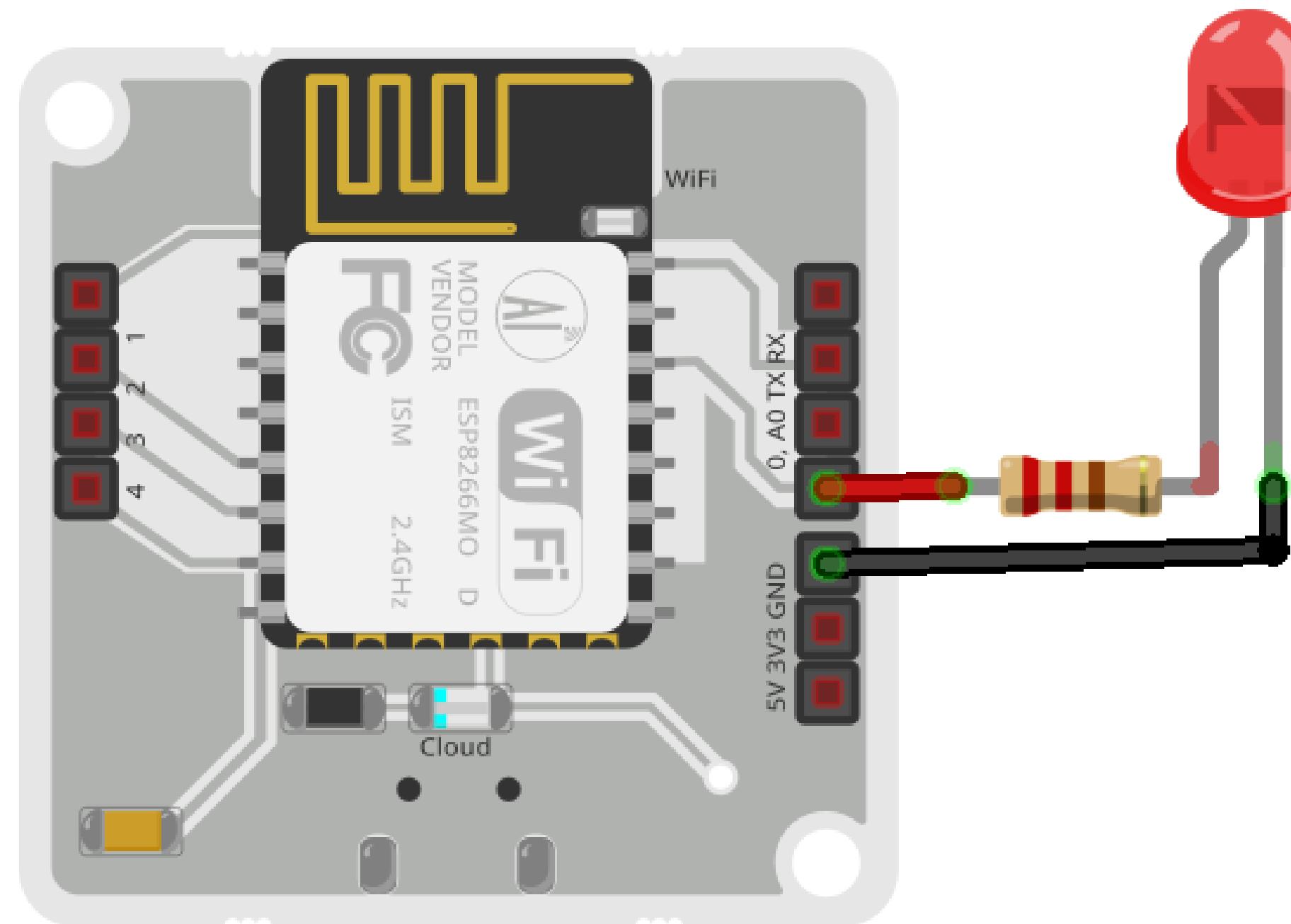
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Home Automation Project

How to approach ?



Controlling LED using Bolt Cloud

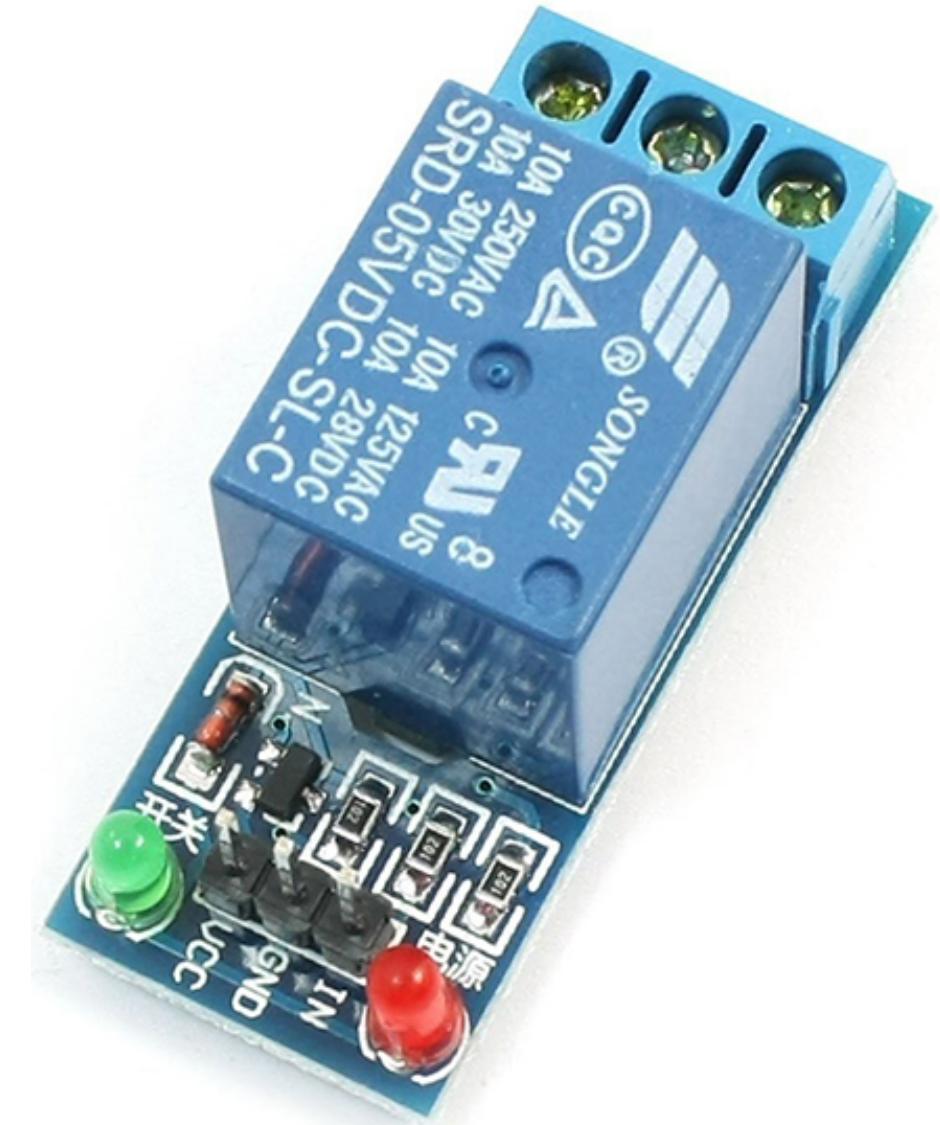




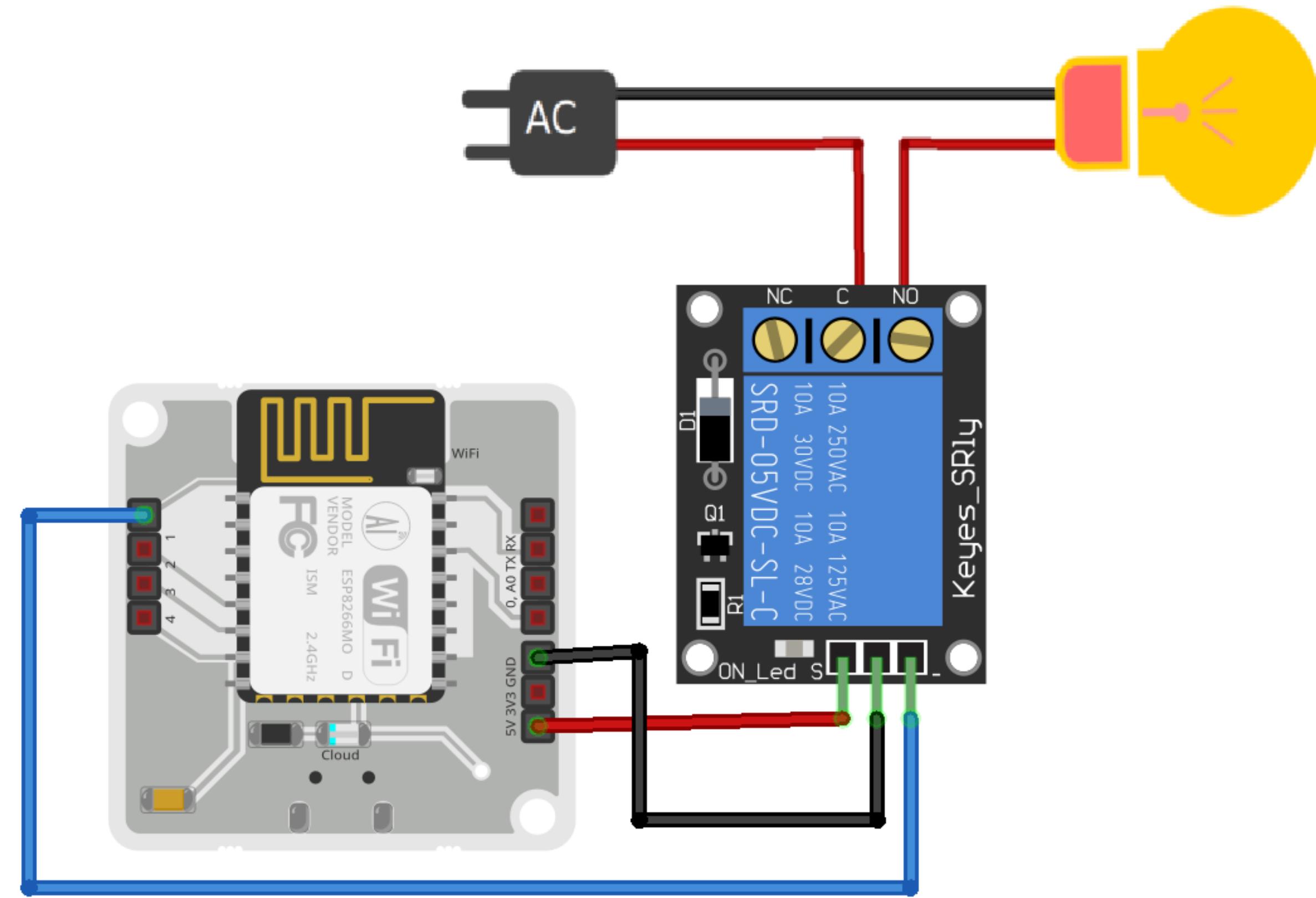
**How to control real
world appliances that
work on 220-250V?**

Introduction to Relays

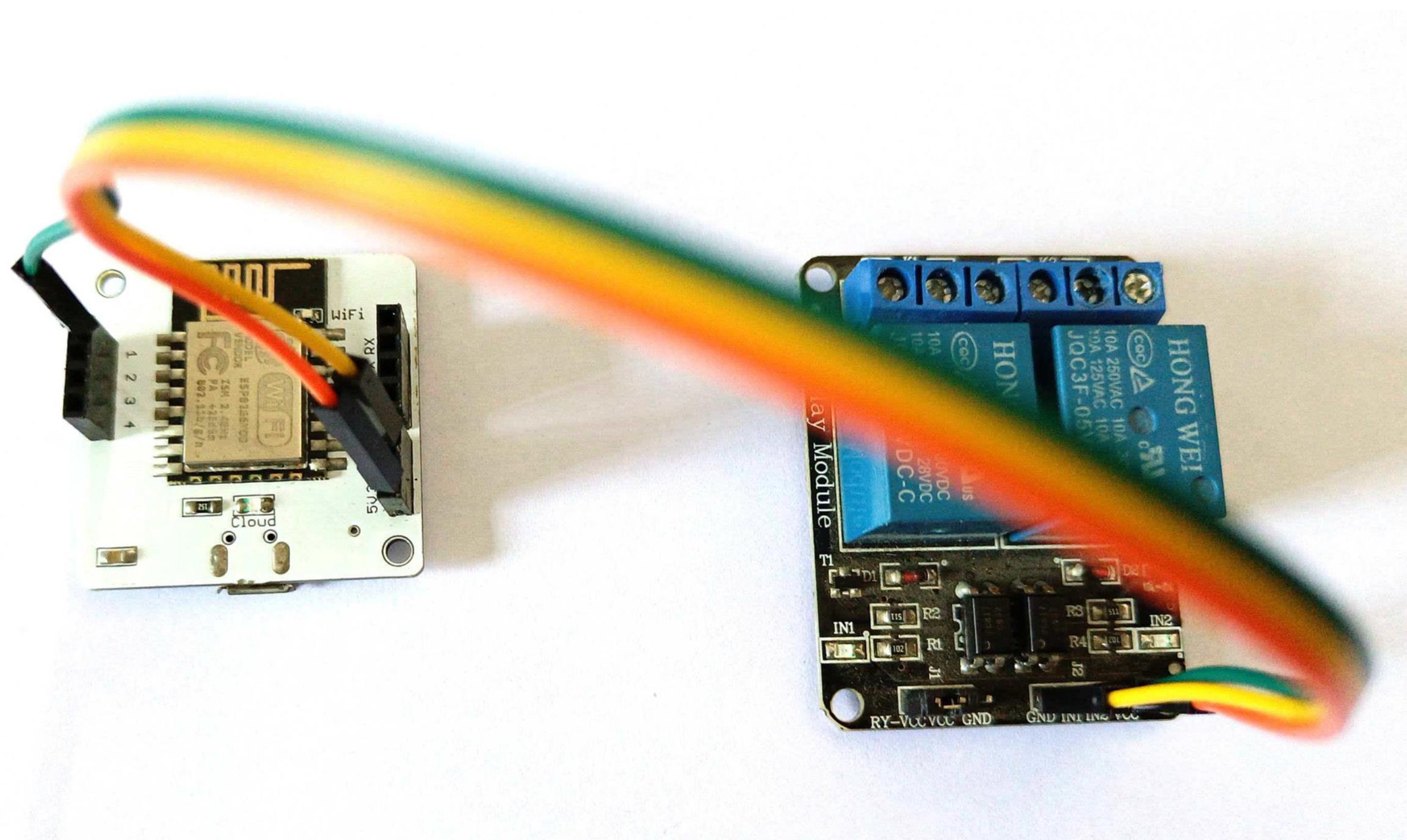
- A relay is a switch, which opens and closes the circuit electronically.
- When Digital Pin is LOW, the relay turns on the appliance.
- When Digital Pin is HIGH, the relay turns on the appliance.
- We will connect relay in Normally Open Condition



Schematic



Hardware Connections

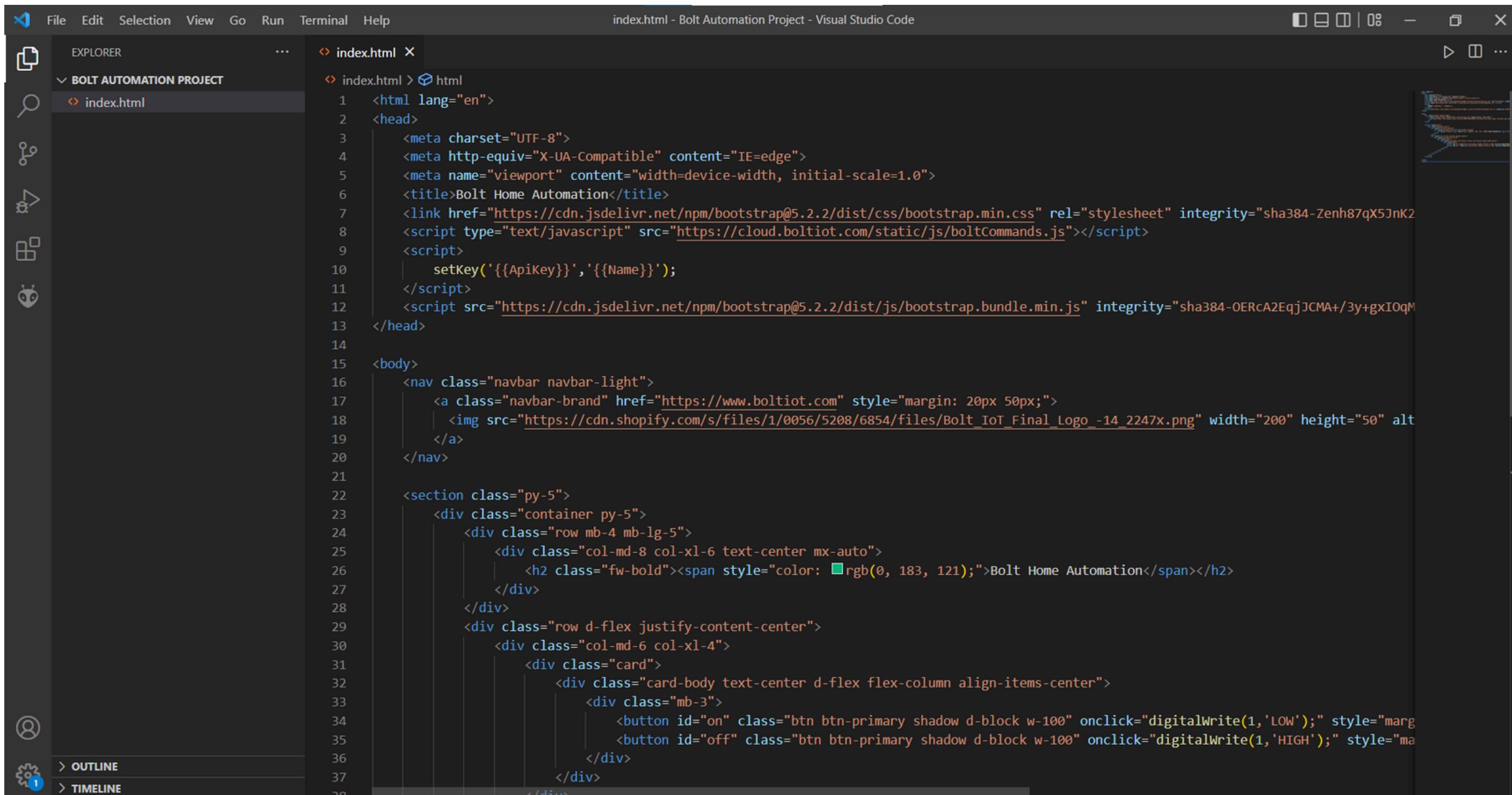


Web Dashboard Using Code Snippets

The screenshot shows a web-based development environment for a project titled "Boat". The top navigation bar includes "Products: Setup", "Shobhit", and a menu icon. Below the header, there are tabs for "Readme", "Hardware", and "Code". A modal window titled "Code snippets" is open, displaying a list of code snippets: "Bar Graph", "Dodge Brick", "Gauge", "Histogram", "Led Control" (which is highlighted in green), "Line Graph", "Prediction", "Scatter Graph", and "Table". A "SELECT" button is located in the top right corner of the modal. The main content area features a large title "Led Control" and a subtitle "This is a simple code that allows you to control the led connected to pin. [Read the docs here](#)". Below this is a section titled "Code preview" containing the following code:

```
singleButton({name:"Led On", action:"digitalWrite", pin:"0", value:"HIGH", sound: "spaceship.m4"});  
singleButton({name:"Led Off", action:"digitalWrite", pin:"0", value:"LOW", sound: "spaceship.m4"});
```

Custom Web Dashboard using JS



The screenshot shows the Visual Studio Code interface with the following details:

- File Bar:** File, Edit, Selection, View, Go, Run, Terminal, Help.
- Title Bar:** index.html - Bolt Automation Project - Visual Studio Code.
- Explorer Panel:** Shows a project named "BOLT AUTOMATION PROJECT" containing an "index.html" file.
- Editor Area:** Displays the content of the "index.html" file, which includes HTML, CSS, and JavaScript code for a web dashboard.
- Bottom Status Bar:** Shows icons for Outline, Timeline, and a gear icon with a '1'.
- Decorative Element:** A green decorative graphic with the word "BOLT" at the bottom right.

```
<html lang="en">
<head>
<meta charset="UTF-8">
<meta http-equiv="X-UA-Compatible" content="IE=edge">
<meta name="viewport" content="width=device-width, initial-scale=1.0">
<title>Bolt Home Automation</title>
<link href="https://cdn.jsdelivr.net/npm/bootstrap@5.2.2/dist/css/bootstrap.min.css" rel="stylesheet" integrity="sha384-Zenh8qX5JnK2" type="text/css"/>
<script type="text/javascript" src="https://cloud.boltiot.com/static/js/boltCommands.js"></script>
<script>
    setKey('{{ApiKey}}','{{Name}}');
</script>
<script src="https://cdn.jsdelivr.net/npm/bootstrap@5.2.2/dist/js/bootstrap.bundle.min.js" integrity="sha384-OERcA2EqjJCMA+/3y+gxIOqM" type="text/javascript"></script>
</head>

<body>
    <nav class="navbar navbar-light">
        <a class="navbar-brand" href="https://www.boltiot.com" style="margin: 20px 50px;">
            
            Bolt Home Automation
        </a>
    </nav>

    <section class="py-5">
        <div class="container py-5">
            <div class="row mb-4 mb-lg-5">
                <div class="col-md-8 col-xl-6 text-center mx-auto">
                    <h2 class="fw-bold"><span style="color: #rgb(0, 183, 121);>Bolt Home Automation</span></h2>
                </div>
            </div>
            <div class="row d-flex justify-content-center">
                <div class="col-md-6 col-xl-4">
                    <div class="card">
                        <div class="card-body text-center d-flex flex-column align-items-center">
                            <div class="mb-3">
                                <button id="on" class="btn btn-primary shadow d-block w-100" onclick="digitalWrite(1,'LOW');" style="margin-bottom: 10px;">ON</button>
                                <button id="off" class="btn btn-primary shadow d-block w-100" onclick="digitalWrite(1,'HIGH');" style="margin-top: 10px;">OFF</button>
                            </div>
                        </div>
                    </div>
                </div>
            </div>
        </div>
    </section>

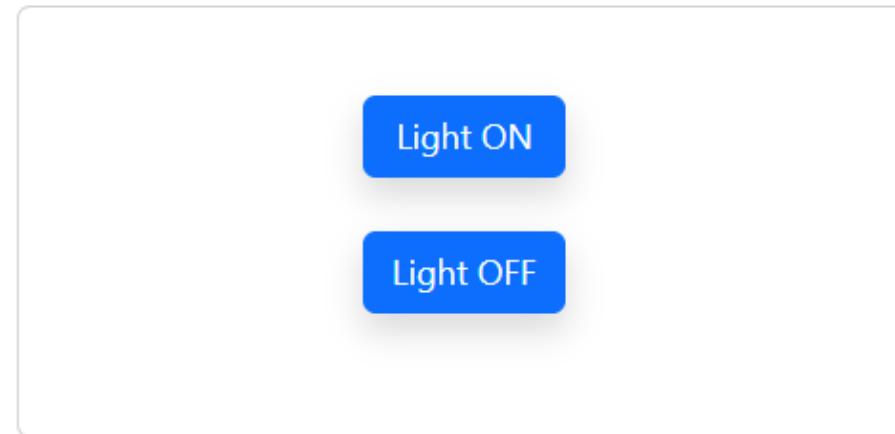
```

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Web Dashboard Preview



Bolt Home Automation



Important Links

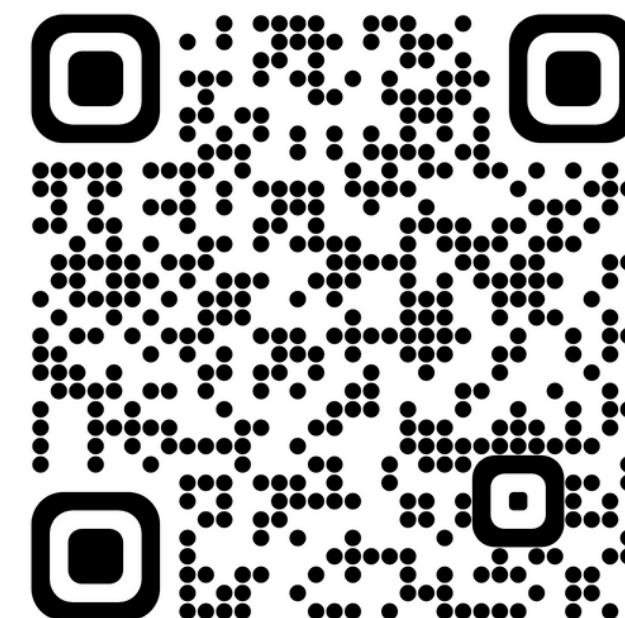
Project Resources

<https://github.com/sbkmt/BoltIoT-Home-Automation-Workshop>

Reference Links

shorturl.at/GMP12

All in One QR





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*Thank
you*