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Smart Remote

Project Description

This project was born out of a want of a smart home. Typically, buying and using commercially advertised products now is astronomically expensive. With the use of intuition and everything I learned in this class and in previous classes I decided to assemble a few different types of hardware in order to achieve my goal. The project goal was to implement the use of a smart plug, raspberry pi, and a self made web server to make an online remote that I could use within the confines of my own home wireless network to control the power, on and off, of a device such as a lamp, fan, or anything of that nature. In doing research and making the project purposefully open ended I hope to expand on it in the future by controlling other devices such as desktop computers, smart TVs, and other internet connectable devices.

This project is connected to the internet by mainly the web server. For the project to be usable it needed a user interactive web server to control the binary function of toggling on and off a light. Additionally, each part of the project needs to be connected to the internet as well. The web server is always running on the internet, the raspberry pi need to be connected to the internet and connected to MQTT to receive messages from the web server in order to send a message to the connected smart plug to turn on or off the plugged in device, in this case a lamp that is plugged in to a smart plug.

Hardware

- Lamp
- Raspberry Pi 3 Model B
- 16 GB MicroSD Card
- WeMo Switch Smart Plug
- iPhone (or other mobile smartphone able to connect to the internet)

Final Cost (Excluding Lamp and iPhone): $78.89

The Hardware was acquired from amazon.com.

Networks

       The network I used for this project is WiFi. I used it because it is one of the mostly widely available networks that is used in technology today and the WeMo smart plug is only WiFi enabled. It also allows me to control devices anywhere in the range of the wifi network without needed all of the devices to be close together like networks like Bluetooth require.

GitHub Repository

https://github.com/sweetermanm/Smart-Remote-Using-Raspberry-Pi

WebServer Link

https://myapp-clarycxicj.now.sh

Demo Video

https://www.youtube.com/watch?v=wd-og7RI1zo

Architecture

User initiates protocol by interacting with toggle button on the web server	→	Web server sends an MQTT message to the raspberry pi	⇄	Raspberry pi executes function that changes the smart plug state that turns on and off the the light	→	Smart plug receives function change and executes change of state

The web server and raspberry pi are able to send messages back and forth to each other using cloudMQTT.