IoT Project Analysis Year 2 Semester 2

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Project Title: Home Automated Smart Lamp

Purpose: The purpose of this Project is to build a home automated lamp controlled remotely from a mobile phone and/or controlled by Motion Sensor as a second option providing the customer more options.

Customer Feature List:

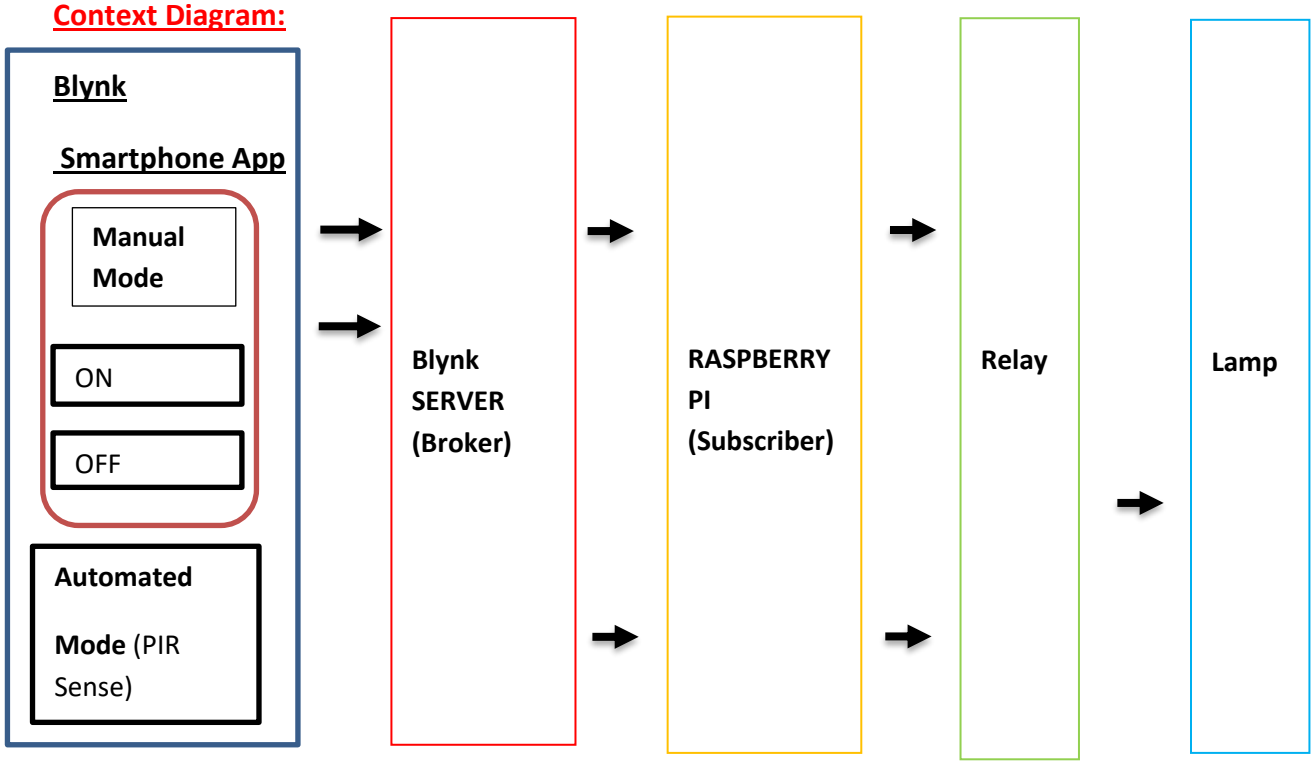
The Customer will be able to turn on/off a Lamp by using a Smartphone application at will. This will provide a quick and more efficient way to turn off/on any appliance so long as it is connected to what we call a relay. Relays are switches that open and close circuits electromechanically or electronically. Relays control one electrical circuit by opening and closing contacts in another circuit. As relay diagrams show, when a relay contact is normally open, there is an open contact when the relay is not energized.

Major features in this Project include:

1. Blinking the Lamp
2. Smartphone interface
3. MQTT Broker
4. Wi-Fi

Name	Binary Code	Type	Description
ON	1	On	This will trigger the relay switch to turn
OFF	0	Off	This will send a digital signal to turn trigger the relay to turn off

Context Diagram:



When an **ON** signal is published, the data (1 Binary Signal) is sent to the **Blynk Server**, which receives it and send it to whatever Topic the subscriber (raspberry pi) is subscribed to and trigger the relay which is connected via GPIO Pin which will then turn on the Lamp. When an **OFF** signal is published, the data (0 Binary Signal) is sent to the **Blynk Server**, which receives it and sends it to the subscriber (raspberry pi) which contains the Token key of my Blynk Account, this is how it knows exactly what to connect to. The events are written in Javascript code in which my virtual pins that listen for once the subscriber is connected to the Server **(when the .js program is run, initially on startup).** This event triggers the relay which is connected via GPIO Pins, when they're live which will then turn on the Lamp.

What will my Project depend on?

My Project will depend on its performance and latency in terms of getting a reply from the Blynk Server and publishing the data values the subscriber **(lamp)**. It will also depend on the connectivity such as the input signals that is passed from the Smartphone.

Non-Functional Requirements:

1) The Motors that will be used in the Drone must be battery powered.
2) The communication will be Wireless which means the data being sent to the receiver (The Raspberry Pi and then to the Relay which will trigger the switch) will depend on the input.

Concepts Used:

I will be using other skills from what I learned in other modules such as Discrete Mathematics (Logic), Computer Systems, Physics, Programming.

Language used:

JavaScript

Technology/Tools:

1. Raspberry Pi 3B board
2. Raspbian Operating System
3. 1 x 5V Relays
4. 1 x Lamp
5. Wi-Fi
6. PIR Motion Sensor
7. Smartphone Device
8. Jumper Wires
9. Raspberry Pi 3 Model B
10. Blynk Application