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Project Presentation on

SMART HOME

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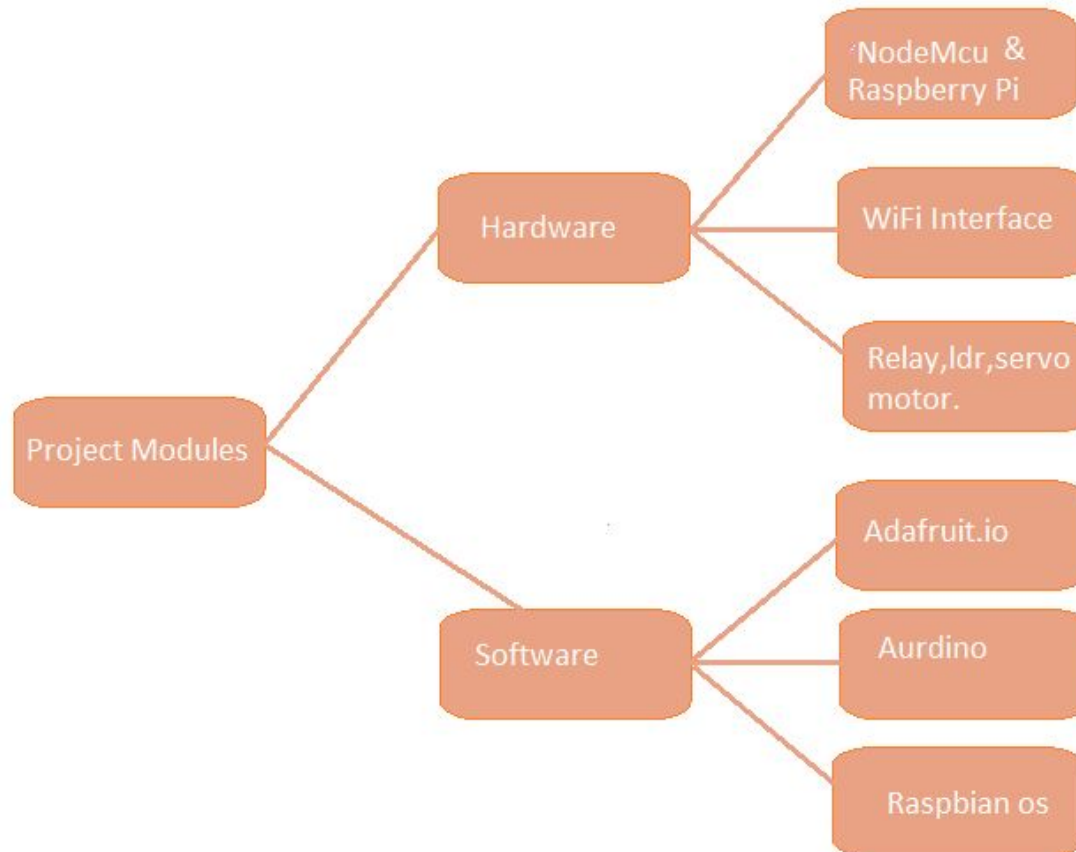
INTRODUCTION

- There is an increasing demand for smart homes, where appliances react automatically to changing environmental conditions and can be easily controlled through one common device.
- This project presents a possible solution whereby the user controls devices by using their existing mobile phone, where control is communicated to the NodeMcu from a mobile phone through its WIFI interface.

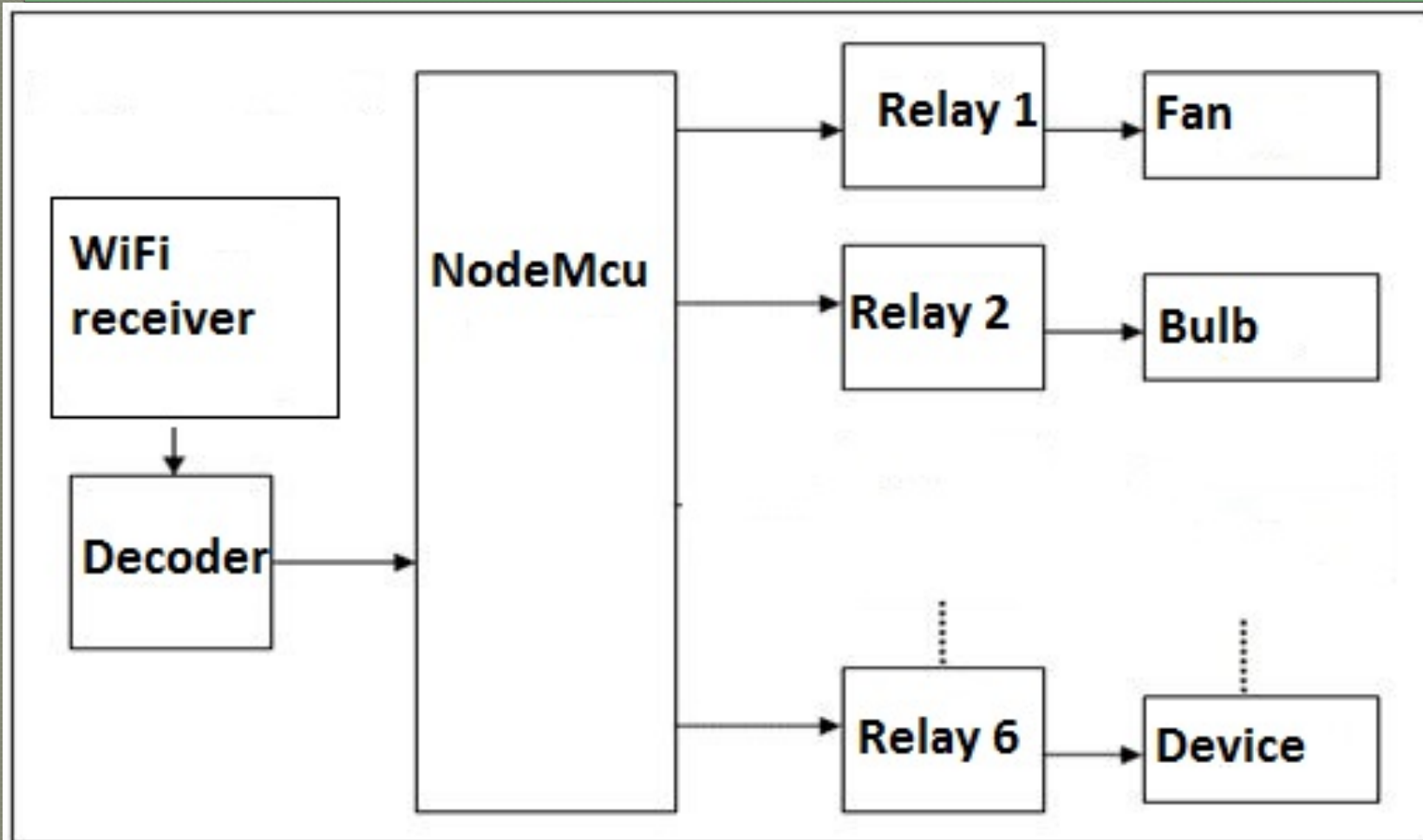
What is Home Automation?

- Home automation involves introducing a degree of computerized or automatic control to certain electrical and electronics system in a building.
- These lighting, temperature control, etc., this paper demonstrate a simple home automation system which contains a remote mobile host controller and several client module (home appliances).
- The client modules communicate with host controllers through a wireless device such as a Bluetooth enabled mobile phone, in this case, an android based smart phone.

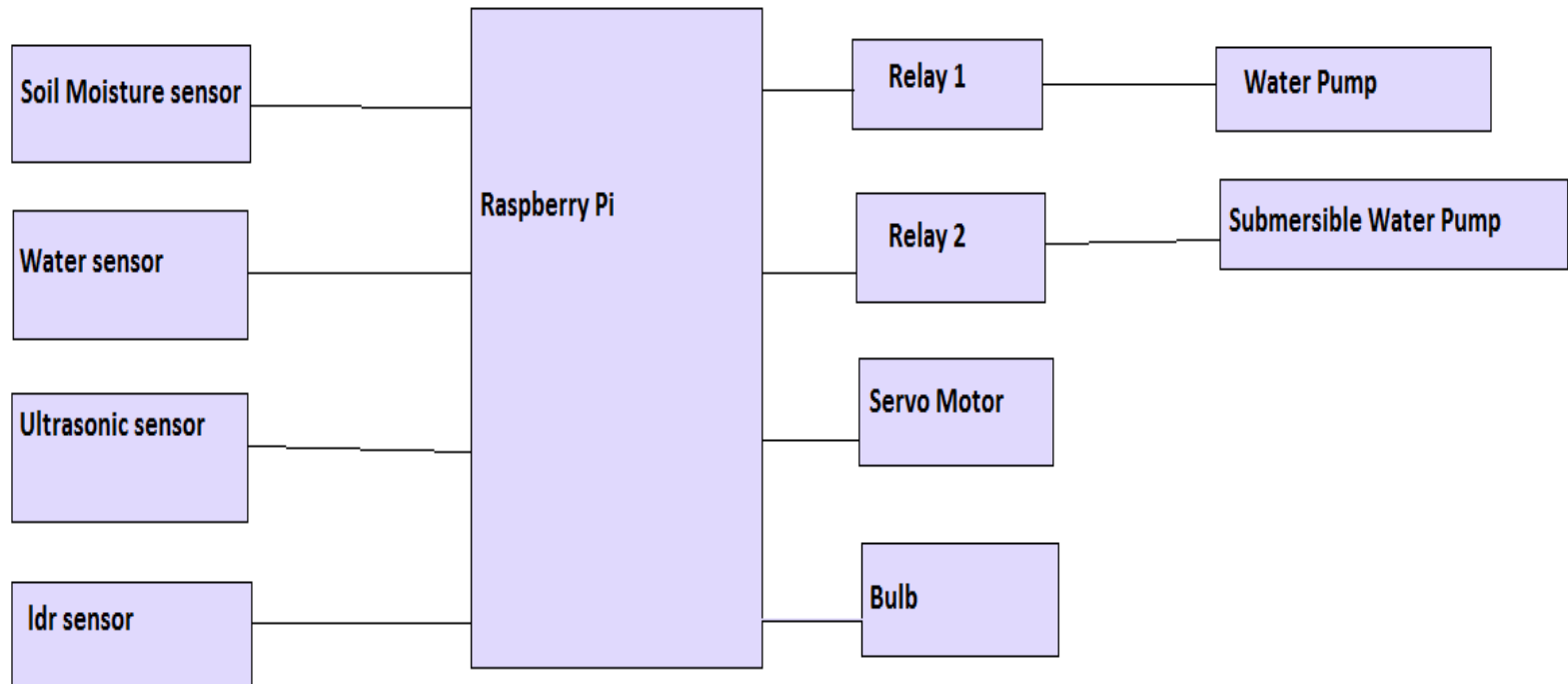
Project Modules



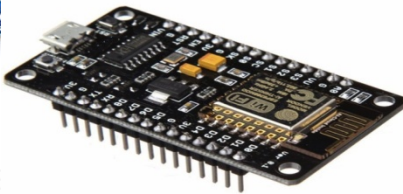
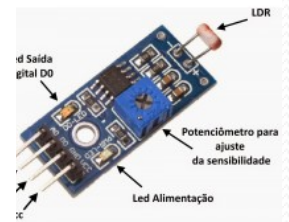
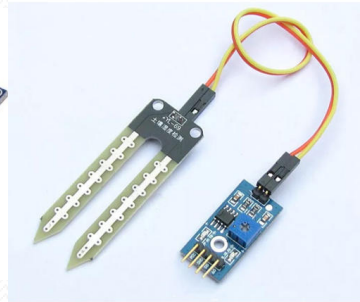
Block Diagram 1:



Block Diagram 2:



COMPONENTS USED



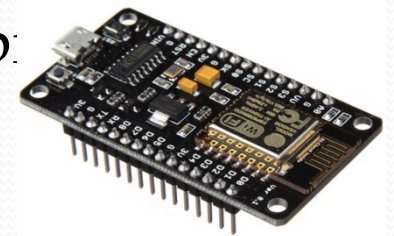
Components Required

S.No	Component Name	Nos. Required
1	Raspberry Pi	1
2	NodeMcu	1
3	Jumper Wire	as per required
4	Relay	8
5	Bulb	6
6	Fan	2
7	LDR sensor	1

8	Water Pump	1
9	Water Sensor	1
10	Soil Moisture Sensor	1
11	DHT11 Sensor	1
12	Ultrasonic Sensor	1
13	Submersible Water Pump	1
14	Battery	1
15	Servo Motor	2

NodeMcu

NodeMCU is an open source IoT platform. It includes firmware which runs on the ESP8266 WiFi SoC from Espressif Systems, and hardware which is based on the ESP-12 module. The term "NodeMCU" by default refers to the firmware rather than the development kits. The firmware uses the Lua scripting language. It is based on the eLua project, and built on the Espressif SDK for ESP8266. It uses many open source projects as lua-cjson and SPIFFS.



Raspberry Pi

The Raspberry Pi is a low cost, credit-card sized computer that plugs into a computer monitor or TV, and uses a standard keyboard and mouse. It is a capable little device that enables people of all ages to explore computing, and to learn how to program in languages like Scratch and Python. It's capable of doing everything you'd expect a desktop computer to do, from browsing the internet and playing high-definition video, to making spreadsheets, word-processing, and playing games.



Relay

- A relay is an electrically operated switch.
- Relays are used where it is necessary to control a circuit by a low-power signal.
- Relays protect electrical circuits from overload or faults.



Servo Motor

This is nothing but a simple electric motor, controlled with the help of servomechanism. If the motor as a controlled device, associated with servomechanism is DC motor, then it is commonly known DC Servo Motor. If AC operates the controlled motor it is called AC Servo Motor.



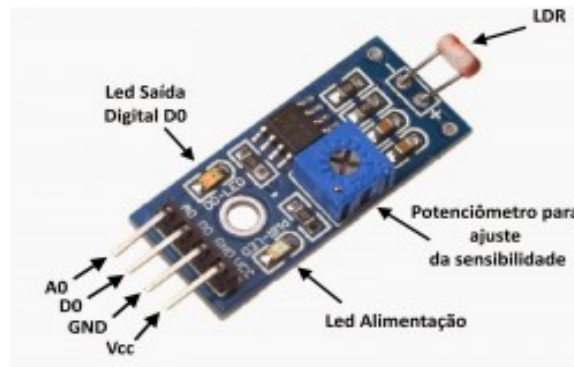
Ultrasonic Sensor

An Ultrasonic sensor is a device that can measure the distance to an object by using sound waves. It measures distance by sending out a sound wave at a specific frequency and listening for that sound wave to bounce back. By recording the elapsed time between the sound wave being generated and the sound wave bouncing back, it is possible to calculate the distance between the sensor and the object.



LDR Sensor

A photoresistor (or light-dependent resistor, LDR, or photo-conductive cell) is a light-controlled variable resistor. The resistance of a photoresistor decreases with increasing incident light intensity; in other words, it exhibits photoconductivity. ... A photoresistor is made of a semiconductor



Submersible Water Pump

A submersible pump (electric submersible pump(ESP)) is a device which has a hermetically sealed motor close-coupled to the pump body. The whole assembly is submerged in the fluid to be pumped. ... Submersible pumps push fluid to the surface as opposed to jet pumps having to pull fluids.



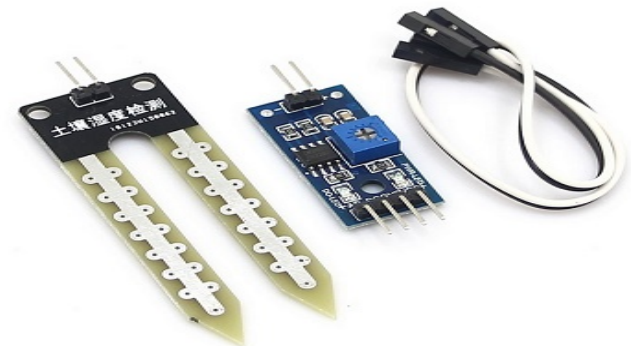
Water Pump

The pumping of water is a basic and practical technique, far more practical than scooping it up with one's hands or lifting it in a hand-held bucket. This is true whether the water is drawn from a fresh source, moved to a needed location, purified, or used for irrigation, washing, or sewage treatment, or for evacuating water from an undesirable location. Regardless of the outcome, the energy required to pump water is an extremely demanding component of water consumption. All other processes depend or benefit either from water descending from a higher elevation or some



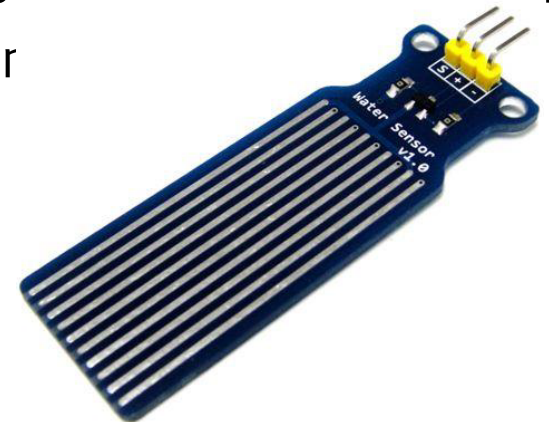
Soil Moisture Sensor

Soil moisture sensors measure the volumetric water content in soil.[1] Since the direct gravimetric measurement of free soil moisture requires removing, drying, and weighting of a sample, soil moisture sensors measure the volumetric water content indirectly by using some other property of the soil, such as electrical resistance, dielectric constant, or interaction with neutrons, as a ρ content.



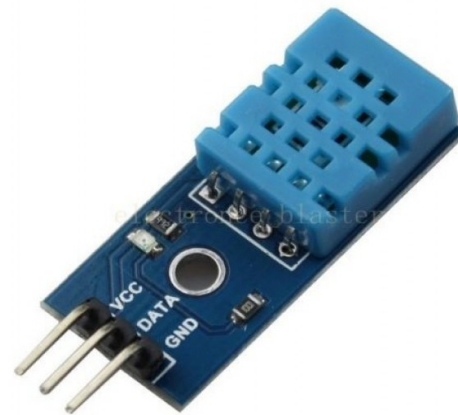
Water Detector/Sensor

A water detector is an electronic device that is designed to detect the presence of water and provide an alert in time to allow the prevention of water leakage. A common design is a small cable or device that lies flat on a floor and relies on the electrical conductivity of water to decrease the resistance across two contacts. The device then sounds an audible alarm together with providing onward signalling in the presence of enough water to bridge the contacts. These are useful in a normally occupied area near any infrastructure that has the potential to leak water, such as HVAC, water pipes, drain pipes, ver dehumidifiers, or water tanks.



DHT11 (Temperature Sensor)

The DHT11 is a basic, ultra low-cost digital temperature and humidity sensor. It uses a capacitive humidity sensor and a thermistor to measure the surrounding air, and spits out a digital signal on the data pin (no analog input pins needed). Its fairly simple to use, but requires a pull-up resistor to read data.



Adafruit.io

Adafruit IO is a system that makes data useful. Our focus is on ease of use, and allowing simple data connections with little programming required. IO includes client libraries that wrap our REST and MQTT APIs. IO is built on Ruby on Rails, and Node.js



Do more with Google Assistant

Create commands to control online services & devices

You can create your own commands for your Google Assistant using IFTTT. IFTTT is a separate company from Google. The name stands for "If this, then that."

For example, if you say:

"It's time to wake up," then your automated coffee maker turns on

Together, your custom phrase and action is called an Applet. To create an IFTTT Applet or use ones that other people have steps below.



Advantages:

- The main advantage of “**Home Automation through Android Mobile**” is that the “**Physically Challenged and Disabled People**”.
- Replace television, air conditioner etc., remotes for sleep mode.
- Smart Home.

Application:

1. Home automation – This project can be used to control various Home Appliances
2. We can control device from a long distance, thus it gives ease of access.
3. Faster operation and efficient.
4. No need to carry separate remote or any other controlling unit.

Conclusion :

- Home Automation is undeniably a resource which can make a home environment automated. People can control their electrical devices via these Home Automation devices and set up controlling actions through Mobile.
- In future this product may have high potential for marketing.



THANK YOU..