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MULTI PLUG CONTROL USING INTERNET OF THINGS

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ABSTRACT: - Using Automation technology life is getting simpler and easier in all aspects. In today's world Automatic systems are being most well-liked over manual system. With the speedy increase within the variety of users of net over the past decade has created net a locality and parcel of life, and IOT is the latest and emerging internet technology. Internet of things could be a growing network of everyday object from industrial machine to goods which will share info and complete tasks whereas you're busy with alternative activities. Wireless Multi-plug Automation system mistreatment IOT could be a system that uses computers or mobile devices to regulate basic home functions and options mechanically through net from anyplace round the world, an automatic house is typically referred to as a wise home. It is meant to save lots of the electrical power and human energy. The home automation system differs from alternative system by permitting the user to control the system from anyplace round the world through net affiliation. IOT is rapidly transforming the destiny of devices which are placed at a core with a specified task in our world. These devices will act among themselves and with humans.

1. INTRODUCTION:

IOT or internet of things is an upcoming technology that allows us to control hardware devices through the internet. Here we propose to use IOT in order to control home appliances, thus automating modern homes through the internet. This system uses 3 masses to demonstrate as house lighting and an acquaintance. Our user friendly interface permits a user to simply management these home appliances through the net. For this system we use an Arduino family microcontroller. This microcontroller is interfaced with a Wi-Fi modem to get user commands over the internet. Relays are used to switch loads. The entire system is powered by a twelve V electrical device. After receiving user commands over the net, microcontroller processes these directions to work these masses consequently. Thus this technique permits for economical home automation over the net.

It conceptualizes the idea of remotely connecting and monitoring real world objects (things) through the Internet. When it involves our house, this idea may be ably incorporated to form it smarter, safer and automated. This IOT project focuses on building a sensible wireless home system besides, an equivalent can even be utilized for home automation by creating use of an equivalent set of sensors. The leverage obtained by preferring this technique over the similar sorts of existing systems is that the alerts and therefore the standing sent by the Wi-Fi connected microcontroller managed system can be received by the user on his phone from any distance no matter whether or not his mobile is connected to the net. The microcontroller employed in the present paradigm is that the Arduino launch pad board that comes with associate degree embedded micro-controller associate degreed an aboard Wi-Fi protect creating use of that all the electrical appliances inside the home can be controlled and managed.

1.1 EXISTING SYSTEM:

Proper security feature and authentication is not available in the existing system. Hence, the system is time consuming and inefficient for manually switching when more devices are involved.

LIMITATIONS OF THE EXISTING SYSTEM

- Time Consuming
- Physically switching is tiresome when more switches are involved.

1.2 PROPOSED SYSTEM:

To overcome the drawbacks of the prevailing system, the proposed system has been evolved. This project aims to reduce the human efforts and saving time.

The system provides with the best user interface. Four switches can be handled by this system.

THE ADVANTAGES OF THE PROPOSED SYSTEM

- Can be controlled from anywhere
- Saves Time.
- Simple and easy to use.

2. SYSTEM SPECIFICATION:

2.1 SOFTWARE REQUIREMENTS:

- Wi-Fi android app
- Arduino-IDE

2.2 HARDWARE REQUIREMENTS:

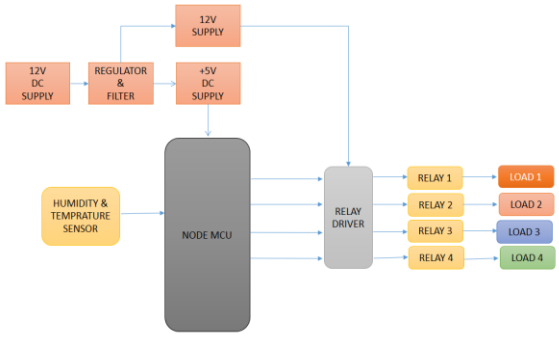
- 4- channel Relay
- NodeMCU
- Android devices

Front End: Android app: Android phone, pushes the data with which NodeMCU will control the devices connected with it. For publishing and subscribing, I am going to use MQTT at all the ends (NodeMcu, Android Phone and Server).

Backend: NodeMcu: This ESP8266 based wireless web server project is built around an Arduino. Currently, ESP8266 is gaining quality within the field of natural philosophy as a result of it's affordable, reliable and easily available in the market. Most documents associated with this module square measure in Mandarin information} provided within the data sheet isn't adequate enough for exploitation ESP8266 for associate degree application.

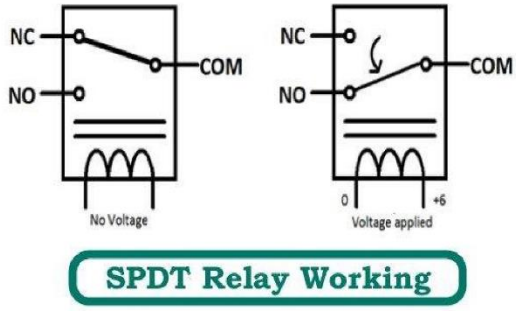
3. PROJECT DESCRIPTION:

BLOCK DIAGRAM (SYSTEM ARCHITECTURE):



HIGH LEVEL DESIGN (Architecture):

LOW LEVEL DESIGN:



4. **REQUIREMENTS DESCRIPTIONS:**

ESP 8266 WI-FI MODULE:

The ESP8266 could be a low price Wi-Fi chip with full TCP/IP stack and MCU(micro controller unit). This small module allows micro controller to connect to a Wi-Fi network and makes simple TCP/IP connections.

NodeMCU is an open source development board and firmware based in the widely used ESP8266 WiFi module. It allows you to program the ESP8266 WiFi module with the simple and powerful LUA programming language or Arduino IDE. With simply some lines of code you'll be able to establish a WiFi affiliation and outline input/output pins per your wants precisely like arduino, turning your ESP8266 into a web server and a lot more. It is the WiFi equivalent of ethernet module. Now you've got net of things (iot) real tool. With its USB-TTL , the nodeMCU Dev board supports directly flashing from USB port. It combines features of WIFI accesspoint and station and microcontroller. These features make the NodeMCU

extremly powerful tool for Wifi networking. It is used as access purpose and/or station, host a webserver or connect to internet to fetch or upload data.

ROUTER:
A router could be a networking device that forwards datapackets between pc networks. Routers perform the traffic leading functions on the net. A datapacket is typically forward from one router to another throught the networks that constitute the internetwork until it reach its destination node.

SOLID STATE:
A relay is an electrically operated switch. Many relays use AN magnet to automatically operate a switch, however different operational principles square measure used, like solid state relays.

ANDROID:
Android could be a mobile OS developed by Google. It is used by several smartphones and tablets. Examples include the Sony Xperia, the Samsung Galaxy.

The Android operating system is based on the Linux kernel. Unlike Apple's iOS, Android is open source, meaning developers can modify and customize the OS for each phone.

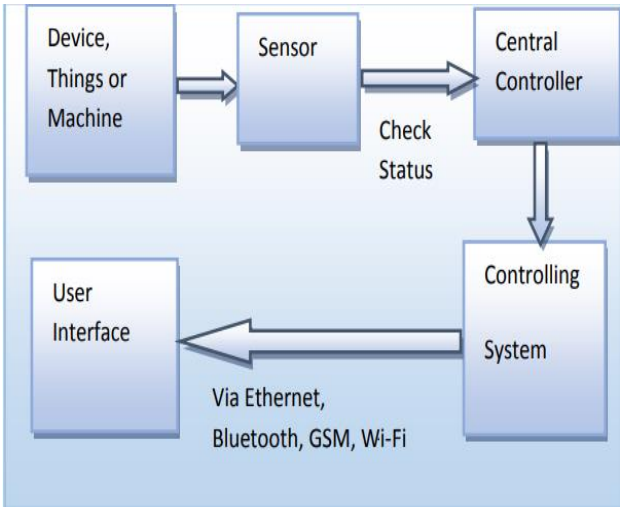
Android is a mobile operating system developed by Google. It is supported a changed version of the UNIX operating system kernel and different open supply package, and is designed primarily for touchscreen mobile devices such as smartphones and tablets. In addition, Google has further developed Android TV for televisions, Android Autofor cars, and Wear OS for wrist watches, each with a specialized user interface. Variants of automaton also are used on game consoles, digital cameras, PCs and other electronics.

ARDUINO IDE:
Arduino is AN ASCII text file platform used for building physical science comes. Arduino consists of each a physical programmable board (often brought up as a microcontroller) and a chunk of package, or IDE (Integrated Development Environment) that runs on your computer, wont to write and transfer coding system to the physical board.

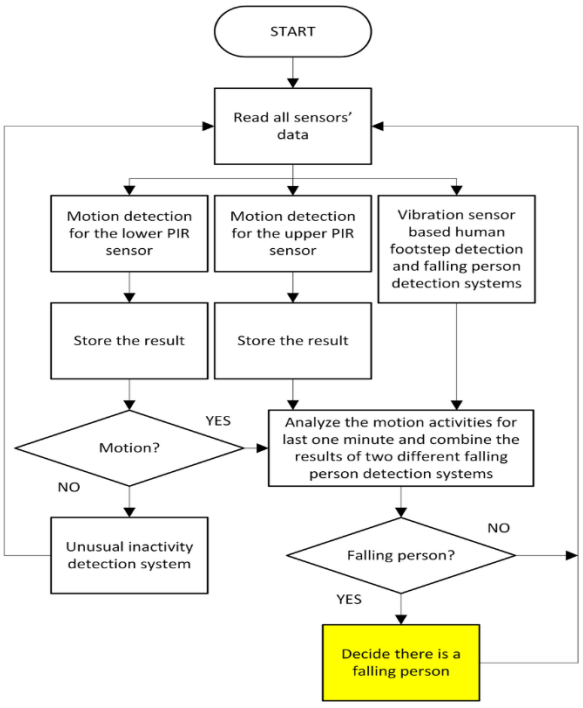
The Arduino integrated development atmosphere (IDE) could be a cross-platform application (for Windows, macOS, Linux) that is written in the programming language Java. It is wont to write and transfer programs to Arduino board.

5. SYSTEM DESIGN:

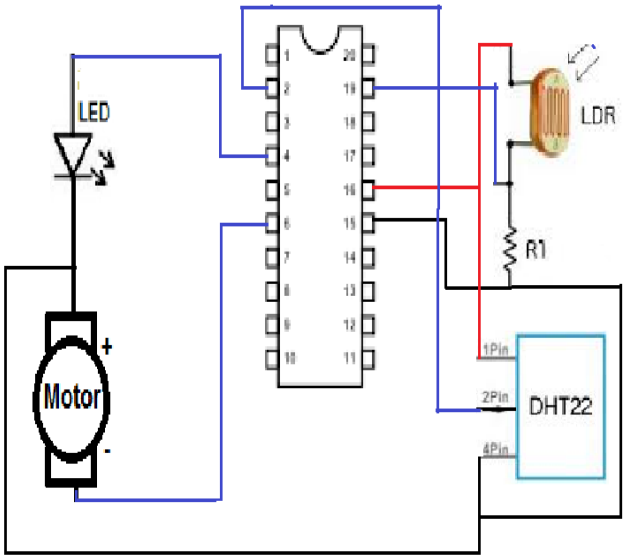
5.1 DATA FLOW DIAGRAM



5.2 FLOWCHART



5.3 INPUT/OUTPUT INTERFACE DESIGN



INPUT DESIGN

The input style is that the link between the data system and therefore the user. It includes the developing specification and procedures for knowledge preparation and people steps ar necessary to place dealings knowledge in to a usable type for process may be achieved by inspecting the pc to scan knowledge from a written or written document or it will occur by having individuals keying the info directly into the system. The design of input focuses on dominant the quantity of input needed, controlling the errors, avoiding delay, avoiding extra steps and keeping the process simple. The input is meant in such the way in order that it provides security and simple use with retentive the privacy. Input Design considered the following things:

- What data should be given as input?
- How the data should be arranged or coded?
- The dialog to guide the operating personnel in providing input.
- Methods for preparing input validations and steps to follow when error occur.

OUTPUT DESIGN

A quality output is one, which meets the requirements of the end user and presents the information clearly. In any system results of process ar communicated to the users and to different system through outputs. In output style it's determined however the data is to be displaced for immediate would like and additionally the textual matter output. It is the foremost necessary and direct supply info to the user. Efficient and intelligent output style improves the systems relationship to assist user decision-making.

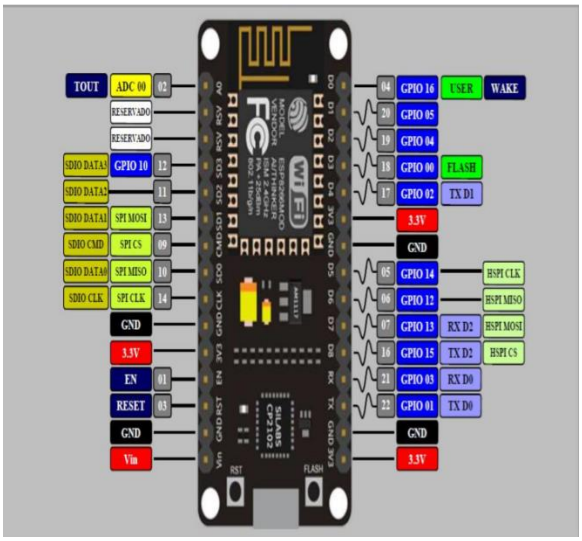
- Designing computer output should proceed in an organized, well thought out manner; the right output must be developed while ensuring that each output element is designed so that people will realize the system will use simply and effectively. When analysis style laptop output, they should Identify the specific output that is needed to meet the requirements.

• Select methods for presenting information.

• Create document, report, or other formats that contain information produced by the system.

- The output form of an information system should accomplish one or more of the following objectives.
- Convey information about past activities, current status or projections of the Future.
- Signal important events, opportunities, problems, or warnings.
- Trigger an action.

5.4 PIN DIAGRAM



6. CONLUSION:

Thus by using this IOT project we could indeed control the plug board via a simple app. Which conceptualizes the idea of remotely connecting and monitoring real world objects (things) through the Internet. When it involves our house, this concept can be aptly incorporated to make it smarter, safer and automated. This IOT project focuses on building a wise wireless home system besides, the same can also be utilized for home automation by making use of the same set of sensors. The leverage obtained by preferring this technique over the similar varieties of existing systems is that the alerts and therefore the standing sent by the Wi-Fi connected microcontroller managed system can be received by the user on his phone from any distance regardless of whether or not his portable is connected to the net. The microcontroller utilized in this image is that the arduino pad board that comes with Associate in Nursing embedded micro-controller Associate in Nursingd an aboard Wi-Fi defend creating use of that all the electrical appliances inside the home can be controlled and managed.

7. FUTURE ENHANCEMENT:

The sensible planet dream may be created true with the applying of the net of things. By victimization the embedded chips and sensors, the smart objects can be enhanced to "think", "feel", "talk", and "interact" with each other. These objects may be increased to move with kinsfolk by utilizing the net and mobile or different network facilities. Such that, these objects may be controlled and monitored from anyplace, anytime and utilize their intelligence services victimization web of things.

I hope with the advancement in technology, in future the application of the internet of things brings a revolutionary change in electric field automation and smart planet dreams may come true.

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