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SMART HOME AUTOMATION SYSTEM

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Abstract:

In current scenario the power consumption is very high and the people are not aware of their daily power consumption. In this digital era people want to control their devices from any place without their physical existence and also, they want to plan their daily power usages. They want to know the individual power consumption of each device. To overcome the above problems, we are proposing a low cost smart home automation system, which enables the user to configure their daily power usages, control their devices and plan their daily activities according. In this system the devices are connected to relays and the relays are controlled by the IOT module which is connected to the cloud server over the WIFI connection. The real-time status of the device is send to the cloud, whenever there is a change in the status of the device. This status can be viewed on the mobile application.

1.Introduction:

Our Application is Smart Home Automation System. In this application we can control all the appliances in our home by switching on and off through WI-FI. So we created a home screen to access all the rooms to control all the devices. And we added menu bar in home screen to change mode that is manual or auto mode and we can create profile that is we can schedule our day and then we have to activate so it should be save in my profile activity. And we can view our monthly bill in this application. We have added some extra features called feedback, share. And also we will get to know the power cut information. And we can know the how much power is consumed in particular month. Our application is easy to use and illiterates can also access this

application. Our application is very cost effective.

2.Literature Survey

We have conducted an survey regarding the controlling devices of the smart home application. There are some of the difficulties faced by the people, so on basis of it we have created this application. The user will be using android application for controlling all appliances using WI-FI.

2.1. Android Studio:-

Android is a mobile operating system developed by Google, based on a modified versions of the Linux Kernel and other Open Source Software and designed primarily for touchscreen mobile devices such as Smartphone's and Tablets. In addition, Google has further developed Android TV

for televisions, Android Auto for cars, and War OS for wrist watches, each with a specialized user interface.

2.2. About IOT:-IOT (Internet of Things) is an advanced robotization and analytics framework which abuses networking, sensing, big data, and artificial intelligence technology to deliver complete frameworks for an item or service. These frameworks permit more prominent straight forwardness greater transparency, control, and performance when applied to any industry or system. IOT frameworks have applications across industries through their novel flexibility and ability to be appropriate in any environment. They enhance information collection, automation, operations, and much more through smart devices and empowering technology.

2.3. An Overview of the Main Stages in the IOT Architecture:-

In simple terms, the 4 Stage IOT architecture consists of

1. Sensors and actuators.
2. Internet gateways and Data Acquisition Systems.
3. Edge IT.
4. Data center and cloud.

2.4. Life Cycle of IOT:-

IOT projects pursue a comparable procedure when they are being implemented. The IOT Wheel is closed-loop project life cycle which empowers iterative development and takes into consideration when requirements change or things go wrong.



Figure-2.2.2: Life Cycle of IOT

2.5. REST API:-

REST stands for Representational State Transfer. REST is web standards based architecture and uses HTTP Protocol. It revolves around resource where every component is a resource and a resource is accessed by a common interface using HTTP standard methods. REST was first introduced by Roy Fielding in 2000. In REST architecture, a REST Server simply provides access to resources and REST client accesses and modifies the resources. Here each resource is identified by URIs/global IDs. REST uses various representation to represent a resource like text, JSON, XML. JSON is the most popular one.

3.Existing System:

In previous days there is no smartness. They have to control all the appliances manually. But now a days we can control all the appliances automatically through WI-FI, Bluetooth by using programming languages.

4.Proposed System:

In this system, android application used to send signal to Arduino board and Wi-Fi module which is connected to Arduino gives

this signal to Arduino for controlling appliances using relay board.

- In our application we can schedule timings according to our daily schedule.
- We can also create our profile and check the weekday profile.
- In this application it automatically on/off devices according to our schedule we have activated.
- It also provide bill.
- It shows power consumption details per day/month.
- It is very cost efficient and control many appliances easily.

4.1 System Architecture:

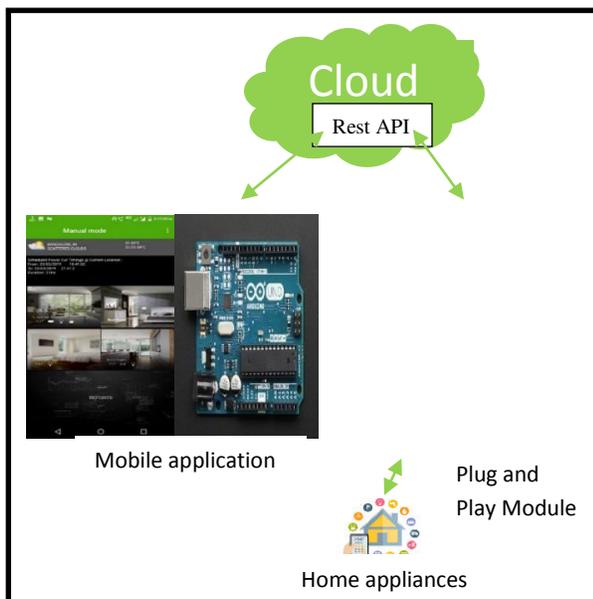


Fig. 4.1. System Architecture

Description: The architecture consists of four modules. Cloud, mobile application, plug and play module and home appliances. According to this the user can access the all appliances from the mobile application in which, the data of this application is send to the cloud through REST APIs and the plug

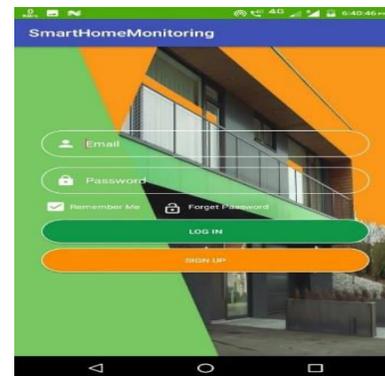
and play module can retrieve the data from the cloud which is connected to home. Through this entire setup the user can access all the appliances in the home.

4.2 Modules Description:

4.2.1 User:

- Login
- Homepage
- Menu
- Auto mode
- My Profile
- Bill
- Living Room
- Bed Room
- Reports
- Feedback

Login screen:



Login: This option provides the authorized or verified users to securely login to the application.

Home Screen:



Homepage: Under this option we can control different room appliances.

Menu Screen:



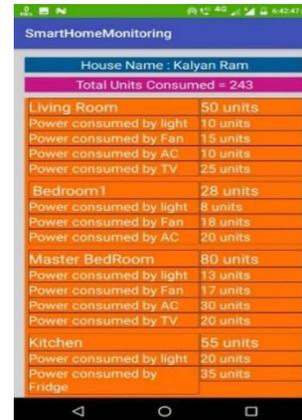
Menu: In this option we can select mode and also view our bill, profile, feedback and share our application.

My Profile:



My profile: This option allows the users to view or update profile details like their weekday schedules and personal details like photo, contact number.

Bill Screen:



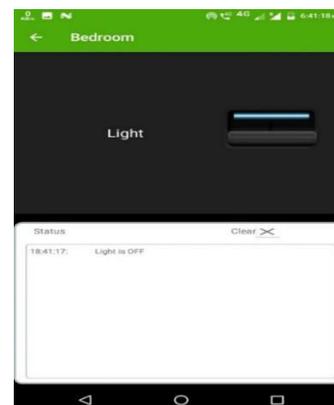
Bill Screen: In this option user can view his bill.

Living room:



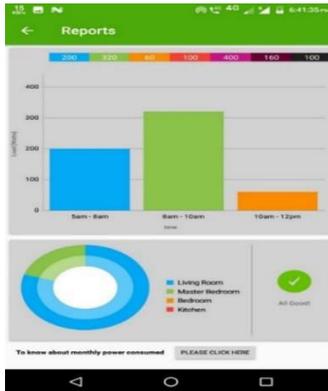
Living room: In this option, we can control the devices in living room.

Bed room:



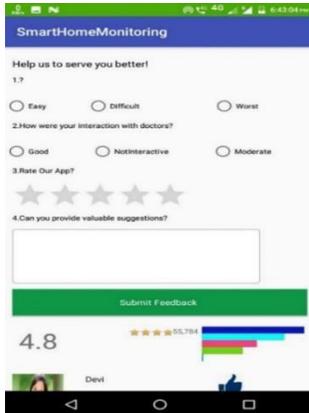
Bedroom: In this option, we can control the devices in the bedroom.

Reports:



Reports: In this option, it shows how much the power is consumed per day/month.

Feedback:



Feedback: In this option, user can give his feedback.

5. Conclusion:

The project has proposed the idea of smart homes that can support a lot of home automation systems. A smart home contains an association between remote communications, sensors, monitoring and tracking. Smart homes are a enormous system that incorporate multiple technologies and applications that can be

utilized to give security and control of the home effectively.

6. Future Enhancement:

There is a varieties of enhancement that might be made to the system to achieve greater accurateness in sensing and detection.

- There are a lot of other sensors to control home with remote in which the cost will be reduced.
- To develop this application in future we will include language translator and google assistance.

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