HOME AUTOMATION:Using IOT and CLOUD

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***Abstract-***— **IoT is a technology that is used to connect devices and objects by which we can make them intelligent, and more useful with the help of programming so that they are able to interact with us humans. The huge about of data that was being generated over and over all this time can be now collected and by use of techniques of analyzing the data we can make it useful for learning about its usage by different people in different situations. The data can be displayed in ways of graphs and charts and by use of different algorithms, we can learn a lot about the human psyche and behavior. The technology allows the user to control the devices from anywhere and anytime, we are also going to use Cloud technology with IoT for the purpose of home automation. We will use a variety of sensors to capture and collect the data of machines and objects and control them, we will make use of the WIFI modules to send the data to the cloud, where it will be stored and analyzed and the output can be decided as well**

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1. INTRODUCTION

IoT is a technology and concept in which we use unique identifiers such as objects, devices, etc, and also equip these for transferring data, we use the idea for combining the objects for use and control, and learning purposes. In the world of IoT, more and more devices are getting connected so that the ecosystem can be developed for decreasing the use of extra systems and resources for monitoring the data and also saving resources, the devices can be fans, AC, Mobiles, fridges, etc. We try to create a system that can analyze the situations and learn how to react without any need for human touch as well. By this, we are aiming to create an automated system for home so that we can ensure smooth and

complete control of it. All the data that is collected on the data can be used to make the system more intelligent. data is acquired by the use of different sensors from different machines and that is sent with the help of a WIFI module which is the center of all this as without making connectivity we cannot make this whole ecosystem work. We are using NodeMCU and ESP8266 Wi-Fi modules for basic levels so that data can be collected and shared easily.

1. LITERATURE REVIEW

Home automation using a cloud system focuses on the design and implementation of a home gateway to collect data from home appliances and then send it to a cloud data server, processed by MapReduce, and used to implement monitoring tasks for a remote user. The current home automation system is steadily developing its resilience by assimilating current features that satisfy people's growing interest. This paper presents the design and development of a home automation system that uses cloud computing as a service. Home automation means automating the operation of all devices/appliances/systems to meet the needs of the people who live there. Home Automation is a system that allows users to control various devices of various kinds and also makes it easier to control home appliances and save energy. There are various technologies through which we can access home automation such as WIFI-based home automation, Cloud-based home automation, GSM-based or Bluetooth-based home automation.

In this project, we will create our own cloud using PHP, Mysql, and ESP(12E). This NODEMCU updates the data in the database using PHP API. We will then create an HTML application that will again be hosted on a server that will store all the data provided to nodemcu. All the data will show on the website for example the electricity bill, the units that have been consumed in a day or a month, the power consumed, etc. We can connect multiple devices and allow them to exchange data in real-time.

We will be able to control your home appliances like TV, fans, bulbs, LEDs, etc. using your smartphone from anywhere in the world. The Esp8266 module (NodeMCU) will receive commands from your smartphone wirelessly over the Internet. Command logs are stored on the application server.

1. RELATED WORK
2. Wired-based home automation system-

A wired home automation system uses Cat 5 cables to send information. The system is connected to a control center. Like other types of home automation systems, you can use this system in a new or old home, but it is more suitable for new homes. It is a great choice for home automation. It is a reliable system and you can easily connect this system to other devices.

Although this system does not have many disadvantages, it is not as popular as other types of home automation systems. People prefer wireless systems perhaps because of their ease of use. This home automation system uses a programmable logic controller and a home device is connected to it. Actuators help the device receive commands from the master controller.

B) Smart lock system-Home Automation-

Locks are considered the foundation of home security. Traditional locks have keys, which has several disadvantages. Keys can easily be lost or found by someone we don't want. In such cases, our traditional locks threaten security. People are switching to digital smart door lock systems to make their homes more secure.

This is one of the most interesting IoT home automation projects. With the help of Arduino, ESP8266 WiFi module, AVR family microcontroller, solenoid lock, and high-power transistor, you can build this cost-effective smart security device for your home. How does it work? Well, there will be a QR code on the door; all you have to do is connect to WiFi with your mobile device, scan the QR code, and login with your unique ID and password. And it is done. The solenoid lock is activated and the door opens.

C) Smoke detection using gas sensor-

Fire is a destructive force that can spread quickly and cause unimaginable damage to property, health, and even lives. That is why we should install fire protection elements in the home and in the work environment. Whenever you burn something—such as gasoline, natural gas, wood, oil, propane, or charcoal—carbon monoxide is released into the air. In outdoor spaces, exhaust gases are the main source of CO.

Smoke Detecting IoT device is a smart fire detection system that can detect flammable gases and alert you to take immediate action to control or stop a fire outbreak. Using an Arduino, an MQ-2 smoke detection sensor, a breadboard, some jumper wires, a resistor, two LEDs and a buzzer, this fire detection system can be quickly built using IoT. A carbon monoxide detector can alert you to high levels of carbon monoxide in your area and help you get to safety immediately. We detect and measure carbon monoxide gas with this Arduino smoke detector.

IV. METHODOLOGIES

A. BOOTSTRAP-

Bootstrap was developed by Mark Otto and Jacob Thornton on Twitter. It was released as an open-source product in August 2011 on GitHub.As of June 2014, Bootstrap was the #1 project on GitHub.

Bootstrap is a popular HTML, CSS and

JavaScript framework for responsive and mobile development. It is a used front-end framework

for easier and faster web development. It contains HTML and CSS-based design templates for typography, forms, buttons, tables, navigation, modals, image carousels, and many others. It can also use JavaScript plug-ins. Bootstrap enables fast and responsive development and is consistent and well-supported by development and

community design. As the framework continues there are more and more reasons to use Bootstrap.

There are various tools for bootstraps-

Brix

Jetstrap

Pinegrow

Pingendo

Codepen

Bootmetro etc.

Bootstrap is a free and open-source web development framework. It is designed to ease the web development process of mobile-first responsive websites by providing a collection of designs. Bootstrap helps web developers build websites faster because they don't have to worry about basic commands and functions. In this, we also have the bootstrap grid system, which is widely used to design the layout and structure of the content in print design. In web design, this is a very effective method to create a consistent layout quickly and efficiently by applying HTML and CSS. Bootstrap includes responsive, mobile

the first fluid grid system that scales appropriately up to 12 columns as the size of the device or viewport increases.

B.JQUERY-

Nowadays, website development is a challenging task to develop interactive websites. Scripting is an important buzzword in the website development scenario. Jquery is one of the important techniques for web design. Web applications are dynamic environments for client-server interaction. Web design tools are is growing significantly, which helps in fast and interactive web development. User-friendly GUI creates by implementing animations, effects, and color attribute to attract and encourage users to use web applications. Jquery provides various methods, events, and plugins to help develop interactive web applications. It can be implemented with any web language like asp, PHP, Python, Perl, etc. The main problem related to the web is cross-browser compatibility, jquery is a powerful tool to solve this problem interactively.

C. REACT JS-

React is a framework of JS which uses a declarative paradigm that makes it easier to develop an efficient and flexible website. It helps us to design simple views for each state in your web application, and as for the dynamic website it also efficiently updates and renders just the right component or views of the website when your data changes. The declarative view makes your code more predictable and easier to debug. We studied virtual DOM objects in React.JS, which we implemented in our project. Any changes we made in our real-time communication web application caused the entire User-Interface to re-render the virtual DOM. This allows us to compare the potential difference between the DOM Object and Virtual DOM. We used JSX, It made our code easier and simpler to write in React application.[4] React.JS uses Components that are the building blocks of User-Interface wherein each component had a logic related to our real-time communication website and contributed to the overall User-Interface of our web application. Components can be reused, and it helped our code for the web application easier to be understood by other developers and overall web application better performance. We started our react application by first installing create react-app using npm or yarn. npm install create-react-app global OR yarn global adds create-react-app are the two commands for using npm or yarn respectively. After that, we created a new react app by using. create-react-app THE CALL, then navigate into our app name folder and type yarn start or npm start to start your application [4].