IoT Enabled Air cooler & Air conditioner Controlling System Using Android App

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Abstract: ***Real intelligence is when technologies interact with one another to make things effortlessly happen. We want the technology to earn a permanent place in everyday life, where IoT technology will play a crucial role making the process of cooling homes and commercial spaces smarter, effective and effortless. Remote is an essential component of electronic devices such as air conditioner, air cooler, television etc. By using the remote only one person can operate at a time. This leads us to designing of a remote buttons which will be in one self's mobile phone. Here in this project smart air cooler and air conditioner has to be design. The air cooler comes with features such as speed controlling of fan and automatically off the water pump in the air cooler. Air cooler is automating that cooler from anywhere using a mobile application. In manual mode adjust the cooler speed with buttons provided on the air cooler. In case the water level is low, the air cooler gives you a warning through alerts. The smart air conditioner comes with features of ON/OFF and increases or decreases the temperature through same mobile app.***

IndexTerms – nodemcu,android studio,android mobile,sensors,relays.

I. INTRODUCTION

In recent days remote controller is available for every electronic device. We can develop the remote in our smart phone screen which indeed will be very useful for communication. The purpose of research is to provide air conditioner and air cooler operation in one mobile application so that designer can focus and enjoy all appliances without wasting time in search of remote. Total controlling of cooler and A/c will be there in our hands. This simple architecture is also useful for Education of android application and arduino IDE programming because the students can build their own Android application with low cost and use them as platform for experiments in several courses.

II. LITERATURE SURVEY:

In earlier system, the devices were controlled by manual operation. A person was supposed to go near to the switch or the device to switch ON/OFF and to control the device. In the previous systems air conditioners can be controlled by using a Bluetooth module by changing the internal arrangements in it. But the internal changes may leads to damage of system. This can be eliminates by controlling the air conditioner without disturbing the air conditioner. Air cooler speeds also can control by using the mobile application. User can control the appliances easily by his smart phone via android application.

III. METHODOLOGY:

This section shows the succession of consummation of this project. At first a block diagram was settled on what parts will be utilized for this thought. Later a software platform and stream of software was chosen and worked on. These are described as follows.

IV. BLOCK DIAGRAM:

Block diagram is a basic flow diagram to explain the project. Here we can see that the nodemcu connected to relays and sensors directly. This whole connected hardware is connected to android mobile phone wirelessly via nodemcu. On the software part we used Android Studio and Arduino IDE.

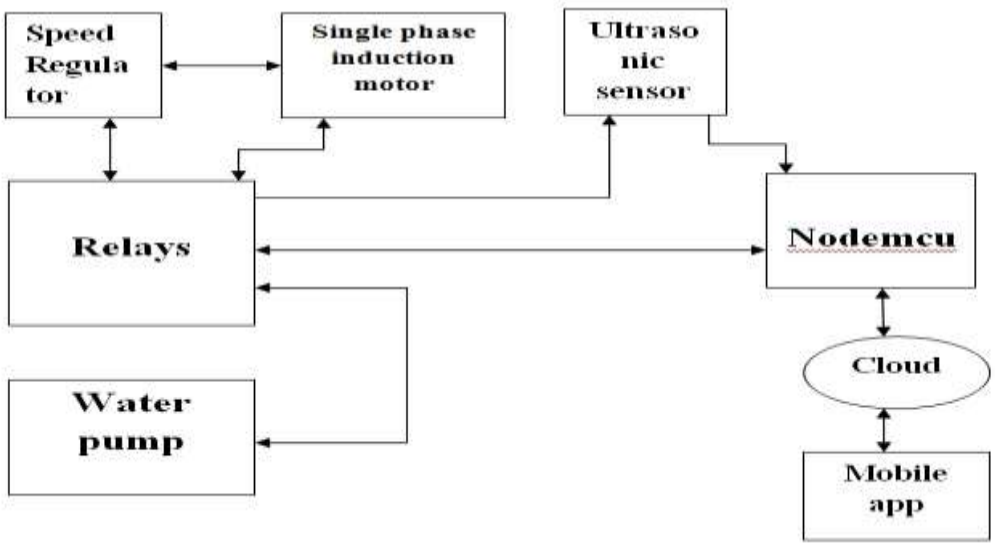

FIG.1.BLOCK DIAGRAM

V. HARDWARE DESCRIPTION:

We chose Android platform for our applications because that is user friendly. The nodemcu is connected with the relays for on and off purpose and regulator is used to control the speed of fan. Ultrasonic sensor is used to measure the water level in the air cooler. To control Air conditioner IR hex codes programmed in the Android application.

FIG.2. NODEMCU

VI. SOFTWARE DESCRIPTION:

A complete hardware and software require each other for complete execution. In this project two software's used are;

1. ANDROID STUDIO:

Android Studio is an open source web application which was originally developed by Google and Jetbrains designed especially for Android development. It transforms the coding of complex languages like java into a simple drag and drop based coding.

2. ARDUINO IDE:

The Arduino IDE (Integrated development environment) software was downloaded and installed on the hardware (laptop). Arduino IDE provided a perfect platform to write and burn the program on to the Arduino board. It consists of libraries and source code with it.

VII. ANDROID APP:

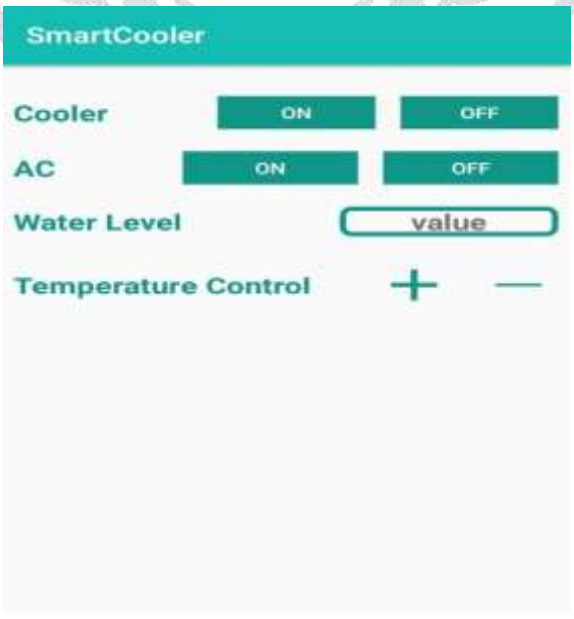

FIG.3. ANDROID APP USER INTERFACE

VIII. WORKING OF APP:

First open the app on the mobile. Click on air cooler on. When click on air cooler on the command will go to the nodemcu through cloud. Here thingspeak is using as cloud purpose. When click on air cooler on nodemcu receive the commands from app though cloud and the command send to the relay and it gets ON. After selecting cooler on new page opens on mobile app. In new page having different speed

buttons for varying the fan speed. Select the different speeds on app the command send to the nodemcu though the cloud. A speed regulator connected to the relay for different speed control. When the commands are given to air cooler different speeds attain through the relay and the regulator. An ultrasonic sensor is connected with nodemcu for measuring the water level in the air cooler. Ultrasonic sensor measures the water level according to the distance of water from the sensor and shows the water level reading in the mobile app. When water level is low automatically pump gets off. For air conditioner operating ir hex codes was programmed in the mobile app. When click on ac on the temperature adjustment indicator shown in the app. We can increase/decrease the temperature of air conditioner and switch off the ac with app.

IX. ADVANTAGES & DISADVANTAGES:

1. ADVANTAGES:

- The main advantage of this application is that it is user friendly.
- It is easy to develop the application and not much costlier.
- Easy to operate multiple units at a time.

2. DISADVANTAGES:

- The main drawback of this project is mobile application without ir blaster not works properly.

X. FUTURE SCOPE:

We can increase the number of appliances like air conditioner, refrigerator to control in same mobile application and also give a login access to the android application for security purpose to don't operate all members.

XI. CONCLUSION:

Here we would like to conclude that the mobile application is good way for wireless communication. The android application is provided to be a better substitute comparatively to the actual remote of any appliance. The development of apps is easy and free of cost with tremendous smart phone in markets; it is bound to have many more applications in near future.

XII. REFERENCES:

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