

Android App Based LED Dimming Technique



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Abstract:

our proposed system gives information about the working procedure of reducing the light intensity using smart phone. For that we are going to use BLUETOOTH module to communicate with our embedded kit. To maintain the transactions and transformation between device and the app Bluetooth module is used. So here we have developed an android app to install in our mobile phones.

When we need to transmit the information then that app should be opened in our mobile phone and respective key need to be pressed. Then according to the pressed key, its respective information will be transmitted. And we are increasing the brightness by automatic mode also by using LDR if light is good then LEDS will be in off condition otherwise depending on light the brightness of LEDS will be glow. We placed a switch for selecting automatic mode and manual mode.

Keywords:

Dimming, Bluetooth, LED.

I.INTRODUCTION:

In olden days LEDS were often used as indicator lamps for electronic devices. These LEDS have replaced small incandescent bulbs. They were soon packaged into large numeric readouts in the form of 7-segments. But these days LEDS are replaced due to their disadvantages. Today, there are more than four billion incandescent lamps in US homes according to the US Department of Energy (DOE). But recent estimates by Philips Lighting predict that LED lighting will capture as much as 50 percent of the consumer by 2015 in market.

To save the power transaction CFL (compact fluorescent lamp) lamps this will reduce the power consumption and will provide much light. These lights require only 2-17 watts of energy consumption. After compared with other bulbs projects they are going to provide much heat but these CFL lamps will consume very less power. For that purpose we have come up with the help of this technique, information will be passed to the light intensity and reduces the power consumption.

II.SYSTEM DESIGN:

So we have proposed this system consisting of mobile phone with the android app used to control the intensity of light and a Bluetooth module which is used to receive the data sent from the android app. The Bluetooth module will be connected to the controller kit, from which the LEDS are going to control. COM port has been considered for this process to PC to store information. Here we provide the basic structure for that design.

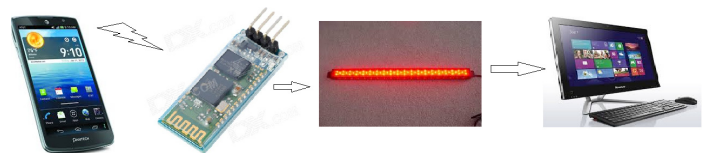


Fig.1. System Diagram

III.BLOCK DIAGRAM:

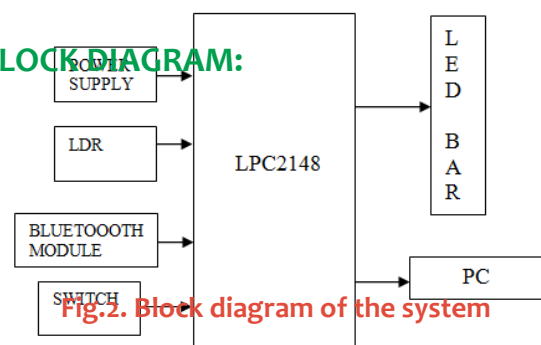


Fig.2. Block diagram of the system

IV.HARDWARE DESCRIPTION:

A) APP DESIGN INSTALLED IN MOBILE:

Here we are going to describe the app that needs to be installed in our mobile. In this app back end has entire coding, with front end indicating only the buttons displaying the percentage of light intensity. We have designed the app in such a way that it has 20%, 40%, 60%, 80%, 100% indications. Here we have also provided the settings button, which is used to change the name of the button. By using this button we can also change the data that should be transmitted.

After installing the app in our android based mobile phones, if we open that app then it shows different Bluetooth devices which are in its range. Make sure that our mobile should be in the range of Bluetooth module of our kit, because Bluetooth range is local area environment and small area consumption. So here selection is need for the appropriate one and then we have to click on the CONNECT button. Then automatically the paring of the devices will be completed. Android app has been shown below.

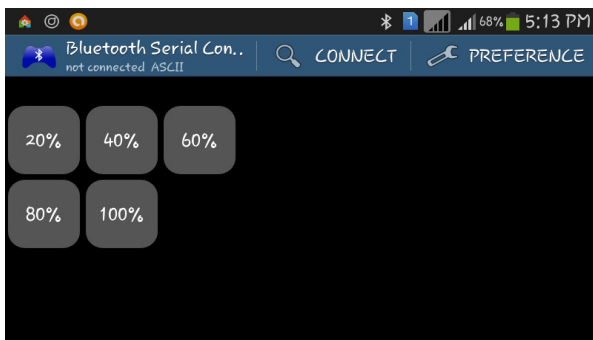


Fig.3. app need to be installed in the mobile

B)BLUETOOTH MODULE:

The Bluetooth module we are going to use is hc-05. It is connected to the controller board in the circuit, to recognize our mobile Bluetooth device. So when the app is opened in our mobile and a button is pressed, then its related information will be converted into data format and will be sent from the mobile phone. That information will be received by the Bluetooth which is assigned in our application. Now blue-tooth's main task is to transfer that information to the controller kit.

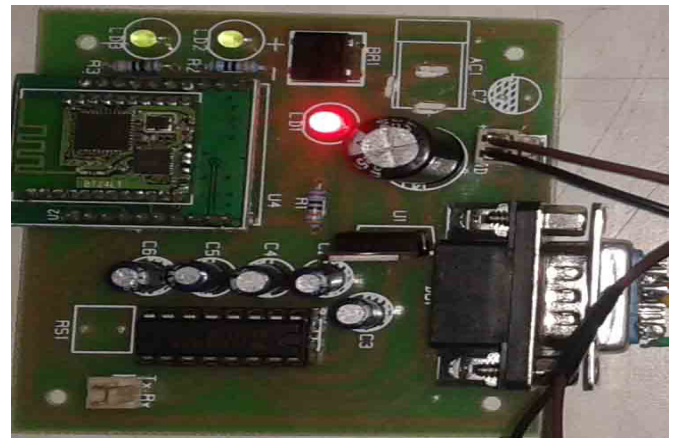


Fig: 4 BLUETOOTH MODULE

C)VB SOFTWARE:

Here VB is Visual Basic software. It consists of console applications along with windows form application. Here we are going to generate windows form application to read the data sent by the controller using the second UART. Initially we need to install the software in our PC and then we need to write the program according to receive the data from serial communication using COM port. In our program in VB, we would inform the type of format in which we want to store the data. While executing the project we need to run the program written in the VB, then automatically it is going to store the information received from the COM port. Along with the data we are going to store the time and date. The time and date will be read from the PC.

V.WORKING PROCESS:

Our project gives information about the led dimming process with the help of smart phone and android app. Initially when we are going to provide the power supply to our kit, through this we can make the LEDS off. That time LCD here for displaying the message "WAITING FOR INPUT". It indicates that, it is going to wait for the input data from the Bluetooth module. Here we have placed two options manual mode and automatic mode for selecting these modes we placed a switch if we press switch then automatically LEDS will glow automatically and reduce brightness also automatically. Then we need to check the availability of Bluetooth devices on our mobile by using android app. Bluetooth name of the device, connected to the kit, will be displayed on the screen of our mobile.

Select the device and then press the button CONNECT available on the screen. Then mobile Bluetooth will get paired with the Bluetooth connected to the kit. Now we can perform our required task. Then click on the button of your choice you want your lights to glow. For example if we want to glow the lights with an if you press the button indicating 60% then leds will glow with 60% intensity its respective information will be transmitted to the Bluetooth of the board. From Bluetooth, that information will be transferred to the controller. In controller the comparison will takes place and according to that the LED glows..

According to the program we have dumped in the controller it is going to apply the PWM technique on the LEDS connected to the controller. We are going to show with how much intensity it is going to glow, as "60% PWM APPLIED". With the help of second UART, we are going to connect it to our PC. The light intensity information will be transmitted to the PC through the COM port. In PC we are going to open the excel sheet and would store the light intensity values according to time. We are going to read the time of PC.

VI.FLOWCHARTS :

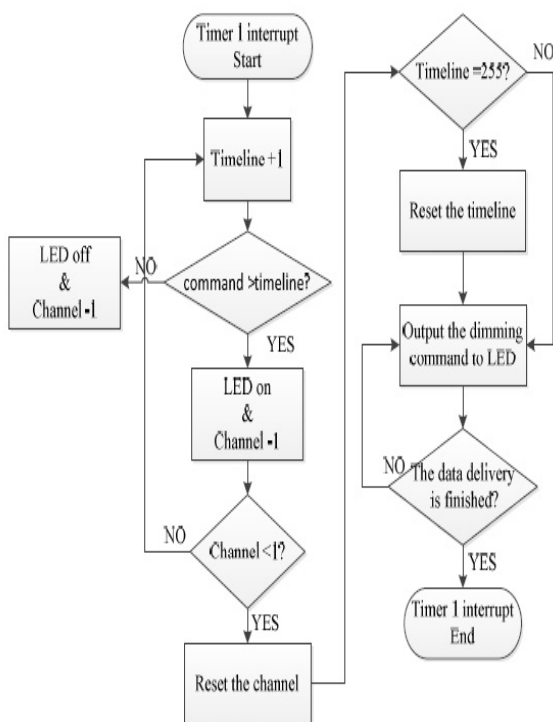


Fig. 5(1) Flowchart light intensity control

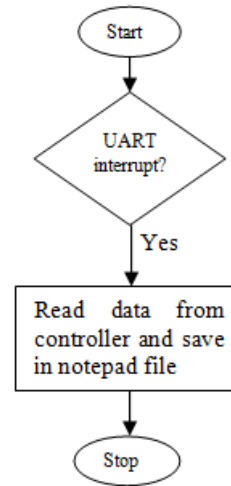


Fig. 5(2) Flowchart for data store in PC

VII.RESULTS:

We have executed the project by placing a row of LEDS on board. LEDS have been glowing with different intensities according to the button pressed on mobile application. Automatically it will be connected to Bluetooth of the controller board. Here we have provided some pictures indicating the work done by us.

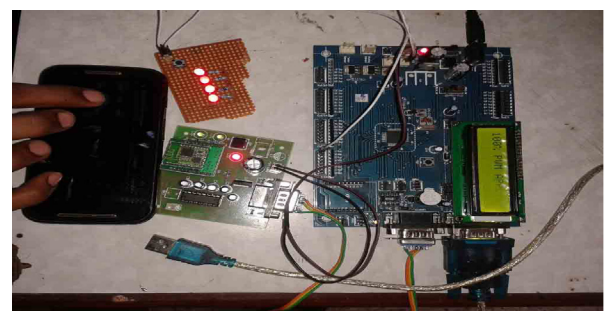
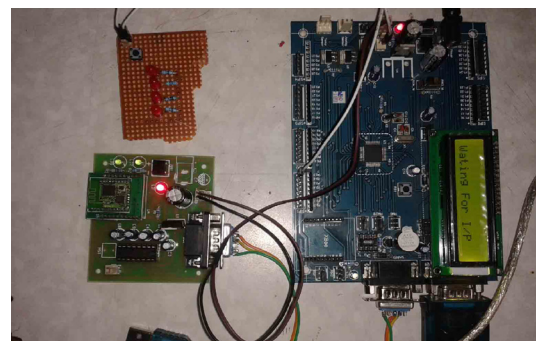


Fig: 7 LEDS glowing with 100% intensity

By using USB to SERIAL CABLE we have stored that data in our laptop in the excel sheet along the intensity of light and date and time.

VIII.CONCLUSION:

Based on the intensity of LED glow, the power utilized depends. So if we reduce the intensity of light, automatically the power utilized will also be reduced. With the help of this project we are going reduce the power utilized for glowing lights.

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