

ArduinoBasedSmartPhoneCharger

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Abstract—In day todays life,user of a smartphone or a simple feature phone mostly faces an issue connecting your phone to the charging adapter and forgetting that you plugged in the device. Every battery has a limit to the number of times it can be charged (known as charge cycles).It makes effect on the lifetime of the battery. Temperature plays an important role. This project develops Arduino based smart charging controlling. The aim is to develop a charging that can be controlled by setting the charging time. Therefore, the problem of overcharging will be anticipated. The main concept behind the Arduino based Smartphone Charger is very simple. We have to set the time for which you wish to charge your mobile phone. As soon as the time is reached, the power supply to the charger will be turned off automatically. The charger is provided a power with the help of a relay and the timer begins.

IndexTerms—*Arduino Uno R3, Relay Module, Rotary Encoder, LCD keypad shield*

I. INTRODUCTION

Now days, smart phone is having very high advanced technology than personal computers. In that smart phone we can access mobile banking, Whatsapp, Facebook, and other social media .Mobile phone is having lithium ION batteries and it was the one we can charge very fast. Many people are connecting their phones to charger and forget to removes it as fully charged. Due to this increased temperature the hardware of the mobile will gets affected and malfunction may happen. In this project we will show a very practical project called Arduino based smartphone charging, where the amount of the time your smartphone charges its battery is controlled by you.

II. OBJECTIVE

Sometimes user plugs their handset to switch board for phone charging but forgets to removephone after charging, it means that phones overcharges. Therefore, internal degrades and heat occurs inthe battery. These changes damages phone or internal phonecircuitry.Intheproposedmethodology, overheatingisrestrictedbysettingtimeforthechargingandthephonegetsdisconnectingwhenchargingtime is completed.

III. PROPOSED METHODOLOGY

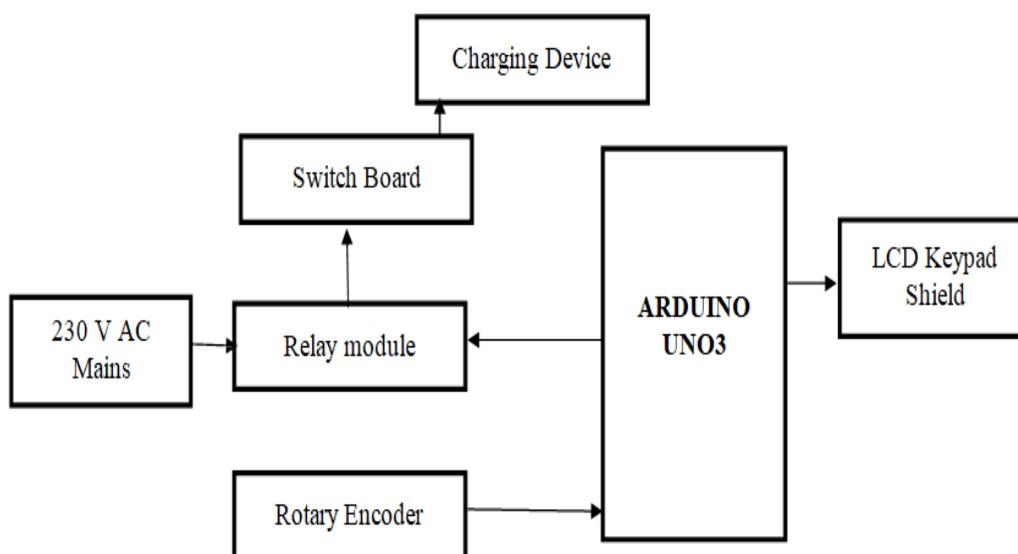


Fig 1.Blockdiagramof ArduinoBasedSmart PhoneCharger

The proposed system is designed by using relay module in a single socket power outlet box with a control switch so that relay would control the socket. Rotary encoder is used to set the desired number of hours. The time will appear on LCD key shield. The program is written using Arduino including the conditions, when we turn on the power supply the relay gets activated (which means the phone starts charging) and the countdown begins for the amount of time set by you. Once the countdown reaches "0" the relay is turn OFF (power to adapter is OFF).

IV. CIRCUIT DIAGRAM

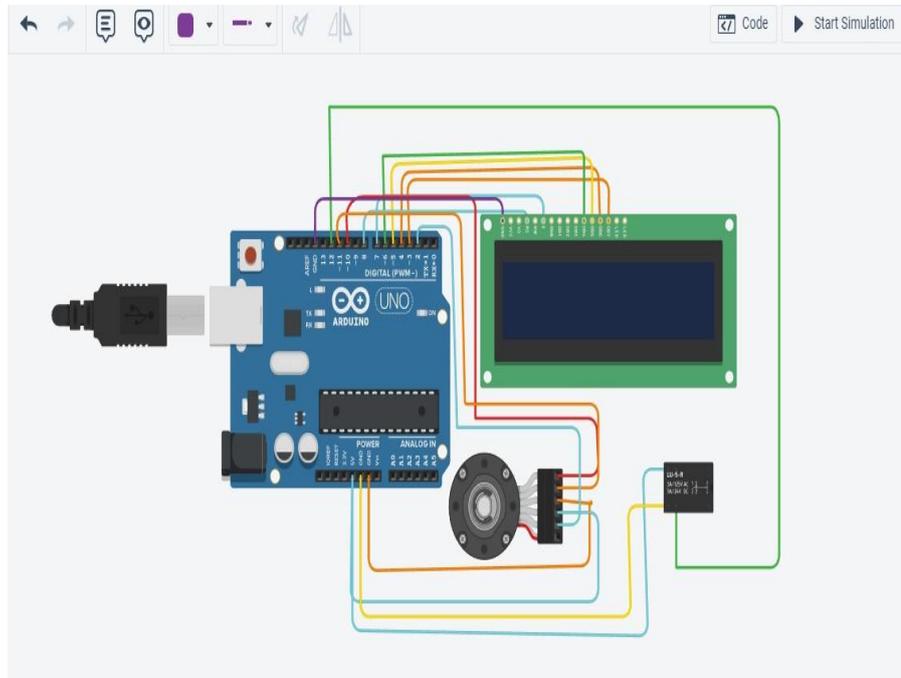
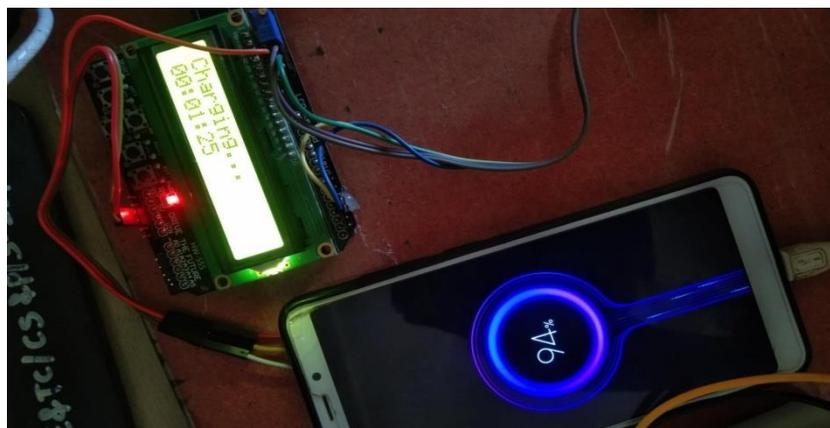


Fig.2 Circuit diagram of Smart Phone Charger

After making the necessary connection as per the circuit diagram, upload the code to Arduino and turn on the power supply. You will get Hours (HH), Minutes (MM), Seconds (SS), on the 16X2 LCDDisplay. By selecting Hours, rotate the knob on the rotary encoder to set the desired number of hours. When the hours value is set, push the knob to fix that value. You can set minutes and seconds. After everything is set, select OK on the LCD and push the knob. The relay gets activated (which means the phone starts charging) and the countdown begins for the amount of time set by you. Once the countdown reaches "0", then relay is turned OFF (power to adapters OFF). During charging if there is power failure, the remaining times stored in the memory and when the power comes back, it will prompt you whether to continue with the countdown or to set a new time. Accordingly, the charging will be performed.

V. RESULT

Fig.3 charging of smartphone according to set time



The relay gates activated (which means the phone starts charging) and the countdown begins for the amount of time set by you. Once the countdown reaches “0” the relay is turned OFF (power to adapter is OFF).

VI. APPLICATIONS

- 1) To charge electric vehicles.
- 2) In Electronic convenient gadgets

VII. CONCLUSION

Arduino based Smart phone charger is a simple project in which we can plug in our phone to the charger, set the time for charging and forget as the project will automatically disconnect power to the charger. This project is very useful for people who tend to charge the phone during night time or those who often forget that they plugged in the phone to the charger

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