MICROPROCESSOR AND MICROCONTROLLERS

PROJECT BASED ASSIGNMENT – CO 5

Tittle of the Project: Smartphone Charging Controller

Project Given By:

B. Chandra Mouli Sir (ECE Dept.)

Project Members:

1. P.Charan Kumar(320126512155)

2. P.Haranadh(320126512156)

3.P.VenkataKarthik(320126512157)

PROJECT DESCRIPTION

INTRODUCTION:

Almost every mobile phone (either a fancy smartphone or a simple feature phone) user faces this one issue: connecting your phone to the charging adapter and forgetting that you plugged in the device.

Almost all the modern charge controllers on mobile phones are very advanced and detect when your battery is fully charged and disconnect supply of power to the battery (not completely but a keeps the device in a charging state known as trickle charge).

But the main disadvantage of keeping the device plugged in even after the battery is full is its affect on the lifetime of the battery. Every battery has a limit to the number of times it can be charged (known as charge cycles).

Also, temperature plays an important role in the life of a battery. Higher temperatures might disrupt the chemistry of the battery.

But what if I told you that the Arduino based Smartphone Charging Controller project can be help full to control the charging time and once the time is up, the power to the charging adapter is disconnected. Sounds interesting and practical, right.

So, let’s get started with the project Arduino based Smartphone Charging Controller.

Concept behind Arduino based Smartphone Charging Controller

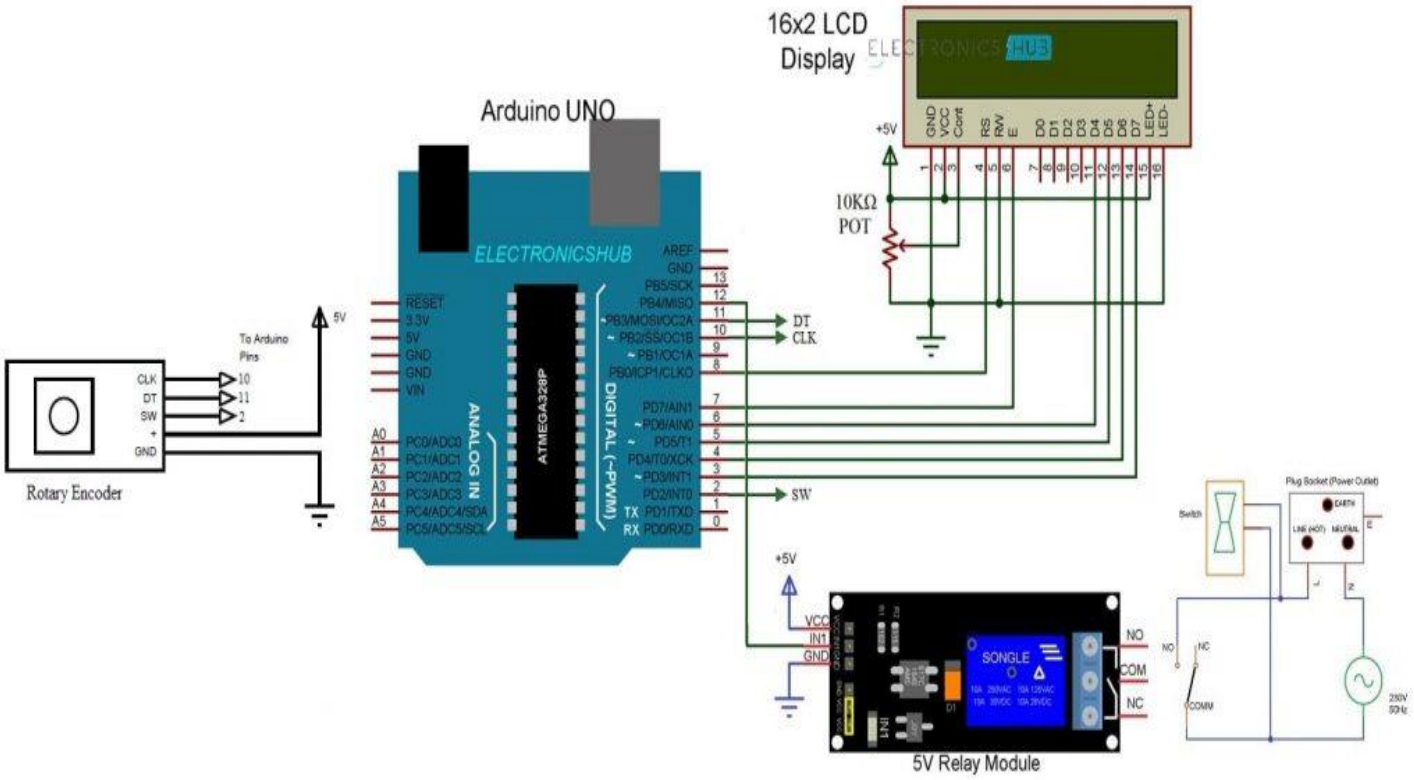
The main concept behind the Arduino based Smartphone Charging Controller is very simple. Set the time for which you wish to charge your mobile phone. Once the time is reached, turn off the power supply to the charger.

For example, you have set the charging time as 2 hours (maybe based on the previous observation or by mathematical calculations). The power to the charger is turned on with the help of a relay and the timer begins.

Your mobile phone gets charged for the next two hours and when the countdown is reached to the 2-hour mark, the relay is turned off and as a result, the power supply to the charger is also cutoff.

Diagram Circuit:

The following image shows the circuit diagram of the Arduino based Smartphone Charging Controller system.



Components Required:

Arduino UNO

16×2 LCD Display

Rotary Encoder

5V Relay Module

10KΩ POT

Connecting Wires

Breadboard

Charging Adapter

Single Socket Power Outlet Box

Circuit Design:

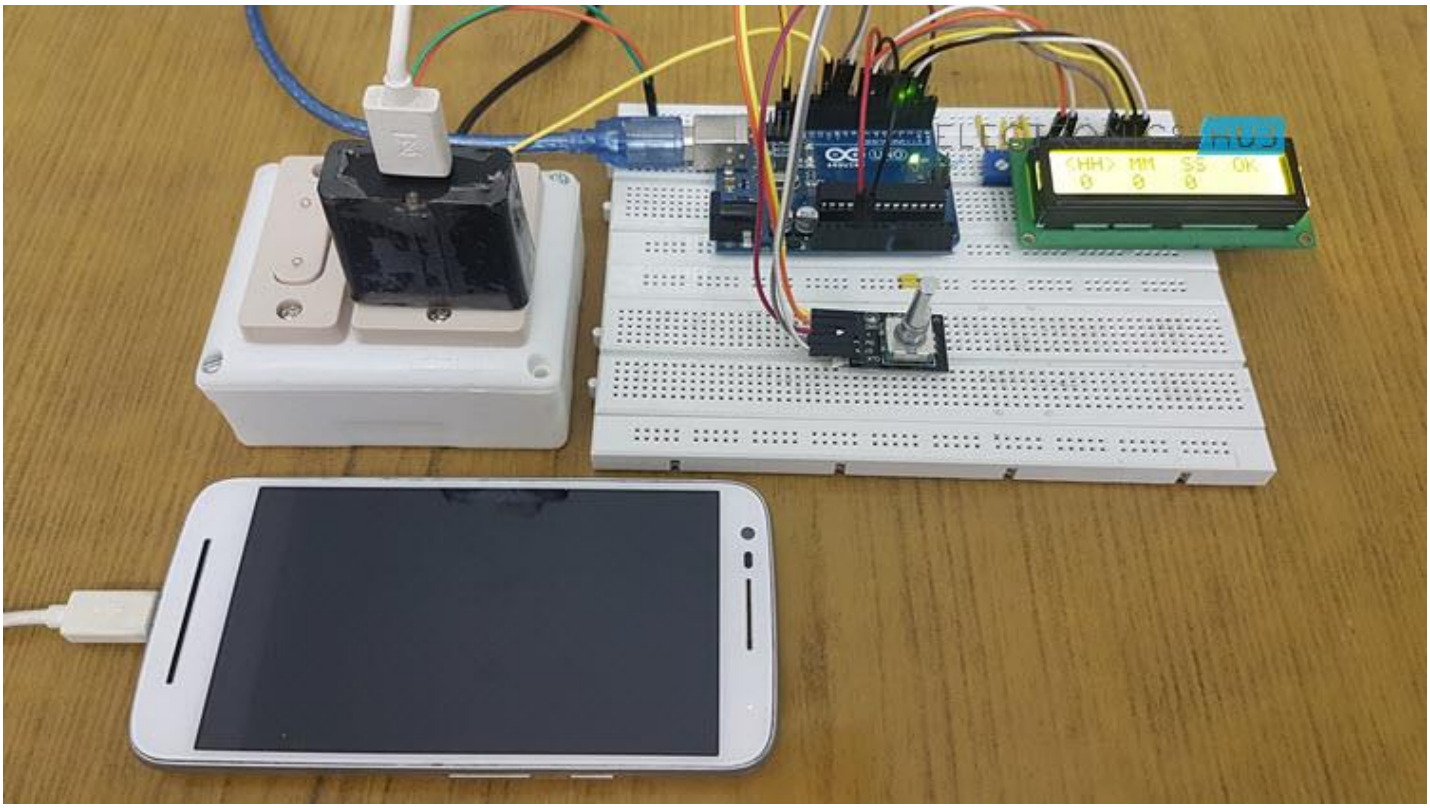
The main components of the project other than Arduino UNO are Rotary Encoder, Relay and 16X2 LCD Display. Let me start with the Relay. Connect the IN1 Pin of the Relay Module to Pin 12 of Arduino.

Coming to the rotary encoder, its CLK, DT and SW pins are connected to Pins 10, 11 and 2 of Arduino UNO. Finally, the LCD, Pins 8 through 3 of Arduino are connected to RS, E, D4 – D7 of the LCD.

Setting up the Arduino based Smartphone Charging Controller Project:

Components like 16×2 LCD Display, Rotary Encoder and Arduino UNO can be placed on a breadboard but I though it would be nice to place the relay in a single

socket power outlet box with a control switch so that the relay would control the socket and you can plug in your charging adapter into the socket.



WARNING: If you are implementing this project, you have to deal with 230V AC Mains Supply, which is potentially dangerous. I suggest you take an expert guidance for the connections.

Advantages

--The main advantage of this project is to save power consumption

--very little maintanance

--Easy to install

--Compact design

Coclusion/Result:

From this article,we studied about aurdino basedsmartphone charging controller.