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COIN BASED MOBILE CHARGER

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ABSTRACT

In this coin-based mobile charger system, we enter a coin to run the system. It is basically wireless and the process and mechanism will be done in physical forms or in offline. The working of the system is done by entering a coin into the system and then the phone gets charged. This technology is highly useful for emergency purposes where there are no available sources to charge the mobile phone. This can also be used in public places like bus stops, railway stations, metro stations and public booths for mobile charging. Some of the mobile gadgets have a problem of easy battery drainage and people suffer a lot due to lack of battery and unavailability to charge hence this could be much useful to everyone to immediately charge their mobile in emergency or safety purposes. This system works depending on the genuine of the coin that we enter. There Is an acceptor, micro controller and power supply which are the vital parts of the system.

Keywords: Coin acceptor, Microcontroller, Relay.

1. INTRODUCTION:

The main idea of the system is to provide charging services to the public in every possible place to charge their mobiles in need for safety and emergency. To those who have low battery while travelling to places or while not being able to charge due to unavailability of charger ,and to those whose mobile phone drains the battery so fast and to those whose phones have high battery drainage and etc has highly benefit of this system. Just by using coins we can create a power supply of 5v for every coin which will be inserting in to the system .The only thing that we need to do is just to carry coins as per the need .The coin based mobile charger is so simple yet useful for the emergency purposes.

In the coin based mobile charger, there is an acceptor which checks the genuinely of the coin and figure about the coin before it sends to the microcontroller for further processing. An IR signal is received by the IR receiver which is used basically to module the polarity of the pulse or the signal in SCU input.

Here we need to insert the coin between the IR transmitter and receiver. The SCU pulse is used because it converts the low and normal pulses or signals to high pulses. And then there is a driver circuit's which is an input in which the output is sent .The driver circuit is helpful to make sure the sufficient amount of relay's input voltage. The ultimate power supply is up to 230v charger to charge the mobile .This is activated by the relay which is ensured by the driver circuit.

The coin acceptor which plays the major part to accept the coin based on its validity or genuine coin, if the coin is found unvalid then the coin will not be accepted and Arduino takes the action and does not allow to charge the mobile with the invalid coin. The Arduino can also calculate the time taken to charge the mobile and the time taken for the power availability time. When the coin is valid then the power allowed for every coin is 5v and the power can be available for a limited time only for each unit, that is based on the number of coins entered in to the system.

2. EXISTING SYSTEM:

There are also many kinds of devices to provide charging to the mobile phones by using solar energy like solar panels, coin-based charging. When we don't have a power bank to provide charging. We can develop this model everywhere like streets, railway stations, bus stops and etc. The charging time for the phone can be shown on the screen of the LCD.

To feed the device, a sun panel is used. Solar energy is used basically to convert light energy in to DC current and in this way the charge cell phones are used. A fixed size of coin should be used for charging and the insertion for fixed size of coin is not developed during the system of process .There will be a constant power supply until the coins are inserted up to 230v.

3. PROPOSED SYSTEM:

In this system, all the process is done in the system where it uses an IR sensor, It also checks the coin is valid or not. This indicates that the coin is real or not. If it is valid then the signal is been sent to the micro controller after getting processed that it is provided to the LCD display for the time duration. We need to use the mobile hotspot to receive the date and time on server side. This can charge multiple devices at the same time. It uses multiple pins to charge multiple mobile phones at a time.

4. SYSTEM ARCHITECTURE:

This figure shows block diagram of the architecture. Here we are providing 5v power supply to micro controller. Circuit consists a voltage regulator to convert 12v to 5v for micro controller, LCD and relay.

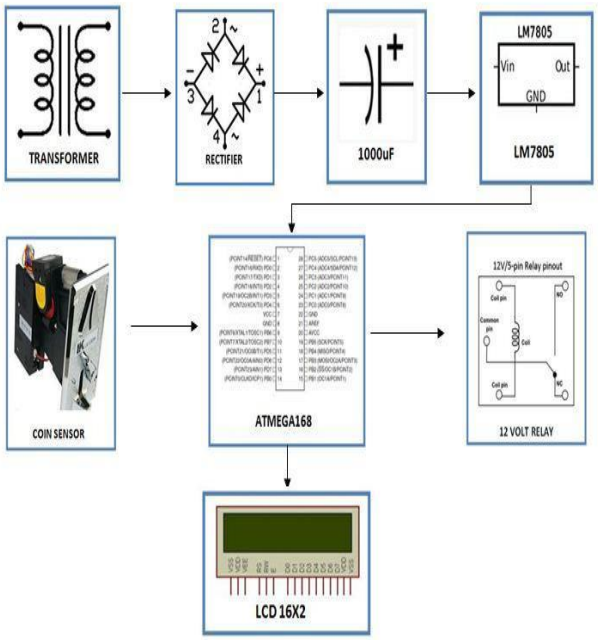

Fig.1 Block Diagram

A. Hardware Components

1. Coin Acceptor: We inserted the coin through a coin insertion slot. The CH-936 multi-coin sensor was used in this experiment. Depending on its diameter the sensor will recognize and confirm the coin. If the inserted coin is valid, it sends a signal to the Arduino, which turns on the power supply; otherwise, the coin is returned

Fig.2 Coin Sensor

2. Bread board: It plays vital role in circuit design. As PCB is more economical and simple than PCB, we chose breadboard for our experiment.

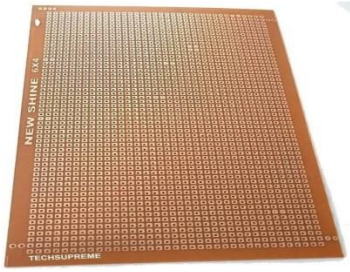

Fig.3 Breadboard

3. Resistor: It is a two terminal passive component. It provides resistance which controls the flow of current in circuit. Resistance is inversely proportional to current. Ohm is the unit of resistance.

Fig.4 Resistor

4. LCD: Liquid Crystal Display is the abbreviation for LCD. Firstly "please insert a coin" will be displayed and if coin inserted is valid, charging time will be displayed, and if the coin is not valid it is rejected and dropped into the coin box, and it asks to insert the coin again.

Fig.5 LCD

5. Potentiometer: It is a passive electrical device. The shaft in this provides resistance when twisted. We will use analogue values in Potentiometer to measure resistance.

Fig.6 Potentiometer

6. Connector: We may use USB port to charge or devices. And we can charge many devices at a time using single connection. This eliminates need for multiple cables.

Fig.7 Connector

7. DC adapter: It is often known as DC plug, it is used to supply direct current. Every DC adapter takes a given ac input and convert it into specific DC output.

Fig.8 DC adapter

8. Relay: It is an electro mechanical switch. It is a switch similar to standard switch we use, used to close our open circuit manually. It uses electrical signal to drive electro magnet, which connects or disconnects another circuit.

Fig.9 Relay

9. Diode: It passes signal in one direction only, which is most commonly used for rectification.

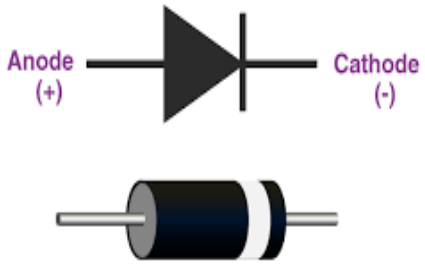

Fig.10 Diode

10. ATMEGA328 Microcontroller: It is the heart of Arduino. It was originally used for industrial purpose. Working with it requires advanced electrical engineering and programming skills.

Fig.11 ATMega Microcontroller

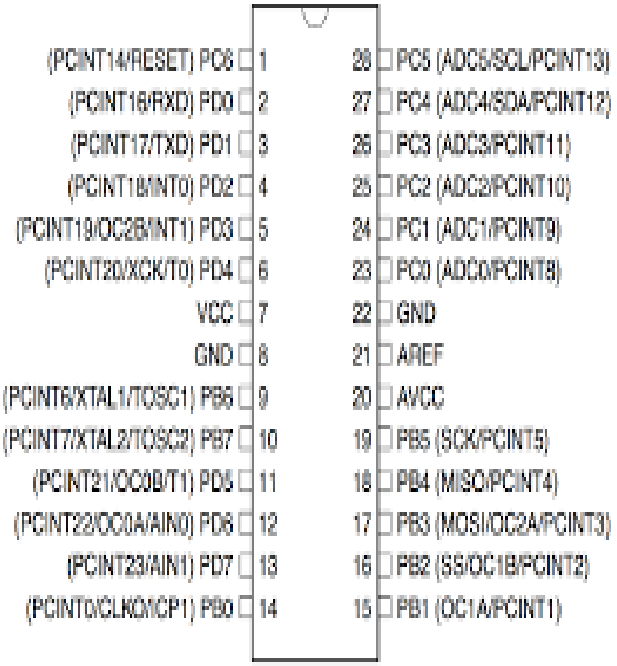

Fig.12 PIN Diagram of Microcontroller

11. LED: Light emitting diode is most commonly used as power indicator in most of the circuits.

Fig.13 LED

12. Capacitors: Here we used two types of capacitors: ceramic and electrolytic.

Fig.14 Capacitor

13. Crystal oscillator: It provides 16Mhz time pulses, that means micro controller can execute can execute 16 million binary instructions per second.It works on principle of piezoelectric effect.

Fig.15 Crystal Oscillator

14. Power input Jack: Arduino use 5v supply. The power adapter is inserted into this power input Jack.

Fig.16 Power input jack

15. Voltage regulator(7805): It is used to down 7v to 12v input power to 5v, which is operating voltage of micro controller.

Fig.17 Voltage regulator

5. SYSTEM ARCHITECTURE:

When a coin is inserted, the coin gets validated and the signal is sent to Arduino. Then the signal will be sent to 16*2 LCD from Arduino. Now the LCD displays the charging time of coin bars on the coin. Then the phone will be charged dependent on the quantity of valid coins in the battery.

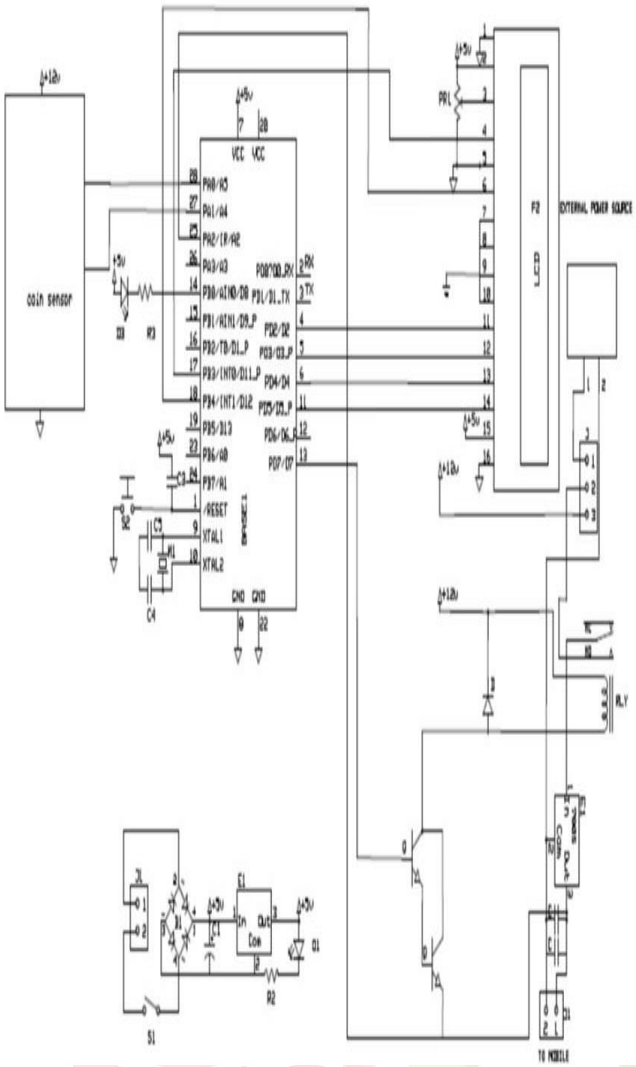

Fig.18 Circuit Diagram

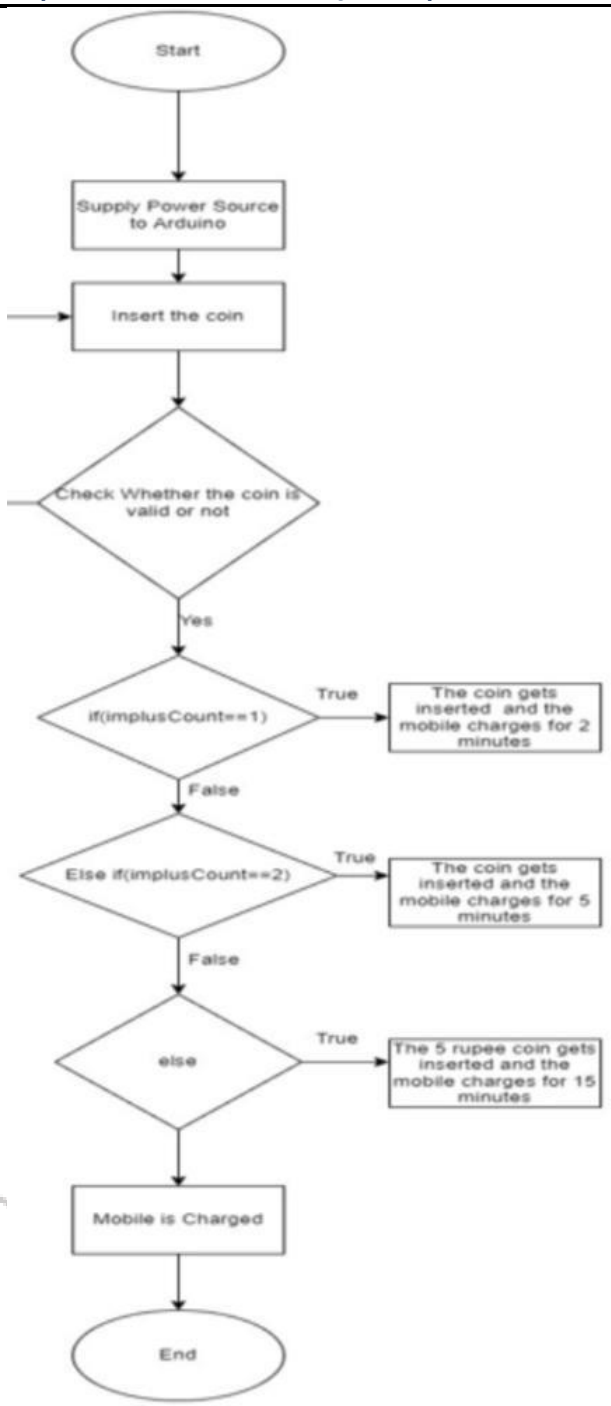

Fig.19 Flow Chart

6. RESULTS:

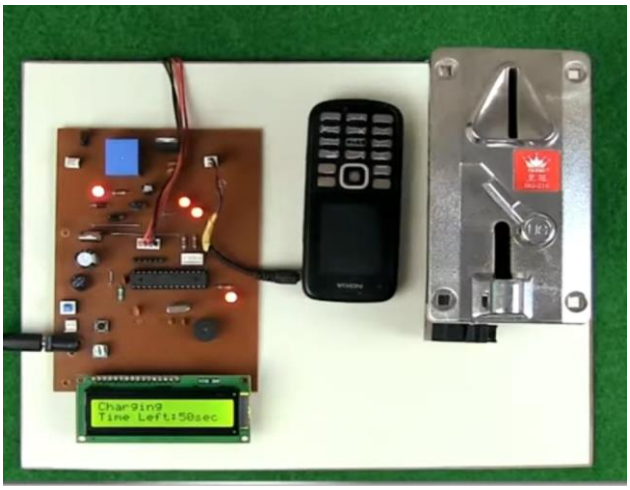

Fig.20 Output 1

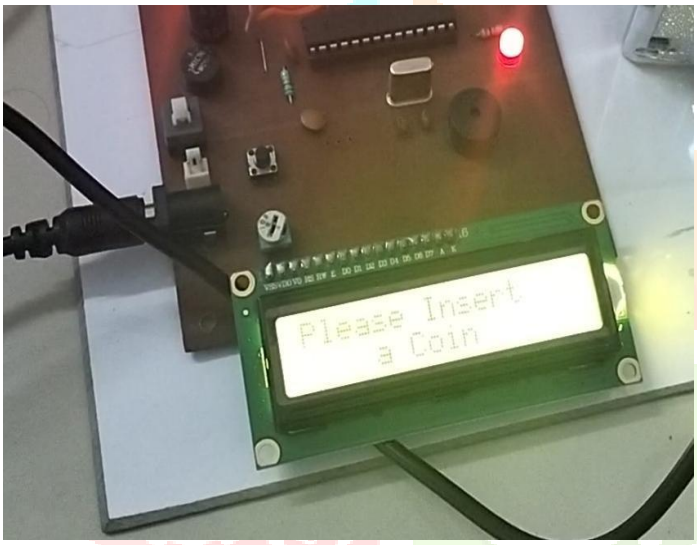

Fig.21 Output 2

7. CONCLUSION:

In this Coin Based mobile charger system, we are offering manageable mobile charging services in public places which meets all the needs of the mobile charging during emergency and safety purposes. This system is simple yet can be available to everyone .In this system we also provided Mobile charger micro controller, relay, coin sensor .In the future we can also develop this system as the revenue generator using the same mechanism by implementing Graphical User Interface application(GUI).

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