Coin Based Cellphone Charger

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Abstract- *Now a days mobile phones are play's important role in the present communication world as well as day to day life. The coin based cell phone charger works in accordance with programming written in the "C++". When a coin is inserted, the microcontroller will detect the input. The RFID is also used for the people who not have a coin, for the purpose of security of cell phone by providing security pins which are to be entered by the users. The controller reads the program written in "C++". The tray placed to facilitate the charging of the mobile is opened which contains multi pin charger. Mobile is placed in the tray and the tray is closed within the time that is written in the code. Meanwhile relay switches multi pin charger. The time period depends on the coding written in the controller. With the help of multi pin charger we can charge different mobiles. And by providing two or more trays it is possible to charge more than one mobile at a time. After the time of charging is completed the user can use password and can withdraw the mobile from the tray.*

Keywords- Arduino Mega, Solar Panel, Battery, Coin Acceptor, LCD display, RFID Module.

I. INTRODUCTION

Now-a-days almost everyone use cell phone. It has become as an essential means of communication in urban and as well as rural areas. Most of the times cell phone battery becomes low or dead at inopportune times when standard charger is not accessible. As we know that, in most of the budding nations the electric power supply is not accessible for many hours. These days mobile phones are the vital communication gadget. The coin- based mobile battery charger can solve this problem. In cases where there is unpredictable electric power supply and solar energy is available, this secured mobile phone charger is very useful.

So we use solar supply or power supply to charge battery with coin detecting mechanism, microcontroller, RFID, charging circuit and different phone sockets. The coin based charger is similar like a vending machine for charging cell phones.

When the coin or RFID tag is identified, microcontroller excites the signal and pass the signal to the circuit. For the purpose of security of cell phone, keypad system is used. The tray provided for placing cell phone resembles like locker system.

The locker system used is keypad, when the coin or RFID card is detected the signal is passed to the microcontroller to open the tray. The user has to place mobile for charging, when the charging time completes, then enter the password by the user for withdraw the mobile from the tray.

Problem Statement:

In many developing countries the grid power is not available for few hours to several hours on daily basis especially in semi urban and rural areas and there was no provision for the user to keep his mobile safely in the system. The user needs to hold the mobile until the charging duration completes.

Objective:

The main objective of coin based cellphone charger with rfid using grid power or solar power is principally for rural areas where the electric power supply is not accessible for many hours and to provide security for the cellphone kept for charging and giving the best to the people in less cost.

II. LITRATURE SURVEY

"Mobile Battery charger on Coin Insertion" This project is very useful in today's life. A method of charging mobile batteries of different manufactures has been designed and developed whenever required. Because now days the necessity of communication is very important, so every person having cell phone but every time we cannot carry charger with us. When we are going for long travel we may forget to carry cell phone charger. This project is used to help the people by coin based charger. Also now days because use of internet and smart phones, this kind of project is very useful. Conventional grid power is used for mobile charging hence project is low cost [1].

"Secured Coin Based Cell Phone Charger With RFID" In this project, Cell phone charger is also provided with RFID for

mobile security. Availability of grid power supply is not convenient, in such cases this coin based secured cell phone charger with RFID is very much useful. The time period depends on the coding written in the controller. After the time of charging is completed the customer can punch RFID card to the RFID reader and can withdraw the mobile from the tray [2].

"Coin Based Mobile Charger using Solar" In this proposed system image processing is used for the correct coin detection. Nearly equal to 70% people use mobile phone all over word. This system is useful for today's life. Because now a day's communication is became a part of human lives. Many times we cannot carry mobile charger with us; if mobile will discharge and we have any important work and charging sources are unavailable then this system is useful. This system uses solar power, this one also another major thing because solar energy is free in source and generate more energy. In this system also uses external grid power. This comes under phenomenon when solar energy is unavailable. Mostly in rural areas this system is useful because their always have problem of lack of electricity [3].

"Mobile Charging Using Coin Insertion" This is the smart coin based mobile charging system that charges your mobile for particular range of time on inserting a coin. The system is to be used by shop owners, public places like railway stations to provide mobile charging facility. This system consists of a coin recognition module that recognizes valid coin. If a valid coin is found then the data is provided to the controller for the startup process of the relay activation which throws the 5v output with the ground connection directly to the battery of the mobile phone, now systems also needs to monitor the time duration of charging. After the condition of charge time is satisfied the system stops. Even the system ensures security and authentication services by providing security pins which are to be entered by the users. So the system can be used for smart mobile charging at public places [4].

"Coin Based Mobile Charging using Solar Panel" This project is very useful to people who are using mobile phone without charging condition in public places. It is also useful for the area where electricity is present for few hours. The main aim of the project is to provide the benefit of charging their mobile in emergency conditions and giving the best to the people in less cost. A system for charging mobile batteries of different manufacturer using solar power is proposed. The system is proposed for rural and remote areas where the current supply is not available all the time or for sufficient time. This project is very useful at such locations where people are facing power crisis. Since, necessity of communication is very important now days, cell phone charging is one of the problem faced by users. The proposed system shall provide a source of charging the cell phone in emergency conditions without the electric supply [5].

"Coin Based Mobile Charger Using Solar Panel, RFID" In this paper we represent mobile battery charging using solar power for rural & remote areas where the Grid power supply is unavailable, now-a-days every person wants to connected with each other. But every time we can't carry charger with us or we may forget to carry mobile charger for long drive then this device is very useful. This can be used at Hotels, Exhibition halls, service offices, Shopping malls, Airports, Train terminals. So that the mobile phone users can reactivate a low battery or dead battery by simply plug in & charging for one rupee [6].

III. METHODOLOGY

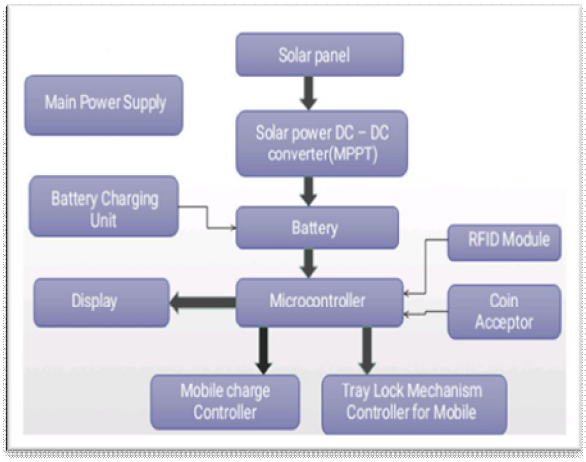

Fig 1: Block Diagram

The insertion of coin or RFID card in the respective slot is the initial stage. The charger will start charging battery of mobile phone which is plugged to charger, after coin is put into the mechanical slot. Particular coin has to be inserted in the slot. If any other coin is inserted, it will not be detected. If the right coin (In this design we programmed 2Rs and 5Rs coin) is placed inside the slot. Similarly RFID card is also used for the people who not have a coin, then a signal is passed to the controller. This will authorize the start of charging of the mobile phone battery.

Coin based cell phone charger is powered through grid power supply or solar power. The power supply section should deliver unvarying supply for efficient working. The relay is used for activating mobile terminals upon coin insertion or RFID card.

The liquid crystal display shows all the required information to the person using it. When microcontroller will

detect the input (Coin or RFID tag), it shows “Authorized access”. While charging it shows “Charging” and when microcontroller will not detect the input it displays “Access denied”, while security of cell phone by providing security pins which are to be entered by the users, it shows “Enter Passkey:”. When the charging is completed the user can use password it similar to stored data then, it displays “Passkey Accepted”. While user enters wrong password then, it shows “#. Change Passkey”.

For the purpose of security of cell phone Keypad system is used. The tray provided for placing cell phone resembles like locker system. When the coin or RFID card is detected the signal is passed to the microcontroller to activate the relay and open the tray. When the tray is opened, then the mobile is placed in the tray for charging, then set password by the user. After a fixed period of time the charging completes and tray can be only opened by the user and administrator with an password set by them.

IV. FLOW CHART

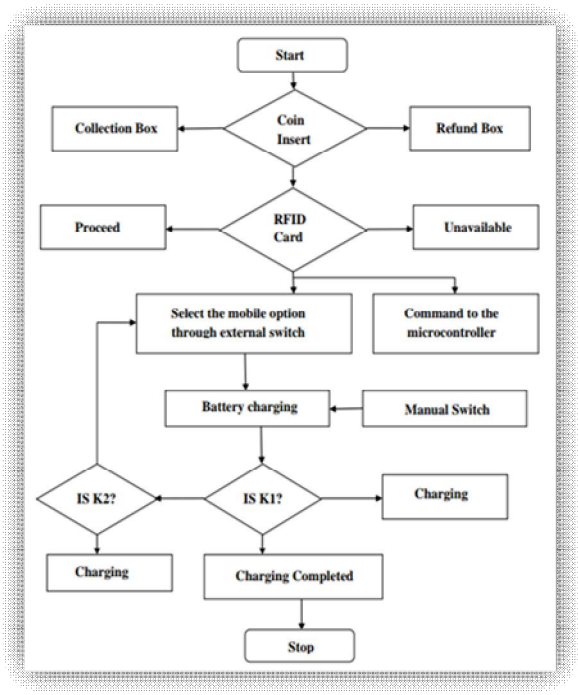

Fig 2: Flow Chart

ALGORITHM

1. Start
2. Insertion of coin
3. Collect the coin
4. Swap RFID card
5. Command to the microcontroller
6. Battery charging
7. Supply to the mobile charger pin
8. Mobile charging will start
9. Completion of charger will displayed on LCD
10. Stop

V. HARDWARE COMPONENTS

Coin acceptor :

Fig 3: Coin Acceptor

The basic principle for coin detection is to test the physical properties of the coin against known characteristics of acceptable coins. The coin acceptor identifies the coin according to its mass, size, diameter, thickness, metal composition and/or magnetism, and then sends an appropriate electrical signal via its output connection. Coin acceptors are modular, so a dirty acceptor can be replaced with a clean unit, minimising downtime. The old unit is then cleaned and refurbished. Some new types of coin acceptors are able to recognize the coins through "training", so they will support any new types of coins or tokens when correctly introduced.

RFID Module:

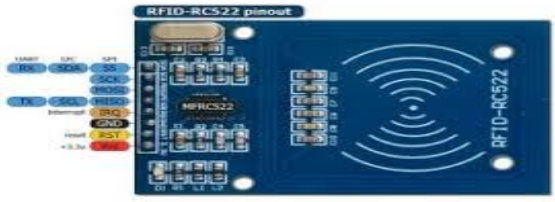

Fig 4: RFID Reader

Fig 5: RFID Tag

RFID Reader has transceiver which generates a radio signal and transmits it through antenna. This signal itself is in the form of energy which is used to activate and power the tag.

When RFID tag comes in range of signal transmitted by the reader, transponder in the tag is hit by this signal. A tag draws power from the electromagnetic field created by reader. Then, the transponder converts that radio signal into the usable power. After getting power, transponder sends all the information it has stored in it, such as unique ID to the RFID reader in the form of RF signal. Then, RFID reader puts this unique ID data in the form of byte on serial Tx (transmit) pin. This data can be used or accessed by PC or microcontroller serially using UART communication.

VI. SOFTWARE COMPONENT

Arduino Mega:

Fig 6: Arduino Board

The Arduino Mega 2560 is a microcontroller board based on the ATmega2560. It has 54 digital input/output pins (of which 15 can be used as PWM outputs), 16 analog inputs, 4 UARTs (hardware serial ports), a 16 MHz crystal oscillator, a USB connection, a power jack, an ICSP header, and a reset button. The Mega 2560 board can be programmed with the Arduino Software (IDE). The ATmega2560 on the Mega 2560 comes pre-programmed with a bootloader that allows you to upload new code to it without the use of an external hardware programmer.

VII. EXPECTED RESULT

The expected result of this is to charge a mobile battery with the help of solar panel and main power supply. If a user insert a 2 rupee coin at that time the mobile battery will be charged up to 5minutes and for 5 rupee coin at that time the mobile battery will be charge up to 10minutes and RFID card for 5minutes of charging which is written in the programme. After analyzing some proposed systems similar to coin based secured cell phone charger, it was observed that there was no provision for the user to keep his mobile safely in the system. The user needs to hold the mobile until the charging duration completes. Therefore in this proposed system tray lock mechanism and password system has been incorporated to provide security for the cell phone kept for charging in the system.

VIII. FUTURE SCOPE

This idea can be used for many purposes instead for charging the mobile. It used for buying foods in the hotels, snacks in the stores, toys in the stationary by inserting the require amount to that particular product. The tickets buying in the trains, buses in the fast moving society by this idea the reduction of queue in the public places.

IX. CONCLUSION

This project is very useful in today's life. Because now a days every person having cell phone. When they are going to long travel they may forget to carry the charger. This project is used to help that person by coin based charger. If it is placed in important places such as bus stand, petrol bunks, theatres then we will charger our mobile according to this project. A system for charging mobile batteries of different manufacturer using solar power is proposed. The system is proposed for rural and remote areas where the current supply is not available all the time or for sufficient time. This project is very useful at such locations where people are facing power crisis. Thus this paper is used to the rural people were the insufficiency of grid power by solar panel and RFID is also used in the sense of not having the coin. This will be a really satisfying as well as helpful system to the users, one in need of immediate charging and is a system which can be also proposed for the better public use.

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