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COIN BASED MOBILE PHONE CHARGING

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Abstract -The aim of this project is to provide a solution for charging of mobile at public places. The person who wants to charge his/her mobile has to insert a coin and connect his/her mobile with the charger. Mobile will be charged a particular amount of time depending on the number of coins inserted by him/her. As soon Coin Sensor detects the coin it sends a pulse to the Microcontroller. The Microcontroller turns ON the relay and the user can charge his/her mobile phone from the socket. LCD is used to display the time duration for which user can charge his/her phone. As the total time gets lapsed, the charging will be stopped..

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***Key Words*:**GPRS Module, GSM Module, Arduino, Cloud, UR Sensor

1.INTRODUCTION

In many developing countries the current supply is not available for several hours on daily basis especially in semi urban and rural areas were the cell phones are the essential communication device. The aim of this project is to provide a solution for charging of mobile at public places. The person who wants to charge his/her mobile has to insert a coin and connect his/her mobile with the charger. Mobile will be charged a particular amount of time depending on the number of coins inserted by him/her. As soon Coin Sensor detects the coin it sends a pulse to the Microcontroller. The Microcontroller turns ON the relay(Electromechanical Switch) to provide 230V,50Hz signal to the charging socket and the user can charge his/her mobile phone from the socket. The LCD (16×2) is used to display the time duration for which the user can charge his/her mobile phone. As the total time gets lapsed, the charging will be stopped.

An Embedded System is a combination of computer hardware and software, and perhaps additional mechanical or other parts, designed to perform a specific function. An embedded system is a microcontroller-based, software driven, reliable, real-time control system, autonomous, or human or network interactive, operating on diverse physical variables and in diverse environments and sold into a competitive and cost conscious market. An embedded system is not a computer system that is used primarily for processing, not a software system on PC or UNIX, not a traditional business or scientific application. High-end embedded & lower end embedded systems. Highend embedded system - Generally 32, 64 Bit Controllers used with OS. Examples Personal Digital Assistant and Mobile phones etc .Lower end embedded systems - Generally 8,16 Bit Controllers used with an minimal operating systems and hardware layout designed for the specific purpose. Examples Small controllers and devices in our everyday life like Washing Machine, Microwave Ovens, where they are embedded in. firmware.

2. Methodology

In this project 'Coin Based Mobile Charging' there are two units namely the coin module and the micro-controller unit. The coin module operates at 12volts and precaution has to be taken while connecting it to the micro-controller board. The coin module has to be connected as label given on the connectors. So once the connection is done properly, turned it on and we have our system up and running. The system will first display the "coin based mobile charging "and then it will wait for coin input.(InsertCoin).This system accepts only two rupee coin and no other coin is accepted. Once you insert two rupee coin the system will start 5min count down. After this 5min finishes the charging voltage gets disconnected. If another one rupee coin is inserted in the system, before finishing of 5minutes then the system will add another 5minutes to the remaining time.

3. System Analysis

Printed Circuit Board:A printed circuit board, or PCB, is what holds your electronic components together and also gives electrical paths for their interconnection. ¬ PCB boards usually have copper base for the electrical

paths known as the copper layer. ¬ The other side is usually fiberglass, composite epoxy, or other laminate material that gives good mechanical strength to the PCB. The components can be mounted in through hole fashion as well as in surface mount depending upon what component type we will use like SMD, DIP, etc.

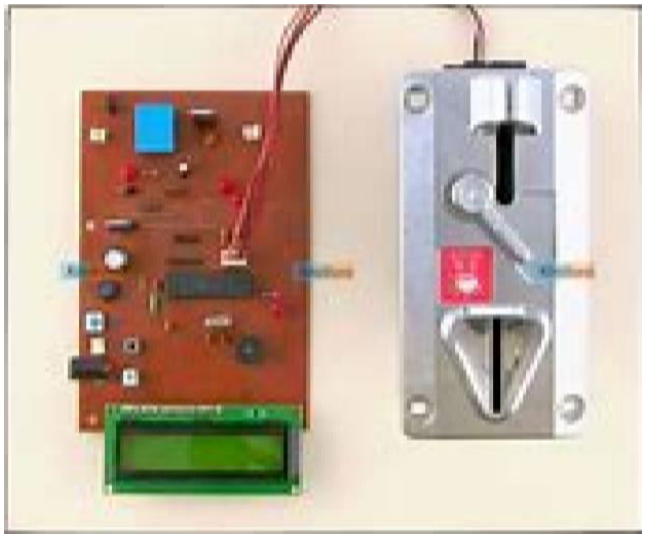

Figure 1: PCB Block Diagram

PCB Files:

1. PCB files can be created using various software available in the market of which some are free while the others being needed to be purchased.
2. Some of the software names are as Eagle PCB, Proteus, Easy PCB, etc.
3. The design stuff can be done using these software's layout explorer features.
4. The second step will be creating CNC readable files. The file format generated by the earlier software is usually not understandable by the CNC machine's software.
5. Hence, here we have an in intermediary software like CopperCam that converts these file formats into the ones readable by the CNC machine's software.
6. The copper layer file and the drill layer files are separately generated by the software.
7. Once the CNC readable files are generated, they can be uploaded to the CNC software (CNC software comes with the machine itself and is recommended by its manufacturer).

4. SYSTEM IMPLEMENTATION

1) In this project 'Coin Based Mobile Charging' there are two units namely the coin module and the micro- controller unit.
2) The coin module operates at 12volts and precaution has to be taken while connecting it to the micro-controller board.
3) The coin module has to be connected as label given on the connectors.
4) So once the connection is done properly, turned it on and we have our system up and running.
5) The system will first display the "coin based mobile charging "and then it will wait for coin input.(Insert Coin)
6) This system accepts only two rupee coin and no other coin is accepted.
7) Once you insert two rupee coin the system will start 5min count down.
8) After this 5min finishes the charging voltage gets disconnected.
9) If another one rupee coin is inserted in the system, before finishing of 5minutes then the system will add another 5minutes to the remaining time.

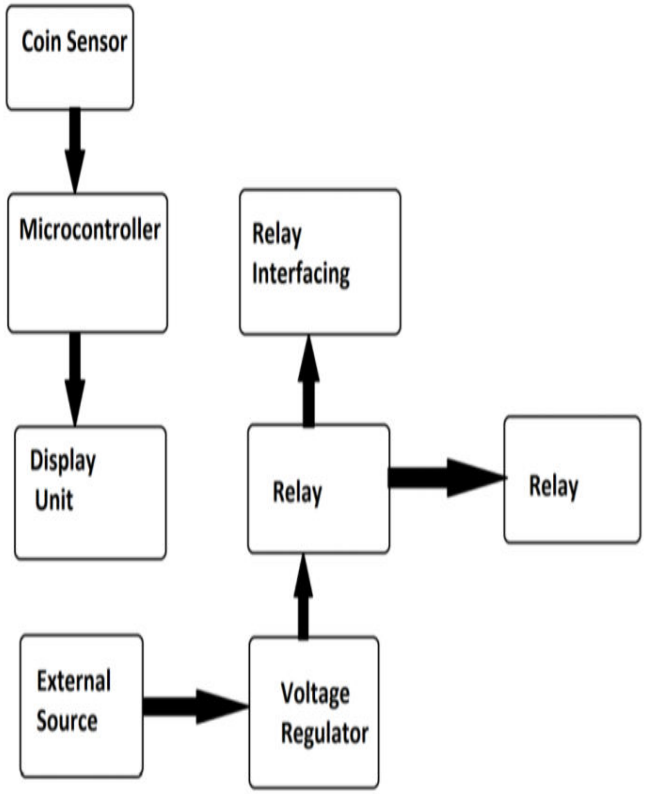

Figure 2: Block diagram of the project

16x2 LCD DISPLAY Liquid crystal displays (LCD's) have materials which combine the properties of both liquids and crystals. Rather than having a melting point, they have a temperature range within which the molecules are almost as mobile as they would be in liquid, but are grouped together in an ordered form similar to a crystal.that same particular amount of time, this way we can also know the time taken. Now simply calculate the distance using a microcontroller or microprocessor.

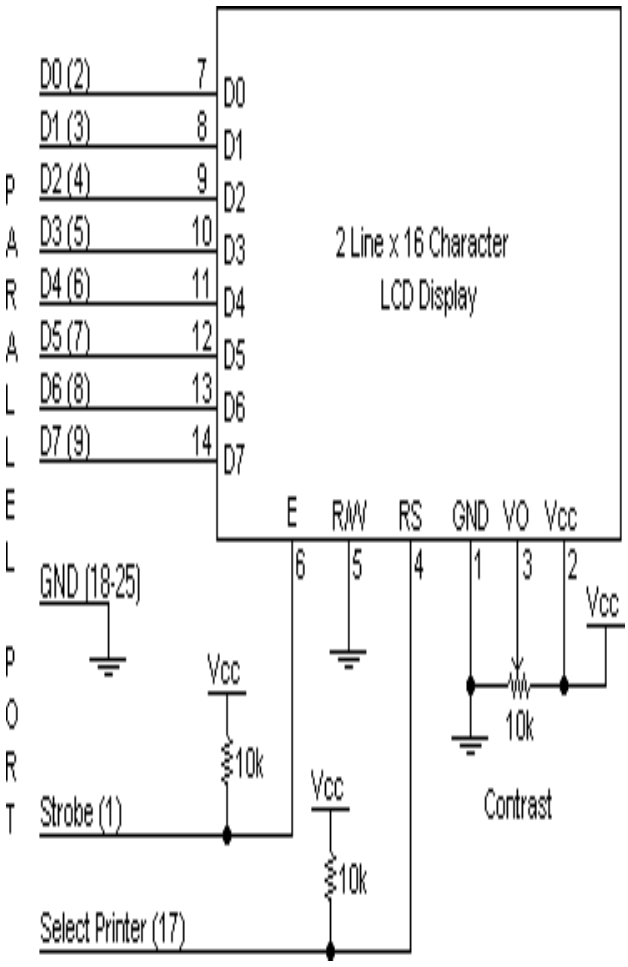

Figure 3: LCD Display

Figure 4: Pin Diagram

a) Battery

An electrical battery is a combination of one or more electrochemical cells, used to convert stored chemical energy into electrical energy. The battery has become a common power source for many household and industrial applications. A battery is a device that converts chemical energy directly to electrical energy. It consists of a number of voltaic cells; each voltaic cell consists of two half cells connected in series by a conductive electrolyte containing anions and cat ions. One half- cell includes electrolyte and the electrode to which anions (negatively-charged ions) migrate, i.e. the anode or negative electrode; the other half-cell includes electrolyte and the electrode to which cat ions (positively-charged ions) migrate, i.e. the cathode or positive electrode. In the red ox reaction that powers the battery, reduction (addition of electrons) occurs to cat ions at the cathode, while oxidation (removal of electrons) occurs to anions at the anode. The electrodes do not touch each other but are electrically connected by the electrolyte. Batteries may be used once and discarded, or recharged for years as in standby power applications. Miniature cells are used to power devices such as hearing aids and wristwatches larger batteries provide standby power for telephone exchanges or computer data centers. An electrical battery is one or more electrochemical cells that convert stored chemical energy into electrical energy. Since the invention of the first battery (or "voltaic pile") in 1800 by Alessandro Volta, batteries have become a common power source for many household and industrial applications. According to a 2005 estimate, the worldwide battery industry generates US$48 billion in sales each year, with 6% annual growth. There are two types of batteries: primary batteries(disposable batteries), which are designed to be used once and discarded, and secondary batteries(rechargeable batteries), which are designed to be recharged and used multiple times. Miniature cells are used to power devices such as hearing aids and wristwatches; larger batteries provide standby power for telephone exchanges or computer data centers.

b) ATMEGA328P

The ATmega328P is a 32K 8-bit microcontroller based on the AVR architecture. Many instructions are executed in a single clock cycle providing a throughput of almost 20MIPS at 20MHz. TheATMEGA328-PU comes in PDIP28 pin package dissuitable for use on our 28pin AVR Development Board. The computer on one hand is designed to perform all the general purpose tasks on a single machine like you can use a computer to run as faster to perform calculation so you can use computer to store some multimedia file or to access internet through the browsers there as the microcontrollers are meant to perform only the specific tasks for example switching the AC Off automatically then room temperature drops to a certain defined limit and again turn ON the temperature rises above the defined limit. There are number of popular families of

microcontrollers which are used in different applications as per their capability and feasibility to perform the desired tasks most common of these are 8051s AVR and PIC microcontrollers. In this we will introduce you the AVR family of microcontrollers.

Figure 5: Pin Digram of ATMEGA328P

c) **COIN SENSOR** A coin acceptor validates a coin/token based on physical propertes such as teights size and/or magnetc content and then sends a corresponding I/O signal to its output connector.

Figure 6: Coin Sensor

a) Advantages

- Simple and hand Efficient
- Less expensive
- Reduce man power
- Consumes less Power
- Simple to operate
- Useful to public. By using a coin to charge a mobile phone in any public places
- Can be used to charge different types of mobiles

b) Disadvantages:

- The life of the battery will be less than that of the given period
- There is a chance of high voltage flow during charingtimeframe, they become quicker, for it is the perfect condition for development.

5. RESULTS AND DISCUSSION

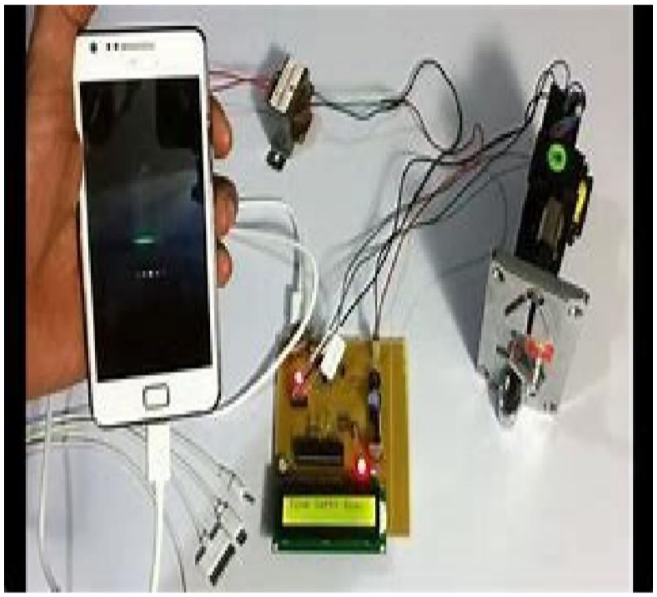

Figure 8: Hardware Connection

Technology	How it works	Disadvantages	Advantages
Mechanical Coin Validator (Validates low denomination coins.)	Uses diameter, thickness, magnetic content and weight of pre-selected coin/token to make a mechanical validation decision. Validated coin/token then trips a micro switch, sending a signal to an output device.	• Low security level - prone to slugs and frauds • Can only be set to accept one type of coin/token	• Cost effective
Coin Comparitor	Uses an actual coin or token to make a baseline validation.	• Can only be used in single coin validation applications	• Good level of security at a very competitive price • May be fine-tuned against better quality slugs and frauds
Electronic Coin Validator (Validates high denomination coins.)	Stores the coin/token's electrical data for use as validation criteria. Uses a series of optics to gather coin data for validation that vary in placement and style along the coin path.		• Offers highest security against frauds, on board diagnostics and programming • Advanced models allow for multi-coin validation • Field programmable

Figure 7: Comparision

6. CONCLUSIONS

The coin based mobile phone charge is very useful for public using a coin to charge the mobile in any public places just like charging it normally owing to the fact that it relayed the electricity Through the coin based mobile phone charger needed to bring the mobile phone back to life A novel method of charging mobile batteries of different manufacturers using 12V adapter has been developed for rural and remote areas

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