Perspectives in Communication, Embedded-Systems and Signal-Processing (PiCES)
ISSN: 2566-932X, Vol. 2, Issue 4, July 2018
Proceedings of National Conference on Emerging Trends in VLSI, Embedded and Networking (NC-EVEN 18), April 2018

IOT – ChargeItSpot

Murthy S S[1], Deepika K S[2], G Sai Dheeraj Kumar[3]

1. ECE, RGIT, Bangaluru, India, e-mail Murthyss1982@gmail.com
2. ECE, RGIT, , Bangaluru, India, e-mail kumardeepika1995@gmail.com
3. ECE, RGIT , Bangaluru India, e-mail Saidheerajgandla@gmail.com

Abstract: The objective of this project is inserting the coin using charge for your mobile phone in public places. This project is very useful to people who are all using mobile phone without charging condition in public places. In this project, who are all using mobile phones in outside of home are office without charging condition. The IOT coin based mobile phone charger is very useful to that person for using coin to charge for that mobile. In this project we are implementing more application by using the same concept like water filling and emergency alert to nearby hospitals and police stations by using the IOT concept.

Keywords: Slot Sensor, LCD Display, GSM, Renesas Microcontroller, Solar Panel, switch

I. INTRODUCTION

The mobile phone business is currently worth billions of dollars and supports millions of phones. The need to provide a public charging service is very essential.

ChargeItSpot, can work with some of the biggest brands in the world to provide free and secure cell phone charging to consumers. The fully-customizable charging stations can be installed in retail stores, malls, casinos, hospitals, and arenas. Consumers love that they never have to worry about a dead phone battery. Clients love that customer who charge shop longer and spend more.

Coin operated mobile phone charger is new business milestone because many are attending business conventions and forgetting their charger at home or in hotel rooms. Students and many people use the public transportation and may not be aware of energy level of their mobile phone battery power. Such people are customers for coin operated mobile phone charger service. The IOT coin-based mobile battery chargers are designed to solve this problem.

This project may not seem as lucrative business for people residing in urban areas but may prove to be a major boon to people travelling from rural areas to urban areas, everyday. The source for charging can be obtained from direct power grid or solar energy in case of non availability of grid power. The IOT coin-based mobile battery charger can be quickly and easily installed outside any business premises.

II. LITERATURE SURVEY

The growth of mobile phone market is phenomenal in recent years and the need for charging the mobile battery is required anytime and anywhere. 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 where the mobile phones are the essential communication device. While the urban population use more sophisticated mobiles with good power batteries lasting for few days, the rural population buy the pre-owned mobile phones that require charging frequently even two or three times a day. AIOT coin based universal mobile battery charger is designed and developed in this paper. This device is like a vending machine for mobile battery charging at kiosks and the user has to plug the phone into one of the adapters and insert a coin for charging at a constant current for a definite duration.

Here we are also concentrating on water effective utilization in rural and urban areas. And also effective water distribution by using coin based water pumps.

III. DESCRIPTION

To implement above project mainly we are using Microcontroller, slot sensor, LCD, KEYS, mobile charger, Relay, GSM/GPRS.

In this project slot sensor is used for to insert the coin. The sensor senses and sends the corresponding electrical output signal to microcontroller. The microcontroller unit analysis the number of coin dropped on the coin box and according to that the sensors operates. The people will deposit the money in the coin box. The sensor senses the coin and gives the output signal to the relay. According to the money paid by the people, it will shows the 2 option you can select which one you want after that if you select 1 option the relay on the gate valve of the tank and delivers water and if you select other option the relay on the gate valve of the output is given to t changing block and the charging is taken place. In this project we are using some 3 keys, one for mobile charging, and one for filling of water another one for timing. The emergency key is used for security purpose, here 2 keys are used one for hospital and another for police stations for any theft any materials, By using IOT concept the particular data will stored in the specified server what we mentioned and then it will sends to the nearest police station and the hospital by using the GPRS. In future if we need any information we can easily access the data by the help of server and GPRS.

IV. METHODOLOGY

After selecting the option the microcontroller taken the specified operation.

If any emergency case is accrued it will directly inform to the nearest police station and the hospital for the security purpose.

Conference held at Brindavan College of Engineering, Yelahanka, Bagalur Main Rd, Dwarka Nagar, Bengaluru - 560063

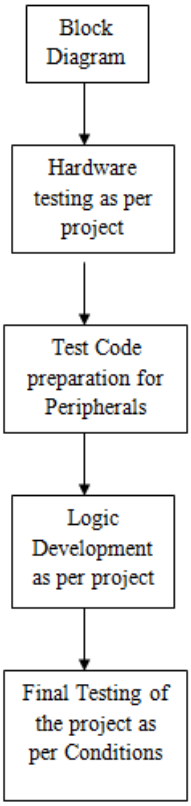

Fig 1. Flow of the work

After performing the operation the sensor value is uploaded to cloud via GPRS for further use.

V. BLOCK DIAGRAM

The mobile battery charger starts charging a mobile connected to it, when a coin is inserted at the coin insertion slot at the input stage.

The type of coin and the size will be displayed at the LCD display for the user, so as to ensure correct coin insertion. Any other coin, if inserted in the slot will be returned to refund box.

A mechanical slot is attached with electrical triggering in coin insertion slot, if the correct coin is inserted, it sends a pulse to the control unit authorizing the start of charging the mobile battery connected to the device.

Then the coin insertion slot accepts the coin into the battery charging unit and start charging the mobile battery for a specific period controlled by the software of the microcontroller.

Controller section acts according to the input signal from the sensor circuit. Coin accepted or rejected is based on the diameter of the coin. This invokes microcontroller along with LCD interface displays the selection of mobile option if particular mobile is selected for charging the corresponding routine is activated and charge the mobile for a particular duration of time. When the routine completes, it indicates charge complete message through LCD display.

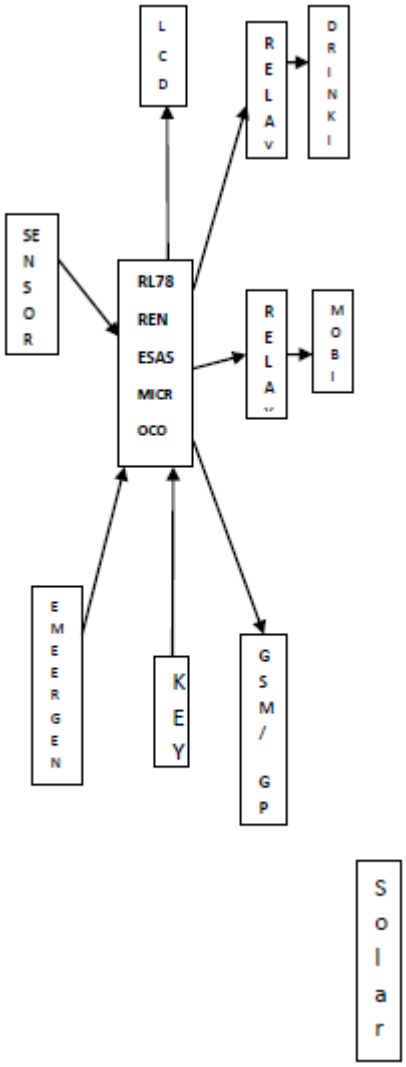

Fig 2. Block diagram

Similarly the same procedure is followed for charging more than four different mobiles simultaneously. The LCD displays all the information to the customer as and when required. When the mobile battery is connected, it displays" Insert Coin".

While charging it displays "Charging" and at the end of charging cycle it displays "Charge completed".

For charging continuously the coin has to be inserted when the display shows "Charge Completed" The output has 10 terminals for connecting different types of mobile batteries and 7 of them are internally connected for charging mobile batteries of different make.

Power salient feature of the universal mobile battery charger is that it draws power from the solar energy during the day time for charging the internal battery of the controller.

Only if additional power is required, then the grid power is used. A solar micro inverter, has been designed for supplying 230v, 50Hz so that both grid power and the solar power are connected in parallel with a switch to changeover from one to the other.

VI. COMPONENTS USED

A. *Renesas Microcontroller:* Renesas microcontroller provides excellent expandability, fast highly reliable, low in cost & eco-friendly performance.

B. *LCD (16x2):* Liquid crysta1l display is a flatpanel display or other electronically modulated optical device that uses the light-modulating properties of liquid crystals.

C. *Slot sensor:* Slot sensors are used when only a short sensing distance is needed.

D. *Mobile charger*: It is used to charge the device.

E. *Relay:* A relay is an electrically operated switch. Many relays use an electromagnet to mechanically operate a switch, but other operating principles are also used, such as solidstate relays.

F. *Water pump:* A pump is a device that move fluids, or sometimes slurries, by mechanical action.

G. *Keys*

H. *GSM/GPRS:* Global system for mobile communication is a standard developed by European telecommunication it is used to describe the protocols for second-generation digital cellular networks.

I. *Solar panel:* It absorbs sunlight as a source of energy to generate electricity.

VII. SOFTWARES USED

- Embedded C
- Cube suite+ Tool
- Renesas Flash Programmer

VIII. ADVANTAGES

- Effective utilization of water
- Helpful for emergency communication

IX. DISADVANTAGES

- If the equipment is left unguarded during night, thieves may rob it.
- Misuse by some miscreants in public, if left unguarded.

X. APPLICATION

- Use in public places like bus stand, railway stations etc…
- This project can be used in railway station.
- It can be installed in shops and malls can be better source of earning money
- There is no full time power in rural areas this can be installed in those places.

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