



A Minor Project Report

on

AUTOMATED TROLLEY CART

Submitted in partial fulfilment of requirements for the award of the

Degree of

BACHELOR OF ENGINEERING

in

ELECTRONICS AND COMMUNICATION ENGINEERING

Under the guidance of

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BONAFIDE CERTIFICATE

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Vision and Mission of the Institute and Department

Vision

To emerge as a leader among the top institutions in the field of technical education.

Mission

- ❖ Produce smart technocrats with empirical knowledge who can surmount the global challenges.
- ❖ Create a diverse, fully-engaged, learner-centric campus environment to provide quality education to the students.
- ❖ Maintain mutually beneficial partnerships with our alumni, industry and professional associations.

Department of Electronics and Communication Engineering

Vision

- ❖ To empower the Electronics and Communication Engineering students with Emerging Technologies, Professionalism, Innovative Research and Social Responsibility.

Mission

- ❖ Attain the academic excellence through innovative teaching learning process, research areas & laboratories and Consultancy projects.
- ❖ Inculcate the students in problem solving and lifelong learning ability.
- ❖ Provide entrepreneurial skills and leadership qualities.
- ❖ Render the technical knowledge and industrial skills of faculties.

PROGRAM EDUCATIONAL OBJECTIVES (PEO'S)

- ❖ **PEO1:** Graduates will have a successful career in academia or industry associated with electronics and communication engineering.
- ❖ **PEO2:** Graduates will provide feasible solutions for the challenging problems through comprehensive research and innovation in the allied areas of electronics and communication engineering.
- ❖ **PEO3:** Graduates will contribute to the social needs through lifelong learning, practicing professional ethics and leadership quality

PROGRAM OUTCOMES(PO'S)

- ❖ **PO1: Engineering knowledge:** Apply the knowledge of mathematics, science, engineering fundamentals, and an engineering specialization to the solution of complex engineering problems
- ❖ **PO2: Problem analysis:** Identify, formulate, review research literature, and analyze complex engineering problems reaching substantiated conclusions using first principles of mathematics, natural sciences, and engineering sciences
- ❖ **PO3: Design/development of solutions:** Design solutions for complex engineering problems and design system components or processes that meet the specified needs with appropriate consideration for the public health and safety, and the cultural, societal, and environmental considerations
- ❖ **PO4: Conduct investigations of complex problems:** Use research-based knowledge and research methods including design of experiments, analysis and interpretation of data, and synthesis of the information to provide valid conclusions
- ❖ **PO5: Modern tool usage:** Create, select, and apply appropriate techniques, resources, and modern engineering and IT tools including prediction and modeling to complex engineering activities with an understanding of the limitations
- ❖ **PO6: The engineer and society:** Apply reasoning informed by the contextual knowledge to assess societal, health, safety, legal and cultural issues and the consequent responsibilities relevant to the professional engineering practice

- ❖ **PO7: Environment and sustainability:** Understand the impact of the professional engineering solutions in societal and environmental contexts, and demonstrate the knowledge of, and need for sustainable development
- ❖ **PO8: Ethics :** Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice
- ❖ **PO9: Individual and team work:** Function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings
- ❖ **PO10: Communication:** Communicate effectively on complex engineering activities with the engineering community and with society at large, such as, being able to comprehend and write effective reports and design documentation, make effective presentations, and give and receive clear instructions
- ❖ **PO11: Project management and finance:** Demonstrate knowledge and understanding of the engineering and management principles and apply these to one's own work, as a member and leader in a team, to manage projects and in multidisciplinary environments
- ❖ **PO12: Life-long learning:** Recognize the need for, and have the preparation and ability to engage in independent and life-long learning in the broadest context of technological change.

PROGRAM SPECIFIC OUTCOMES(PSO'S)

- ❖ **PSO1:** Applying knowledge in various areas, like Electronics, Communications, Signal processing, VLSI, Embedded systems etc., in the design and implementation of Engineering application.
- ❖ **PSO2:** Able to solve complex problems in Electronics and Communication Engineering with analytical and managerial skills either independently or in team using latest hardware and software tools to fulfil the industrialexpectations.

ABSTRACT

Now a day's technology has become more advanced. People of all ages who are admired to electronic gadgets are enormous. In many industries the production of electronic devices such as smart card readers, barcodes, and RFID scanner are increasing. Supermarkets also need this kind of gadgets. Right now people in super markets and malls are purchasing the things and put them in a trolley and waiting for a long time standing in a queue for receiving the bill. In the process of billing, the employee of the mall or supermarkets scans each stuff with the help of the barcode present in it and billing it finally. This process take a lot of time and it is worse on holidays because of waiting for a long time in a queue and it is often crowded. To avoid this waste of time in billing and waiting in a queue the smart trolley billing system is developed. In this billing system RFID tag is placed instead of barcode. By tapping the product on RFID reader. It displays the cost, name and expiry date in LCD screen which is fixed in trolley then the total cost will be added to final check of bill. The bill is stored in micro controller memory. Once the purchase is over, after billing it we can reset. This system gives solution to reduce the shopping time at supermarkets and increases the consumer experience.

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1. INTRODUCTION:

Throughout the century many of the innovations and information technologies are drastically changing and so as our views and expectations. A main thing where human spend maximum time is shopping. According to survey we can say human spend approximately 1 to 1.5 hours for shopping and most of the customers will always tend to walk out of a queue if it is long. In modern world, in every supermarkets and malls have shopping trolley and baskets for customers to store the purchased products. When shopping is done customers have to proceed to checkout at the billing counter. Here this billing process is quite time consuming and have to employ more human resource at the billing section. To overcome this problem, we are implementing RFID based smart trolley system to minimize the rush, save time and human efforts. Our prototype has some enhanced features which will overcome this queue issue. The RFID tag is attached to a product. When a person puts that product in the trolley the RFID reader automatically scans the products and the details regarding the product name, cost, quantity is displayed on the LCD. The automated shopping cart, small cart is an innovative consumer purchasing product that is designed to help shopper fast track their shopping experiences. For the moment a shopper removes an item from the stores. The automated shopping cart receives all the information to where the final bill is calculated and ready for final checkout. This dramatically reduces shopping and checkout time. Automated shopping system using radio frequency identification system emerges as converging technology where time and efficiency are the matter of priority in shopping system of present day.

1.1 Objectives

Aim of this task is to develop a system that can be used solve the challenges faced by the people in the shopping mall during billing process.

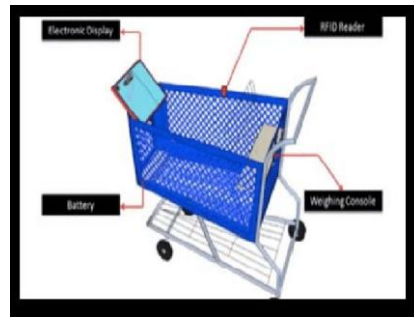


Fig no :1.1

2. LITERATURE REVIEW

Smart Shopping Cart : This model Is attached to the trolley for easy viewing. It consists of RFID reader which is used to scan Each product which has the RFID tag in it. The billing is done in smart trolley itself. The Product name and its price will get displayed on LCD screen.

RFID Based shopping Trolley for Supermarket : It consists of RFID Here the number of product and will be displayed, Along with the price details.

Smart Cart with Automatic Billing : The author innovate a system which supports smart billing trolley. In that they are Representing the system with the additional functionality, which will calculate and update the Customer bill. The product and the price will be displayed in the LCD screen. They can Directly go the billing desk and pay the amount

Smart trolleys for Shopping Malls : Now a days number of large as well as small shopping malls has increased throughout the Global due to The increasing public demand and spending. Constant enhancement is required In the traditional billing system so as to improve the quality of shopping. To improve the Existing system this shopping cart will generate the shopping bill on cart itself with the help Of RFID reader. This system will save the time of customers and workload of employees in The mall.

Smart shopping cart with automatic billing system through RFID In malls there can be a big rush on holidays, weekends especially during on special offers And discount. Due to purchasing in the shopping mall, now-a- days customer prefer the online Shopping to get the required items like Amazon ,Flipkart etc. so to solve this Problem this paper proposed the virtual cart, using which one can overcome the Complications of online and offline shopping by ensuring a better experience.

3.PROJECT METHODOLOGY

3.1 Proposed System

RFID based smart trolley consists of trolley that incorporated with RFID reader.as soon as the customer place the product they want to buy in the trolley .the RFID reader attach to the trolley detect the RFID tag number of the product to identify



Fig no: 3.1

3.2 Proposed Method

RFID reader:



Fig no:3.2

A radio frequency identification reader (RFID reader) is a device used to gather information from an RFID tag, which is used to track individual objects. Radio waves are used to transfer data from the tag to a reader. RFID is a technology similar in theory to bar codes. However, the RFID tag does not have to be scanned directly, nor does it require line-of-sight to a reader. The RFID tag it must be within the range of an RFID reader, which ranges from 3 to 300 feet, in order to be read. RFID technology allows several items to be quickly scanned

RFID tag:



Fig no:3.3

RFID tags are a type of tracking system that uses smart barcodes in order to identify items. RFID is short for “radio frequency identification,” and as such, RFID tags utilize radio frequency technology. These radio waves transmit data from the tag to a reader, which then transmits the information to an RFID computer program

MICROCONTROLLER:



Fig no:3.4

The PIC microcontroller PIC16f877a is one of the most renowned microcontrollers in the industry. This microcontroller is very convenient to use, the coding or programming of this controller is also easier. One of the main advantages is that it can be write-erase as many times as possible because it uses FLASH memory technology. It has a total number of 40 pins and there are 33 pins for input and output. PIC16F877A is used in many pic microcontroller projects. PIC16F877A also have much application in digital electronics circuits.

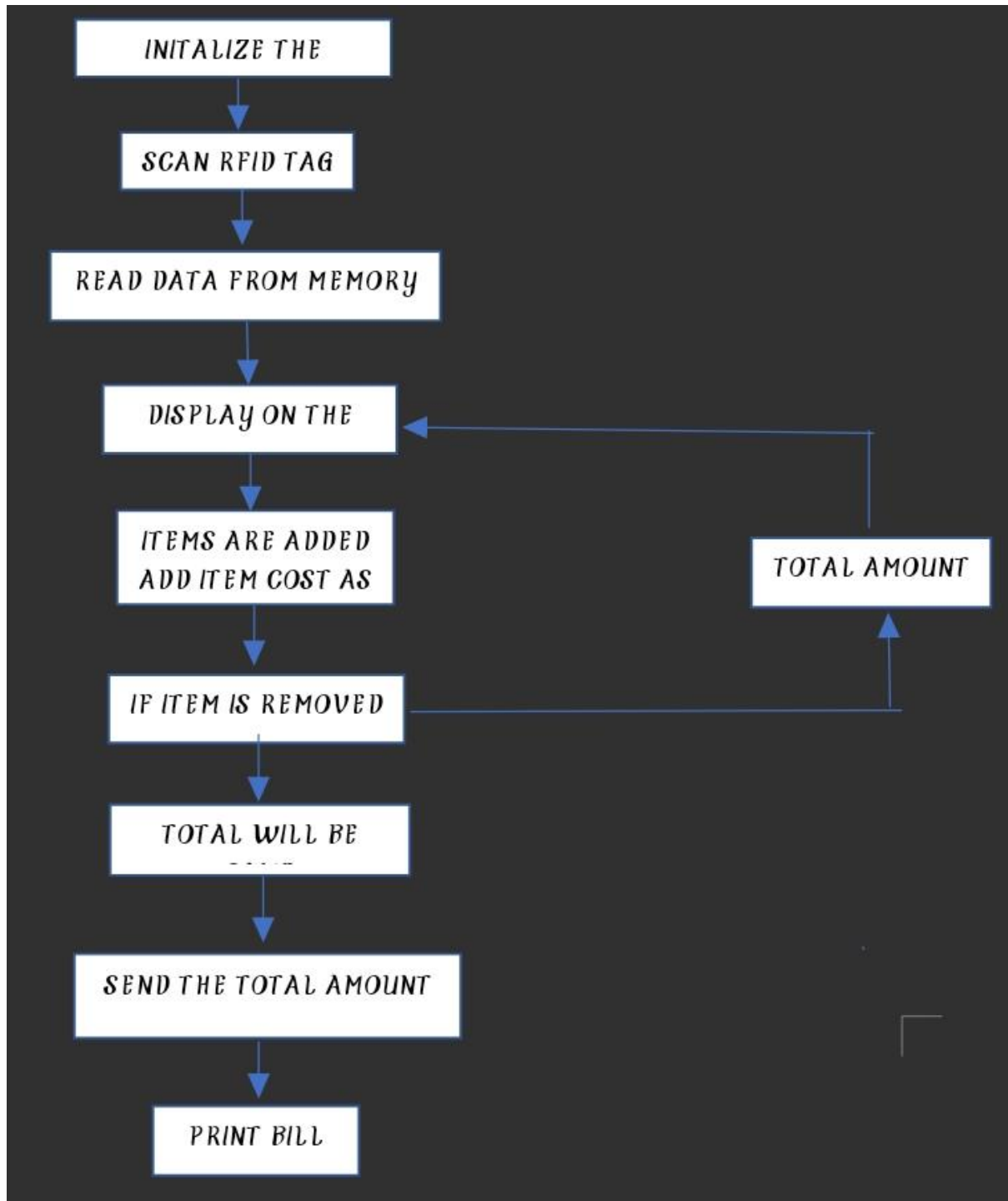
LCD Display:



Fig no 3.5

An LCD screen is an electronic display module that uses liquid crystal to produce a visible image. The 16×2 LCD display is a very basic module commonly used in DIYs and circuits. The 16×2 translates to a display 16 characters per line in 2 such lines. In this LCD each character is displayed in a 5×7 pixel matrix.

Flowchart for proposed system



Tablet no: 3.1

4. RESULTS AND DICUSSION

The proposed model is easily accessible and convenient to use. It does not require special training . The manpower is decreased and will save time that the user spends in billing queue. Many users can be attended in same time which is useful for retailers and customers. Time efficiency and cost efficiency are guaranteed by this smart billing system

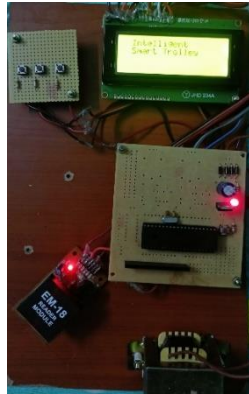


Fig no:4.1

Intelligent smart trolley



Fig no:4.2

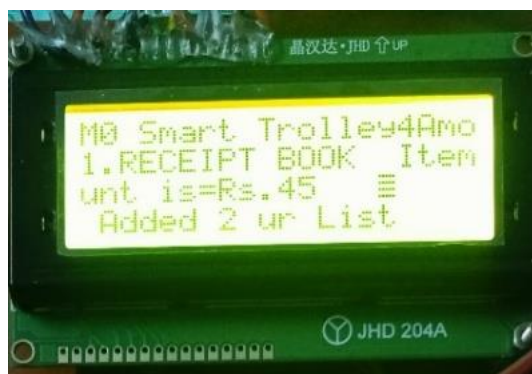


Fig no: 4.3



Fig no:4.4

Total Amount



Fig no:4.5

5. CONCLUSION

In this paper, we successfully implemented the RFID tags for the smart trolley billing system. Even though we have some challenges with smart shopping ie, sometimes items cannot be Detected because of its tag orientation, size and shape. Technologies that support the Interactions between physical products are relatively costly. These Are the drawbacks Addressed which have been overcome in this application. This smart trolley is cost effective.

And the automated billing amount will be displayed on LCD. The Future Enhancement, we can add the indoor navigation system which can locate the Required product from the customer place of location. Here we have used a very low range RFID reader, which can be further enhanced with a high range reader when it comes for real Enactment of this prototype. Although many new developments have been made in this area, Supporting such application is still a major challenge

6.REFERENCES

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