

SMART TROLLEY WITH FRID

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This report submitted in accordance with requirement of the UniversitiTeknikal
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(Industrial Electronics)(Hons.)

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DECLARATION

I hereby, declared this report entitled “Smart Trolley with RFID” is the results of my own research except as cited in references.

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APPROVAL

This report is submitted to the Faculty of Engineering Technology of UTeM as a partial fulfillment of the requirements for the Bachelor Degree of Electronics Engineering Technology (Industrial Electronics) (Hons.). The member of the supervisory is as follow:

.....
(Project Supervisor)

ABSTRAK

Sejak beberapa dekad yang lalu, teknologi secara drastik telah mengubah cara hidup masyarakat kita. Generasi pada masa kini terlalu bergantung kepada teknologi baru. Di kebanyakan negara, teknologi telah banyak membantu membangunkan kemudahan yang lebih canggih untuk digunakan dalam kehidupan seharian. Dengan adanya alat peranti elektronik pengimbas RFID kehidupan manusia akan menjadi lebih mudah. Pusat membeli-belah adalah tempat di mana pengguna mendapatkan keperluan harian mereka. Pengguna sering menghadapi masalah dan kesulitan apabila membeli-belah. Oleh itu, troli pintar dengan menggunakan sistem RFID telah direka sebagai usaha untuk menggantikan teknologi barkod yang sedia ada. Pengimbas RFID dengan LCD akan dipasang pada troli membeli-belah supaya mudah bagi pengguna untuk mengimbas barangan mereka dan dapat mengetahui jumlah harga. Selain itu pengguna akan merasa lebih selesa ketika membeli-belah.

ABSTRACT

Over the past few decades, technology has been drastically change the way of life in our societies. The current generation is becoming completely dependent on new technologies. Technology has affected society and its surroundings in a number of ways. In many countries, technology has helped developed more advanced facilities being used in daily life. It also allows for more task to be completed in less time, increase efficiency and create entirely new ways to make a living. Thus it makes more areas of life to be improved. Shopping mall is a place where most people in great hurry to get their daily necessities. Consumers often face problems and inconvenience when shopping. Thus, a Smart Trolley with RFID has being designed as effort to replace the existing bercode technology. A RFID scanner with LCD will be attached to the shopping trolley. It is easy for consumers to scan their items and can know the total price of items and consumer fells more comfortable while shopping.

DEDICATION

Specially dedicated to my beloved family
Hj Hassan Bin Topit and Hjh Fatimah Bt A.Wahab
and all SEM friends
for their
Love, Sacrifice, Wishes and Encouragements

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Alhamdulillah, praise be to Allah to Whom we seek help and guidance because I can complete this project and make this project successful. Without HIS blessing, I would not be here and would not be able to complete this project.

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LIST OF ABBREVIATIONS, SYMBOLS AND NOMENCLATURE

A/D	-	Analog to Digital
ATCS	-	Automated Toll Collection System
CPU	-	Central Processing Input
DC	-	Direct Current
EPC	-	Electronic Product Code
HZ	-	Hertz
IC	-	Integrated Circuit
I/O	-	Input/Output
ISO	-	International Standard Organization
LCD	-	Liquid Crystal Display
MB	-	Mega Byte
PC	-	Personal Computer
PCB	-	Printed Circuit Board Assembly
PIC	-	Programmable Interface Controller
RAM	-	Random Access Memory
RFID	-	Radio Frequency Identification
ROM	-	Read Only Memory
Rx	-	Receiver
Tx	-	Transmitter
UART	-	Universal Asynchronous Receiver Transmitter
USB	-	Universal Serial Bus
UV	-	Ultra Violet
VB	-	Visual Basic

CHAPTER 1

INTRODUCTION

1.1 Project Background

Over the past few decades, technology has been drastically change the way of life in our societies. The current generation is becoming completely dependent on new technologies. Technology has affected society and its surroundings in a number of ways. In many countries, technology has helped developed more advanced facilities being used in daily life. It also allows more task to be completed in less time, increase efficiency and create entirely new ways to make a living. Thus, it makes more areas of life to be improved.

Shopping mall is a place where most people in great hurry to get their daily necessities ranging from food product, apparels, toiletries, gardening tools, electrical appliances, and others. Consumers often face problems and inconvenience when shopping. They want a quick payment and enough budget. They worry that the amount of the money they bought is not enough to pay the items they had bought. Consumers sometimes got fed up of waiting and wasting unnecessary time at the counter. They also face insufficient information of the items for example the price of each items they want to purchase.

Smart Trolley has being designed to make the consumers more satisfaction and comfortable when shopping. By using this trolley consumers can easily know the price of the items and at the same time the shoppers will also know the total price of the items thus will make the shoppers know the estimation of their expenditure.

In addition, this project will also be useful for the workers at the store to update the stocks of the items. The inventory system has been introduced to enable the storekeepers to detect the track sale of the stock that had been out for sale on that day.

1.2 Problem Statement

There are some problem during shopping. Thus, the level of advancement of shopping mall system and infrastructure also varies. Costumers often face problems and inconvenience when shopping. The idea of inventing this project is when the situation occurring in everyday life was find. The shopping mall are become crowded during a big sales, festival and weekends. For example, consumers difficulties in knowing the price of certain items that are without the tag price. Problem will surely arise when the consumers need to queue for a long time at the cashier to wait for turn to make payment. Apart from that, consumers also have to wait for other consumers to make their payments. This situation can makes consumers feel annoyed by waiting too long because not all cashier are open for payment. Other than that, consumers also find hard to make an estimation of their expenditure because they do not know the total price of the items that had bought. The consumers will worry the amount of money brought is not enough to pay for all the things that wanted to be bought. For the inventory system, it is difficult for storekeepers to calculate manually the items that had been released and update the stocks of the items. The inventory system has been introduced to enable the storekeepers to detect the track sale of the stock that had been out for sale on that day. This problem can be overcome with this Smart Trolley. It will be a great improvement on the existing system if the technology of RFID is implemented. Consumers will feel satisfaction and comfortable while shopping.

1.3 Objectives of Project

The objectives of this project is:

- (i) To research on the problem domain, which includes RFID technologies, existing similar systems and also the suitable programming language that will be used to develop this system.
- (ii) To design a Smart Trolley using RFID.
- (iii) To develop a prototype of Smart Trolley using RFID.
- (iv) To verify the effectiveness of this system through testing by users.

1.4 Scope of Project

Smart Trolley with RFID need to develop follow the procedure, it is because the scope of work should take seriously to ensure the project objectives are achieve. Every task must be complete followed the sequence on a flow chart and must meet a time for the project runs smoothly, thus helping to achieve the project objectives. In this project, there four of scope that may be concern about the problem statement, design and build the hardware part, design software programming and the last is test run also making some troubleshoot. Other than that, this project assumes that all of consumers using this system are honest and will scan every item that consumer purchase using the RFID reader.

1.4.1 Research About The Problem Statement

Smart Trolley with RFID is a product project to make a human duty everyday become easier. It need more information that collect from books, internet and supervisor point of view. Other than that, this project use microchip PIC and Radio Frequency Identification (RFID). So, need some study about the PIC programming and Radio Frequency Identification (RFID) to communicate with each other.

1.4.2 Design And Build The Hardware Part

Radio Frequency Identification (RFID) is an electronic device that must scan when the RFID tag was scan to the reader. Therefore, it need to simulate the RFID control circuit using the Proteus Isis software to interface with microcontroller. After that, it must be test the Radio Frequency Identification (RFID) control circuit on the breadboard.

1.4.3 Design Software Programming

Programming part need to design PIC programming using MicroC Pro compiler. After that, it need some simulation and test run before some troubleshoot need to made on the program. Other than that, the Visual Basic software also need to be used to create the system at the supermarket. At the last, request the components for this project.

1.4.4 Interface Hardware and Software

Link the hardware and the software after done the previous work. After that, test or run the project and troubleshoot if needed. Other than that, this project assumes that all of consumers using this system are honest and will scan every item that consumer purchase using the RFID reader.

1.5 General Flow Chart

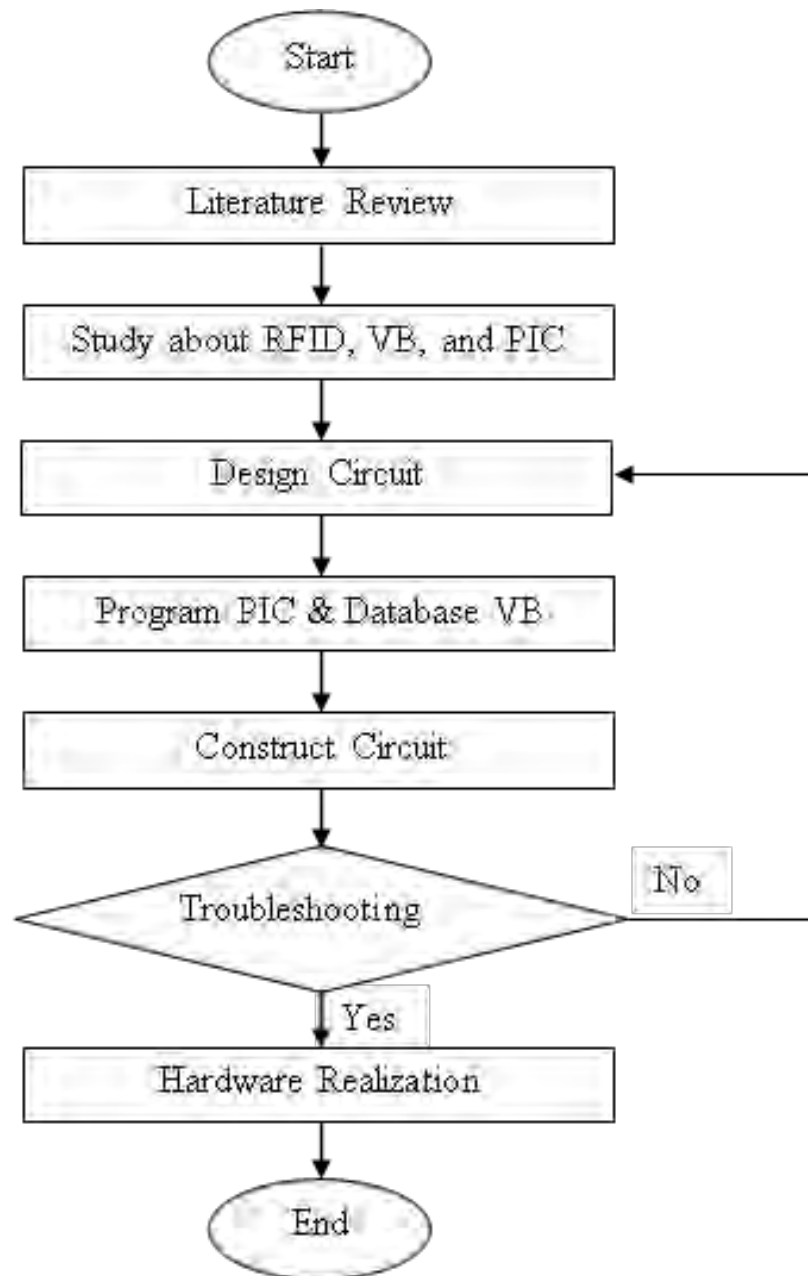


Figure 1.1: General Flow Chart of Project

1.6 Summary

This project are important to consumers when shopping because consumers can know the price of each items, save time while make payment and estimation of their expenditure. At the inventory it easy for storekeeper to update the stocks and maintain their good service. This project are upgraded from the existing to the new technology, which are Barcode to the RFID.

For this chapter it is about the overview of this project as it is stated clearly all the general aspects of this project. For the next chapters, different phases of the system development will be discussed. Some of the topics are literature reviews, methodologies, result and discussion, conclusion and future work.

CHAPTER 2

LITERATURE REVIEW

In this chapter, it will discuss about the literature review which it contains the information gathered to gain knowledge and ideas in completing the project. There are several sources that had been taken as a resource such as books, thesis, journal and website. It was included the operation of the circuit, the hardware and software which is useful in the project. Other than that, in this chapter also make a study about several project that related to make some improvement or take some idea from the other project. It is useful to complete a project that has created.

2.1 Introduction

The main purpose of writing this literature review is to know what knowledge and ideas that have been established about RFID system and can be found easily by searching via journals, work papers, conference articles, reference books and previous theses. It also will show the strength and weakness of the system. This project was replaced with the existing shopping mall system that used the technology of Barcode. With the implementation of this new system that used the RFID technology, it is more benefits to consumers while shopping and automatically updated to the inventory system. In addition, the staffs can checked their stock of every item precisely, can make early orders, and