GL SYSTEM (GARBAGE LISTING SYSTEM)

IMRAN ARIFF BIN MOHAMED @ RAZLAN

This report is submitted in partial fulfillment of the requirement for the award of Bachelor of Electronic Engineering (Computer Engineering) With Honours

Faculty of Electronics and Computer Engineering
Universiti Teknikal Malaysia Melaka

April 2010

UNIVERSTI TEKNIKAL MALAYSIA MELAKA

FAKULTI KEJURUTERAAN ELEKTRONIK DAN KEJURUTERAAN KOMPUTER

BORANG PENGESAHAN STATUS LAPORAN

PROJEK SARJANA MUDA II

Tajuk Projek : GL SYSTEM (GARBAGE LISTING SYSTEM)

Sesi Pengajian : 2009/2010

Saya   IMRAN ARIFF BIN MOHAMED @ RAZLAN

mengaku membenarkan Laporan Projek Sarjana Muda ini disimpan di Perpustakaan dengan syarat-syarat kegunaan seperti berikut:

1. Laporan adalah hakmilik Universiti Teknikal Malaysia Melaka.

2. Perpustakaan dibenarkan membuat salinan untuk tujuan pengajian sahaja.

3. Perpustakaan dibenarkan membuat salinan laporan ini sebagai bahan pertukaran antara institusi pengajian tinggi.

4. Sila tandakan (√) :
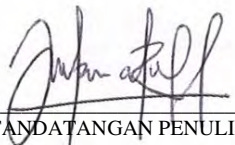
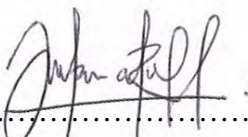|		
☐	**SULIT***	(Mengandungi maklumat yang berdarjah keselamatan atau kepentingan Malaysia seperti yang termaktub di dalam AKTA RAHSIA RASMI 1972)
☐	**TERHAD***	(Mengandungi maklumat terhad yang telah ditentukan oleh organisasi/badan di mana penyelidikan dijalankan)
☐	**TIDAK TERHAD**	

Disahkan oleh:

_____
(TANDATANGAN PENULIS)

_____
(COP DAN TANDATANGAN PENYELIA)

ZUL ATFYI FAUZAN BIN MOHAMMED NAPIAH
Pensyarah
Fakulti Kejuruteraan Elektronik Dan Kejuruteraan Komputer
Universiti Teknikal Malaysia Melaka (UTeM)
Karung Berkunci No 1752
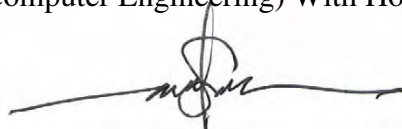Pejabat Pos Durian Tunggal
76109 Durian Tunggal, Melaka.

Alamat Tetap:

LOT 86,
SRI TANJUNG TEMIN,
27000 JERANTUT,
PAHANG DARUL MAKMUR.

Tarikh: ...22/04/2010...

Tarikh: ...22/X/2010...

"I hereby declare that this report is the result of my own work except for quotes as cited in the references "

Signature   : ……………………………………………

Author   . Imran Ariff Bin Mohamed @ Razlan

Date   : 22/ 04 / 2010 …………………………

"I hereby declare that I have read this report and in my opinion this report is sufficient in terms of the scope and quality for the award of Bachelor of Electronic Engineering (Computer Engineering) With Honours "

Signature   : ....

Supervisor's Name : ....

Date   : ....

ZUL ATFYI FAUZAN BIN MOHAMMED NAPIAH
Pensyarah
Fakulti Kejuruteraan Elektronik Dan Kejuruteraan Komputer
Universiti Teknikal Malaysia Melaka (UTeM)
Karung Berkunci No 1752
Pejabat Pos Durian Tunggal
76109 Durian Tunggal, Melaka.

22/4/2010

I would like to express my gratitude to En. Zul Atfyi Fauzan Bin Mohammed Napiah

for his support and help during this project

ACKNOWLEDGMENT

I want to express my sincere gratitude to all Universiti Teknikal Malaysia Melaka staff and student especially my bachelor degree project supervisor En. Zul Atfyi Fauzan Bin Mohammed Napiah for helping me and giving me a lot of guidance with my final year project development. I also would like to thank my entire classmate for all the suggestions and help during the time I needed them the most, thanks for all the support and cooperation.

ABSTRACT

The purpose of this project is to build a system and a hardware tools to capture and record all the garbage that have been thrown away by the user in a data form and store it into a database. Then user can recall the data and list out as a shopping list. This project uses a barcode label as an identifier to all the item that have been thrown away by the user, due to each product item nowadays have a significant barcode to identify the product, even a simple candy bar. This project is to help user or housewives list the grocery that they want to buy. It can save time in listing what grocery that should be buy and help to notify certain item price. It also can prevent user from making a mistake (such as forgetting to buy a certain item and buying item in a large of small quantity).

ABSTRAK

Projek ini bertujuan membina sebuah sistem dan perkakasan untuk merekod setiap sampah yang telah dibuang oleh pengguna dalam bentuk data dan menyimpannya di dalam pengkalan data kemudian pengguna boleh memanggil kembali data tersebut yang akan disenaraikan dalam bentuk senarai membeli belah. Projek ini menggunakan label kodbar sebagai medium pengenalan kepada semua barang yang dibuang oleh pengguna, kerana semua barang yang dijual di pasaran pada masa kini mempunyai kodbar tersendiri untuk mengenalpasti produk berkenaan walaupun ianya hanya satu coklat bar. Projek ini memudahkan suri rumah atau pengguna menyenaraikan barangan keperluan yang harus dibeli. Ia membantu menjimatkan masa untuk menyenaraikan senarai barangan dan dapat membantu mengesan jika berlaku kenaikan harga barang. Ia juga dapat membantu mengelakkan pengguna dari membuat kesilapan (seperti lupa tentang barangan yang harus dibeli dan membeli barangan secara berlebihan atau membeli barangan keperluan terlalu sedikit),

CONTENTS

LIST OF TABLE

LIST OF FIGURES

LIST OF SHORT FORM

AIDC -   Auto Identification Data capture

ASCII -   American Standard Code of Information Interchange

CCD -   Closed Caption Display

COM -   Component Object Module

CPC -   Central Product Classification

DAO -   Data Access Object

DB -   Data Base

EAN -   European Article Number

GL System -   Garbage Listing System

HTML -   HyperText Markup Language

IBM -   International Business Machine

ID -   Identification

ISBT 128 -   International society of Blood Transfusions Code 128

MB -   Mega Byte

OBDC -   Open Database Connectivity

PC -   Personal Computer

PDF -   Portable Document Format

PS2 -   Personal System 2

RAM -   Random Access Memory

SQL -   Structured Query Language

UPC -   Universal Product Code

USB -   Universal Serial Port

UTeM -   Universiti Teknikal Malaysia Melaka

VB -   Visual Basic

VBA -   Visual Basic Application

XHTML -   Extensible HyperText Markup Language

XML	-	Extensible Markup Language
XSLT	-	Extensible Stylesheet Language Transformation
1D	-	One Dimension
2D	-	Two Dimension

LIST OF APPENDIX

CHAPTER 1

INTRODUCTION

1.1   Overview

GL SYSTEM is a system that will ensure the entire disposal garbage is recoded as a data in this system. It is a system that consists of hardware application such as a bar code scanner and one personal pc as a database. As we all known, all the grocery in our market today have a designated bar code in their packing as references to the supplier and the buyer. This system will use the barcode to identify every item that have been dispose by user and that list them. The hardware for this system is a special design trash can, equip with a bar code scanner to record all the trash that have been thrown out. For example, when user want to throw away a can of coke, they can scan the item first before throwing it in the trash can, the system will record all item that have been thrown away by the user. When the users want to go out for shopping, they can print out the entire list of item that have been used or thrown away. This way user can keep track on what have ran out in the kitchen. The user can also modify this system by adding a item according to its designated bar code. The system also allow user to add more detail on certain item such as the item brand and price. This way user can notice if the prices for the item have been increase or decrease.

1.2 Objective

The objectives of this project are:

1. Help user or housewives list the grocery they want to buy
2. Help user from making a mistake such as forgetting to buy a certain item, buying item in a large of small quantity.
3. Help saving time in listing what grocery that should be buy
4. Help to notify is there a any increase in a certain item price

1.3 Problem Statement

(a)   User having difficulties remembering what they have to buy

Due to nowadays everyday life, people often become more busy with their work and spend less time at their home. When this happen, people often forgot what are running out in their kitchen and what they have to buy.

(b)   User buying groceries in a wrong amount of quantity

When they do remember what they have to buy, another problem usually occurs. The problem is the amount of quantity they should buy. Some item comes with an expiration date. When buying an item with a short period of expiration date in a large quantity, it will cause the items to expire before using. This would be a waste of money.

(c)   User taking a lot of time making a checklist on the item they want to buy

Time is gold for people that are busy with work. Making a shopping checklist takes times because users have to check what items have run out in the house.

(d)   User having difficulties remembering the item previous price to compare them with the current price

The ups and downs in item price is normal in business but if we can determine the cheapest price for an items, it will help consumer save more money on

groceries. I of the hardest thing to remember is usually the previous price for certain item.

1.4 Scope of Project

For this project, the scope of work is divided into two categories:

(a) Hardware

    (i) The hardware is inclusive of a barcode scanner that is attached to a computer

    (ii) The hardware is attached with a trash can so that user can easily scan the bar code of an item before throwing it out into the trash can

(b) Software

    (i) Creating one new system that will list the input taken from the bar code scanner

    (ii) The new system is created using Microsoft Visual Basic

    (iii) The system will be user friendly so that user can use it easily

    (iv) The system is capable to list the item in PDF format so that it can be print or saved as a soft copy

1.5 Report Structure

This thesis consists of five chapters. Chapter I will describe about the brief overview and the definition about the project such as introduction, objectives, problem statement and scope of the project. This chapter there will be summary the project progress.

Chapter II will discuss about research and information which are related to this project. Every fact and information are gained from different references will be discussed so that the best technique and method can be implemented on this project. This will be based on the literature review and information about the project. Every facts and information which found through journals or other references will be

compared and the better methods have been chosen for the project. The software development that are using is Microsoft Visual Studio 2005.

Chapter III will discuss about the project methodology used in this project such as data acquisition module, a pre-processing module, normalization and re-sampling module, a feature extraction module, a classifier module and a decision module. All these methodology should be followed for a better performance.

Chapter IV will describe about the project finding such as progress result and analysis. The result is presented by using tables, graph and figures.

The final chapter, Chapter V will explain about the conclusion of the whole project which includes project finding, achievement analysis and conclusion about the research implementation which have been used. The project suggestion for enhancement also discussed.

CHAPTER 2

LITERATURE REVIEW

2.1   Introduction

Basically this chapter will reveal the knowledge pertaining this field of project in which is gained through a lot of resources such as reference book, papers, journal, articles, conferences articles and documentations regarding applications and research work.

This shows how the theory and the concept have been implemented in order to solve project problem. The theory understanding is crucial as guidance to start any project. The result of the project cannot be assessed if it's not compared to the theory.

2.2   Barcode

Figure 2.1: Example of a Barcode

A barcode is an optical machine-readable representation of data. Barcodes can be read by optical scanners called barcode readers, or scanned from an image by special software. Originally, barcodes represented data in the widths (lines) and the spacing of parallel lines, and may be referred to as linear or 1D (1 dimensional) barcodes or symbologies. They also come in patterns of squares, dots, hexagons and other geometric patterns within images termed 2D (2 dimensional) matrix codes or symbologies. Although 2D systems use symbols other than bars, they are generally referred to as barcodes as well. Barcodes can be read by optical scanners called barcode readers, or scanned from an image by special software. The first use of barcodes was to label railroad cars, but they were not commercially successful until they were used to automate supermarket checkout systems, a task in which they have become almost universal. Their use has spread to many other roles as well, tasks that are generically referred to as Auto ID Data Capture (AIDC). Other systems are attempting to make inroads in the AIDC market, but the simplicity, universality and low cost of barcodes has limited the role of these other systems [1].

The mapping between messages and barcodes is called a **symbology**. The specification of a symbology includes the encoding of the single digits/characters of the message as well as the start and stop markers into bars and space, the size of the quiet zone required to be before and after the barcode as well as the computation of a checksum.

Linear symbologies can be classified mainly by two properties:

(a)   Continuous vs. discrete: Characters in continuous symbologies usually abut, with one character ending with a space and the next beginning with a bar, or vice versa. Characters in discrete symbologies begin and end with bars; the intercharacter space is ignored, as long as it is not wide enough to look like the code ends.

(b)   Two-width vs. many-width: Bars and spaces in two-width symbologies are wide or narrow; how wide a wide bar is exactly has no significance as long as the symbology requirements for wide bars are adhered to (usually two to three times wider than a narrow bar). Bars and spaces in many-width symbologies are all multiples of a basic width called the **module**; most such codes use four widths of 1, 2, 3 and 4 modules.

Some symbologies use interleaving. The first character is encoded using black bars of varying width. The second character is then encoded, by varying the width of the white spaces between these bars. Thus characters are encoded in pairs over the same section of the barcode. Interleaved 2 of 5 is an example of this. Stacked symbologies consist of a given linear symbology repeated vertically in multiple. There is a large variety of 2D symbologies. The most common are matrix codes, which feature square or dot-shaped modules arranged on a grid pattern. 2-D symbologies also come in a variety of other visual formats. Aside from circular patterns, there are several 2-D symbologies which employ steganography by hiding an array of different-sized or -shaped modules within a user-specified image (for example, DataGlyphs) [2].

Linear symbologies are optimized to be read by a laser scanner, which sweeps a beam of light across the barcode in a straight line, reading a **slice** of the barcode light-dark patterns. In the 1990s development of CCD imagers to read barcodes was pioneered by Welch Allyn. Imaging does not require moving parts, like a laser scanner does. In 2007, linear imaging was surpassing laser scanning as the preferred scan engine for its performance and durability. Stacked symbologies are also optimized for laser scanning, with the laser making multiple passes across the barcode.

2-D symbologies cannot be read by a laser as there is typically no sweep pattern that can encompass the entire symbol. They must be scanned by an image-based scanner employing a charge coupled device (CCD) or other digital camera sensor technology [2].

2.3   Type of barcode

There are many type of barcode that exist in our world today but for groceries product, they usually use a UPC (Universal Product Code) type of barcode. Almost every item purchased from a grocery store, department store, and mass merchandiser has a UPC barcode on it. This greatly helps in keeping track of a large number of