

INVENTORY STORAGE WITH BARCODE (ISwB)

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**This report is submitted in partial fulfillment of requirement for the Bachelor
Degree of Electronic Engineering (Computer Engineering)**

**Fakulti Kejuruteraan Elektronik Dan Kejuruteraan Komputer
Universiti Teknikal Malaysia Melaka**

APRIL 2011



UNIVERSITI TEKNIKAL MALAYSIA MELAKA
FAKULTI KEJURUTERAAN ELEKTRONIK DAN KEJURUTERAAN KOMPUTER

BORANG PENGESAHAN STATUS LAPORAN
PROJEK SARJANA MUDA II

Tajuk Projek : INVENTORY STORAGE WITH BARCODE

Sesi Pengajian : 2010/2011

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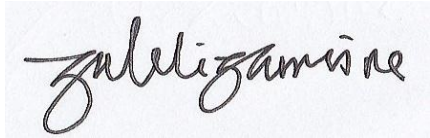
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*A time to remember family and friends, too;
A time to reminisce, and say "Thank You."*

*For my beloved parents,
Ramli bin Ahmad &
Azizah binti Nawang*

*My brothers,
Mohd Fahmi & Mohd Faizal*

*My love is no ends.
Appreciation on your supervision,
Puan Norhidayah binti Mohamad Yatim*

Your co-operation,

For my family,

Also for my friends...

May Allah bless all of you...

ACKNOWLEDGEMENT

In preparing this project, I was in contact with many people, researchers, academicians, and practitioners. They have contributed towards my understanding and thoughts. In particular, I wish to express my sincere appreciation to my project supervisor, Puan Norhidayah binti Mohamad Yatim, for encouragement, guidance, critics and friendship. I am also very thankful to my parent, En.Ramli binti Ahmad and Puan Azizah binti Nawang for his guidance, advices and motivation. Without their continued support and interest, this project would not have been the same as presented here.

I am also indebted to Univesiti Teknikal Malaysia Melaka (UTeM) for providing me the facilities and information to successfully complete this project; not only that, without this course provided by UTeM, I would not be able to gain this valuable experience from this project.

My sincere appreciation also extends to all my colleagues and others who have provided assistance at various occasions. Their views and tips are useful indeed. Unfortunately, it is not possible to list all of them in this limited space. I am grateful to all my family members.

ABSTRACT

Inventory control systems in IT Support and Services industry needs systematic database management system. Inventory involved in this industry are materials, machineries, spare parts, etc. This study is about to develop the inventory system that can be applied in IT Support and Services industry. The objectives are to identify the problems involved in the implementation of the current inventory system at the spare parts store, to identify the needs of systematic inventory system at the spare parts store and to develop the prototype of the inventory system that can be implemented at the spare parts store. A case study has been focus in IT Supports and Services for the prototype development. The prototype used MySQL database, Visual Basic.NET and Bar Coding System. The prototype not only benefit to the person who in-charged with the system, but also benefit to all staffs dealing with the spare parts store by making it faster, more accurate and easier.

ABSTRAK

Sistem kawalan inventori dalam industri Teknologi Maklumat dan Perkhidmatan memerlukan sistem pengurusan pengkalan data yang sistematik. Inventori yang terlibat dalam industry ini ialah bahan-bahan, mesin, alat ganti, dan sebagainya. Kajian ini adalah tentang membina sistem inventori yang boleh diaplikasikan dalam industri pembinaan. Objektifnya adalah untuk mengenal pasti masalah yang terlibat dalam pelaksanaan sistem inventori yang sedia ada di stor alat ganti, industri Teknologi Maklumat dan Perkhidmatan, untuk mengenal pasti keperluan sistem inventori yang sistematik di stor alat ganti tersebut dan untuk membina prototaip sistem inventori yang boleh dilaksanakan di stor alat ganti tersebut. Kajian kes difokuskan pada industri Teknologi Maklumat dan Perkhidmatan untuk pembangunan prototaip. Prototaip tersebut menggunakan pengkalan data MySQL, Visual Basic.NET dan sistem barkod. Prototaip yang dibina bukan sahaja berfaedah kepada orang yang ditugaskan terhadap sistem tersebut, tetapi juga bermanfaat kepada semua staf yang berurusan dengan stor alat ganti tersebut dengan mempercepatkan, memudahkan dan membuatkan urusan lebih tepat.

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LIST OF ABBREVIATION

A

ASCII	American Standard Code for Information Interchange
API	Programming Interface
ANSI	American National Standards Institute

C

COD10	Concise Oxford Dictionary
CD-ROM	Compact Disc, read-only-memory
CPU	Central Processing Unit
COBOL	Common Business Oriented Language
CMMS	

D

DBMS	Database Management System
DDL	Data Definition Language
DML	Data Manipulation Language
DBA	Database Administrator
DOS	Disk Operating System

E

ERD Entity-Relationship Diagram

G

GUI Graphic User Interface

I

ISwB Inventory Storage with Database

IT Information Technology

L

FIFO First-In, First-Out

LIFO Last-In, First-Out

LAMP Linux, Apache, MySQL, PHP

M

MySQL My Structured Query Language

N

NET Network Equipment Manufacturer

O

ODBC Open Database Connectivity

OCR Optical Character Reader

P

PHP Hypertext Preprocessor

PSM Projek Sarjana Muda

R

RDMS Relational Database Management System

S

SQL Structured Query Language

SMTP System Mail Transport Protocol

U

UTeM Universiti Teknikal Malaysia Melaka

UPC Universal Product Code

URL Uniform Resource Locator

V

VB.NET Visual Basic .NET

CHAPTER 1

INTRODUCTION

1.1 Background

According to Concise Oxford Dictionary (COD10) on CD-ROM Tenth Edition, 'data' means 'the quantities, characters, or symbols on which operations are performed by a computer'. Meanwhile, 'database' means 'a structured set of data held in a computer'. Connolly and Begg [1] said that 'database' is 'a shared collection of logically related data (and a description of this data), designed to meet the information needs of an organization'. They also said that 'Database Management System (DBMS)' means a software system that enables users to define, create, and maintain the database and provides controlled access to this database'. According to Concise Oxford Dictionary (COD10) on CD-ROM Tenth Edition, 'inventory' means 'a complete list of items such as goods in stock or the contents of a building'. Meanwhile, 'system' means 'a complex whole; a set of things working together as a mechanism or interconnecting network.

Inventory control systems require the frequent identification of things to the computer. For instance, to record the movement of a pallet of material from one point in the facility to another, three identifications must be made: the material being

moved, its origin and its destination. In large warehouses and distribution centers, tens of thousands of identifications can be needed each day. Automatic identification is faster than manual identification and keying. It also can save labour cost (Young J.B.[4]).

Nowadays, bar coding is the most widely automatic identification technology applied. Bar code technology is well developed, the equipment required to print and read bar codes is inexpensive, and the resulting reliability and accuracy are extremely high. A bar code is a series of light and dark printed bars. The pattern of the bars is pre-established to represent alphabetic and numeric characters in any of a number of standard schemes. When a laser beam is run across the bars at a constant velocity, light is reflected from the bars and spaces in a series of pulses that can be electronically detected and converted into the appropriate characters.

A Bar Code is just a different way of encoding numbers and letters by using a combination of bars and spaces of varying widths. This is just another way of entering data into a computer. A bar code does not contain descriptive data. It is a reference number that a computer uses to look up an associated record that contains descriptive data and other important information.

The next step up from clerk and cards system is computerization in a batch environment. Batch inventory systems simply automate the clerical portion of the inventory system. Material handlers still manually record the receipt and shipment of material for central processing. But the written transactions are keyed and electronically posted to records inside a computer. There is little or no change in data gathering and material handling procedures.

Independent data collected usually keyed in by human actions which may cause errors. It is important that the information be removed from the control of humans to the extent possible to eliminate errors. Bar code error rates are very low, and they make it impossible, for all practical purposes, to cheat. Bar coding, therefore, is an effective way of gathering independent data.

1.2 Problem Statement

In most businesses it is normal for several people to be involved in the keeping of inventory records. Businesses require a continuing flow of materials and supplies. To

avoid disruption of that flow, most make an effort to keep track of the amounts of each item on hand. In Small businesses with small amounts of inventory, it is often sufficient for a human to Remember approximate inventory records. When the human thinks that supplies may be getting low, he or she can walk to the stockroom and check. As the amount of inventory increases and as the rate of material flow into and out of stock increases, it becomes more and more difficult for a human to remember even approximate inventory balances. Some form of recordkeeping is needed to supplement the human mind.

Often the clerical job of doing the arithmetic and writing the results on cards is separated from the material handling jobs of placing items on shelves, removing them when they are needed, and performing occasional counts to verify the recorded balance. In a typical manual system, material handlers move material into and out of the warehouse and create written records (called transactions) as they work. Periodically, the transactions are turned over to a clerk for posting to ledger cards. When things go right, manual inventory records can be an efficient way for businesses to assure that they have the materials they need. Unfortunately, this method of keeping inventory records, simple as it may seem, is vulnerable to a long list of possible problems (Young J.B.[4]).

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IT Support and Services usually have a lot of tool and spare part to support their services internal and external over the area and the entire tender project. All these things handled under Logistics store. They maintaining services in printer, cpu,

monitor and also get tender from company for maintaining IT support and networking. With the current situation at the spare parts store a lot of things, the department needed the systematics management in inventory tool to increase their efficiency in services and management. The problems facing with current inventory system are data redundancy, difficult to update and maintain, inconsistent data, bad security, difficult to impose constraints on various data file and difficult to backup.

1.3 Aim and Objectives of Project

The aim of this project is to develop the inventory system that can be applied in IT industry.

The objectives of this study are:

- i. to identify the problems involved in the implementation of the current inventory system at logistic store in IT Support and Services,
- ii. to identify the needs of systematic inventory system at logistic store in IT Support and Services,
- iii. to develop the prototype of the inventory system that can be implemented at logistic store in IT Support and Services.

1.4 Scope of Project

This project scopes is to provide Inventory Storage with Barcode for the logistic store at Computer sales and services. It involved study and research about operating data in inventory and reporting system. The inventory system as a flow of material and supplies which are capturing the code as an identification material, validation, sorting, classifying material in the right part, retrieving and storing the material which are in services status such as CPU and printer in database.

In part of reporting system, the data can be summarizing and calculation for monthly report. Auto email can be used for sent the report and alert for early detection of stock expiry, hit maximum / minimum / re-order to manager.

The system uses Visual Basic, SQL database, and barcode system.

1.5 Current Scenario

Table 1.1 Statistic of inventory system user

COMPANY	DESCRIPTIONS	SOURCES
Florida Transport Inventory	'When compared to the current method of gathering inventory system features the new application increases safety and accuracy and reduces data collection time.'	by Christy Dove and Daniel Teaf. http://d9plintranet.dot.state.fl.us/opintranet/statistics/transtat.asp
National Greenhouse Gas Inventories	'Greenhouse Gas (GHG) inventories in Finland since early 1990s - current system more resources and expertise, more formalised system (detailed agreements and protocols on responsibilities)'	by Riitta Pipatti Statistics Finland www.stat.fi/greenhousegases
Malaysian Palm Oil Board	According to MPOB, the country had a total of 1.72 million tones of palm oil inventories in August; a 23% hike over the 1.41 million tones in July.	by Koo Jie Ni http://www.theedgemalaysia.com/in-the-financial-daily/173710-palm-oil-inventory

Figure above have shown the statistic of others company that applied Inventory System in daily business. From sources above an example Florida Transport Inventory company can increase safety, accuracy and reduces data collection time by using inventory system. Then, for national Greenhouse Gas Inventories also increase company performance in formalized system. Last example of Malaysian Palm Oil Board SDN.BHD the company also increases their profit to 23% per month because their inventory well managed

1.6 Importance of Research

This research was made to prepare the Inventory Storage with Barcode for the logistic store at IT Support and Services. This research could provide useful inventory system as the outcome of the research for the spare parts store

1.7 Thesis Outline

This final year project report consist seven chapter to elaborate about ISwB project which are starting with Introduction, Literature Review, Methodology, Project Requirement, Design, Analysis and Conclusion.

Chapter I – Introduction discuss about background of the project, problem statement and the purpose of developing this project. It also mentions the important of this project.

Chapter II – Literature Review consist about the background study and research before developing the ISwB. The content of the background studies such as Traditional File-Based Systems, The Concepts of the Entity-Relationship Model, Inventory System and Bar Coding

Chapter III – Methodology described about the methods or approaches used in solving projects. Among the main content of this chapter are Initial Planning, Planning, Requirements, Analysis and Design, Implementation, Testing, Evaluation and Deployment.

Chapter IV – Project Requirement described about the methods that been used in this project and the advantages of the requirement have been chosen. The main requirements are VB.NET and MySQL Database.

Chapter V – Design described about designing the ISwB which are interface is using VB.NET and database MySQL. The methods start design which is flowchart of the ISwB and function of this system.

Chapter VI – Analysis consist the The analysis will describe about data collected through the observation of using the ISwB and not using the ISwB, also interview sessions.

Chapter VII – Conclusion consist the summary of the project and recommendation for the future research.