WAREHOUSE ORDER SYSTEM

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This report is submitted in particular fulfilment of the requirements for the award of Bachelor of Electronic Engineering (Computer Engineering) With Honours

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Sesi Pengajian : 2009/2010

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Signature : .....
Name of Supervisor : Muzalifah bte Mohd Said
Date : 21 April 2010

Signature : .....
Name of Supervisor : Syafeeza Binti Ahmad Radzi
Date : 21 April 2010

Specially..

To my beloved parents

To my kind brothers and sisters

And not forgetting to all friends

For their

Love, Sacrifice, Encouragements, and Best Wishes

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ABSTRACT

This report is a final year project report presenting the design and development of the warehouse order system. This project is as mention in the title, which is the warehouse order system, it main concern is the process for the warehouse ordering and product delivering of the warehouse. So it is also implements with the warehouse management system into this project. The project's system is mainly developed by Visual Studio 2008 with the database is developed by Microsoft Access, while for the hardware part; the system is able control the motor via a microcontroller, which is Microchip PIC 16f877A. The communication between the software systems with the hardware is via the Universal Asynchronous Receiver Transmitter (UART) module. This communication is a full duplex communication where it is able for 2 way communication at the same time. A Universal-Serial-Bus-to-Serial-Port convertor with integrated RS-232 is for the connection. The system allows user to order, manage payment status, warehouse control, delivery control, faulty report control, faulty replacement, and also inventory control. These different types of control combine and form a system, and the hardware is used as the conveyor belt to deliver the product from the warehouse to the deliver station. The hardware is control by the system during the warehouse control and the faulty report control. The system will send data to trigger the 2 motor that connected to the hardware, this 2 motor is turning in different direction as it is used for the in/out stock control. For this order system, all the data will be save into the database as user can trace the progress of the ordering. The connection of database with the system is using ActiveX Data Objects module to connect. The database is constructed by multiple tables of data. This system is able to apply into the industrial warehouse, and also the shop lot which can deliver a higher efficiency ordering system to overcome the disadvantage of current ordering system.

ABSTRAK

Laporan ini adalah laporan disediakan untuk Projek Sarjana Muda, kanduanan laporan ini termasuk rekacipta dan pembangunan untuk sistem penempahan gudang. Projek ini adalah seperti apa yang ingin disampaikan melalui tajuk di atas, iaitu projek ini menitikberatkan proses semasa penembahan produk dalam gudang dan juga penghantaran produk dari gudang. Jadi sistem ini juga akan implikasi sistem pengurusan gudang. Projek ini adalah direka dengan Visual Studio 2008 bergabung dengan pangkalan data yang direka dengan Microsoft Access 2007, manakala perkakasan projek ini, sistem ini boleh mengawal motor melalui mikropengawal, iaitu Microchip PIC 16f877A. Komunicasi perisian dengan perkakasan projek ini adalah melalui modul Universal Asynchronous Receiver Transmitter (UART). Komunicasi adalah dupleks penuh, ini merujukkan komunikasi ini adalah dua hala. Satu Universal-Serial-Bus-to-Serial-Port penukar yang menyepadukan dengan RS-232 digunakan untuk sambungan ini. Sistem ini juga membolehkan pengguna untuk menguruskan dalam process penembahan, pembayaran, gudang kawalan, penghantaran produk, laporan kerosakan, penukaran kerosakan, dan akhirnya pengawalan inventori. Pelbagai process yang disebuti adalah digabung menjadi sebuah sistem dan perkakasan ini diguna sebagai pengawal untuk mengawal tali pengakut untuk mengakut barang-barang dari gudang kepada stesen penghantaran. Perkakasn ini dikawal semasa penghantaran produk dan laporan kerosakan produk dalan sistem. Ia dikawal melalui sistem untuk diaktif dengan sistem bagi isyarat untuk membenarkan 2 motor berjalan dengan dua hala yang berlainan, satu untuk masuk dan pengeluaran produk. Untuk penembahan sistem ini, data-data akan disimpan dalam pangkalan data untuk menyenangkan pengurusan proses penembahan. Jaringan pangkalan data dengan sistem adalah disambung dengan modul ActiveX Database Objects. Pangkalan data direka dengan gabungan data yang dikumpul. Sistem ini boleh diaplikasikan di gudang industri, dan juga

kedai kedai untuk menaikkan kadar kecekapan penembahan yang sedia ada kini dan mengurangkan kekurangan yang hadapi.

TABLE OF CONTENT

LIST OF TABLE

LIST OF FIGURE

LIST OF ABBREVIATION

A/D	-	Analog To Digital
ADC	-	Analog To Digital Convertor
ADO	-	ActiveX Data Object
CCS	-	Code Compose Studio
CPU	-	Central Processing Unit
D/A	-	Digital To Analog
GUI	-	Graphical User Interface
HTTP	-	Hypertext Preprocessor
I/O	-	Input And Output
ID	-	Identity
IEEE	-	Institute Of Electrical And Electronic Engineering
LAN	-	Local Area Network
LCD	-	Liquid Crystal Display
MCU	-	Microcontroller Unit
MSSP	-	Master Synchronous Serial Peripheral
PDA	-	Personal Digital Assistant
PIC	-	Programmable Interface Controller
RAM	-	Random Access Memory

RISC	-	Reduce Instruction Sets Computer
RS232	-	Recommend Standard 232
SCI	-	Serial Communication Interface
SPBRG	-	Serial Peripheral Baud Rate Generator
UART	-	Universal Asynchronous Receiver Transmitter
USART	-	Universal Synchronous Asynchronous Receiver Transmitter
USB	-	Universal Serial Bus
VB	-	Visual Basic
WLAN	-	Wireless Local Area Network

LIST OF APPENDIX

CHAPTER I

INTRODUCTION

This chapter will explain about the basic introduction of the concept for the project design to the reader. The contents in this chapter are introduction, objectives of the project, problem statement, scopes of work, brief methodology, and report structure.

1.1 Introduction

Inventory is heart of a warehouse, where the industries or enterprises store their product before it is delivered to their customer. While waititng the order of the customer, the warehouse is imporant as the place that keep their product in good condition and safe, to make sure the environmental element will not bring any damage or defficiency to their product.

Warehouse is refer as a place in which goods or merchandise are stored; a storehouse, a large wholesale shop. It also refer to place or store product into a warehouse in transtive verb [1]. The rate of in-out stock for a warehouse can be frequently. The amount of in-out product also can be in massive value. Since the high frequency of in-out stock, there will a lot of chances for the human mistake happenned during these process, so the efficiency of the product delivery is important for a warehouse, it related to the income sourse for the company, any delay or miss

shipment of the product with cost high amount for the warehouse. To reduce the mistakes happenned, the warehouse management system is introduce to overcome the problems faced among the warehouse management teams.

For conventional ordering system, first the vendors need to call to the sales person of warehouse and order their goods as the purchase order. Next, the sales person will print out an invoice manually according to the order received. Then the invoice will release to the warehouse management and pass to the storekeeper. Last the statement is used for the storekeeper to find the items ordered and packed before send to the delivery transport. For the conventional ordering system, there is lots of step before the products is deliver. And during the process for product delivery, there is chances for mistake happen, and the progress of product delivery might hard to trace.

For the conventional ordering process which is time and cost cosuming, waste on printing paper, storekeeper take time to find the goods ordered, and low cost effectiveness. To overcome the problem faced by the warehouse management teams, one of the solution is hired more storekeeper to increase the effectiveness for product delivery, but it was increase the management cost for the warehouse, from the chain effect, it will increase the cost per unit of the product which decrease the cost effectiveness. When the storekeeper didn't know the exact location for the product, and it takes time to find for the whole warehouse, during the time for search in warehouse, other order has been delay which causes missing of shipment schedule happenned. In addition, the low effectiveness in inventory management might causes the enterprises loss million of money when failure in manage the old inventory that stacked and missed during the ordering process.

This project studies and analysis on the flow of warehouse ordering system and comeout with a project to enhance the warehouse management to increase the power to competite with other warehouse.

1.2 Objectives

The main target for the project is focus on the design a system which implements warehouse management system based ordering system, in order to improve the conventional order system. The objectives of the project are listed as below:

i. To overcome the issues of miss delivery, time consuming, and low inventory space effectiveness.
ii. To create a network based warehouse order system.
iii. To improve and enhance the current existing order system.

1.3 Problem Statement

The conventional ordering system used in the warehouse has provided a low effectiveness service to the warehouses and its customers. An alternative method to overcome this problem is the existing order system should be informationlization, in order to provide a high quality service to the customer and cost effectiveness to the warehouse.

First of all, the main problem faced is the low effectiveness of the conventional order system where the steps are taken is complex and it could cause miss order and queue jumping for product delivery. Second is the loss of the warehouse when the old inventory is stacked or the items are expired due to the failure of time management for the product delivery scheduling in the inventory management. The low capacity of the warehouse due to the items is not arrange and misplaced for some product that needed store in special condition. In addition, the high time consuming for the storekeeper to collect the product from the warehouse and deliver is one of the problems concerned. Due to these problems, the warehouse tried to overcome it by a lower cost effectiveness method, which is hired more storekeepers, which it will increase the management cost, as it also will increase the cost per unit of the product. So this warehouse order system is focus on solving these problems and provides high effectiveness solution.

1.4 Scope of Work

The main concern of this project is the new design flow of ordering process in a warehouse until the product is delivered. So the analysis of the problem faced and the order process is considered.

A smooth flow of ordering process, payment control, inventory control, and product delivery process is design and structure to allow the user can trace the progress of each steps, and monitor by the administrator of the system. The software system is developed by the Visual Studio .Net 2008. The system should be design for able to communicate with the main database, so that the data can be store and easier maintenance, where the database can be design by Microsoft Access 2007. Other than that, the hardware of the system is design for communicate with the software to control the motor of conveyor belt via UART module with USB-RS232 convertor transmission cable. While for the hardware part, a circuit with Microchip PIC 16F877A to receive the signal and trigger the motor of the conveyor belt.

1.5 Report Structure

This report is a documentary of the project idea generated delivering, concept applied into the system, steps taken, and the delivery of the project. This report is consists of five chapters, where each chapter is describe the information from start of project development until project is deliver.

First, chapter 1 is giving the reader a basic introduction about the concept of the project development. The content of the chapter includes project introduction, objectives of the project, problems statements, scope of works, brief methodology and report structure.

About the content of the chapter 2, it is the literature review on the related theoretical concept which is applicable into this project. In this chapter, it describe about the studies of data communication of USB-RS232 convertor transmission cable, the warehouse management system, the software development by the Visual

Studio .Net 2008, the database of Microsoft Access 2007, HyperTerminal as the medium for connection testing, the hardware circuit with microcontroller Microchip PIC 16F877A as the main controller for the system.

While for the chapter 3 is introduces the methodology that used for the project development. In this chapter, it includes the flow chart for the project as describe the flow of the system. Besides, it also describes all the steps that taken during the process of project development, which involves the design of individual software and hardware system, interface between them and form the warehouse order system.

Regarding to the chapter 4, which is the result from during the project design, all the finding and output from the finding is discuss in this chapter. Other than that, the precaution steps, failure and steps taken to improve the project will discuss.

For the last chapter of the report, chapter 5 will concludes for this project, the recommendation and suggestion to improve the project will be stated in this chapter. It allows this project for further development.