ASSET TRACKING SYSTEM (ATS)

LAU SIEW JOO

This report is submitted in partial fulfillment of the requirements for the award of
Bachelor Of Electronic Engineering (Computer Engineering) With Honors

Faculty of Electronic and Computer Engineering
Universiti Teknikal Malaysia Melaka

APRIL 2010

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UNIVERSTI TEKNIKAL MALAYSIA MELAKA

FAKULTI KEJURUTERAAN ELEKTRONIK DAN KEJURUTERAAN KOMPUTER

BORANG PENGESAHAN STATUS LAPORAN

PROJEK SARJANA MUDA II

Tajuk Projek : ASSET TRACKING SYSTEM

Sesi Pengajian : 2009/2010

Saya LAU SIEW JOO

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Dedicated to my family, specially to my beloved mother, father and sisters, my lectures and lastly my friends.

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ACKNOWLEDGEMENT

First and foremost, I would like to express my sincere gratitude to my supervisor, Puan Noor Mazlina Binti Mahmod for her encouragement and guidance. The success of the project would not be possible without her comments, ideas and endless support throughout the period of completing this project. My acknowledgement also goes to Encik Mohidden Bin Mansor for contributing the information needed in order to start the project. His time and effort provided is very much appreciated.

Besides, I would also like to take this opportunity to thank my university, Universiti 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.

I would also like to thank my friends who have helped me in some part of this project. The completion of this project is part of their effort and time for giving me the thoughtful advices and information.

Finally, my honorable appreciation goes to my families who have been providing the countless support and encouragement throughout my study at Universiti Teknikal Malaysia Melaka (UTeM). Their continuing support is part of the reason why I am able to complete this course and project.

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ABSTRACT

This study aims to develop a project by final year undergraduate. The project concerns about the design and the development of the Asset Tracking System. This project will enhance the efficiency for laboratory assisstant of FKEKK to track the location of the assets. This paper will describe the functionality of the system and the analysis of the asset tracking system. I believe that by using the Asset Tracking System, laboratory assisstants would be able to locate the asset in a laboratory in a shorter time and at the same time reducing the manual workload. With the implementation of some simple design into the system, a reliable and useful asset tracking system will be produced.

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ABSTRAK

Kajian ini bertujuan untuk menghasilkan satu Projek Sarjana Muda oleh mahasiswa tahun terakhir UTeM. Projek ini adalah mengenai reka bentuk and penghasilan *Asset Tracking System*. Tujuan projek ini adalah untuk meningkatkan kecekapan pembantu makmal FKEKK untuk mengetahui lokasi aset dalam makmal. Tesis ini menerangkan fungsi-fungsi yang disediakan dalam *Asset Tracking System*. Analisis yang bersesuaian telah dijalankan bagi mendapat idea-idea untuk menghasilkan satu sistem yang sesuai untuk digunakan di makmal. Saya percaya bahawa dengan menggunakan *Asset Tracking System*, pembantu makmal akan dapat mencari aset di makmal dalam masa yang singkat berbanding dengan sistem manual yang digunakan sekarang.

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LIST OF ABBREVIATION

ACM	-	Association of Computing Machinery
ASCII	-	American Standard Code for Information Interchange
ATS	-	Asset Tracking System
CCD	-	Charge Coupled Device
CPU	-	Central Processing Unit
EAN	-	European Article Numbering
EAN 8	-	Encode 8
EAN 13	-	Encode 13
FKEKK	-	Faculty of Electronic and Computer Engineering
GUI	-	Graphic User Interface
HTML	-	HyperText Markup Language
ID	-	Identity
ITF	-	Interleaved 2 of 5
JIT	-	Just In Time
JPEG	-	Joint Photographic Experts Group
JSP	-	Java Server Pages
LAN	-	Local Area Network
LED	-	Light Emitting Diode
MySQL	-	My Structured Query Language
OCR	-	Optical Character Recognition
RFID	-	Radio Frequency Identification
UGPCC	-	Uniform Grocery Product Code Council
UPC	-	Uniform Product Code
UTeM	-	Universiti Teknikal Malysia Melaka
PC	-	Personal Computer
PHP	-	Hypertext Pre-Processor

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PNG	-	Portable Network Graphics
PT Number	-	Part Number
SPARC	-	Scalable Processor Architecture
VBScript	-	Visual Basic Script

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CHAPTER I

INTRODUCTION

1.1 Overview

Chapter one of this report explains the objective, scope of asset tracking system and problem statement of the system that is currently used in the Laboratory of Faculty of Electronics and Computer Engineering (FKEKK). Chapter two will cover the research of the related field. Chapter three explains the methods used to develop this project. Chapter four is the result and discussion for this project. Lastly, a conclusion and recommendations will be discussed in the last chapter.

Studies had been done on a few systems which related to tracking system. One of the tracking systems is Asset Tracking System. The Asset Tracking System has been used by the WiseTrack Enterprise. WiseTrack Enterprise uses RFID to track and locate their assets. This model is not suitable to be used as the cost for RFID is relatively high which might not be afforded by certain organization. It is not necessary for a laboratory to spend in such a costly system.

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1.2 Problem Statement

Universiti Teknikal Malaysia Melaka (UTeM) has been investing in costly assets such as computers, oscilloscopes, flat screen monitors, software, components and etc. to provide the best facilities to the students and staffs of the university. Different laboratory provides different types of equipments based on the requirement of the laboratory. Therefore, assets borrowing service is available between laboratories, lecturers and students. Due to the easy movement of the assets, the probability of asset misplacing, unreturned and assets lost has increased dramatically.

The system used by the laboratory management of FKEKK will be the main consideration. All of the transactions in the laboratory are based on manual documentation. The documents of each category are separated into different files such as reservation of equipment or reporting malfunction of the equipment. There are a lot of documents inside each file. The Laboratory Assistant face difficulties when they need to find information of a specific asset because they will need to manually search through the shelves or cabinets for the documents with the same PT Number or Serial Number as the asset that is labeled onto it. The PT Number or Serial Number is the same for both asset and Asset Document. Thus, it is time consuming for the Laboratory Assistant to find the specific data of the selected asset that might not even be where it is supposed to be.

1.3 Project Aims

This project proposes a web based tracking system to manage the assets more systematically as well as enhance the security of assets in the laboratory. Asset Tracking System should be able to store, detect, and track the asset in the laboratory with just a few clicks. Furthermore, it can reduce lost of assets in the laboratory.

The next objective is that the barcode reader must detect the bar code label accurately. The bar code reader should be able to decode the correct information based on the bar code label which is composed by a series of bars and spaces.

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Different information will have different range of bars and spaces of the bar code label.

Thirdly, the system should be able to track the asset faster. Information of the specific asset should be identified when the bar code label on the asset is scanned using the bar code reader. It is important for the user to scan the bar code label on the asset in order to avoid slow data entry.

Finally, asset tracking system should be able to manage search and retrieval process of the asset. It is possible for the user to key in the PT Number or Serial Number of the asset to search the availability of the asset.

1.4 Scope

This section is described in three categories which is system operability, system functionality and user of this system.

1.4.1 System Operability

Asset Tracking System is specifically developed for the laboratory in FKEKK. This system is a web based system and it is suitable for multiple laboratories as it uses the Local Area Network (LAN) to connect within the University campus which means that the user will be able to log in to this system as long as they have the password within the University network. This means that the system can be viewed online through Internet Explorer or Mozilla Firefox browser. This sytem will be only used for FKEKK laboratory asset management only.

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1.4.2 System Functionality

There are five main areas in this system which includes registering new equipment, searching, borrowing equipment, reporting on malfunction equipment and tracking user.

1.4.2.1 Registering New Equipment

All information of the assets in the laboratory is registered in the system by keying in the equipment name, PT number, date, serial number, and model of the equipment. For the equipment name, there will be a drop down menu for the user to choose if the equipment name has been registered before. If the name does not exist in the drop down menu, the user can enter it manually and the name entered will be shown for the next equipment registration.

1.4.2.2 Searching Equipment

Asset could be searched based on four criteria which is PT Number, Serial Number, Equipment Name or All. 'All' criteria will show the entire asset depending on the user status. If the user is an Admin, the system will display the entire equipment in the laboratory of FKEKK. If the user logs in as Lab Assistant, then it will only display the equipment in their own laboratory. For Admin, there is another option for them to search which is the laboratory. They can choose which laboratory's equipment they want to search for.

1.4.2.3 Borrowing Equipment

The borrowing equipment function allows the users to insert the asset borrowing details, recording and updating the assets location, status of the asset and reporting on assets.

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