UNIVERSITI TEKNIKAL MALAYSIA MELAKA

DEVELOPMENT OF INVENTORY SYSTEM AND MATERIAL HANDLINGS USING RADIO-FREQUENCY IDENTIFICATION

This report is submitted in accordance with the requirement of the Universiti Teknikal Malaysia Melaka (UTeM) for the Bachelor of Computer Engineering Technology (Computer System) with Honours.

by

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This report is submitted to the Faculty of Electrical and Electronic Engineering Technology of Universiti Teknikal Malaysia Melaka (UTeM) as a partial fulfilment of the requirements for the degree of Bachelor of Mechanical Engineering Technology (Computer System) with Honours. The member of the supervisory is as follow:

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ABSTRAK

Perkembangan sistem inventori dan pengendalian bahan menggunakan pengenalan frekuensi radio sangat penting untuk dilaksanakan di makmal. Ini kerana sukar untuk mengenal pasti siapa yang meminjam barang dari makmal berdasarkan sistem di makmal sekarang yang guna borang kertas. Perkara ini menyebabkan kesukaran dalam mengesan pergerakan keluar dan masuk inventori. Dalam projek ini, satu penyelesaian telah disediakan untuk masalah yang dihadapi dalam makmal iaitu menggunakan sistem RFID. Setiap lajur rak diletakkan satu pembaca RFID manakala setiap item akan diletakkan satu kad RFID tag. Selain itu, pengguna perlu memasukkan kata laluan sebelum membuka pintu rak. Oleh itu, sistem boleh mengetahui identiti peminjam berdasarkan kata laluan dan ID yang dimasukkan. Tambahan pula, system ini juga dirancang mempunyai fungsi mengunci secara automatik apabila pintu tersebut bersentuhan dengan dindingaya. Jesteru, kecuaian pengguna seperti terlupa menutup pintu dapat dielakkan. Maka sistem ini secara tidak langsung telah membawa keselamatan aset atau barang tidak diambil oleh pihak tertentu yang mengambil kesempatan terhadap pengguna yang terlupa mengunci pintu. Projek ini hanya memberi penekanan yang lebih terhadap reka bentuk perkakasan dan pelaksanaan perkakasan dan hanya meliputi sedikit pada reka bentuk perisian, pelaksanaan dan ujian terhadap perisian. Secara kesimpulannya, projeck ini dapat membaca semua ID dalam kad RFID Tag dengan betul dan hantar data yang betul ke pelayan.

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ABSTRACT

Development of inventory system and material handlings using radio-frequency identification is very important to implement in the laboratory. This is because it is difficult to identify who borrow the item from the lab based on the current system in laboratory that use paper form, so it is very hard to track in and out of the inventory. In this project, a solution has been proposed for the problem faced in laboratory by using RFID system. Each column of the shelf is installed a RFID reader while each item will be installed a RFID tag card. Moreover, user need to key in the password before open the door of the shelf. Thus, the system can identify the borrower based on the user login ID and password. Furthermore, the system is designed to have automatic lock function when the door is in contact with the wall. However, negligence of user like forgetting to close the door can be avoided. So the system has indirectly brought the safety of assets or goods not taken by certain parties who take advantage on users that forget to lock the door. This project will cover more on the hardware design and hardware implementation and cover lesser on software design, implementation and software testing. In short, this project able to detect correctly every item deal and able to send the correct data to the server.

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DEDICATION

To my beloved parents; Ng Ching Guan and Ong Lay Yoke, and for my beloved family who encourages me, also do not forget to whom may involve in order helping me to complete my project. I also dedicate this report to my supervisor, En Ahmad Nizamuddin and co supervisor, En Mohd Saad who always encourage and guide me in this project. Finally, this dedication is also dedicated to my beloved friends, Angeline Chiew Yuen Huei that have provided me with a strong love shield and always surround me and never lets any sadness enter inside.

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LIST OF SYMBOLS

V	-	Voltage
H	-	Inductance

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LIST OF ABBREVIATIONS

RFID	-	Radio Frequency Identification
LCD	-	Liquid Crystal Display
EPC	-	Electronic Product Code
LF	-	Low Frequency
HF	-	High Frequency
UHF	-	Ultra High Frequency
IT	-	Information Technology
LAN	-	Local Area Network
CCTV	-	Closed-circuit Television
RLSI	-	RFID based Library Information System
CD	-	Compact Disc
DVD	-	Digital Video Disc
USB	-	Universal Serial Bus
PC	-	Personal Computer
RF	-	Radio Frequency
WIFI	-	Wireless Fidelity
ID	-	Identification
CM	-	Centimeter

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