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JUDUL: EXPLORATION ON ZIGBEE IN WIRELESS BODY AREA NETWORK

SESI PENGAJIAN: 2012 / 2013

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EXPLORATION ON ZIGBEE IN WIRELESS BODY AREA NETWORK

LIM KAR YIE

This report is submitted in partial fulfilment of the requirements for the
Bachelor of Computer Science (Computer Networking)

FACULTY OF INFORMATION AND COMMUNICATION TECHNOLOGY
UNIVERSITI TEKNIKAL MALAYSIA MELAKA
2013

DECLARATION

I hereby declare that this project report entitled

EXPLORATION ON ZIGBEE IN WIRELESS BODY AREA NETWORK

is written by me and is my own effort and that no part has been plagiarized without citations.

STUDENT : LIM KAR YIE Date: 30th August 2013

(STUDENT'S NAME HERE)

SUPERVISOR : PM DR RABIAH AHMAD Date:

(SUPERVISOR'S NAME HERE)

DEDICATION

I would like to thank to my beloved parents and family, thank you for giving me the biggest support when I meet with problem. Your all support is the biggest for me to finish the final big task in my university life.

To my supervisor, PM Dr. Rabiah Ahmad, you are the best supervisor that I meet in my university life. No matter what problem that meets in this final year project, you will spend your precious time in order for me to complete the task. I really appreciate a lot of help for you. At here, I would like to say, thank you PM Dr. and for the evaluator, Prof. Dr Shahrin Sahibuddin, and PSM committee, thank you for guidance and encouragement during project implementation.

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Last but not least, I would like to deliver my thanks my evaluator, Prof. Dr Shahrin Sahibuddin for evaluating and reading this report.

ABSTRACT

The project is about studying the new technology introduce in medical as patient or elder people are no longer needed having monitoring in hospital by introduction WBAN. ZigBee network used in WBAN are the main concern in this project. ZigBee architecture is study as the functionality of each layer which provide security element. Security mechanisms like some common known authentication protocols are study for the understanding level of access control in securing WBAN. The project discusses some threats happen in WBAN and introduce on authentication in the WBAN for originality and security of data. Thus this project will be include setting basic access control in simulate WBAN network.

ABSTRAK

Projek ini adalah mengenai satu teknologi baru yang telah diperkenalkan di dalam bidang perubatan. Dengan pengenalan rangkaian kawasan badan tanpa wayar, pesakit atau orang tua tidak akan lagi memerlukan pengawasan di dalam hospital. Dalam rangkaian kawasan badan tanpa wayar ini juga, kegunaan teknologi ZigBee telah diperkenalkan. Seni bina ZigBee ditemui akan menentukan tahap unsur keselamatan dalam rangkaian tersebut. Mekanisme keselamatan seperti protocol pengesahan yang telah biasa digunakan akan ditemui di dalam projek ini dengan melibatkan sumber buku dan kajian dalam aspek keselamatan. Simulasi asas dengan parameter tertentu dijalankan di dalam projek ini supaya pengawalan laluan asas semua nod dalam rangkaian ZigBee tercapai.

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3G	-	Third Generation
API	-	Application Programming Interface
BAN	-	Body Area Network
BASN	-	Body Area Sensor Networks
BCU	-	Body Control Unit
BP	-	Blood Pressure
DoS	-	Denial-of-service
ECG	-	Electrocardiogram
GPRS	-	General Packet Radio Service
MAC	-	Media Access Layer
Nonce	-	Number Used Once
NTP	-	Network Time Protocol
PDA	-	Personal Digital Assistant
PHY	-	Physical Layer
RO	-	Research Objective
RP	-	Research Problem
RQ	-	Research Questions
RTA	-	Relative Temporal Authentication
TSS	-	Time-Stamping Service
WBAN	-	Wireless Body Area Network

WPANs	-	Wireless Personal Area Networks
ZDO	-	ZigBee Device Object

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INTRODUCTION

Recent developments of electronic devices domain of personal gadgets, sensing and wireless communication technologies bring together development of Wireless Body Area Networks (WBANs) (Crosby, Ghosh, Murimi, & Chin, 2012). As WBAN is technology closer to human body which gather and send vital signal of users, it is important to keep the privacy and originality of the data collected by these network. Authentication is necessary to enable the WBAN to validate network nodes and thus avoid network as well as node impersonation (Ming, Wen Jing, & Kui, 2010) (Crosby, Ghosh, Murimi, & Chin, 2012). Therefore, this project will explore on the security issues in WBAN. This project will carry the amount of works to accomplish the objectives which are literature review and analysis, design and development, testing and evaluation and documentation.