# BLUETOOTH QUIZ SYSTEM

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# BORANG PENGESAHAN STATUS TESIS*

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BLUETOOTH QUIZ SYSTEM

CHIAM SEE LUAN

This report is submitted in partial fulfillment of the requirement for the
Bachelor of Computer Science (Computer Networking)

FACULTY OF INFORMATION AND COMMUNICATION TECHNOLOGY
UNIVERSITI TEKNIKAL MALAYSIA MELAKA
2010

# DECLARATION

I hereby declare that this project report entitled
## BLUETOOTH QUIZ SYSTEM

is written by me and is my own effort and that no part has been plagiarized
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STUDENT    : _____    Date: 25/6/2010
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# DEDICATION

This thesis is dedicated to my beloved mother, Soon Swee Kiang, who has supported me all the way since the beginning of my studies. She had taught me that even the largest task can be accomplished if it is done one step at a time.

It is also dedicated to my soul mate, Chou Lian Jie, who kept my spirits up when the muses failed me. Without his lifting me up when this thesis seemed interminable, this thesis would be incomplete.

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My family members, my wonderful mother, Soon Swee Kiang, are mentioned last to emphasize the special nature of their encouragement, support and patience all through my studies.

# ABSTRACT

The Bluetooth Quiz System (BQS) is developed for university's lecturer to computerize the current manual quiz system. Students submit answer via Bluetooth connection instead of answer sheet. Lecturer can easily manage all aspect of quiz question and student information. All quiz question and student information will be saved into database and can be keep track in simple way. Student result will be calculated by system automatically and saved in database as well. Based on answer sent by student, BQS can generate a statistical graph to show number of student against question options for a particular question. Lecturer can view the graph anytime by select the desired question number. The methodology of this system is Iterative Model. An analysis study and research has been done based on current manual quiz system. All problem statements and requirements has been analyzed and identified throughout the study. The interfaces of BQS have been designed based on the analyzed requirement. After that, the system was implemented on appropriate environment by developer. A test team was organized in order to conduct the system testing. All test data and expected result was prepared by system developer and provided to testers. Result of testing was recorded and documented. This Bluetooth Quiz System is beneficial and improves the performance of current quiz system.

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The Bluetooth Quiz System (BQS) is developed for university's lecturer to computerize the current manual quiz system. Students submit answer via Bluetooth connection instead of answer sheet. Lecturer can easily manage all aspect of quiz question and student information. All quiz question and student information will be saved into database and can be keep track in simple way. Student result will be calculated by system automatically and saved in database as well. Based on answer sent by student, BQS can generate a statistical graph to show number of student against question options for a particular question. Lecturer can view the graph anytime by select the desired question number. The methodology of this system is Iterative Model. An analysis study and research has been done based on current manual quiz system. All problem statements and requirements has been analyzed and identified throughout the study. The interfaces of BQS have been designed based on the analyzed requirement. After that, the system was implemented on appropriate environment by developer. A test team was organized in order to conduct the system testing. All test data and expected result was prepared by system developer and provided to testers. Result of testing was recorded and documented. This Bluetooth Quiz System is beneficial and improves the performance of current quiz system.

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# LIST OF ABBREVIATIONS

| | | |
|---|---|---|
| BQS | - | Bluetooth Quiz System |
| FICT | - | Faculty of Information Technology and Communication |
| OBEX | - | Object Exchange |
| ICT | - | Information and Communication Technology |
| PAN | - | Personal Area Network |
| PIN | - | Personal Identification Number |
| LAN | - | Local Area Network |
| SIG | - | Special Interest Group |
| IEEE | - | Institute of Electrical and Electronics Engineers |
| WPAN | - | Wireless Personal Area Network |
| AES | - | Advanced Encryption Standard |
| POS | - | Personal Operating Space |
| WLAN | - | Wireless Local Area Network |
| DUN | - | Dial-Up Networking |
| PC | - | Personal Computer |
| PDA | - | Personal Digital Assistant |
| 3G | - | Third Generation |
| 2G | - | Second Generation |
| IP | - | Internet Protocol |
| Wi-Fi | - | Wireless Fidelity |
| DFD | - | Data Flow Diagram |
| SDLC | - | System Development Life Cycle |
| ERD | - | Entity Relationship Diagram |
| DBMS | - | Database Management System |

# LIST OF APPENDICES

# CHAPTER I

## INTRODUCTION

### 1.1 Project Background

In order to train and prepare for student's industrial training, this subject BITU 3973 Projek Sarjana Muda I is a necessary for every FICT student. Hereby, I would like to develop a Bluetooth Quiz System. This system can display the questions and options via projector after input by lecturer. Students need to send their answer via mobile phone Bluetooth. Then, the system can collect student's answer sheet and do matching of answer. There is an option to choose to display a statistic graph of overall result of quiz. Besides, lecturer can view previous quizzes by using this system. In term of wireless connection, Bluetooth is ideal choice to implement in this system instead of using Wi-Fi or any other wireless method. Bluetooth makes wireless communication and networking between devices in a small localized area of a room or a small office (around 10 meters) as easy as clicking on the mouse. In Bluetooth, all the connections between devices are instantaneous, invisible and the devices can communicate even if they are not in line of sight because Bluetooth utilizes a radio-based link. Additionally, it supports multipoint with speed of 1 to 2 Mbps.

## 1.2 Problem Statements

In future, paper will become a precious property due to environmental issue that happened since few couple years ago. To minimize this issue, we need to apply technologies to change this world to paperless. In every university, paper is a necessary element for every purpose, for example quiz for student. In traditional way, lecturers need to print out a lot of copy of question sheets for every student. Hence, the creation of this Bluetooth Quiz System is an initial step to replace the hardcopy of question sheets to softcopy. It can reduce the use of paper, and thus can slowly save the earth.

Other than that, store question and answer sheets in hardcopy become troublesome and time consuming because lecturers need to arrange it accordingly. This new quiz system can help to save up some time by storing all questions and students' answers in database for future use.

Bluetooth is a wireless data transmission technology that offers connection that supports up to seven slaves and one master in piconet over a short distance. The enhanced system can solve this problem because the file transfer time between lecturer's laptop and student's mobile phone is short enough to avoid the master and slaves problem of Bluetooth. Thus, lecturer can always listen for request and receive student answer once detected sending request.

## 1.3 Objective

There are few objectives that must be achieved to accomplish the project. Below is the list of objectives.

- To complete the project of Projek Sarjana Muda (PSM).
- To research on automatic quiz system using Bluetooth connection.
- To utilize Bluetooth profile which means OBEX is used to transfer answer rather than submit answer sheet.
- To utilize function of Bluetooth in student's mobile phone due to Bluetooth-enabled mobile phone is very common now.

## 1.4 Scope

This system's target users are lecturer and student in university. This project covered basic function such as display, edit, add, and delete for both quiz and student record. It covered Bluetooth programming on the system as well so that the system can receive files from Bluetooth-enabled mobile phone. Other than that, this system included graph generator to generate simple bar graph of answer's statistic. Only Nokia mobile phones are available in this system.

This system does not cover decoder programming of file received from mobile phone. This is because different brand of mobile phone save Notes file in different file extension.

## 1.5 Project Significance

The creation of this system, lecturers can save up time to print out question papers. Thus, university can cut down cost of printing and paper as well. University can use the budget in better way such as campus facilities. Furthermore, this quiz system may attract student to concentrate during class because quiz can be start at anytime without any preparation of lecturer. Student need to pay attention during class to score their mark.

## 1.6 Expected Output

The expected output of this project is to computerize the traditional quiz so that can minimize the labor of preparation such as printout the question papers before class. Hence, it can make quiz system become much more easy and save up time and cost.

## 1.7 Conclusion

In a nut shell, implementation of Bluetooth technology in quiz system is an initial step to computerize the exam system in future. In addition, it gives benefits to all people that involve who are lecturers, students and the university.

# CHAPTER II

# LITERATURE REVIEW AND PROJECT METHODOLOGY

## 2.1 Introduction

In this project, the main focus is the Bluetooth technology. This chapter will discuss about the literature review of Bluetooth technology in overall and project methodology that being used in this project. With this literature review and research of methodologies or techniques that being used in other researches which is related with this project, identification of methodology or technique that is best fitted to this Quiz System can be made. Before the literature review and methodologies research, a research on Bluetooth technology has been done.

Literature review is a process of reviewing written and published knowledge on a topic like a journal article. Typically does not include information that is verbal, cultural or based on oral tradition. Sometimes, it can refer as a summary and explanation of key studies relevant to a proposed project.

According to Wikipedia, a project methodology can refers as a framework that is used to structure, plan, and control the process of developing and information system. A numerous of such framework have evolved over the years, each with its own strengths and weaknesses. Each of the available methodologies is the best suited to specific kinds of projects, based on various technical, organizational, project, and team considerations.

## 2.2 Literature Review

### 2.2.1 Domain

The domain of this Bluetooth Quiz System is ICT in Education and Training. The purpose of the development of this project is to build a systematic quiz system that give convenience to both lecturer and student. With this quiz system, lecturer can collect all answer of student accordingly and save to database so that a statistic graph can be made. From the graph, lecturers can measure the level of understanding of student to the particular topic.

### 2.2.2 Keyword

- **Bluetooth**

Bluetooth is a technology for wireless ad hoc networks, initially envisaged for short-range communication (up to 10 meters) between devices like a personal computer, keyboard, mouse, headset, printer or other peripherals, forming a Personal Area Network (PAN). Such a local ad hoc network does not require a sophisticated key management infrastructure. A security association between two devices can be established manually by pairing, i.e. the user entering a common PIN on both devices [1].

Bluetooth devices can form piconets of up to seven slaves and one master, enabling discovery of services and subsequent implementation of many varied usage model included wireless headsets, Internet bridges, and wireless operation such as file exchange, data synchronization, and printing. Despite talk of Bluetooth competing with wireless LANs, Bluetooth products work over shorter distances and are designed to solve different problems.

The Bluetooth Special Interest Group (SIG) publishes the Bluetooth specification. The IEEE has formed the 802.15 working group to define standards for wireless PANs. The 802.15.1 standard for WPANs will be modeled after the Bluetooth specification from the Bluetooth SIG.

The waters of Bluetooth security have yet to be tested. However, the Bluetooth specification has a robust management scheme built in, as well as upper layers of security. Bluetooth uses the national standard AES algorithm for encryption and the general consensus is that the options for Bluetooth security are strong and robust [2].

If Bluetooth lives up to its potential, it will revolutionize the way people interact with information technology. It is originally conceived as a low-power short-range radio technology designed to replace cables for interconnecting devices like printers, keyboard, and mice, its perceived potential has evolved into much more.

It has given rise to the concept of the PAN, a technology of convenience where everything within the Personal Operating Space (POS) of an individual that is related to communicating information is automatically tied into a seamless peer-to-peer network that self-configures to make information easily accessible. Scenarios for its usage are many and diverse and are only limited by the imaginations of the companies that create the products.

There is even talk of Bluetooth competing with WLANs, but Bluetooth products work over shorter distances and are designed to solve different problems. While the functionality of a WLAN device stands alone as network component, the functionality of a Bluetooth component required a host. The host can be any number of Bluetooth-enabled devices such as mobile phones, headsets, keyboards, vending machines, bar code readers, and cameras.