

## BORANG PENGESAHAN STATUS TESIS

JUDUL: RFID BASED STUDENT ATTENDANCE SYSTEM

SESI PENGAJIAN: 2 – 2008/2009

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**STUDENTS TRACK SYSTEM VIA RADIO-FREQUENCY IDENTIFICATION  
(RFID)**

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

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## DECLARATION

I hereby declare that this project report entitle  
**RFID BASED STUDENT ATTENDANCE SYSTEM**

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

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## DEDICATION

Specially dedicated to  
My beloved family, my lovely fiancée who have  
encouraged, guided and inspired me throughout my journey of education  
my friends and my colleagues.

## ACKNOWLEDGEMENT

First and foremost, I would like to praise upon Allah for letting me complete my Projek Sarjana Muda (PSM) project on time and success. Next, I would like to express my sincere gratitude Encik Rizuan bin Baharon, my advisor, for his constant direction and support. She always has shown her consistent and encouragement for me to carry out my research.

Most of all, I should mention my parents for their endless concerns to me. I cannot forget their trust and encouragement on me. My brother Zol Kahar bin Samsury also has given me warmhearted concerns. The completion of this project has taught me to work hard and concentration is important.

## ABSTRACT

This project is developed to help lecture eliminate the time spent tracing back student attendance through paper. This system, RFID Based Student Attendance System has three module to be completed which is translation module, students' information module, display attendants module and attendance percentage module. The project methodology used for developing this system will be System Development Life Cycle (SDLC) which is a framework for describing the phases involved in developing information systems. The current problems are analyzed where the current systems to track the locations of the students are done manually. This is a web based system that using a VB.net script that will process the data and translate the data. For the system design, process and software architecture, components, modules, interfaces, and data for a computer system to satisfy specified requirements are studied and design for the system are made. Hopefully, this system will help the lecturer and the lecturers can calculate the attendance percentage of students easily using this system.

## ABSTRAK

Projek ini dibangunkan bagi membantu pensyarah menjimatkan masa mengambil kedatangan pelajar secara manual. System ini, Students Track System via Radio-Frequency Identification (RFID) mengandungi empat modul iaitu modul penterjemahan, modul maklumat pelajar, modul kehadiran pelajar dan modul peratus kehadiran. Kaedah yang akan digunakan bagi membangunkan system ini ialah System Development Life Cycle (SDLC). SDLC ialah rangka yang menerangkan fasa-fasa yang terlibat dalam membangunkan sesuatu system. Permasalahan yang berlaku sebelum system ini dibangunkan dianalisis dimana proses untuk mencari pelajar adalah dilakukan secara manual. System yang akan dibangunkan menggunakan VB.net script dan data akan diproses dan diterjemahkan. Bagi reka bentuk system, proses dan rekabentuk perisian, komponen, modul, antara muka, dan akhir skali data bagi system tersebut dikenalpasti bagi memenuhi keperluan system. Diharapkan, system ini dapat membantu dan memudahkan pensyarah membuat pengiraan peratus kehadiran pelajar.

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# CHAPTER I

## INTRODUCTION

### 1.1 Project Background

Radio Frequency Identification (RFID) is a system that facilitates the tracking of objects, primarily for inventory tracking, via a three part technology comprised of a reader, a transceiver with decoder and a transponder (RF tag). RFID is a wireless system that works in conjunction with an organization's information technology infrastructure to improve business processes such as inventory management and efficiency in supply chain management. Radio Frequency Identification (RFID) Systems are not nano technological devices, but the current controversy over using electronic tracking systems provides an indication of how local communities may respond to nano-devices that similarly, though invisibly, track human bodies.

RFID systems fundamentally consist of four elements: the RFID tags themselves, the RFID readers, the antennas and choice of radio characteristics, and the computer network (if any) that is used to connect the readers. The Student Track System is a web based system that using a Visual Studio 2005 script as the programming language that will process the data given by the information from the microchip that contains the student's subject taken for the particular semester. The system should be able to track whether the students attend or absent from their classes and the system can calculate the students' attendance percentage.

## 1.2 Problem Statements

In the UTeM environment, the current systems assigning student's attendance are done manually. The problem is that lecturer do not take roll because it can be time consuming and unorganized. With this system, hopefully lecturer will begin taking roll and holding students accountable for attendance. In former ways of taking roll, one student could "cover" for another by signing the roll for him. With the security of this system, that will be eliminated. This will benefit students, instructors, and the university as a whole. For the attendances of students in classes, lecturer has to check and calculate manually the attendance percentage to ensure the students are qualified to sit for the final examination.

## 1.3 Objective

The main objectives of this project are:

- To create a web based system which can integrate with RFID  
The system can check student class attendance using RFID
- To display the attendance on web site based on the time table
- To calculate the attendance in percentage.

## 1.4 Scope

- This system will be developed using Visual Studio 2005 language and Microsoft Access as the database for the system.
- Student Track System will be integrated with RFID evaluation kit.  
This project only can identify whether the student's attend the class or not.
- The comparison is made using a dummy list.

## **1.5 Project Significance**

Historically, students tend to skip class. This system aids lecturers in tracking the attendance of their students. It will give instructors a central location to track the attendance of all of their students in all of their classes. It will eliminate the time spent tracing back through papers. This system will produce a program for lecturers to track attendance and view student attendance, and easy to calculate the student attendance percentage. From the students card ID, systems will track the location of the student's if they attend the class or not. This system will not allow for students to sign another student's name.

## **1.6 Expected Output**

This system will integrate, with the RFID kits for data collection. In addition, this web based system should be able to check students class attendance using RFID in facts of this system can display the attendance on a web site based on the student's timetable. Lastly, this system should be able to calculate the student attendance and display it in percentage.

## **1.7 Conclusion**

As conclusion, the RFID Based Student Attendance System development will help the lecturer's in tracking the attendance of their students and also can calculate student attendance and display on the website. From this chapter, the problem statement, objectives, scope, and project significance output are being identified in order to develop the system that will be used by the target users.



## CHAPTER II

### LITERATURE REVIEW AND PROJECT METHODOLOGY

#### 2.1 Introduction

This chapter will discuss about literature review and project methodology of the related project. Literature review is a collecting related data, analyze business processes, identify underlying patterns and create the conclusion. The project methodology means technique and type use to complete the project. According to Bourner (1996) there are good reasons for spending time and effort on a review of the literature before embarking on a research project. One of the reasons is to identify information and ideas that may be relevant to the project.

The methodology is a way to use all available approaches, technique and tools used to achieve predetermined objectives. Many kinds to can be approached such as qualitative method (analyst of interview), quantitative method (forecasting, statistical and modeling) and combined method. Therefore with have used applicable methodology project it can help, manage and maintain their system development.

## **2.2 Facts and findings**

In this part, this project will explain about the detail of system that intergrades with RFID in various aspects. All the information will be collected from the related thesis, journal, book and also website from the internet. This is important to give an understanding on RFID functions and the system itself. In the other hands this part will help in order to get as much as information before the project can continue to the next part.

### **2.2.1 Domain**

Domain for this project is RFID Based Student Attendance System itself which a web based application using Visual Studio 2005 as the programming language and the system should can communicate with the RFID evaluation kits which have been provide by UTeM. To be specific, these this web based system should can check students class attendance using RFID in facts of this system can display the attendance on a web site based on the student's timetable and also the system should can display the attendance in percentage.

## 2.2.2 Existing System

### 2.2.2.1 Attendance Student Tracking

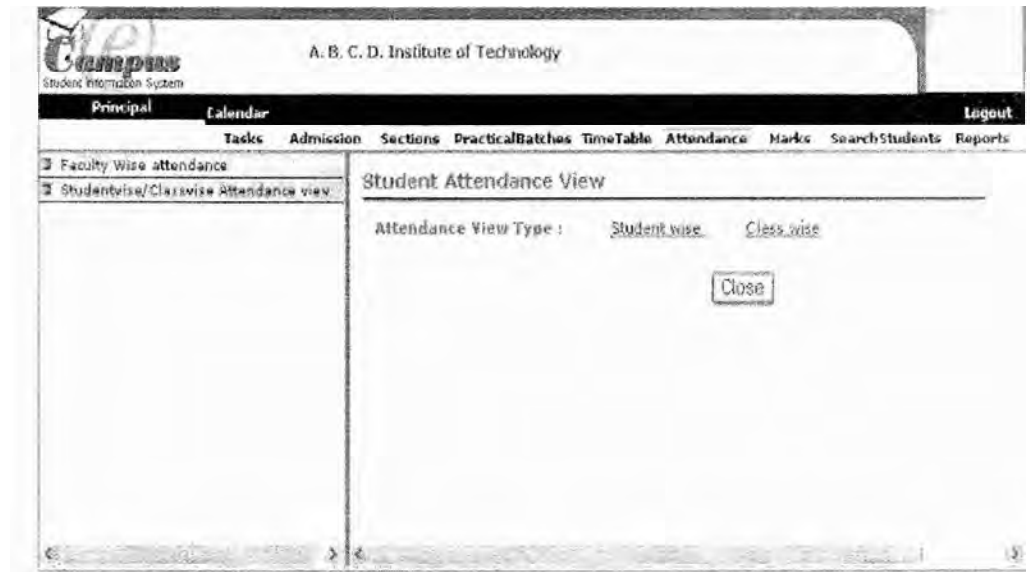
Here is an example of students track system without integrate with RFID. According to Manvish e-services (2003), at any point of time and by any user of the system can track the student Attendance. Users like Student, Parents, Faculty, Dean/HOD and Principal. Attendance Student Tracking is the tracking of the student attendance. Student attendance tracking software is used to record student attendance at lectures, lab classes etc, and then produce attendance reports for management. Tracking of attendance shortage is automatic and alert message to those students and parents. Parents get the Attendance Grades and Class schedules information through Internet access (i.e., Online Attendance Student Tracking). Through Attendance Student Tracking Reports the parent can Track the student attendance.

The Attendance Student Tracking Reports are Attendance Report and Attendance Shortage Report. The Attendance Report shows the attendance of the student. The Attendance Report is a *Consolidated attendance report*, it can be taken at any time and date. Attendance Shortage Report shows the list of attendance shortage student. Tracking of attendance shortage is automatic and alert message to those students and parents. Parents get the Attendance Grades and Class schedules information through Internet access (i.e., Online Attendance Student Tracking). Through Attendance Student Tracking Reports the parent can Track the student attendance.

In Web eSIS, Principal has an option to track the student attendance. Principal can do the Attendance Student Tracking. Principal

can also see the Consolidated Attendance Report and Attendance Shortage Report.

Principal can do the *Attendance Student Tracking*. Below is screen shot of the Student/Classwise Attendance View through which principal can track the student attendance. There are 2 type of Attendance View. Attendance View Type is Student Wise and Class Wise.



**Figure 2.1:** Screen Shot of Student Attendance View Interface

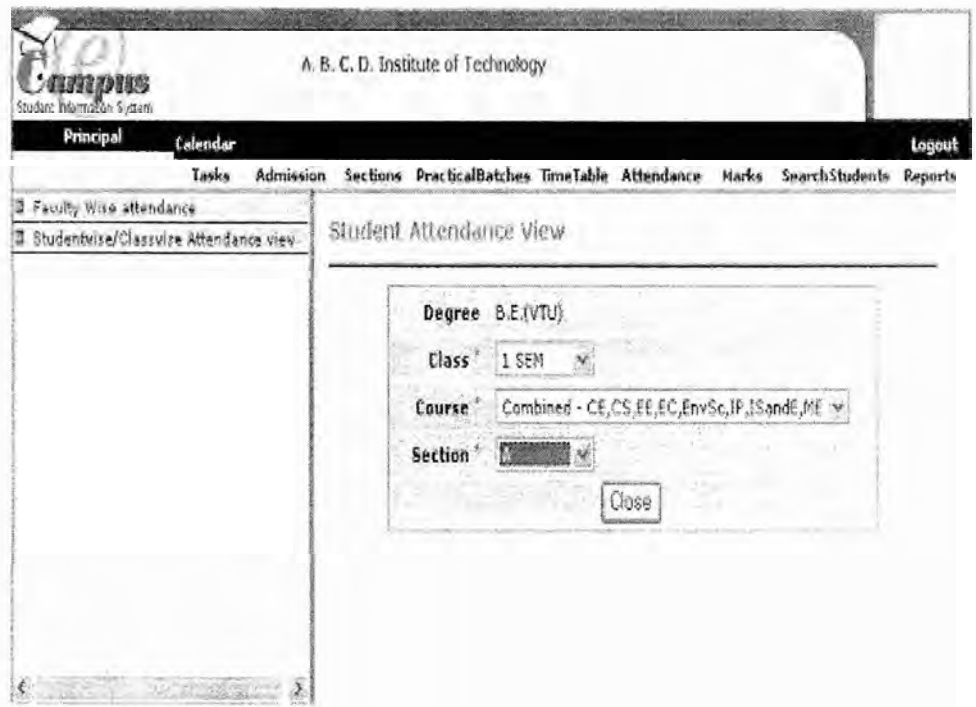


Figure 2.2: Screen Shot of Student Attendance View

Roll no.	Student Name	Cum	Cum. %	09	16	23	30	Month Total	Month %
1	CHETHAN N.S	7/7	100.00	P	P		P	3/3	100.00
2	CHINMAYA D.M	7/7	100.00	P	P		P	3/3	100.00
3	CHIRADEEP BAN..	5/7	71.43	P	A		P	2/3	66.67
4	CHRISTÓFER JA..	6/7	85.71	P	P		P	3/3	100.00
5	DATAMONLANG S..	7/7	100.00	P	P		P	3/3	100.00
7	DARSHAN C.J.	7/7	100.00	P	P		P	3/3	100.00
9	DEBO BARSHAN..	6/7	85.71	P	P		P	3/3	100.00
10	DEEPAK .D. KI..	6/7	85.71	P	P		P	3/3	100.00
11	DEEPAK N.R.	7/7	100.00	P	P		P	3/3	100.00
12	DEEPAK M.N	6/7	85.71	P	P		P	3/3	100.00

Figure 2.3: Screen Shot of Class Wise Attendance View

### 2.2.2.2 RFID Technology

Most histories of RFID trace the technology back to the radio-based identification system used by Allied bombers during World War II. Because bombers could be shot down by German anti-aircraft artillery, they had a strong incentive to fly bombing missions at night because planes were harder for gunners on the ground to target and shoot down. Of course, the Germans also took advantage of the cover that darkness provided.

Early Identification Friend or Foe (IFF) systems made it possible for Allied fighters and anti-aircraft systems to distinguish their own returning bombers from aircraft sent by the enemy. These systems and their descendants today, send coded identification signals by radio: An aircraft that sends the correct signal is deemed to be a friend, and the rest are foe. Thus, radio frequency identification was born. Shortly after the war, an engineer named Harry Stockman realized that it is possible to power a mobile transmitter completely from the strength of a received radio signal. His published paper “Communication by Means of Reflected Power” in the Proceedings of the IRE<sup>2</sup> introduced the concept of passive RFID systems.

Work on RFID systems as we know them began in earnest in the 1970s. In 1972, Kriofsky and Kaplan filed a patent application for an “inductively coupled transmitter-responder arrangement.”<sup>3</sup> This system used separate coils for receiving power and transmitting the return signal. In 1979, Beigel filed a new application for an “identification device” that combined the two antennas; many consider his application by to be the landmark RFID application because it emphasized the potentially small size of RFID devices.

In the 1970s, a group of scientists at the Lawrence Livermore Laboratory (LLL) realized that a handheld receiver stimulated by RF

power could send back a coded radio signal. Such a system could be connected to a simple computer and used to control access to a secure facility. They developed this system for controlling access to sensitive materials at nuclear weapons sites.

Today we would call this Livermore system an example of security through obscurity: What made the system secure was that nobody else had a radio capable of receiving the stimulating radio signal and sending back the properly coded response. But at the time it was one of the most secure access control systems available. The scientists left LLL a few years later and created their own company to commercialize the technology. This system ultimately became one of the first building entry systems based on proximity technology and the first commercial use of RFID.

### **2.2.2.3 Electronic Products Code via RFID**

The reader emits a radio signal that activates the tag and reads and writes data to it. As products are shipped, received or stored, the information (encoded on a bar code like tag) can be read and received by the reader, which is attached to a computer. RFID has been integrated into the EPC global network and uses the EPC (Electronic Product Code).

The EPC is a unique number that identifies a specific item in the supply chain. The EPC is stored on a RFID tag which combines a silicon chip and a reader. Once the EPC is retrieved from the tag, it can be associated with dynamic data such as the origin of an item or the date of its production. Much like a Global Trade Item Number (GTIN) or Vehicle Identification Number (VIN), the EPC is the key that unlocks the power of the information systems that are part of the EPCglobal Network.

### **2.2.3 Technique**

This system will be developed using Visual Studio 2005. Visual Studio 2005 is a reflective programming language originally designed for producing dynamic web pages. Visual Studio 2005 is used mainly in server-side scripting, and powerful for application development but can be used from a command line interface or in standalone graphical applications. For this project, this system will used standalone graphical applications which should can integrate with RFID evaluation kit.

## **2.3 Project Methodology**

The project methodology used for developing this system will be System Development Life Cycle (SDLC). SDLC is a framework for describing the phases involved in developing information systems. Some popular models of a systems development life cycle include the waterfall model, the spiral model, the incremental build model, the prototyping model, and the Rapid Application Development (RAD) model. These life cycle models are examples of a predictive life cycle, meaning that the scope of the project can be clearly articulated and the schedule can be accurately predicted.

The model that will be using in developing this project is waterfall models which involves phase through the phases of requirements analysis, design, implementation, testing (validation), integration, and maintenance.