STUDENT ATTENDANCE MANAGEMENT SYSTEM

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STUDENT ATTENDANCE MANAGEMENT SYSTEM

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This report is submitted in partial fulfillment of the requirements for the
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FACULTY OF INFORMATION AND COMMUNICATION TECHNOLOGY
UNIVERSITI TEKNIKAL MALAYSIA MELAKA
2015

DECLARATION

I hereby declare that this project report entitled

STUDENT ATTENDANCE MANAGEMENT SYSTEM

is written by me and is my own effort and that no part has been plagiarized

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STUDENT   : _____   Date : _____

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SUPERVISOR   : _____   Date : _____

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DEDICATION

To my beloved supervisor, parents and friends

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ABSTRACT

Student Attendance Management System is designed to manage the student's attendance record. The foremost reason this system is being proposed is to overcome the current manual attendance process that is happening in Universiti Teknikal Malaysia Melaka (UTeM). The cutting-edge technology world has led to the idea for transforming the manual attendance into a computerized system. That is how Student Attendance Management System is being developed. The purpose of constructing this system is to increase the efficiency and performance of the attendance process besides minimizing the overall time, work and paper used. The target user that will be using this system is lecturer of UTeM. The major functions that Student Attendance Management System performing is add and manipulate attendance record, automated calculation on number of absent and percentage present of the student based on subject and flexibility to generate complete attendance documents (attendance list, attendance report, warning letter) any time in need. This system is implemented using a three-tiered architecture. The main source codes used in writing Graphical User Interface (GUI) and the overall system coding is JSP file. This file connects user with the application server, which is Apache Tomcat 7.0 and then to Oracle database 11g. Database implementation is carried out using function, stored procedure and trigger. Various stages of testing, such as unit test, integration test, system test and acceptance test have been carried out to ensure that the system is working as a whole and free from both bugs and errors before it is delivered to the end users. More details about the system will be further discussed in this report.

ABSTRAK

Sistem Pengurusan Kehadiran Pelajar dibina untuk mengurus rekod kehadiran pelajar. Sebab utama sistem ini dicadangkan adalah untuk mengatasi masalah proses manual kehadiran pelajar yang sedang digunakan di Universiti Teknikal Malaysia Melaka (UTeM). Dunia semakin hari semakin canggih. Perubahan ini telah membawa kepada idea untuk mengubah kehadiran manual ke dalam sistem berkomputer. Itulah asal-usul mengapa Sistem Pengurusan Kehadiran Pelajar dibangunkan. Sistem ini dihasilkan untuk meningkatkan kecekapan dan prestasi proses kehadiran di samping mengurangkan keseluruhan masa yang diambil, beban dan kertas yang digunakan. Kumpulan sasaran yang bakal menggunakan sistem ini adalah pensyarah UTeM. Antara fungsi utama Sistem Pengurusan Kehadiran Pelajar adalah menambah dan memanipulasi rekod kehadiran pelajar, pengiraan bilangan ketidakhadiran dan peratusan hadir pelajar berdasarkan mata pelajaran secara automatik dan fleksibiliti untuk menjana dokumen kehadiran (senarai kehadiran, laporan kehadiran, surat amaran) secara lengkap apabila diperlukan. Sistem ini dilaksanakan dengan menggunakan seni bina *'three-tiered'*. *'Source code'* yang digunakan untuk menulis dan membina kerangka *'Graphical User Interface (GUI)'* dan keseluruhan sistem ini adalah fail JSP. Fail ini menghubungkan pengguna dengan pelayan applikasi, iaitu Apache Tomcat 7.0 dan kemudian dengan pangkalan data Oracle 11g. Pelaksanaan pangkalan data dijalankan dengan menggunakan *'function'*, *'stored procedure'* dan *'trigger'*. Pelbagai peringkat ujian, seperti ujian unit, ujian integrasi, ujian sistem dan ujian penerimaan telah dijalankan untuk memastikan sistem ini boleh berfungsi secara keseluruhan dan bebas daripada kesilapan sebelum dihantar kepada pengguna. Maklumat sistem akan dibincangkan lagi dalam laporan ini.

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ABBREVIATION	DESCRIPTION
DFD	Data Flow Diagram
SQL	Structured Query Language
GUI	Graphical User Interfaces
ERD	Entity Relationship Diagram
MC	Absent with Medical Certificate
ON	Absent with Notice
DDL	Data Definition Language
JSP	JavaServer Pages
HTML	HyperText Markup Language
CSS	Cascading Style Sheets
UTeM	Universiti Teknikal Malaysia Melaka
FTMK	Faculty of Information and Communication Technology
PDF	Portable Document Format
CSV	Comma-Separated Value
PK	Primary Key
FK	Foreign Key

CHAPTER I

INTRODUCTION

1.1   Project Background

Attendance is a basic and most important criteria needed in all the education system. Attendance is used as a record to assess student consistency in participate the class. Therefore, student is required to attend all teaching activities held by the institutions. Once attendance is below the required policy, the student will be subjected to further action or suspended from taking the final exam depend on the respective institutions they are in.

Student Attendance Management System is a project developed to record and manage daily student attendance in Universiti Teknikal Malaysia Melaka (UTeM). Currently, UTeM is still practicing old method to take the student attendance which is by giving out attendance sheet to be sign by student. This impractical method will lead to fraud on number of absentees by students. Beside, this method also easily allow for impersonation as some student may purposely sign on another student's name. Besides, lecturer needs to analyze manually every attendance sheet to identify the number of

absentees for both lecture and lab classes correspond to subject. Then, lecturer needs to count and calculate percentage of present of all the students manually to identify when warning letter need to be given to the student depend on his or her number of absents without providing any medical certificate or notice. As a result, it is time consuming, increase number of works of the lecturer and prone to human error as it is difficult to ascertain whether the calculation made was correct. Moreover, student needs to spend unnecessarily time during class session to sign on the attendance sheet. This also disturbing and student may lose focus when the attendance sheet is passing around during the class session.

Therefore, Student Attendance Management System is proposed to help or reduce lecturer's work. This system facilitates to access or manage the attendance information of all the classes. Student by default is assumed to be present as number of present will be higher than the absentees for most of the attendance report. After that, lecturer is allows to change or modify absentee's attendance data. The system will automatically count the number of absents and the percentage of present for all the students based on the subject classes. Once the number of absents exceed the attendance policy, appropriate warning letter will be generated automatically to be given to the absentee. Hence, this system provides a tedious work in maintaining attendance records besides saving time to analyze every attendance list and assuring the calculation made was error-free.

1.2   Problem Statements

Based on the observation, there is no available student attendance system in Universiti Teknikal Malaysia Melaka (UTeM). UTeM is still practicing the manual way of taking daily attendance. Lecturer distributes attendance sheet to be sign by student during class session or personally marked the attendance sheet one by one by calling out student name accordingly. However, the attendance sheet can be lost easily and the whole attendance process is tends to human mistake. Consequently, data loss may happen and the data in attendance list might be inaccurate due to deception.

Besides, lecturer needs to manually analyze number of absences and calculate the percentage of present from the attendance list collected or recorded. Lecturer needs to identify number of absentees based on each subject with the respective classes that he or she taught. At the end of the semester, lecturer required to calculate the percentage of present of each student to make sure the student can take their final exam for the respective subject. Therefore, it is time consuming and the result of calculation might go wrong when lecturer missed out some of the data in the attendance record.

In addition, lecturer needs to manually write all the details about the attendance data to the appropriate documents when needed. Warning letter will be distributed to the student when the student total number of absences is 3 or 6 time from the total class session according to UTeM's student attendance policy. On the other hand, attendance report also needs to be filled in by all the lecturers at the end of the semester based on each subject taught. This is to determine whether all the students met the university attendance policy before student is allow to take the final exam. However, all the attendance data need to be analyzed manually first before warning letter and attendance report document can be filled in. All this work has indirectly increases lecturers' work.

1.3   Objective

The objectives of developing Student Attendance Management System are identified based on the review of the problem statements. The purposes are listed as below:

i.   **To store, access and manage student attendance data for every lecture and lab classes.**

All the student attendance data will be stored and managed through Student Attendance Management System. This system enables lecturer to add, view, make changes or delete on subjects, classes, students and attendance accordingly. Moreover, saving attendance records into the system will be more secured as compared to paper-based records.

ii.   **To automatically calculate number of absences and the percentage of present of the students based on subjects with respective lecture and lab classes.**

Student Attendance Management System enhances calculation process to be more accurate and fast. This system by default will do the analysis, which are counting the number of absences and calculate the percentage of present of all the students based on the input data. Hence, the calculated value can be ascertained and trusted as the calculation process is developed to run automatically within the system.

iii.   **To generate warning letter, attendance report and attendance list automatically and accurately along with the required details and in correct format.**

Student Attendance Management System will helps to analyze all the attendance data inserted and then verified either each of the students is following the university attendance policy. If the attendance policy is being violated, the system will automatically generate warning letter, either in Malay or English

language to the respective student. The attendance report will be generated based on the overall attendance of the student for the particular subject. On the other hand, attendance list can be printed out easily when required as the data is ready to be obtained from the system with the format based on the manual attendance sheet. Therefore, attendance report, attendance list and warning letter will be filled, displayed and printed based on the analysis made from the inputted student attendance details with the approved format.

1.4   Scope

Scope that involved in Student Attendance Management System is divided into two parts, which are involvement of user and types of module. The scope is described as below:

i.   User
Lecturer is the main user for Student Attendance Management System. Lecturer can use the system to record and manage student daily attendance for all the classes. The system enables lecturer to manage classes, student attendance and generate documents such as attendance list, warning letter and attendance report.

ii.   Module
Modules that are included in Student Attendance Management System are listed as below:

a.   Login module
This module helps authenticate the validity and eligibility of the lecturer before he or she can use the system. Lecturer is required to login using username and password. If either username or password is inserted wrongly, the system will prompt out login error message. A correct

combination of username and password is needed in order to access to the system. This is important to protect the confidentiality of the attendance data and to prevent unauthorized user from using, accessing and manipulating the system.

b.   Student module

This module provides convenience in managing student details. This module enables lecturer to import list of students from Comma-Separated Values (CSV) file into the system. Besides, lecturer can add students into the attendance one by one. Student data will be deleted when the student does not belong to any of the classes. In addition, this module provides a multiple checkbox which enables lecturer to check on which student to be removed. It can be multiple or single deletion. If none of the checkbox is checked and lecturer clicked on delete button, the system will prompt out delete error message. Overall, this module provides lecturer with a lot of alternative in altering student data.

c.   Attendance module

This module allows lecturer to manage and alter the attendance data efficiently. Lecturer adds new attendance based on week, which is from week 1 to week 14. After that, the system will prompt for date of the attendance before a new attendance data is successfully completed. This module by default assigns all the students to be present as the number of student who present will be more than absent. Then, lecturer can manipulate and change the absentees' attendance status to absent, absent with notice or absent with medical certificate based on the reason given. Different color code will be shown in this module based on student attendance status to ease lecturer readability.

d.   Calculation module

This module provides lecturer with accurate value about the consistency of student attending the class session. This module by default will add up the number of attendance once new attendance information is added. From the attendance data, the attendance status will be grouped and categorized accordingly. After that, the calculation process that involved is total up the absent status of the absentees and converts the number of present status into percentage based on subject. Hence, lecturer is able to view and read the calculated value without counting it manually.

e.   Generate documents module

This module provides the documents such as attendance list, warning letters in both English and Malay language and overall attendance report. All the documents generated is completed along with the details and data needed. Therefore, lecturer can directly print out the documents without the need to edit or analyze.

1.5   Project Significance

The main beneficial user that will get advantages from Student Attendance Management System is lecturer of Universiti Teknikal Malaysia Melaka (UTeM). The system provides a user-friendly interface to help the retrieval and management of the attendance information easily. This is achieved through the configuration of the system with a database that has allowed the system to be able to store a very large record efficiently and effectively. Besides, the system is also reliable and accurate to monitor how diligently the student approached the academic curriculum. The system ensures all the data are stored safely and ready to be displayed accordingly. Furthermore, the system eases and fastens the overall attendance process as the total time consumed in managing

attendance is reduced. As a result, this enables lecturer of UTeM to save a lot of time and energy to be spend on other meaningful works.

In addition, Student Attendance Management System assists the committee in assessing and reviewing the overall student attendance for all the subjects. The system also ensures all the documents generated such as attendance list, attendance report and warning letter will be following the university's Quality Management System Documentation, ISO 9001:2008 UTeM. Thus, the detail of documentation generated will be relevant in accordance with the requirements of this International Standard.

1.6   Expected Output

The anticipated outcomes from Student Attendance Management System are as listed as below:

i.   New computerized system to replace the manual attendance process.
ii.   Attendance monitoring and altering for lecturer to keep track on student's attendance for all the subjects.
iii. Accurate counting and calculation based on student's respective attendance status.
iv.   Precise warning letter, attendance list and attendance report in Portable Document Format (PDF) can be printed through the system.