

# Student Attendance Management System with Fingerprint (Software)

Ma May Thet Htar<sup>1</sup>, Ma Hnin Yu Myaing<sup>2</sup>

<sup>1</sup>Lecturer, Faculty of Electronic Engineering, University of Technology, Yatanarpon Cyber City, Myanmar

<sup>2</sup>Lecturer, Department of Electronic Engineering, Technological University, Mandalay, Myanmar

**How to cite this paper:** Ma May Thet Htar | Ma Hnin Yu Myaing "Student Attendance Management System with Fingerprint (Software)"

Published in International Journal of Trend in Scientific Research and Development (ijtsrd), ISSN: 2456-6470, Volume-3 | Issue-5, August 2019, pp.811-815, <https://doi.org/10.31142/ijtsrd26521>



IJTSRD26521

Copyright © 2019 by author(s) and International Journal of Trend in Scientific Research and Development Journal. This is an Open Access article distributed under the terms of the Creative Commons Attribution License (CC BY 4.0) (<http://creativecommons.org/licenses/by/4.0>)



## 1. INTRODUCTION

Most universities use paper-based to check the students' attendance. At the moment, this system in lecture or lab session, the lecture will pass the student's name list to sign in for a student who attends the class. Falsify of student signature is frequently and easily happened. And lecture requires more calculations to generate the report so there is a greater chance of errors. So, to prevent this problem, it is ideal to develop the student attendance management system with fingerprint-based on Java that will monitor and record the attendance of every student in the class. As we know, the fingerprint is the most convenient and most reliable way to identify someone and there is one and only one fingerprint occurs in the world for each person which will never have duplication. The strength of this research is making very quick comparisons for identification, making identification work as synchronously and also time effective because the calculation is automated which are made at the end of the month or as per the user requirement information. The research is a combination of software and hardware. And the research is also to recognize fingerprint images and match within the database. The first step of the system is the database needs to be created by using MySQL database and inside the database will contain information of the student likes name, roll no, year, major, course, the class and the fingerprint ID of students. In order for creating the software, a programming code is needed and the Java programming is been used for this research. The second step of this research after finishing the database is to make a connection with the

## ABSTRACT

Student Attendance Management System is primarily a paper-based method to manage student Roll-Call. Nowadays, most people have not interested paper-based application. So, find a more efficient solution to reduce paper waste, and staff workload. A fingerprint-based attendance system has been established to track students' attendance reliably in various sessions throughout the year. It mainly consists of fingerprint device connected via Ethernet LAN to PC containing interface through which attendance data received from the reader are displayed as well as required system information is handled. The database was constructed to store all system information about students, departments, courses and lecturer times. Random students have been unique ids for each and their fingerprints caught and stored in the reader. They were also assigned to specific courses attendance system page through the interface. Random information about lecture times, courses and departments' codes have been inserted into the database for testing. Attendance of previous students has been taken at different times for testing. At each time the attendance of students has been obtained correctly through the required course attendance page in the interface. The Java Language is using to make the database easier to access. This system will have the required database for user and student data. This application is implemented by Query Language (MySQL 1.2.12).

**KEYWORDS:** Computer, Fingerprint, Java Language, Query Language (MySQL 1.2.12), Student data, ZKT software

hardware. The hardware that represents here is the Fingerprint Images Scanner Device. The database system will utilize the hardware together with the software development kit. This paper will only express software.

## 2. Database Management System

There are many programming languages such as C, C++, JAVA, C# and so on. Each language has its own properties and methods. For this system JAVA programming language is applied, it can take displaying data and MySQL Query Browser 1.1.12 is used a database file (data contains) for storing data. It can store data as user desire but it is not possible to make the calculation. MySQL 1.2.12 is necessary as a connection tool between programming language and database. Figure 1. illustrates a database management system. [14Ano]

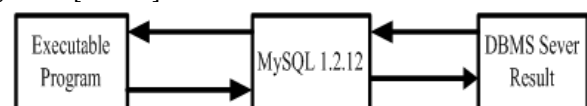


Figure.1.Program and DBMS (Database Management System) Sever Connection

## 3. Introduction to Fingerprint

Fingerprint recognition or fingerprint authentication refers to the automated method of verifying a match between two human fingerprints. Fingerprint verification is one of the most reliable personal identification methods and most

widely used. Fingerprints are popular for identification due to the fact that they are easy to obtain, reliable and most importantly unique. Fingerprints are so distinct that even the ones of identical twins are different. The prints of each finger of the same person are also different and patterns remain unchanged through life. [93Meh]

#### 4. System Flow Diagram

Figure 2. shows the flow diagram of the whole system. All of the results are made with the combination of results from ZKT software, database server construction and JAVA programming language.

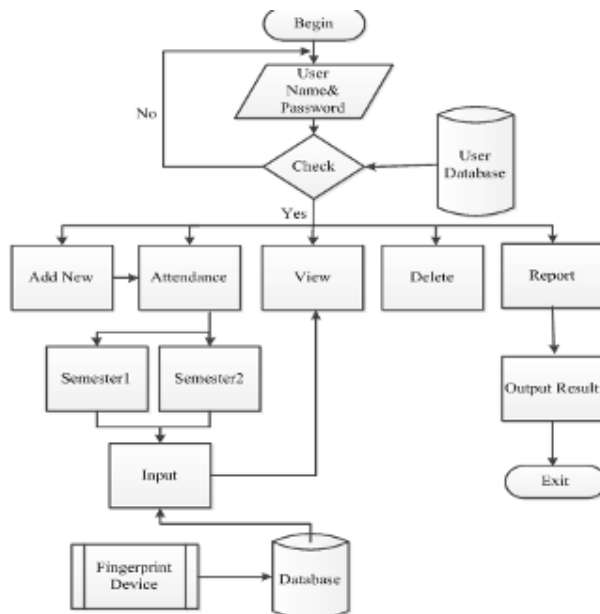


Figure3. Flow Diagram for Student Attendance Management System

MySQL is necessary as a connection tool between JAVA programming language and fingerprint software. Figure 3. shows the flow of the input the data into fingerprint, the time attendance result from fingerprint software, and the input data of student and admin into MySQL database and inserts the result of monthly attendance data to the MySQL database.

#### 4.1. Insert data using ZKT Software

The software is used to insert the data of students' roll numbers, names and fingerprints to the fingerprint device. After inserting the student roll number and name from software, USB is used for transferring the data. At first, the data have to export to the USB to transfer the data to the device. The fingerprints data from each student's fingertip is added into the device and record them with each relevant student. Figure4. shows the input of the student data.



Figure4. Input Student Data

The student data are exported to the USB as shown in Figure 5. And then, USB is connected to the fingerprint device to record a fingerprint. When the student data are imported to the device, then input the fingerprint data from each relevant student. After recording each of the fingerprint data from each student, record the attendance daily until the month-end.

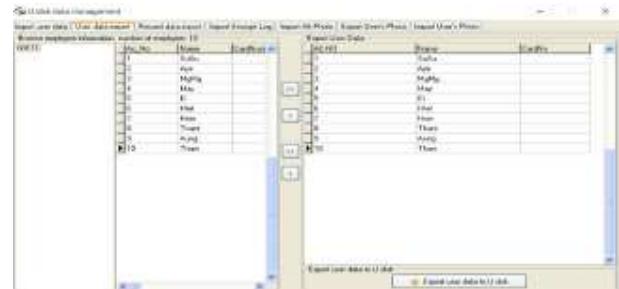


Figure5. Export Student Data to USB

After recording a month of attendance, the attendance record is exported to USB and then imported to the software as shown in Figure 6. The attendance data is import to ZKT software and it will calculate the time attendance. The result will come out as an excel file.

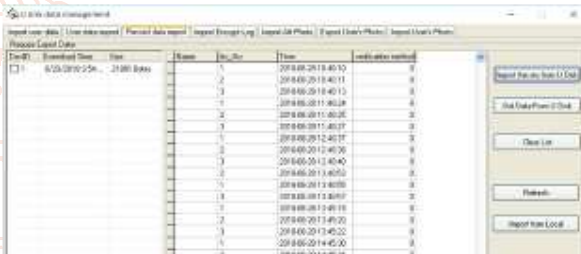


Figure6. Record Data Import from USB

#### 4.2. Timetable Creating in ZKT software

Timetable creating is included in ZKT software. Firstly to create the timetable for each subject, timetable name, on-duty time and off duty time are included. The timetable creating for each subject in each period is shown in Figure 7.



Figure7. Create Timetable for Each Subject

And then, name the timetable for weekly timetable and link each subject with each day to form the weekly schedule. Set timetable for each subject to each day for a week is as shown in Figure 8.

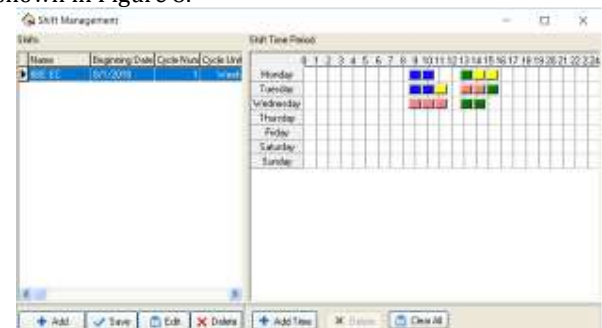


Figure 8. Create Timetable for a Week

And then, link the weekly timetable to each student for a month to calculate the time attendance for each student. Figure 9 shows to create a timetable for a month to each student.



**Figure9. Create Timetable for a Month to Each Student**

By using ZKT software, record data are calculated and exported the data as an excel file. The excel file will import to the database. This software is only export absent and present data. The attendance calculations which are implemented by Java programming language will calculate by using absent record from excel. Figure 10 shows the result of the calculation of time attendance.



**Figure10. Output Result from ZKT Software**

#### 4.3. Table Creating in Database

Table creating is included in the database server because the database is a collection of tables with typed columns. In table creating, column name, data type and allow null are included. The column name is the column of the database table. In this database system, admin table, student table and each month table are designed in MySQL Server. Among the database, in this system, the student database has been shown as an example as a photo. The student Roll No, Name, Major and Year are included under the column name. The data type may be an integer or variable character that is depending upon the user conditions. The numbers of table depending on the user application. It can be added if the system required. The student table creating in the database server is shown in Figure 11. [15Ano]



**Figure11. Student Table Creating in Database**

The admin table includes ID, name and password under the column name. The admin table creating in the database server is shown in Figure 12.



**Figure12. Admin Table Creating in Database**

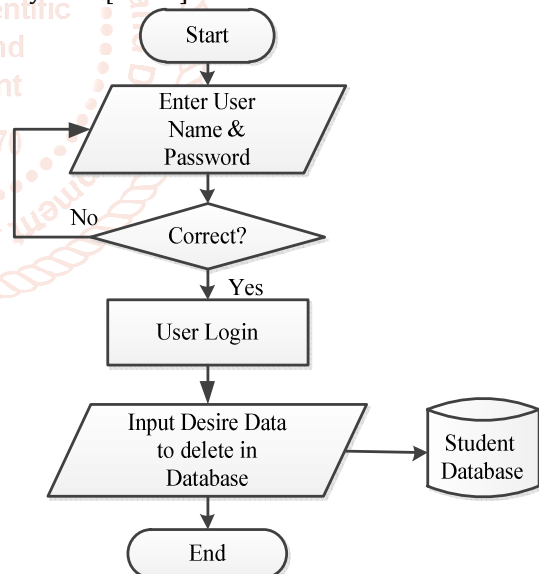
For each month table includes ID, ACNo, Name, Date, Timetable, absent and department under the column name. The month table creating in the database server is shown in Figure 13.



**Figure13. Month Table Creating in Database**

#### 4.4. Delete Data Process

The system can work delete data process from the table in the database. When the data are old or so long, it can delete the data information. In this system, roll no is primary so, user want to delete the data, even user delete roll no and then the data of student concern with roll no are deleted. By deleting extra data, the memory space is less and so effective in searching for the user. Figure 14 illustrates the delete step of the system. [18Sau].



**Figure14. Flowchart of Deleting Data Process**

According to Figure 14, In Input Desire Data Base, add and view all information can be used respectively in the place of delete.

#### 5. Results

The result of each part is as shown in the following Figures. Figure 15 shows the Login page. The login form is the main entry for the system. To use this system, admin filling user name and password needed to be corrected. Changing the user name and password can also be done. The function of the login button is to compare the inputted user name and



password with is a user name, password and confirm password existing in the database table.



Figure15. Login Page of the System

In this system, the user name and password can change when the use of the user is transferred to another user. When clicking the change button, the user can change the new user name and password in Figure 16. After changing the username and password, the user can also return the login page by clicking Back Login Page button.



Figure16. Change Username and Password Form of the System

## 6. Main Page of the System

The main page is included the function of each frame in the menu. It includes File, Register, Person Attendance and Report View All. If the File is clicked, it will appear Add New, Delete and Exit. View All Student will see when clicking the Register. Person Attendance and Report View All contains Subject, Monthly and Semester. Figure 17 is shown an example of the Main Page.



Figure17. Main Page of the System

## 7. Action Pages of each Function

The action pages include Add New Page, Delete Page, Report Each Subject for Each Student, Report Monthly Attendance for each Student, Report semester for each Student, Report each Subject for all Student, Report Monthly Attendance for all Student and Report Semester for all Student. Among them, the four examples are expressed in the following figures.

### 7.1 Report Each Subject for Each Student

Figure 18. shows the result of the student roll call percentage for each subject and each student.

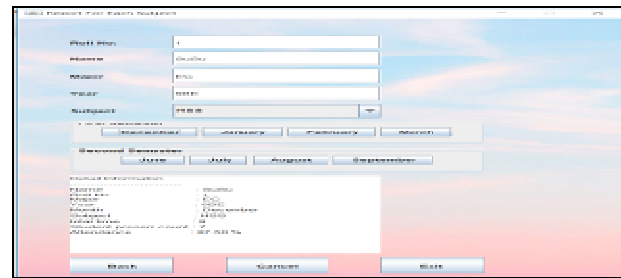


Figure18. Report Each Subject for Each Student

And after the click of the month button, it can be easily seen the result.

### 7.2. Report Each Subject for All Students

First, need to choose the subject and then the click the month button and after that, it can be easily seen the result in Figure 19.

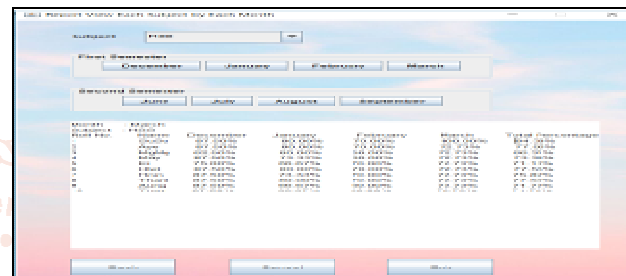


Figure19. Report Each Subject for All Students

### 7.3. Report Monthly Attendance for All Students

Figure 20 shows the result monthly for all student. It can be easily seen the result after click the month button and check.

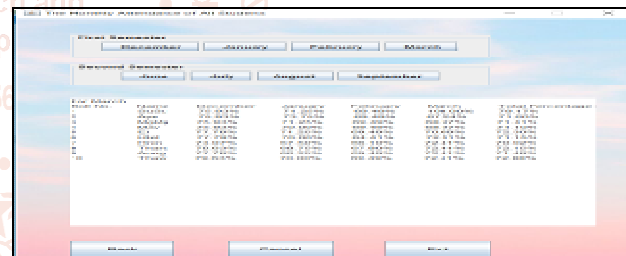


Figure20. Report Monthly Attendance for All Students

### 7.4. Report Semester for All Students

After choose and click the semester button and check, it can be easily seen the report of student for each month and total in Figure 21.

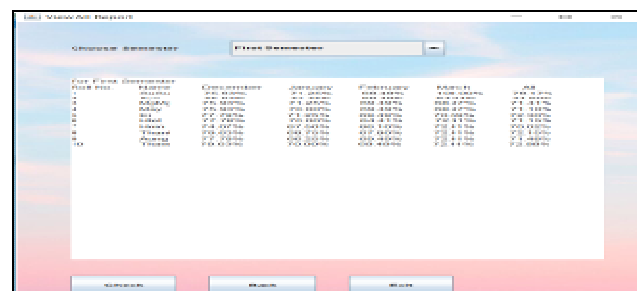


Figure21. Report Semester for All Students

## 8. Discussions

In this system, the Student Attendance Management System with Fingerprint is implemented by using MySQL database and Java Programming Language. This system gave more reliable and faster the student Roll Call system compared to

current manual ways of taking student Roll Call. This system recorded the student attendance in a very convenient manner using a fingerprint. The system is developed very helpful in saving valuable time of students and teachers, paper and generating a report at the required time. In the host computer system, MySQL software is used for the database server. MySQL server benefits system security. The data can be stored in the database. The memory storage was depended on the space of the hard disk. The larger hard disk space, the data can be saved. The window form applications are implemented with the Java Language. The area of a programming language is very large and there are many programming languages such as C, Java, C#, C++ and so on. Java language is applied for the student administration system.

## 9. REFERENCES

- [1] [02Mck] Attendance Management Program of Mckeehan 2002, [www.ijrr.com>sites>fites>issues.files](http://www.ijrr.com/sites/fites/issues.files)
- [2] [18Ano] Student Management System, January 2018, <https://www.softwaresuggest.com>
- [3] [18Sau] Saurar Adhikari: Student Management System using Java with source code and database, July 2018, <https://1-tube.ru>watch>
- [4] [15Ano] Student Attendance System Project in PHP, Java, C, C++ and ASP, May 2015, <https://www.lovelycoding.org>
- [5] [14Ano] Student Attendance System (SAS), November 2014 [www.slideshare.net>pspulkitz](http://www.slideshare.net>pspulkitz)
- [6] [14Ano] Supported Platforms MySQL Database Oracle. Retrieved, March, 2014, <https://en.m.wikipedia.org/wiki/MySQL>
- [7] [10Kha] Khan B, Khan M, and Alghathbar K. S (2010): biometric and identity management for homeland security application in Saudi Arabia. <https://alvinulexander.com>java>
- [8] [93Meh] Mehtre: Fingerprint image analysis for automatic identification. Machine Vision and Application, 1993.

