



ATTENDANCE MONITORING AND REMUNERATION WITH ANDROID APPLICATION IMPLEMENTING IOE IN THUMBAYAN FOOD EXPRESS AND MARKETPLACE

Harrold M. Gueta, MSIT(CAR)

College of Computer Studies
Trimex Colleges, Biñan, Laguna, Philippines

Juan Miguel M. Martinez

College of Computer Studies
Trimex Colleges, Biñan, Laguna, Philippines

Dimple Clarize H. Ramirez

College of Computer Studies
Trimex Colleges, Biñan, Laguna, Philippines

Athena Colleen A. Silva

College of Computer Studies
Trimex Colleges, Biñan, Laguna, Philippines

Louie F. Agustin

College of Computer Studies
Trimex Colleges, Biñan, Laguna, Philippines

Abstract: To make things easier for both employers and employees, a fingerprint scanner will automatically track their daily attendance and their basic wage will be accounted for at the same time. The advantage of the suggested automated system is that it can manage enormous amounts of data, which is difficult to maintain manually, and it also prevents employees from falsifying their attendance. The system enables the administrator to monitor and oversee personnel information, as well as verify attendance and wages. Tenants may check in to the android application to view their employees' attendance. Employees are required to scan their fingerprints using a Biometric Fingerprint Scanner to enter and exit the building, however they do not have access to the automated system.

Keywords: IOE; Biometric; Android; Attendance and Monitoring; Remuneration

I. INTRODUCTION

Nowadays, technologies are becoming more precocious to people. The advancement of technologies makes the work effortlessly and speedy, like the recording of data, keeping of information, and can also compute numbers automatically. The best example of this is the attendance monitoring system. Attendance monitoring provides the daily time-in and time-out of employees and keeps track of them within their working hours to prepare for their wages. It consequently recognizes the number of mistakes happening when preparing information. The benefit of attendance monitoring is that human blunders will decrease and it helps in keeping huge quantities of information which is hard in keeping the data manually. An automated system for attendance has the advantage of tracking the everyday time in and out and can likewise determine the pay rates effortlessly.

II. BACKGROUND

Internet of Everything or IoE depends on the possibility that later on, internet connections won't be limited to PC or work stations and a modest bunch of tablets, all things being equal, machines will commonly get more astute by having more admittance to information and extended networking opportunities. The proposed system will automatically secure

the data of the employees in their everyday time records. Workers will examine their unique mark to gather their information. The Attendance Monitoring is liable for observing employees during their working hours. The system will give them the records they need to pay their workers and they can easily view the details they need on their mobile. The system will assist to facilitate their concern about observing the participation of their workers.

Thumbayan Food Express and Marketplace previous Thumbayan Food and Entertainment Hub were established this year 2020. This is one of the current wet markets in Biñan, Laguna. This establishment was an event place before for the individuals who need to rest and chill, yet went it to a marketplace after the Covid-19 outbreak. It has 61 stalls with 13 to 14 stores. There are 151 workers in Thumbayan.

This establishment experiences numerous problems like experiencing issues in attendance, monitoring of absentees, and calculation of salaries.

The proposed system will allow us to help the Thumbayan Food Express and Marketplace to solve their problem with monitoring the daily attendance, performance, and easy accounting of salaries of the employees. The system can view through a mobile application that we will provide using the internet and intranet.

A. OBJECTIVE OF THE STUDY

The general objective of the study is to create an automated system that can monitor the daily time reports of

every employee in Thumbayan Food Express and Marketplace and the basic pay will easily be accounted for.

- To design and develop a system that will prevent the deceiving of employee's time in and time out using Biometric Fingerprint Scanner.
- To design and develop a computerized system that will monitor the employee's daily attendance record.
- To design and develop the computation of the basic pay of employees.

III. DESIGN OF THE STUDY

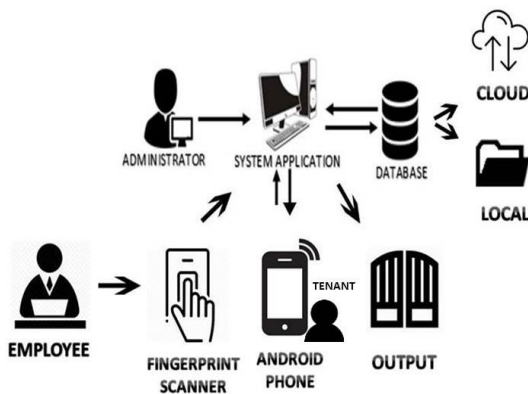


Figure 1. System Architecture

As illustrated above Figure 1, the employee or the personnel of the institution can access the system through the use of the fingerprint scanner. A biometric fingerprint scanner has data that the system application verifies and store data on the database. The administrator is the one who can update the system. The only employee of the establishment that has a record can only use the system. Automatically, the employer of each employee can see the attendance through the android mobile device.

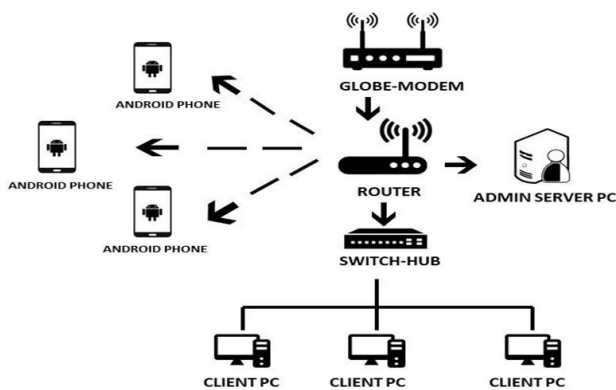


Figure 2 Network Design Infrastructure

Figure 2 above shows the network connectivity of each department. There is only one server that will carry all the systems of the establishment. This server will also cater to the android application system which will be used for monitoring the time in and time out of the employees. The

admin will use Google Chrome, Mozilla Firefox, or Internet Explorer as their internet browser running in Windows 7 to Windows 10. Most of the hardware components use Dual Core unit and i3 models.

A. FLOWCHART

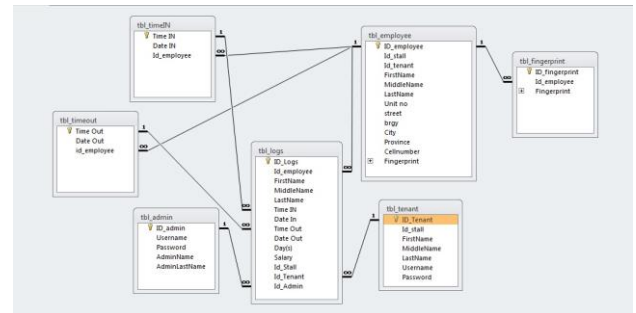


Figure 3 Database Schema

Figure 3 shows the database design of the proposed system. The database consists of 7 tables.

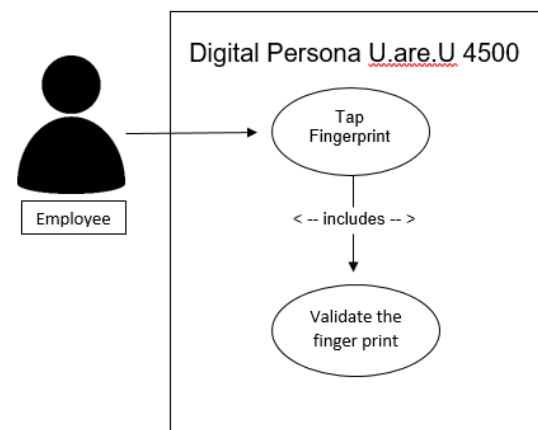


Figure 4 Use Case Diagram Biometric Fingerprint Scanner Module

Figure 4 shows upon tapping the fingerprint of the employee at the biometric fingerprint scanner, the machine will process and verify the holder of the fingerprint and confirm if it was registered or not. The guard who is on duty should monitor and will check the employee if it was them or if it is not, the guard will report it to admin to check the record if they were registered or not.

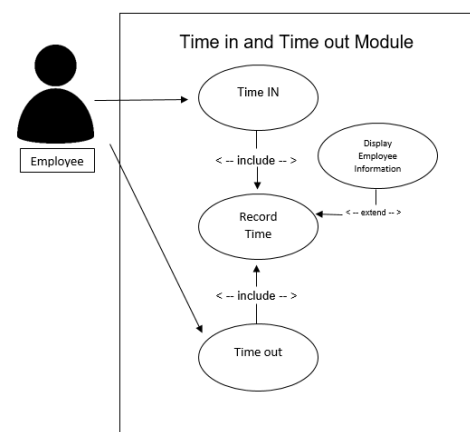


Figure 5 Use Case Diagram Time in and Time out Module

Figure 5 shows after the machine verify the employee, the system will record the time in and time out and display the information of the owner. After recording the data, the system will update the logins of the employee in the database.

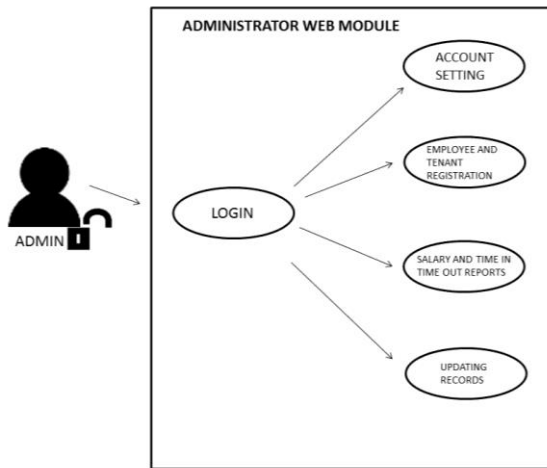


Figure 6 Use Case Diagram Administrator Web Module

Figure 6 shows how the administrator registers the employee, tenant viewing of historical records, and salary report. The admin advises the tenant and the employee for account registration. The admin can monitor the real-time in and time out of the employee. The admin is also responsible for printing reports, updating reports in the android app, and for the payment salary of the employee.

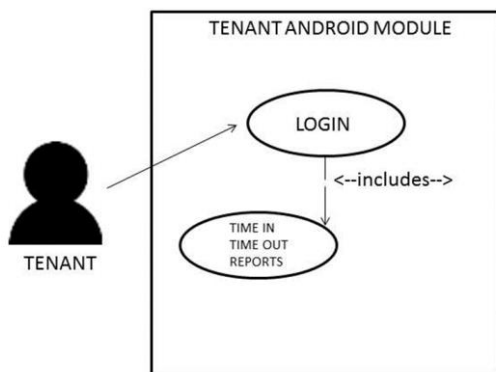


Figure 7 Use Case Diagram Tenant Android Module

Figure 7 shows how the system helps the tenant to monitor their employees' daily attendance time in and time out. The system will generate the reports time in, time out of employees weekly.

IV. RESULTS AND DISCUSSION



Figure 8: User Log-In Module

The figure 8 above the log-in page of the Web-based software.

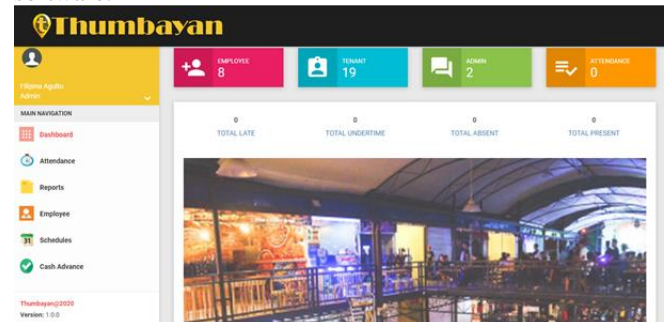


Figure 9: Administrator Dashboard

The figure 9 above demonstrates where the administrator is the only one who can access the whole system such as viewing and updating the employees report, attendance, employees' information and their schedule.

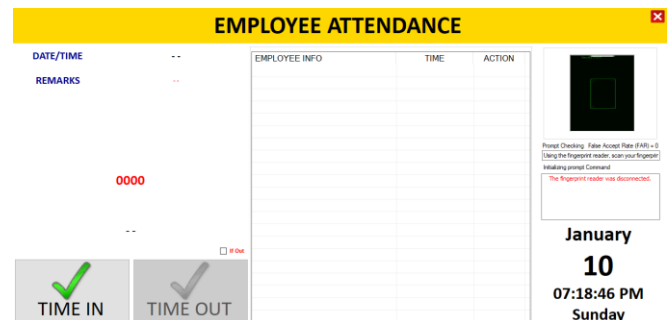


Figure 10: Time-in and Time-out Fingerprint Scanner

The figure above shows the Time-in and Time-out design of the system.

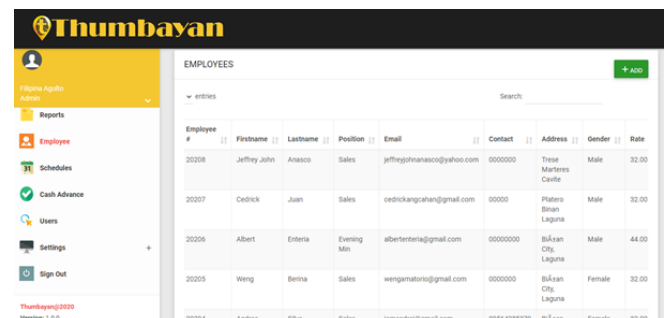


Figure 11: SMS Module

The figure 11 above shows the employees' information with their salary rate per day.

Tenant	Employee	Date	TIME IN	TIME OUT	Hours	Tardiness	Undertime	Action
Play Silva	Albert Enteria	Dec. 22, 2020	1:53 PM	10:54 PM	7.900			[Edit] [Delete]
Play Silva	Albert Enteria	Dec. 23, 2020	1:40 PM	10:14 PM	7.233			[Edit] [Delete]
Play Silva	Albert Enteria	Dec. 24, 2020	1:25 PM	10:26 PM	7.433			[Edit] [Delete]
Play Silva	Albert Enteria	Dec. 26, 2020	2:00 PM	10:10 PM	7.150			[Edit] [Delete]

Figure 12: Templates module

The figure 12 above shows the daily attendance of the employee with his time-in and time-out records and the total of working hours in a day.

Tenant	Employee	Date	TIME IN	TIME OUT	Tardiness	Undertime	Hours	Rate	Cash Advance
Ritchel Angathan	Weng Betina	Dec. 27, 2020	1:48 PM	10:24 PM			7.400	32.00	
Ritchel Angathan	Weng Betina	Dec. 26, 2020	2:00 PM	10:10 PM			7.167	32.00	
Ritchel Angathan	Weng Betina	Dec. 24, 2020	12:00 AM	12:00 AM				32.00	
Ritchel Angathan	Weng Betina	Dec. 23, 2020	1:40 PM	10:14 PM			7.233	32.00	
Ritchel Angathan	Weng Betina	Dec. 22, 2020	1:53 PM	10:53 PM			7.863	32.00	
Total							29.663	648.856	100.00

Figure 13: Employee Report Section

The figure 13 above shows the report of the employee with her time-in and time-out, the total of working hours, and the total of her salary in a week, and her cash advance.

Employee	Bar Name	Day	Time In	Time Out	Action
Weng Betina	DRKF MINI DIVISORA	Friday	2:00 PM	10:00 PM	[Edit] [Delete]
Weng Betina	DRKF MINI DIVISORA	Saturday	2:00 PM	10:00 PM	[Edit] [Delete]
Weng Betina	DRKF MINI DIVISORA	Sunday	2:00 PM	10:00 PM	[Edit] [Delete]
Weng Betina	DRKF MINI DIVISORA	Thursday	2:00 PM	10:00 PM	[Edit] [Delete]
Weng Betina	DRKF MINI DIVISORA	Tuesday	2:00 PM	10:00 PM	[Edit] [Delete]
Weng Betina	DRKF MINI DIVISORA	Wednesday	2:00 PM	10:00 PM	[Edit] [Delete]

Figure 14: System sends SMS to mobile and the received info on mobile

The figure 14 above shows the schedules of the employees every day.

Employee	Amount	Date	Action
Weng Betina	100.00	2020-12-26	[Edit] [Delete]

Figure 15: Cash Advance Section

The figure above shows the cash advance section where the admin and their tenant can view how much and when a cash advance was made.

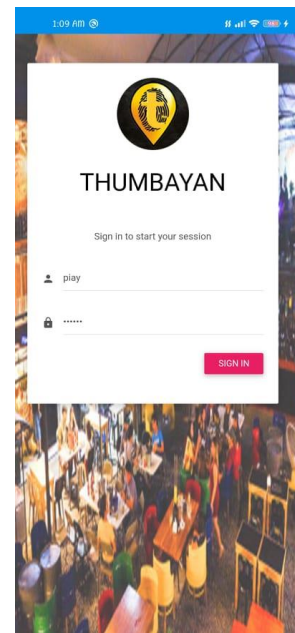


Figure 16: Admin/Tenant Android Application Log-in Page

The figure 16 above shows the admin/tenant log-in page using the android application with the same design and same function in the web-based of the system.

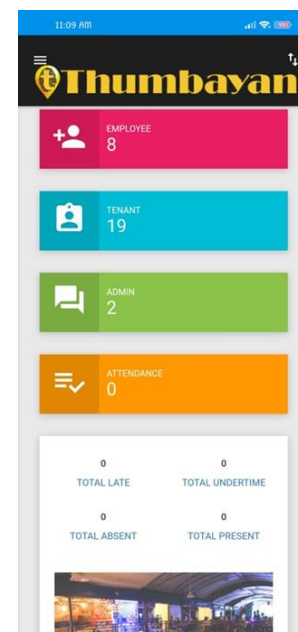


Figure 17: Administrator Dashboard with Android Application

The figure 17 above shows the admin access using the android application.

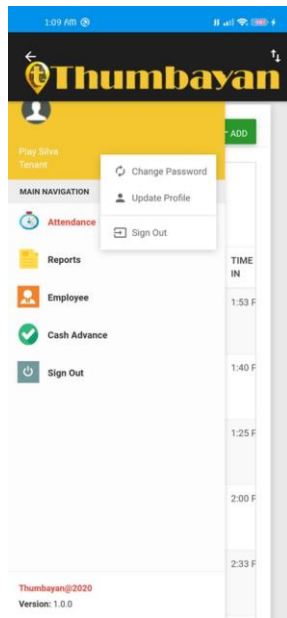


Figure 18: Tenants Access with Android Application

The figure 18 above shows the tenants only access using the android application. They can update their own profile; view their employees' attendance, reports and employees' information.

A. SUMMARY OF SOFTWARE EVALUATION OVERALL MEAN SCORE

Table 1- Summary of Software Evaluation
Overall Mean Score

Criterion	Mean	Interpretation
A. Functionality	4.57	Agree
B. Reliability	4.45	Agree
C. Usability	4.51	Agree
D. Efficiency	4.49	Agree
E. Maintainability	4.38	Agree
F. Portability	4.61	Strongly Agree
OVERALL MEAN	4.50	Agree

This chart is a summary of the overall mean scores of 4.50 from both teacher and student respondent which showing that the system received an overall mean of 4.50 perceived as Agree.

V. CONCLUSIONS

Based on the aims of the study and the results of the evaluation. The following conclusions were drawn

1. Recording and keeping of employees' information make it simple and easier now that it is computerized and can store in the automated system.
2. Attendance monitoring does not require any timesheets for checking the working hours of employees with the help of a Biometric Fingerprint Scanner.
3. Less hassle of computing basic salaries of employees.
4. Tenants can easily determine the absentees every day without checking every stall in the market.

VI. ACKNOWLEDGMENT

To Jesus Christ, for giving the strength, support, wisdom and knowledge, for the guidance in helping surpass all the trials that we experienced and for giving assurance to pursue our research and to make this research possible. We are really grateful because we managed to finish our project and this could not be completed without the effort and participation of each member.

We would like to extend our deepest sincerest gratitude to our thesis adviser, Professor Harrold M. Gueta, MSIT (CAR), for the continuous support to our study, for his patience, motivation, and knowledge. His guidance helps us all the time of research and writing of this thesis. We couldn't have imagined having a far better mentor for our research study.

We would like to express our gratefulness to our panelists, Dr. Rito Camigla jr., Dr. Louie Agustin, Professor Carlo Batitis, Professor Analyn Mendoza, who is the key person in the realization of this study. The researchers truly salute to their competence and professionalism. Thank you for their time, suggestion, and encouragement.

To the researcher's loving family and friends, for their moral encouragement, financial assistance as well as their spiritual support in every path researcher take.

VII. REFERENCES

- [1] Janet L. Holland & Sungwoong Lee (2019), Internet of Everything (IoE): Eye Tracking Data Analysis.
- [2] Sindhu Hari (2017), Mobile Application for Attendance System Coyote-Attendance.
- [3] Karuna Kishor More & Varsha Bhosale (2019), IoT Based Biometric School Bus Attendance and Tracking System.
- [4] Amit Thorat, Aniket Dinde, Gauri Mahajan & Ruchira Puntambekar (2017), Employee Record for Admin Application Using Android Smartphone.