Applied Information Technology And Computer Science Vol. 3 No. 1 (2022) 760-771

AITCS

Homepage: http://publisher.uthm.edu.my/periodicals/index.php/aitcs
e-ISSN :2773-5141

A Web-Based Employee Management System for Keymans Malaysia Sdn Bhd

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DOI: https://doi.org/10.30880/aitcs.2022.03.01.051
Received 30 July 2021; Accepted 12 April 2022; Available online 31 May 2022

Abstract: Keymans Malaysia Sdn Bhd is a firm that offers software, hardware integrations, networking, and security consulting services. They're also into LED lighting and solar panel manufacture, installation, and solutions. Keymans Malaysia still uses a manual approach to keep track of its employees' information. Employees and company data are the organization's difficulty with their current method. The objective of this project is to use a structured method to design a web-based employee management system, to construct a Web-based Employees Management System for Keymans Malaysia Sdn Bhd using a prototyping model, and to thoroughly evaluate the functions of a Web-based Employees Management System. The system is used to keep track of employee`s data, leave information, attendance information, recruitment information, salary information and reports. The system stores all the information of employees in the organization. The system allows employees to key-in their attendance, apply for leave, update information and view salary information. The manager able to manage leave details, attendance details, recruitment details, verifying employee`s salary and view the report. The administrator able to view the all the information such as leave, attendance, salary, recruitment and report and also manage the salary information, recruitment information. This web-based system is developed by using PHP, Xampp and MySQL for the database. The methodology used in developing this web system is the prototyping model. Because many of the features offered by users are frequently misunderstood, prototypes are created to reduce the risk to the system. The phases of development for this system include phase planning, analysis, design, implementation, and testing. In conclusion, this web-based system will help Keymans Malaysia to overcome their problems that occur. It will be easier for the organization to manage all the information efficiently and effectively.

Keywords: Employee, Management System, Web-Based System, Keymans Malaysia, Structured Approach

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1. Introduction

Nowadays, manual process is not relevant anymore to be used by the organization to manage employee`s data. This is because, manual process is tiring and time-consuming process when dealing with huge data. Employee management system can simplify the work by transforming the manual method into computerized. This system can manage employee`s data effectively and stored it safely in the database.

The reason for changing the manual process into computerized process are because of the drawbacks of manual method. The drawback is there is no dedicated database to store employee's information. Therefore, it is very difficult to manage and update employee`s information and the information might be loss and damaged when it is kept in paper format. Next problem is leave records and salary details of the employees are kept in paper files. There is no proper process for employees to request for a leave. The administrator needs to manually calculate the salaries of each employees every month by looking at the salary and leave records. The third problem is keeping track of employee's attendance. Employees will sign the attendance list each time they come and before going back. This method is open to fraud and salary calculation might not be accurate. Besides that, process of hiring new employees also not efficient. The organization just hang up the banner at the office about the job vacancy. The objective developing this system is to design a Web-based Employees Management System for Keymans Malaysia Sdn Bhd using structure approach, to develop a Web-based Employees Management System for Keymans Malaysia Sdn Bhd using prototyping model and to test the functions of a Web-based Employees Management System properly. The developed system will be used by Keymans Malaysia Sdn Bhd as a management system to manage their employee`s data. The user scope of the system are administrator, manager, and employee.

This chapter contains five main sections. Part one describes the background of the project, while part two provides the results of the literature review. Part three shows the research methodology and part four explains the findings from the analysis and design of the system.

2. Literature Review

2.1 Management Information System

A management information system (MIS) is a computer system made up of hardware and software that functions as the backbone of the activities of an organization [1]. In order to help management decision-making, a MIS collects data from various online systems, analyses the information, and reports data. MIS helps organization in managing their information effectively [2]. Management information systems need to have the required components to capture, process, store and retrieve the information whenever it is needed in order to efficiently provide the information needed to decision makers [3]. There are five major components in the management system for examples people, process, data, hardware, and software [4]. Management information system is one of the types of information system.

2.2 Similar Management System

As the technology is increasing, organization have to move with the flow to avoid been obsolete. When the organization grows up, they will employ many people and they have to manage a huge data of employees. A computerized system will be helpful to manage employee`s data. The system should be capable to manage employee`s data and provide others features to ease the works of administrator. Some system that are similar are OrangeHRM, MintHRM, and OpenHRMS. These systems provide features like, leave management, employee database, attendance management and recruitment management. There are several researches that has been done regarding the employee management system to ensure that the development of the project runs smoothly by reviewing the advantages and disadvantages of other systems. Table 1 shows the comparison between three similar systems with proposed system which is Web-Based Employee Management System for Keymans.

Table 1: Comparison Table

Specification	MintHCM	Open HRMS	OrangeHRM	Web-Based Employee Management System for Keymans
Log-in Module	Yes	Yes	Yes	Yes
Leave Management Module (leave constraint)	No	No	Yes	Yes
Recruitment Module	Yes	Yes	Yes	Yes
Employee Module	Yes	Yes	Yes	Yes
Attendance Module	Yes	Yes	Yes	Yes
Notification	Yes	No	No	Yes

3. Methodology/Framework

In developing the web-based employee management system for Keymans Malaysia Sdn Bhd, methodology model that will be used is prototype model. The prototyping model is a method of creation of systems in which a prototype is constructed, tested, and then reworked as required until an appropriate result is obtained from which the entire system or product can be produced [5]. Usually many of the features provided by users may not be properly understood, so prototypes are developed to decrease the system's risk. This is accomplished by confirming the critical concerns that must be addressed before the real system can be built. This model has a complex development process. Figure 1 shows the prototyping model phases. The development of this system involves several phases which are phase planning, analysis, design, implementation and testing.

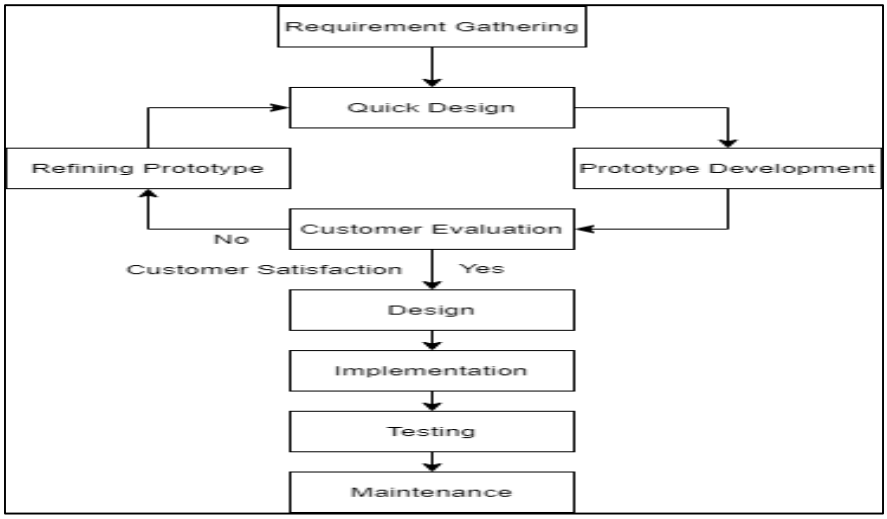

Figure 1: Prototyping Model

3.1 Planning Phase

In the first phase which is planning, important information regarding the user`s requirement of the Keymans employee management system will gathered from the organization representative and will be documented. The approach used to gather the requirements is to perform interview sessions with the representative of Keymans Malaysia Sdn Bhd to inquire about the problem faced by using the current system and the possible solutions that can be implemented.

3.2 Analysis Phase

Requirements Analysis is the process by which users' requirements for an application that is to be developed or updated are established [6]. This includes all the activities that are carried out to define the needs of various stakeholders. Analysis of specifications also involves evaluating, recording, validating, and handling software or hardware requirements. Table 2 shows the functional requirement and table 3 shows the non-functional requirement of the system. After determining the initial requirement as well the functional and non-functional requirement, collection and analysis information will carry out to determine and create Data Flow Diagram (DFD) and Entity Relationship Diagram (ERD) in order to portray the relationship between the entities, as well to determine and demonstrate the process and flow of data in the system. Figure 2 shows the data flow diagram of the system and figure 3 shows the entity relationship diagram of the system.

Table 2: Functional Requirement

No	Modules	Functionalities
1	Registration Module	• The system should allow the new user to register before login into the system. • The system should show error message when wrong email or password entered. • The system should show error when empty field is found.
2	Login Module	• The system should allow the users to login into the system using user email and password. • The system should allow the users to input the valid email and password to logged in as user. • The system should alert the user for invalid input. • The system should redirect the user to respective dashboard once login is successful.
3	Employee Module	• The system should allow the employee to view their personal information. • The system should allow the employee to update their information. • The system should allow the admin and manager view the employee`s information.
4	Leave Module	• The system should allow the employee to apply for the leave. • The system should allow the employee to view their leave request details. • The system should allow the admin and manager to view and manage employee`s leave request.
5	Salary Module	• The system should calculate the employee salary correctly. • The system should allow the employee to view the salary details. • The system should allow admin, manager view the salary details. • The system should allow the employee to print their salary payment slip.
6	Attendance Module	• The system should allow the employee to clock-in and clock-out their attendance. • The system should allow the admin and manager view the attendance details.
7	Recruitment Module	• The system should allow the job seeker to apply for job vacancy without login into the system. • The system should allow the admin and manager view and manage the recruitment details.
8	Report Module	• The system should show the statistics of the employee`s attendance and leave details. • The system should show the visual representation of employee data. • The system should allow the admin and manager to inspect the report for analysis purposes.

Table 3: Non-Functional Requirement

No.	Requirements	Descriptions
1	Operational	• The system should be able to work on way web browser. • The system should be user friendly.
2.	Performance	• The interaction between the user and the system should not be more than 10 minutes. • The system should be able for use anytime.
3	Security	• Only admin and manager can generate the report. • Users can only access their own account with email and password.

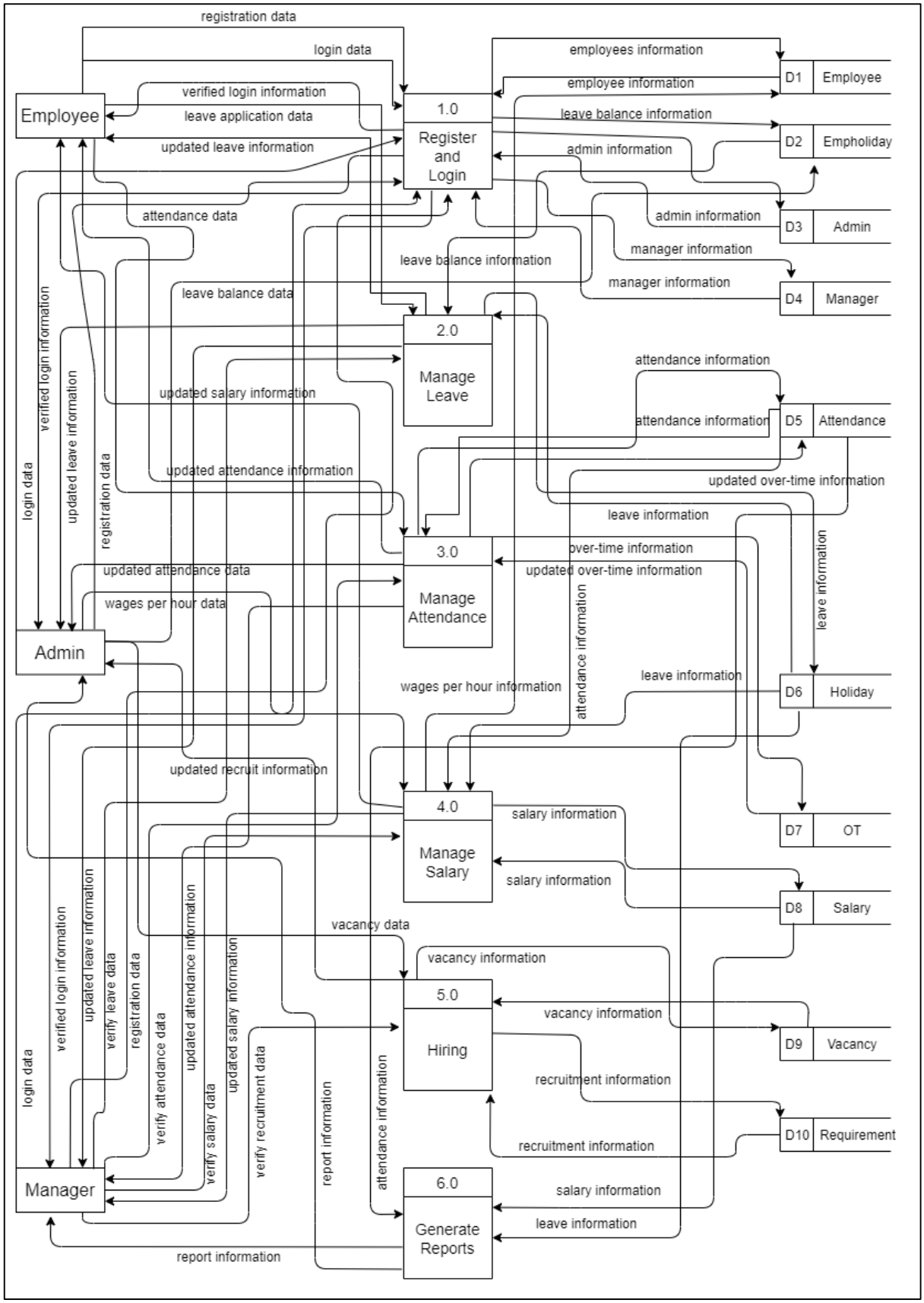

Figure 2: Data Flow Diagram

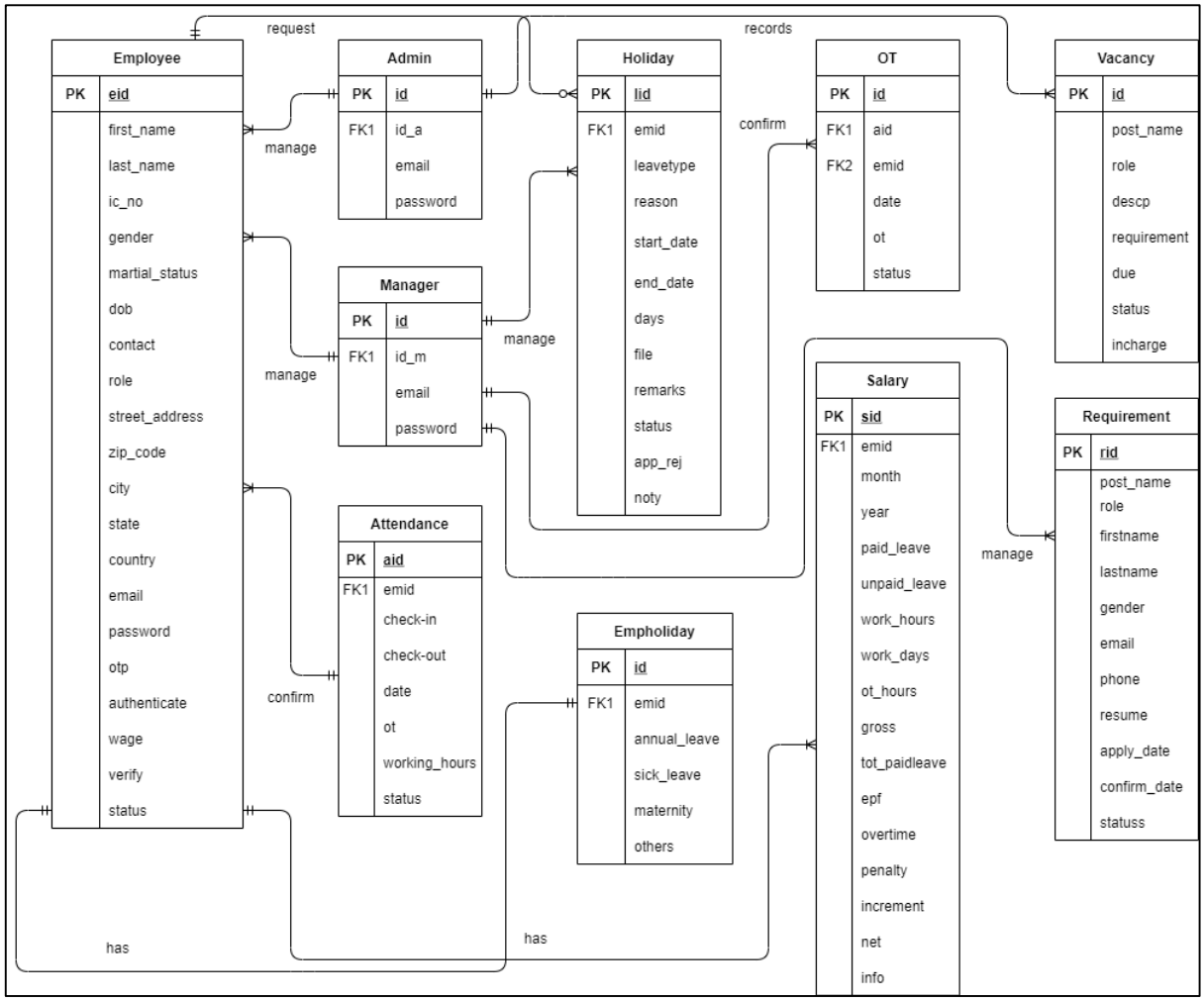

Figure 3: Entity Relationship Diagram

3.3 Design Phase

In the design phase, the functional module design, flowchart, system's database design and user interface design will be created. Graphical user interface of the system is also created to illustrate the actual system presentation. Visual Studio Code is the software used as the platform to develop the system. The design's technical aspects will be shared with the relevant stakeholders. Different factors are also considered, such as the risk, the technologies to be used, and the team's skills.

3.4 Implementation Phase

In this implementation phase, the actual prototype will be coded and developed according to the user`s requirements. Enhancement is required after going through the feedback, correction and repairing processes to ensure that the application meets the user expectation. Hence, rather than a theoretical one the system would include requirements for a true working application. All the functional modules will be developed in this phase to meet the user requirements. The database will start working at this point. PHP is the programming language that used to develop the system while the Xampp server acts as the web server to connect to the MySQL database. Figure 4 shows the interface of employee`s leave application form and figure 5 shows the program code.

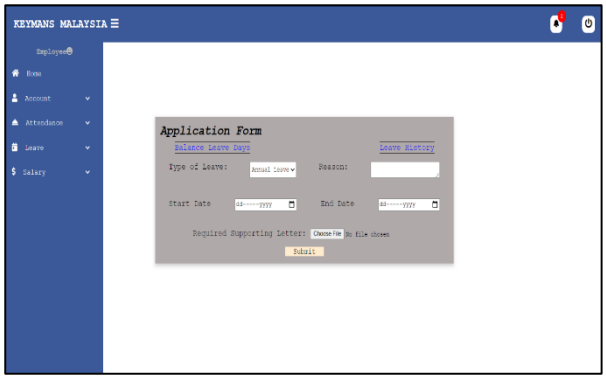

Figure 4: Employee`s Leave Application Form

Figure 5: Code of Leave Application Form

Figure 6 shows the interface of pending leave information that can be view and manage by manager and figure 7 shows the program code of the interface.

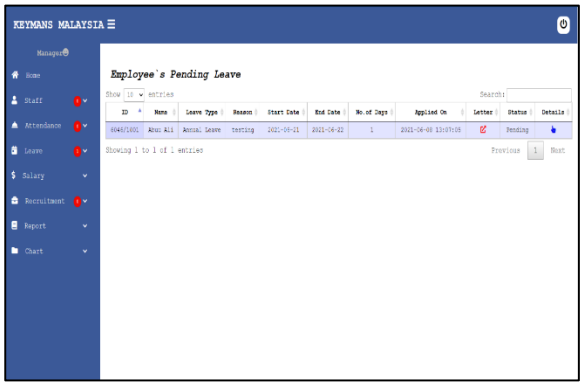

Figure 6: Interface of Pending Leave

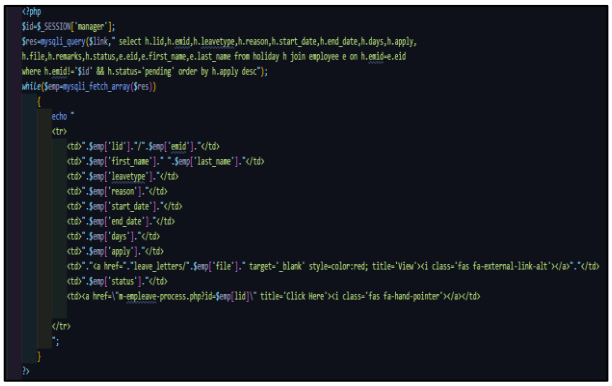

Figure 7: Code of Pending Leave

Figure 8 shows the interface of salary module administrator side where administrator can update employee`s wages per hour and figure 9 shows program code of salary module.

Figure 8: Interface of Salary Module

Figure 9: Code of Salary Module

Figure 10 shows the interface of attendance module employees' side where employees can key-in their attendance and figure 11 shows the program code of attendance module.

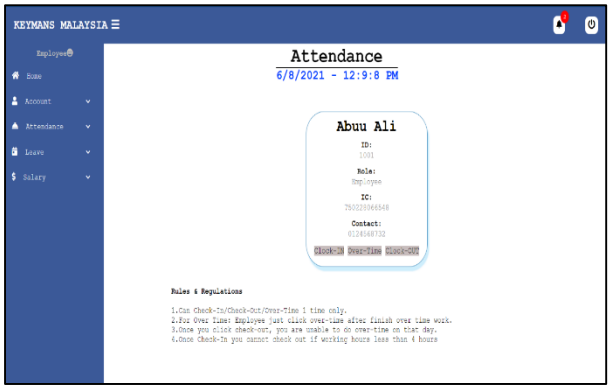

Figure 10: Interface of Attendance Module

Figure 11: Code of Attendance Module

3.5 Testing Phase

This is to ensure that there will be no bugs in the system, and if a bug is found the code is immediately reworked and retested, during this phase will test many activities. The goal at this level is to evaluate whether the system has complied with all the outlined requirements and to see that it meets client requirements.

4. Result and Discussion

There were two approaches used in the testing phase which were functional testing and user acceptance testing. Functional testing is a testing of all modules and functions of this system to ensure that the functions performed exactly the same as defined in the earlier phase. The testing process is done to identify errors that occur while the system is used. Test plan was developed for the system testing. Table 4 shows one of the test plan result obtained for the module in the system.

Table 4: Test Plan for Leave Module

	Test Cases	Expected Output	Actual Output
T1-1	Employee select the start date that is less than current date and click apply	Pop out a message “Invalid Start Date cannot be less than the current date”	As expected
T1-2	Employee select same date for start and end date	Pop out a message “Failed Start Date and End Date Can be same”	As expected
T1-3	If employee take leave days that is more than leave balance	Pop out a message “Cannot Apply Leave Days Applied More Than Balance Leave”	As expected

For the user acceptance testing, due to the COVID-19 situation, a virtual meeting approach are used to show how the system works for different levels of users. A form is given to the users and they fill up the form based on their observation how the system works. The system testing was done by selecting three users from different level of users that use the employee management system and get their feedback. The users are admin, employee and manager. There are ten acceptance requirements that are evaluated by the three users. The users can choose either to accept or reject for each acceptance requirements listed in the form. Through this testing phase, the user satisfied with the system

performance and evaluate that Keymans Employee Management System meet the objectives and the modules works efficiently. Table 5 shows the result obtained from three users for the user acceptance testing.

Table 5: User Acceptance Testing Result

No	Acceptance Requirement	Test Result (Numbers of people)	
		Accept	Reject
1	Registration and Login module working well	3	0
2	Attendance module works fine	3	0
3	Leave module works fine	3	0
4	Salary module works fine	3	0
5	The result of recruitment details must be correct	3	0
6	The system able to generate the reports	3	0
7	All buttons in the system are functional	3	0
8	The content in the application can easily view with full view	3	0
9	The size of the text used in the system is appropriate	3	0
10	The system is user-friendly and easy to understand	3	0

5. Conclusion

This report consists of four parts which are part one, part two, part three, and part four. part one describes the project introduction and research background such as problem statement, objectives, scope, importance and expected results of the project. Besides, part two includes a description of the study literature such as study domain, management system techniques information and comparative studies from existing systems. Then, part three explains the methodology system development. While part four, explains about the result and discussion. This system was developed in accordance with the scheme set out in the analysis and design phase. Some of the functions contained in the system are functioning successfully. Although the system has been successful achieving intended objectives, there are a few suggestions from users of the system in order to upgrade and added some functionality so that the system becomes more complete and easier for the admin, employee and manager. By having this system, Keymans is no longer using the manual process to manage their employee information.

Acknowledgement

The authors would like to thank the Faculty of Computer Science and Information Technology, Universiti Tun Hussein Onn Malaysia for its support and encouragement throughout the process of conducting this study.

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