

E-LEAVE MANAGEMENT SYSTEM AND
PAYROLL (E-LMSP)

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E-LEAVE MANEGMENT SYSTEM AND
PAYROLL (E-LSMP)

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for the award of the degree of
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ABSTRAK

Sistem Pengurusan E-Leave and Payroll (E-LMSP) adalah aplikasi berasaskan web dan mudah alih aplikasi yang boleh digunakan untuk semua organisasi atau syarikat yang memudahkan pengurusan pekerja. Ini disebabkan masalah dalam menggunakan sistem manual yang boleh menyebabkan kerosakan, hilang dan boleh juga mahal. Di samping itu, ia juga akan menyebabkan kelewatan permintaan cuti apabila pegawai berkenaan tidak berada di pejabat. Untuk menyelesaikan masalah yang ditangguhkan, sistem ini menyediakan proses pengurusan cuti mudah automatik seperti maklumat pekerja, kelulusan cuti, jenis cuti, baki cuti, pembayaran, pemberitahuan e-mel, penjana laporan adalah unsur sistem ini. Sistem ini reka bentuk dalam antara muka pengguna yang mudah dan mesra untuk memudahkan pengguna untuk menggunakannya. Setiap pekerja diberikan nama pengguna yang unik, kata laluan dan boleh diakses sama ada oleh pekerja atau admin untuk log masuk ke sistem. Selain itu, fungsi pentadbir untuk sistem ini adalah untuk mendaftarkan pekerja baru, memadamkan dan mengemas kini maklumat pengguna dalam pangkalan data. Pentadbir dikenali sebagai pihak berkuasa yang lebih tinggi yang menggunakan untuk menguruskan cuti sama ada mahu meluluskan atau menolak cuti pekerja. Sistem ini juga menyediakan fungsi yang membantu pentadbir untuk mengira gaji secara automatic bagi setiap pekerja berdasarkan permintaan cuti oleh pekerja. Sistem ini dibangunkan dengan menggunakan kaedah air terjun(Waterfall) untuk memastikan ia digunakan dalam masa yang ditetapkan. Sebagai kesimpulan, sistem ini sangat berguna untuk mana-mana syarikat atau organisasi di mana terdapat ramai pekerja dan lebih mudah untuk mengesan dan mengurus cuti pekerja.

ABSTRACT

E-Leave Management System and Payroll (E-LMSP) project is a web application and mobile application which can be used for all the organization or company that will ease the employees leave management. This is due to the problem in using manual system which can cause damage, missing and can be costly as well. In addition, it also will cause delay in leave request when the respective officer not in the office. To solve leave delayed problem, this system provided with the automated function ease leave management process such as information of employees, approval of leave, types of leave, leave balances, payment, notification of email, report generation are element of this system. The system is design in such a simple and friendly user interface to ease the users to use. Every employee is provided with unique username, password and accessible either by an employee or admin for log into a system. Moreover, the functions of administrator for this system are to register the new employee, delete and update information of user in a database. Administrator is known as higher authorities that use to manage the leave whether want to approve or reject the leave of employees. This system also provides the function that help the administrator to auto calculate the salary for each employee based on leave request by employees. This system is developed by using Waterfall method to ensure it is deployed in the prescribed time. As a conclusion, this system is very useful for any companies or organization where there are have large number of employee and easier to track and manage employees leave.

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LIST OF ABBREVIATIONS

E-LMSP	E-Leave Management System and Payroll
AMS	Absentee Management System
HRMS	Human Resources Management System
PMS	Payroll Management System
GB	Gigabyte
SRS	Software Requirement Specification
SDD	Software Design Document
UAT	User Acceptance Test

CHAPTER 1

INTRODUCTION

1.1 INTRODUCTION

Seri Barat Mixed is a company that was developed in 1983 with its major source of revenue continues to be derived from construction sector with premix production and Quarry. Seri Barat Mixed has factories which are located at Pulau Condong, Tanah Merah and Gua Musang with around 50 staff that needs to be managed.

Currently, the company uses the manual method for leaves application. The employees who want to apply their leave need to follow some procedures. The first procedure is the employee need to submit the leave application form at least 3 days earlier. The second procedure is the employee needs to get a sign or approval from official manager or administrator. The third procedure is the approval leave form need to be submitted to administrator for their record (Miss.Tan, 2015)

By using the manual method, , it raises some problems for the company where it is difficult to manage the leave for each employee due to they need to follow many procedures to apply their leaves and this will take a longer times and difficult to get faster approval leaves if the staff is having an emergency. The problems also could be happen even the approving officer is not available. This will cause the leaves applied will be delayed. This process is not efficient especially when employees have an emergency. Another problems are by using the paper-based system, the record can be damaged or lost and need content supply for inks, papers and files (Datin.Ginny., 2015) Besides that, the administrator will also face some problems which every month before

given the salary for each employee he/she needs to manually calculate the salary based on leaves that applied by employees, especially for the employee who applied an extra leave where their salary will be deducted based on the number of extra leave applied (Miss.Owi, 2015 & Datin.Ginny.,2015)

With respect to the matter, this project proposes an E-Leave Management system and Payroll (E-LMSP) which will be used by employees and administrative which will make the leave application at ease. This system is designed to be used by employees to apply their leaves and help administrative to auto update salary for each employee easily.

Therefore, E-LMSP is a web based and mobile application that makes employees easy to access the systems. This system is an automated system for managing leaves which able to provide leave information of every employee which consists of leave balance, approval of leave, leave cancellation, date of leave application and so on. In this systems, it also provides some features that will auto update salary based on employees apply their leaves, store the employee details into database, view and generate the leave report, apply leave anytime anywhere and so on.

Moreover, to provide a better leave management system of large employee, this leave online system is proposed to handle repetitive and complicated process efficiently. The E-LMSP application will make the leave application become easier to apply without having to filling up their information because the all information will retrieve from the database. This system will able to provide an efficient process the information. Furthermore, this system can reduces the mistake done by human, saving the time and man power, save cost and so on.

1.2 PROBLEM STATEMENT

Currency, Seri Barat Mixed uses manual system for managing leave application. The using of paper-based system can cause missing, damage and need supply cost to buy the papers, files, inks, and storage drawers to keeps leave application form. Moreover, every month when the company is about to give salary for employees, the administrator need to manually calculate the salary based on leave applied by the

employees. Manually calculation of the salary is time consuming and sometimes can lead to some mistakes in calculation of salary. This may cause delay in salary payment (Datin.Ginny., 2015) Therefore, with the proposed E-Leave Management systems and Payroll (E-LMSP) application, it will provide an auto-update salary function when employees take an extra leave without the need of the administrator to manually check and calculate the leave application applied by employees each times.

The use of paper-based system will cause the employees difficult to applied leaves because it needs follow a lot of procedures of the organizations. This will cause the need a lot of man power and time to apply leave which they need to fill up the leaves form at least 3 days earlier and must get a sign or approved by the approving officer and the leave approval will be delayed if approving officer is not in office. Other than that, the employee also does not know the current balance of leave (Datin.Ginny., 2015 & Miss.Tan, 2015)

By using E-LMSP system, the employees does not need to wait to get a sign of the approving officer to approve their leave because this system will provide an email notification to the approving officer for further action. The proposed E-LMSP application does not require the applicant to fill up the information because the employees information are stored into database and can be retrieved easily, prevent the leave delay and it can help to reduces input error. This E-LMSP application will make more efficient and effective that employees no need to follow many procedures of organization which applied leave application for three days earlier, get a sign approval from official manager and submitted leave application form to administrator for their record and employees has a user friendly to use our systems.

The process of E-LMSP application will make easy for staff and administrator who provides information or queries about leave of every employee whether it may concerned on leave balances, leave types, approval of leave and cancelation of leave. This system will be able to provide the administrator an easy way to calculate salary for each employee based on leave applied without any mistake. Then, it can help the administrator do the less work, make employees easy to apply their leave without take a longer time, auto update the salary when the staff apply the leave, store all staff information, save time and cost of the organization.

1.3 OBJECTIVE

Based on the problems statement, the objectives of this project are:

- i. To design the development of the E-LMSP application to replace the manual system for leave application.
- ii. To develop the interface, database and appropriate function in the E-LMSP application that will use by the client.
- iii. To test the E-LMSP application by the client that determined whether the systems have error occurs during testing.

1.4 SCOPE

The project scopes of this project are consists the following:

Administrator

- i. The administrator manage overall of the systems which includes registration, update, delete, apply leave and manage leave of employees.
- ii. The administrator easy to calculate salary based on leave apply by employees with systems having auto deduct the salary when employees are apply their leave.
- iii. The administrator will be able to view information and generate report/slip salary of the employees.

Employees

- i. The employee can apply their leave whether by using the web based application or mobile application an email alert will send to approving officer without waiting a longer time.
- ii. The employees are able to update the profile information, changing password and view the total salary in monthly.

1.5 SIGNIFICANCE

The importance of E-Leave management system and Payroll (E-LMSP) will benefit the organization to handle the leave application for each employee in more efficient way. The E-LMSP application is designed to reduce wasting money for the organizations to buy the papers, inks, files and storage drawers.

Besides that, E-LMSP application will allow administrator to define user profiles and details pertaining to leaves which leave types, leaves balance, approval of leave and cancelling of leave. Then, it will help administrator reduces their works without manually calculate the salary for each employees. With this E-LMSP application it will auto-calculate function for salary.

Furthermore, it also will be able to help organizations to improve their performance by providing an efficient leaves application which provides an email notification to the approving officer to let him know about the application. By using this system, it will provide faster notification compared with paper based system. Thus, an appropriate action can be taken immediately by the approving officer. Other than that, employees no need waiting a longer time and follow a lot of procedures.

1.6 THESIS ORGANIZATION

This proposal comprises of three chapters. In the chapter 1, the general information about research is discussed. This includes introduction, problem statement, objective, scope, significance and thesis organization.

In chapter 2 a literature review and significant research related with the issues are reviewed. It will cover about the existing methods, technique used and comparison between them. Meanwhile in chapter 3, it will discuss the methodology that will be implemented and this includes the workflow process involved design of the systems.

Then, chapter 4 is discussing the test of the development project and the result obtained after testing have been finished. Lastly, chapter 5 is a conclusion of overall development or builds process of the project that has been done.

CHAPTER 2

LITERATURE REVIEW

2.1 INTRODUCTION

This chapter reviews the existing works which will help in developing the new system.

The purpose of the literature review is to study and analyze the advantage and gaps of the existing system that are related to the proposed project. The comparison of hardware, technology and tools used by the selected existing system are also discussed.

2.2 OVERVIEW

This section discusses and reviews about the existing system which includes the challenges, purpose, function, advantage and disadvantage of the proposed model.

2.2.1 Absentee Management System (AMS)



Figure 2.1: Absentee Management System (AMS)

Absentee Management System (AMS) is a software application that is used to control and monitor the employee attendance. AMS is used to help the manager or administrator to keep track and analyze the attendance of the staffs. AMS also keep or record accurate employee database containing relevant information such as personal details and employment information. (SoftAlternative.com, 2006) Figure 2.1 shows an interface of AMS.

The challenge to develop methods of AMS is to support the attendance and control absenteeism. Such as not create a mistrust and system avoidance (Technology, To, & Kuim, 2012) Moreover, by using the traditional methods of absenteeism have proven not be effective and it is impossible to create a fair discipline procedure. The existed of this AMS are helps to develop a willingness of all employees to attend the work regularly and create a fair discipline procedure (Technology et al., 2012)

The advantages of AMS are it enables the administrator to monitor and keep record the attendance of the employees without using manually method. Furthermore, with this system it allows the administrator easily manage absenteeism, sport important trends and take decisive action of the employees are always absent. Another advantage of this system is able to avoid project delay and work product become inconsistencies if employees are absences.

The disadvantages of AMS have much function in one interface and it complicated or confuses to use. Therefore, this system does not provide calculate the salary of the employees based on their attendance.

2.2.2 Human Resources Management System (HRMS)

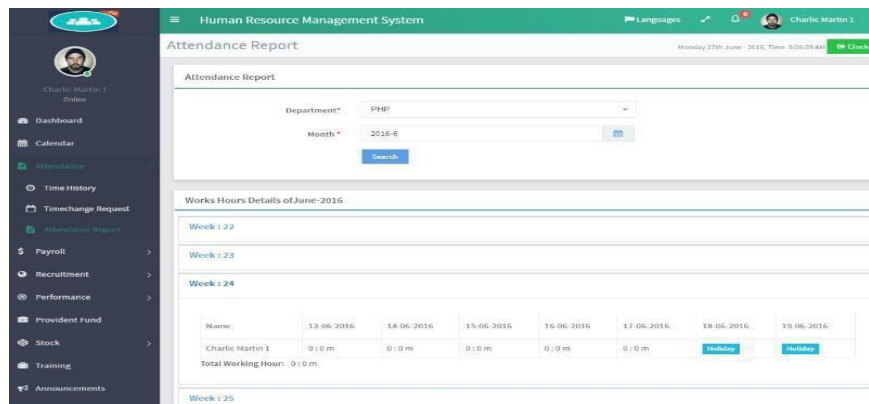


Figure 2.2: Human Resources Management System (HRMS)

A Human Resources Management System (HRMS) is known as an information system that is designed to manage an organization computerized and ensure the easy management of a business employees and data. HRMS that integrated with HR specific business processes and features that give HR staff ability to perform routine operations. Like managing payroll, attendance management and performance evaluations (Wikipedia, 2017) Figure 2.2 shows an interface of HRMS.

The challenge of HRMS is a surface varying perspective of human resource development, workforce availability and quality (Groups, Taylor & Francis, 2010) Moreover, development HRMS are to ensure all employees perform their duties to promote the goals of the company and it plays an important role to make the success of the organization.

The advantage of HRMS are it provides automatic process of daily HR works, reduction of papers, and attendance tracking abilities and management services. The another advantage of HRMS system are provides analyze data and reports for internal and external use, ease of use for qualification computer technology specialist, decrease the probability of errors and ensuring information is not redundant.

The disadvantages of HRMS are difficult to analyze the data and complex to use when the systems contain so much data and function. Besides that, it is difficult to implement because some of the companies are difficult to integrate with online HR

systems that related of business application. This usually happens when it use cloud software from multiple providers or continue to run certain computer-based programs.

2.2.3 Payroll Management System (PMS)



The screenshot displays the Payroll Management System (PMS) interface. At the top, there is a green header with the system name "Payroll Management System" and a user status indicator "[Logged in as Administrator]". Below the header, there are navigation links for "Home", "Employees", and "Log Out". The main content area is titled "New Employee:" and contains a form for adding a new employee. The form includes the following fields: "Employee ID:" with the value "100004", "Name:", "Phone:", "E-Mail:", "Designation:", "Level:" with a dropdown menu showing "Entrn", "User Name:" with the value "Kiran", and "Password:" with masked characters. A green "Submit" button is located at the bottom of the form.

Figure 2.3: Payroll Management System (PMS)

Payroll Management System (PMS) see figure 2.3 is known as a software program or system application that is used by company to manage the financial aspects of the employees or “money paid to employees”. These systems are related to management salary, allowance, deduction and net pay of the employees. Therefore, payroll administration is one of the most important business process of the company platform, yet one of the most cumbersome and time-consuming daily activities. With present PMS it helps the administrator reduces error calculation of salary employees and do the less works. Furthermore, it also makes an administrator to manage the employee information without to consult various sources of data (Bridge Southeast Asia, 2016). Besides that, PMS it automatically calculate the pay based on the employees attendance while taking into account all the parameters. For examples, days of leave, type of leave and balance of leave.

The challenge of PMS processing are safety and security. It is crucial that payroll data is protected from any possible data leaks. If leakage of payroll confidentiality it can affect the business (Groups, Invensis, 2015) The other challenge is taxation. In PMS, neither it nor easy including accurate tax calculations in pay slips,

this because tax rules are dynamic and always keep changing. It needs regular update to ensure that employees salaried are taxes correctly (Global, Invensis, 2015)

The advantage of PMS are helps administrator do the less works and reduces error during calculation salaries of employees. PMS interact with the software with menu-driven programs with user-friendly interface. Another advantage of PMS is capable of accepting electronic transmission of the payroll data for master and more convenient crediting of employees accounts.

The disadvantage of PMS are does not provide any function to record the attendance of employees. Besides that, by using PMS it need to configure accurate way to calculate the tax.

2.3 SUMMARY COMPARING OF THE EXISTING SYSTEM

Based on the comparison between existing system, it can helps to develop a new system become more competitive compare with another systems. This comparison will also help to improve the productivity of the system and reduces some error of the system. Table 2.1 shows the comparison between the three existing system and with the current system.

Table 2.1: Comparison between three existing system with proposed systems

Systems / Feature	Absentee Management System (AMS)	Human Resources Management System (HRMS)	Payroll Management System (PMS)	E-leave Management System and Payroll (E-LMSP)
Hardware Requirement	Dual core 1.6 GHz. Min 1GB above for RAM Min 20GB hard drive	Pentium IV Min 1 GB for RAM Min 160GB hard drive	Pentium II. Min 128 Megabytes for RAM Min 20GB hard drive	Dual core 1.6 GHz above Min 4 GB for RAM Min 500GB hard drive
Software Requirement	Any windows. Google chrome, Firefox	Windows, Macintosh, Linux and so on. Safari, Firefox, Google chrome, opera and so on.	Windows 7 above. Google chrome, IE and Firefox	Windows 7 above. Google chrome, IE and Firefox Android API 18 above.
Development tools	ASP.Net and Microsoft SQL server	PHP and Microsoft Asp.Net	Visual Basic and Microsoft Access	C#ASP.Net, android studio and Microsoft SQL server
Product Functionality or Features	To monitor the attendance of the employees.	To manage/handles data organizations and managing payroll of employees	To automate calculate the salary employees based on the attendance without any error.	Employees easier to apply their leave. Administrator easy to manage leave and calculate salary
Who use this system?	Administrator	Administrator	Administrator	Staffs and Administrator

Security Element	NO	YES	YES	YES
Generate Report	NO	YES	YES	YES
Sending Notification via email	NO	YES	NO	YES
Provide web and mobile application	NO	NO	NO	YES

2.4 CONCLUSION

This chapter discussed some topic which related to what, why, and how the system currently works. This chapter also discuss on the technology to developing the existing system. These discussions are useful to development the new system.

Moreover, three existing system has been discussed in this chapter. There are Absentee Management System (AMS), Human Resources Management System (HRMS) and Payroll Management System (PMS). The main objective of this process is to differentiate some features of the three existing system. So, some good features could be used in the development of teaching style to support the new system based.

Lastly, literature review are study that help to learn the modules and features of the current/existing system that might helps to build or develop the new systems. The study of techniques and methods can guide us for improvement system development process soon. This all information for literature review is gathered or collected from various online articles and journal. The all information is useful or helps to guide us for the next chapter process.

CHAPTER 3

METHODOLOGY

3.1 INTRODUCTION

This chapter will discuss the methodology that is implemented in the E- Leave Management System and Payroll (E-LMSP). In development process, methodology plays as an important part in the application development process. Application development methodology often refers as a framework that is used to plan, design and control the process of developing an information system. The framework used for a specific project usually based on the several of information from organization and technical to achieve the requirement of this project.

In this project, the methodology that has been decided to use is Waterfall model. This methodology is chosen for requirement of complete system are clearly defined and understood. This methodology are contains 7 phases that guide us of developing a system until completed.

3.2 METHODOLOGY

There are several methods that can be used for software or application development. The waterfall model is chosen for developing this project because the project must be clearly defines or complete before next phases can begin, besides this approach provides persistent frameworks of task and deliverables needed to create a system. Therefore, the waterfall methodology can easily tracks the project from

starting of the idea development, through a possibility study, system analysis and design, programming, testing, implementation and pre-implementations analysis. In the waterfall model, it consists 7 phases to ensure the application can be developed successfully. This methodology is a best choice of the application development that to guide us from beginning until the end. In process development of E-LMSP application it will done until 6 phases. Figure 3.1 shows the 6 phases in waterfall model process that will be use during development of E-LMSP application until completed.

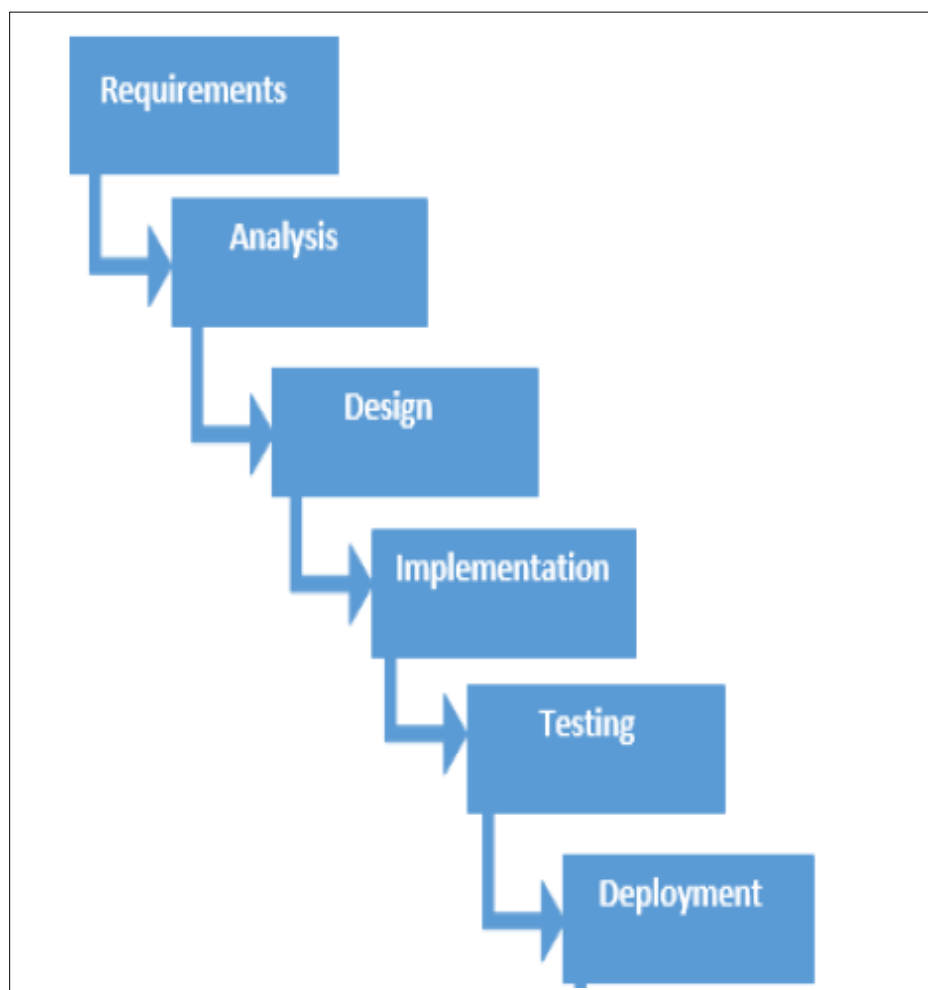


Figure 3.1: Waterfall Model

3.2.1 Requirement Phase

Requirement phase is the primary stage in waterfall model. Where in this phase, the task is to verify the objectives and scope of the proposed system that will be implemented and make a schedule to allocate resources. Besides that, it is known as a procedure to make understanding why the systems should be developed and defining the requirements of project. It also includes feasibility study from several different technical, perspectives, economic, and organizational feasibility aspect. Moreover, Gantt chart will be produced to schedule and plan all the activities that involved during the project development together with the duration of each activity. This phase we conduct brainstorming to gathering all functional requirement that will be included in E-LMSP to ensure system provide the convenient way for Seri Barat Mixed ease to manage leave application of employee. Therefore, E-LSMP is include the functional calculate salary of employee based on leave applied to ensure admin can do the work more effectively and efficient without doing mistake.

3.2.2 Analysis Phase

Initially, the analysis phase is a second phase in waterfall model. This phase is use to gathering all information that related of E-LMSP that will be implemented into this system and provide some convenient way to make employees easily to use for apply their leave. At the same time, able to help administrator easily to manage the leave and salary of employees without any complicated. For example, the literature review is one of the method that is been use to gather information that with compared the existing system and proposed system. Through this method I can know the advantage and disadvantage of the existing system. The advantage of the existing system that will be taken for implemented into proposed system and we will also add some functions that do not exist in existing system. This process will be refined until meet the requirement of the client.

3.2.3 Designing Phase

In design phase, the application will be divided into two categories which are physical design and Logical design. Logical design is use to describe the feature and

overall process of the E-LMSP application from beginning until the end. For example, flowchart, use case diagram, context diagram, dialogue diagram, SRS, SDD and other documentation. This logical design is used to ensure the development is based on the user requirement and easier to guide for development process. Besides that, the physical design is to develop an E-LMSP interface that can be seen and used by user. This physical design is been use Adobe Photoshop to design or sketch the interface. The specific programming language and supporting software that will be chosen for design the proposed system.

3.2.4 Implementation Phase

After completed the design phase, the next phase is a development phase. In this phase, will be use the coding to develop the real E-LMSP application that can be seen and use by user. The E-LMSP application will be developed by using C# Asp.Net and android studio as a system interface or front-end and Microsoft SQL server as a database or back-end of the system that to store the data.

3.2.5 Testing Phase

Testing phase is when completed to develop the E-LSMP application. The testing process will be test in Seri Barat Mixed by the administrator. In the testing phase, type of test by client such as testing system and user acceptance testing. The system will be tests are the process where all the components interaction of the application is included. Any problems occur during testing will be recorded in documentation for do correction.

3.2.6 Deployment Phase

Deployment Phase is the second last phase in the waterfall model. Once the testing is completed and free of error or problems, the E-LMSP application can be release in real environment and deployed in the Seri Barat Mixed for their use.

3.3 SYSTEM DESIGN

The process of E-LMSP application will describe based on context diagram, sequence diagram, flow chart and dialogue diagram.

3.3.1 CONTEXT DIAGRAM

Figure 3.2 shows a Context diagram which explaining the boundary of E-LMSP application. In E-LMSP, it contains two main users which are staff and administrator. In context diagram is demonstrate the relationship and interaction between staff and administrator in E-LMSP application. Both of them have different actions in the E-LMSP application.

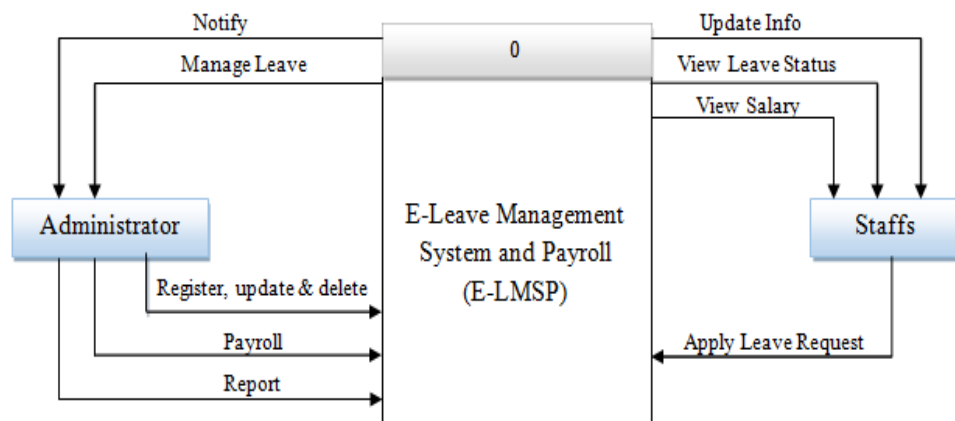


Figure 3.2: Context Diagram of E-LMSP application

3.3.2 USE CASE DIAGRAM

Figure 3.3 demonstrate a Use Case diagram for E-Leave Management System and Payroll (E-LMSP). Two actors are recognized which is the administrator and staff interaction with E-LSMP application. The staff is use to apply leave, update

information, view leave status and salary. However, the administrator is use to register new user, update information, manage leaves, calculate salary and generate report.

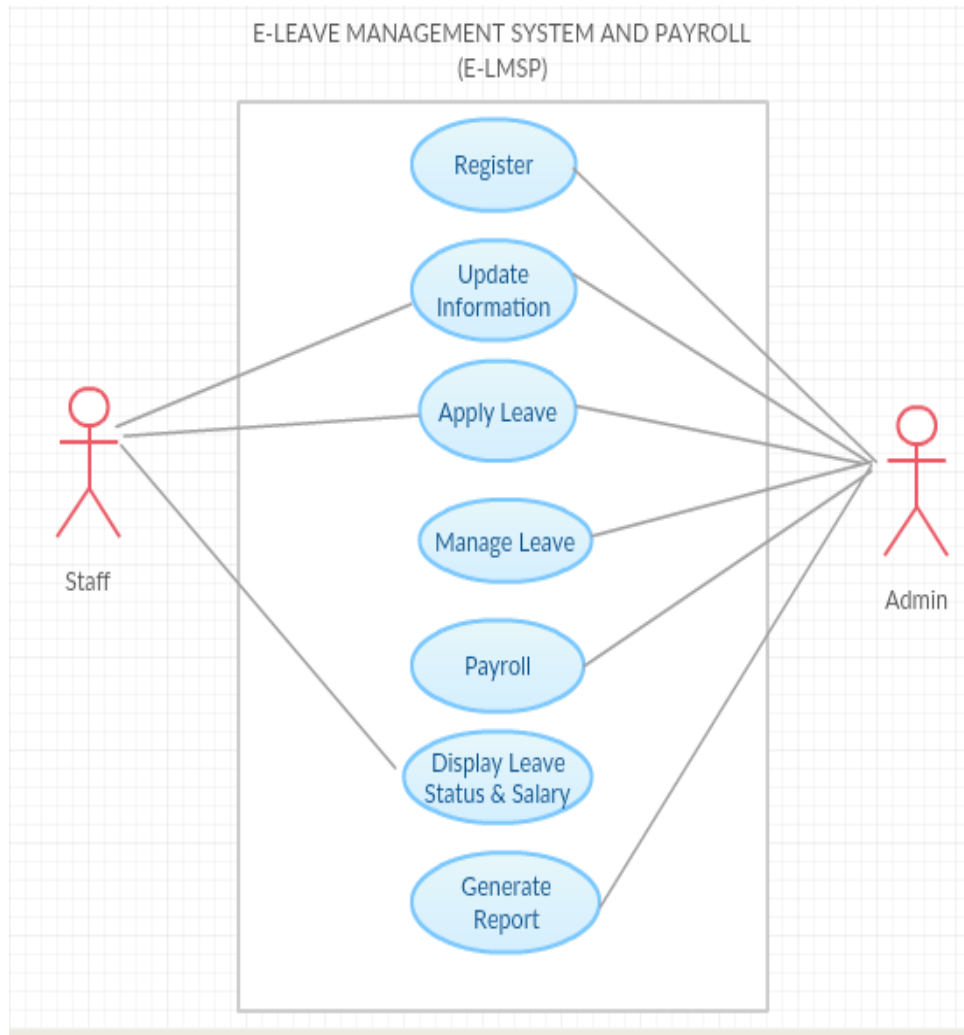


Figure 3.3: Use Case Diagram of E-LMSP application

3.3.3 FLOW CHART

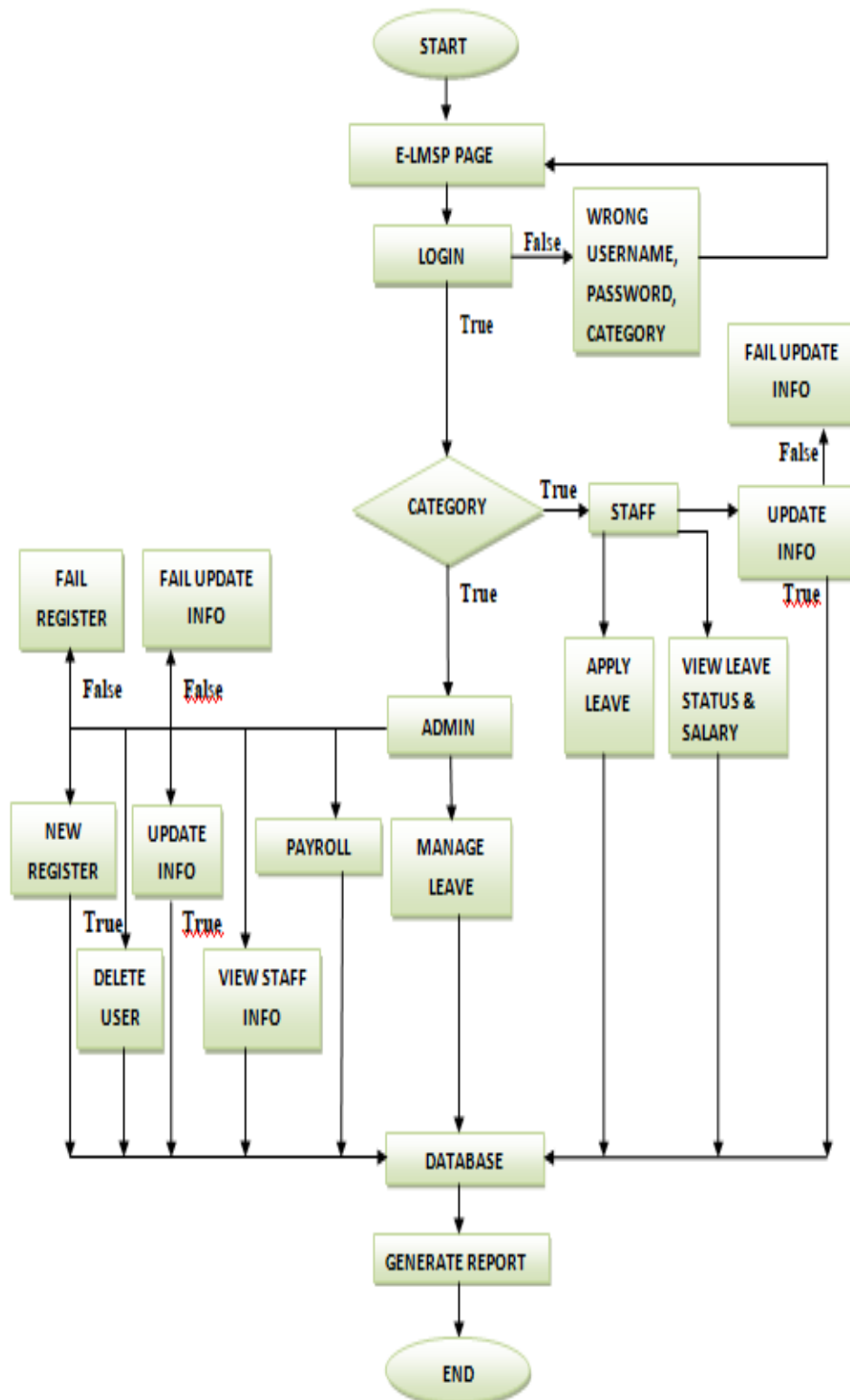


Figure 3.4: The flow chart of E-LMSP application

Figure 3.4 above demonstrate the overall process of E-Leave Management System and Payroll (E-LMSP) application that will be implementing at Seri Barat Mixed. To access E-LMSP application, the employee need to login with correct username, password and category. In E-LMSP application it divides into two types of user which is staff and admin. Once of the staff success to access the E-LMSP, it can commence to apply leave and the notification will send to the administrator via email when employees applied the leave request. After that, staff also can view the leave status and salary in monthly. Staff also can update the information. Besides that, the use functions of administrator in E-LMSP are register new user, update information, delete user, manage leave request of employees, calculate salary, view employee information and generate report. Lastly, all the data will be store into the database.

3.3.4 DIALOGUE DIAGRAM (DD)

A Dialogue Diagram is known as storyboarding provides a graphical method for determining the sequences of screen that are designing. It is significant to plan the sequences of data flow that interacts between a user and the E-LMSP application. Figure 3.5 and 3.6 shows the process of E-LMSP application. In E-LMSP, it divides into two types of user which is staff and admin. To access the E-LMSP, the employees need to enter the correct username, password and category. In the system, staff is use to apply leave, view leave status, view salary and update information. Besides that, the administrator is use to register new user, update information, delete user, view staff information, manage leave, calculate salary and generate report.

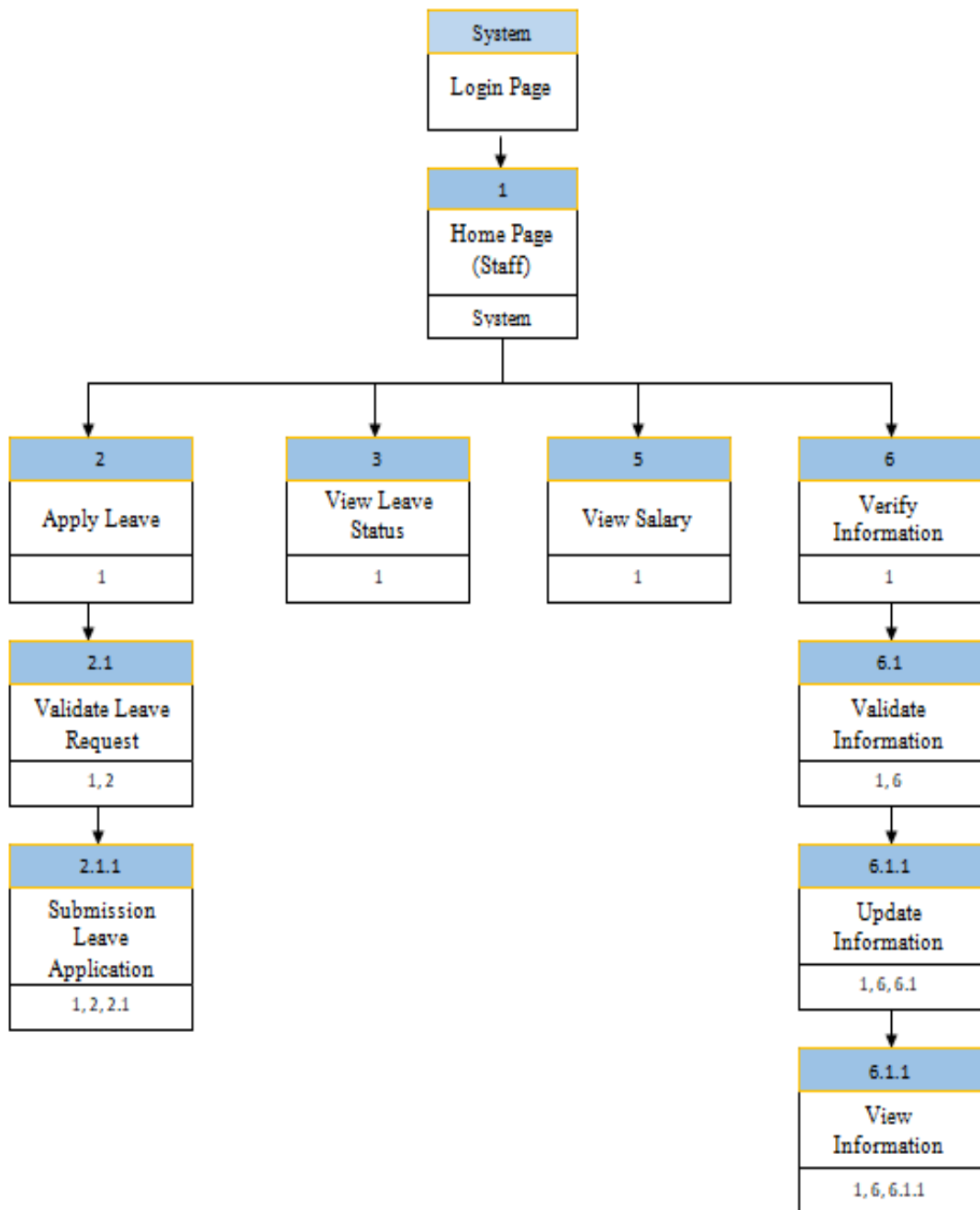


Figure 3.5: Dialogue Diagram of E-LMSP application (Staff)

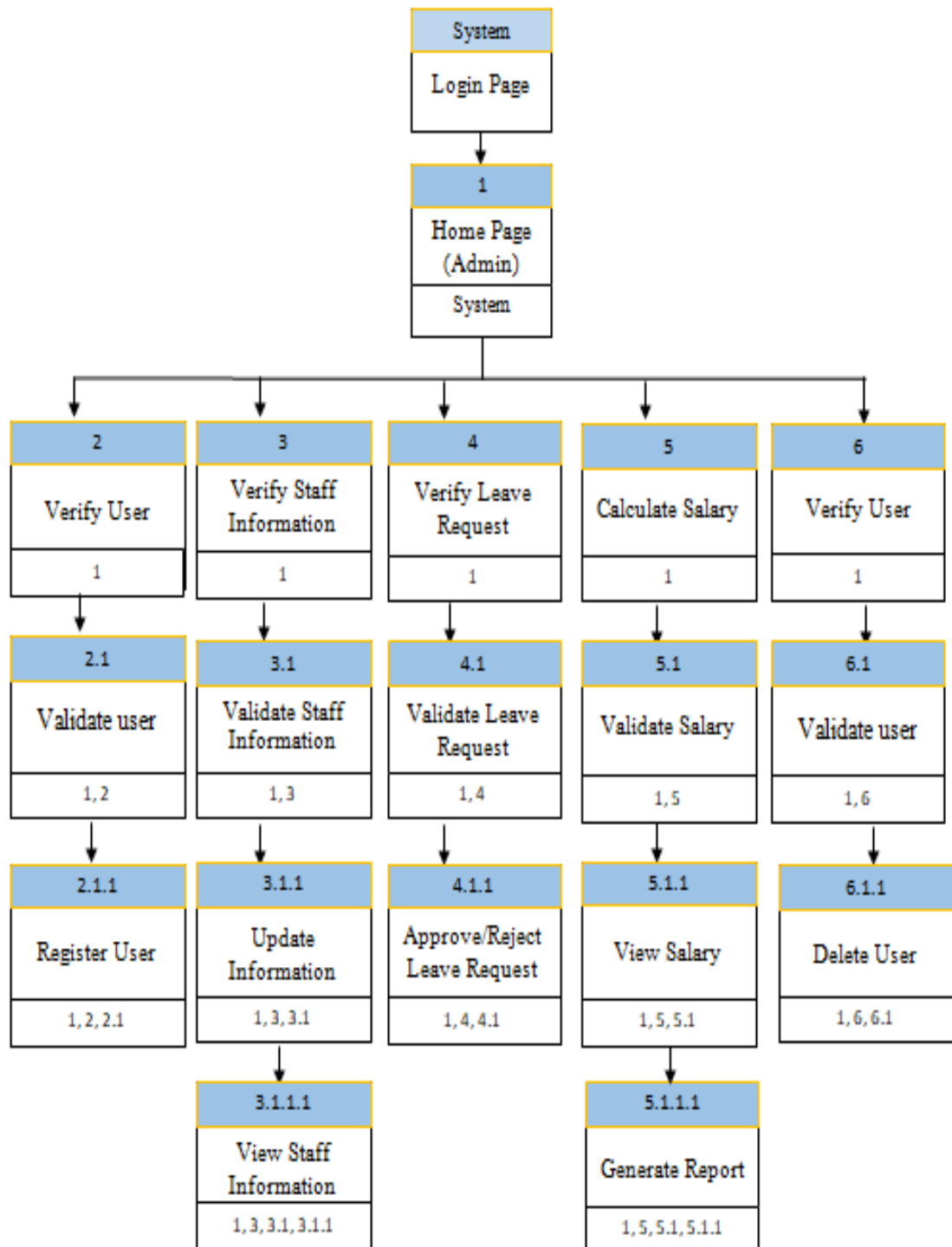


Figure 3.6: Dialogue Diagram of E-LMSP application (Admin)

3.4 SOFTWARE REQUIREMENT AND SPECIFICATION (SRS)

Software Requirement Specification (SRS) is a documentation that describe the design flows and requirements of the system and assure that each requirement are completely fulfilled in the systems. This documentation focus the requirement that needed by the client of this software system. This system will be developing by using C#.Asp.Net and android studio as a system interface and Microsoft SQL server as a database of a system.

(Refer to **Appendix B - SRS**)

3.5 SOFTWARE DESIGN DOCUMENT (SDD)

Software Design Document (SDD) is documentation that describe the design that will be develop in the Seri Barat Mixed. This documentation will provide the Data dictionary, and Graphical User Interface (GUI).

(Refer to **Appendix C - SDD**)

3.6 SOFTWARE AND HARDWARE REQUIRMENT

Table 3.1 shows list of the software component and their function that will be used for develop E-Leave Management System and Payroll (E-LMSP). Meanwhile, Table 3.2 shows the hardware component and their function that use to develop and run the systems and complete the task.

Table 3.1: Software used for development and their description

Software	Version	Description
Windows 10 (Operating system)	64-Bit home premium	As a platform to run the systems.
Microsoft office · Microsoft words	2007 and 2016	· To prepare related document for development.

Microsoft Power point Microsof		<ul style="list-style-type: none"> · To prepare slide presentation. · To create Gantt chart
Microsoft Visio	2013	To drawing context diagram.
Microsoft SQL server	2014	As a database of system to store the data.
Visual studio	2012	To develop/design the interface or front-end of system.

Table 3.2: Hardware used for development and their description

Hardware	Specification	Description
HP Pavilion	HP 1703, Intel @ core i3 processor. Ram: 4GB Hard disk : 500GB	Is use to do documentation and develop the whole system from designing the interface and codes.
Printer	Canon Pixma MP510 series	Is use to print out all documents that will be creating during project Undergraduate Final Year project I and II.

3.7 GANTT CHART

Gantt chart is very important in development application because it will demonstrate all the flow or process of stage from beginning until the final stage. All tasks or activities will include in every stage and stated together with duration for complete each task or activities. Gantt chart is attached in the Appendix A.

(Refer to **Appendix A – Gantt Chart**)

3.8 IMPLEMENTATION

The implementation of project, the first thing we need to do is collecting the entire data requirement that related with the proposed system. The data we can gain from literature review that comparison of current existing system. From comparison, I can know the advantage and disadvantage of the existing system. The advantages of the existing system that will be taken for implemented into proposed system and add some functions that do not exist in existing system.

Before develop the real system we need to design or draw diagram the overall flow of the system such as use case diagram, flow chart, context diagram, dialogue diagram, software requirement and specification (SRS) and software design document (SDD). In this case, we can know the flow and interaction of systems by analyzing the structure of diagram. Therefore, we also can know the hardware and software requirement, modules, function, input and output that produced for the build system.

E-Leave Management System and Payroll (E-LMSP) being implement by using waterfall model methodologies. The primary purposes of using waterfall model methodologies because it can clearly defined understood and guide us of developing a system until completed. The code that being implemented in E-LMSP application is using C# ASP.Net language and android studio as a interface while Microsoft SQL Server will use as a database. E-LMSP application has been develop into two platforms which is mobile application and web application.

Besides that, the E-LMSP have consists two main users which are administrator and staff. In the system, the staff can update information such as personal details, passwords, apply leave, and view the leave record or status. While administrator it can update information such as leave balance and salary, manage leave approved, view leave record, manage salary and generate the report. Lastly, the end of the implementation we will generate the user manual documentation.

3.9 TESTING

The testing plan is done when finish the development of E-LMSP application. The testing plan for the application is will based on the design such use case diagram, dialogue diagram, context diagram and so on. The testing is done based on test cases designed. The test cases designed are regarding the test process where all the functional or components interaction with the E-LMSP application. Any problems or error occur during testing we will take note in the test cases for do the system improvement or correction. The test cases of the application are documented as follows where the event, test data, actual result, expected result, pass or fail and comment also included.

The test data is done by the users to produce the outcome. The expected result will describe what the system would look like when such test data is being done. The expected result should be the same as actual result. If the expected result is not same with actual result, the defect is log in the comment and it is log as pass or fails in the pass or fail column. Below is one example of test cases for the E-LMSP application. The details of test plan are described in the user acceptance test (UAT). Table 3.3 shows the example of the testing function of the E-LMSP application that is further described in the user acceptance test (UAT).

Table 3.3: Testing Function of Register

No.	Event	Test Data/Case	Expected Result	Actual Result	Pass/Fail
1	Register or add new employee into the system.	Enter the entire information requirement.	The data is enter are successfully saved into the database.	The data is successfully store in the database.	Pass

CHAPTER 4

IMPLEMENTATION, TESTING AND RESULT DISCUSSION

4.1 INTRODUCTION

In this chapter will discuss the process of implementation and result obtained based on the testing project of E-LMSP application has been done. To ensure the objectives of the project are fulfilled, the development process E-LMSP application has been done based on the methodology of the earlier phase. The project development process with are using the Microsoft visual studio and android studio tools to build the application. After finish the development of project will be testing to obtain the results and finding the error or vulnerabilities of the systems during in testing phase. The user manual also will be provided to guide user to use the E-LMSP application.

4.2 IMPLEMENTATION

The process implementation of E-LMSP application divided into two parts which is software and hardware implementation. The software is use to implemented of E-LMSP application are android studio, Microsoft SQL Server and Microsoft Visual Studio. Therefore, hardware that will be use is laptop and smart phone to build and run the application. To develop E-LMSP application, the software and hardware need to choose properly. For example, the version of application program interface (API) for android must be low that to ensure it can target more devices to use the proposed application. Besides that, the prototype and function of E-LMSP application is be tested

that to verify no bugs or error during using the application. Lastly, the implementation process is success since does not have any error or bugs during the testing and allow the client to verify any improvement that needs to be added into the E-LMSP application.

4.2.1 DEVELOPMENT ENVIRONMENT

In implementation phase, the E-LMSP application is develop into two platforms which are web-based application and mobile application. The software uses to develop E-LMSP application are Microsoft SQL server, Microsoft visual studio and android studio. The figure 4.1 until figure 4.29 is state the description or function of software to develop the E-LMSP application.

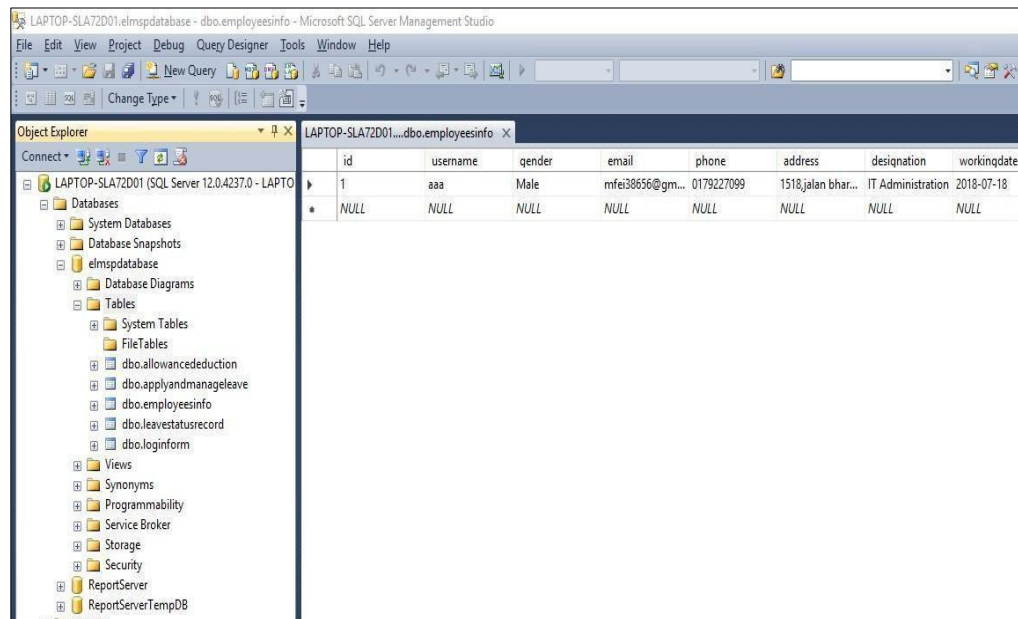


Figure 4.1: Microsoft SQL Server

Figure 4.1 shows the Microsoft SQL Server. Microsoft SQL Server is known as a database that will use to connect with the E-LMSP application and all data will be store into the database. In Microsoft SQL Server you need to create a database name and table name for E-LMSP application. The database for E-LMSP application it contain five table names such as login info, employee info, payroll info, apply and manage leave and view leave status.

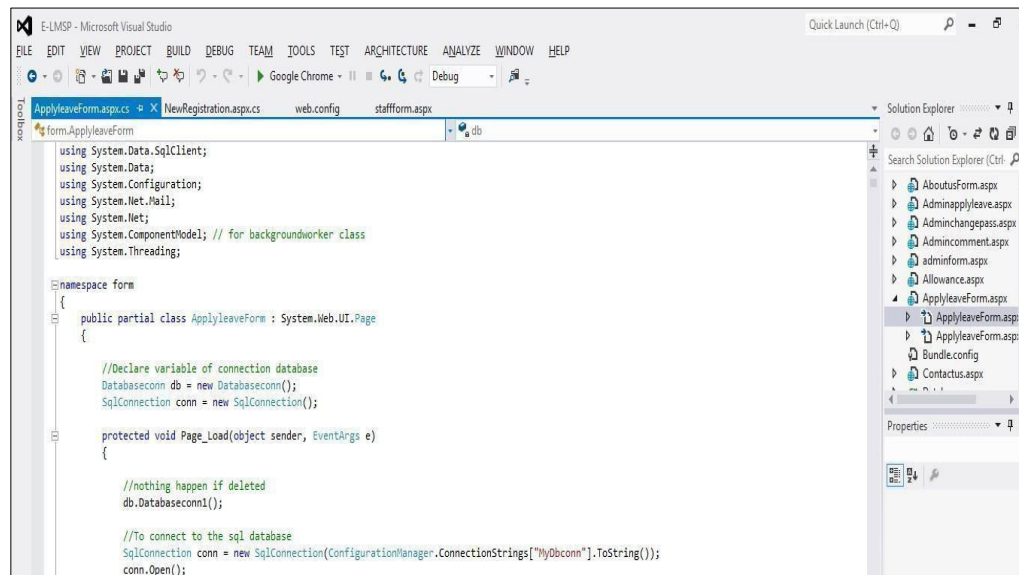


Figure 4.2: Microsoft Visual Studio

Figure 4.2 shows the Microsoft Visual Studio. Microsoft Visual Studio is used to develop the E-LMSP of web-based application. The interface of E-LMSP web application is using the ASP.NET language and the function code is using C# language. E-LMSP web application will be connecting with Microsoft SQL Server that is used to store all data into the database.

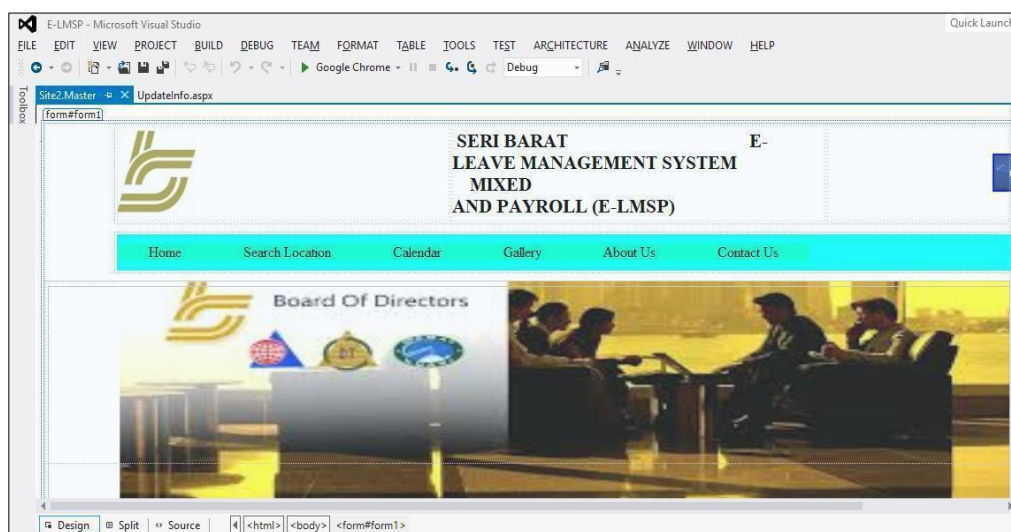


Figure 4.3: Login page of E-LMSP web application

Figure 4.3 shows the login page of E-LMSP web application which is developed by using Microsoft Visual Studio. Login Page is design that to allow the staff and admin to login into E-LMSP.

```

protected void Button1_Click(object sender, EventArgs e)
{
    try
    {
        //nothing happen if deleted
        db.DatabaseConn1();

        //To connect to the sql database
        SqlConnection conn = new SqlConnection(ConfigurationManager.ConnectionStrings["MyDbconn"].ToString());
        conn.Open();

        //check username and password
        //read the string/command of query in database table
        string query = "select count(*) from loginform where username='" + name.Text + "'and password='" + password.Text + "' and category= '" +

        // To connect and execute the query command
        SqlCommand cmd = new SqlCommand(query, conn);

        //if query if found/execute successfully
        string output = cmd.ExecuteScalar().ToString();

        if (output == "1")
    }
}

```

Figure 4.4: Coding for Login Page of E-LMSP web application

Figure 4.4 shows the coding for login page implemented of E-LMSP web application.

DETAILS OF EVENT

Date Apply :

Leave Type :

Day Type :

From Date : To Date :

No. of Days :

Leave Reason :

VERIFICATION OR APPROVAL

Manager Name : [approvedby1]

Figure 4.5: Apply Leave of E-LMSP web application

Figure 4.5 shows the apply leave interface of E-LMSP web application which is developed by using Microsoft Visual Studio. In apply leave form, the staff needs to fill in the detail information and submit leave request to the admin.

```

protected void apply_Click(object sender, EventArgs e)
{
    if (id.Text == "" && username.Text == "" && department.Text == "")
    {
        //message
        HttpContext.Current.Response.Write("<script>alert('You need refresh of click again the apply leave form !!!');</script>");
    }
    else if (leavetype.Text == "-" && daystype.Text == "-" && startdate.Text == "dd/mm/yyyy" && enddate.Text == "dd/mm/yyyy" && noofdays1.Text == "")
    {
        //message
        HttpContext.Current.Response.Write("<script>alert('Please enter all the details of event !!!');</script>");
    }
    else if (approvedby.Text == "" && emailmanager.Text == "")
    {
        //message
        HttpContext.Current.Response.Write("<script>alert('Please enter all the details of verification or approval!!!');</script>");
    }
    else if (dateapplied.Text == "")
    {
        //message
        HttpContext.Current.Response.Write("<script>alert('Date applied cannot empty be reload the page again !!!');</script>");
    }
    else if (leavetype1.Text == "" || leavetype1.Text == "-")
    {
        //leavetype1.Text = "Please select your leave type !!!";
        //message
    }
}

```

Figure 4.6: Coding for Apply Leave of E-LMSP web application

Figure 4.6 shows the coding for apply leave implemented of E-LMSP web application.

VIEW SALARY FORM	
YOUR SALARY DETAIL	
Your Name : [username]	
BASIC SALARY	: RM 0.00
AMOUNT SALARY	: RM 0.00
TOTAL ALLOWANCE (BONUS + OVERTIME + CLAIMS)	: RM 0.00
TOTAL SALARY DEDUCTION (MEDICAL + EPF + SOCSO)	: RM 0.00
TOTAL MONTHLY PAYMENT	: RM 0.00
Last Update : dd/mm/yyyy	

Figure 4.7: View Salary of E-LMSP web application

Figure 4.7 shows the view salary interface of E-LMSP web application which is developed by using Microsoft Visual Studio. In view salary form, the staff can see total salary in monthly.

```

//read the string/command of query in database table
String searchallowanceinfo = "select username, basicsalary, totalallowance, totaldeduction, totalpayment, amountsalary, lastdate from allowan

// To connect and execute the query command
SqlCommand cmd = new SqlCommand(searchallowanceinfo, conn);

//Read the data in the database
SqlDataReader dr;
dr = cmd.ExecuteReader();

if (dr.HasRows)
{
    // Get/read data in the database
    while (dr.Read())
    {
        // Insert data to the textbox
        username.Text = dr.GetString(0);
        basicsalary.Text = dr[1].ToString();
        totalallowance.Text = dr[2].ToString();
        totaldeduction.Text = dr[3].ToString();
        totalpayment.Text = dr[4].ToString();
        amountsalary.Text = dr[5].ToString();
        dateupdate.Text = Convert.ToDateTime(dr[6].ToString()).ToString("dd/MM/yyyy");
    }
}

```

Figure 4.8: Coding for View Salary of E-LMSP web application

Figure 4.8 shows the coding for view salary implemented of E-LMSP web application.

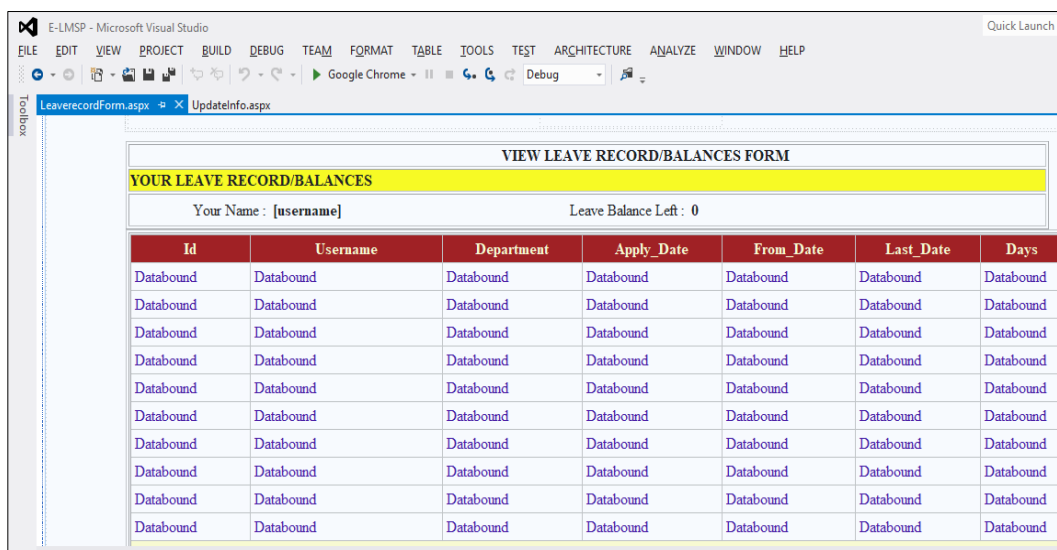


Figure 4.9: View Leave Status of E-LMSP web application

Figure 4.9 shows the view leave status of E-LMSP web application which is developed by using Microsoft Visual Studio. In view leave status form, the staff can view leave status whether is approve or reject. Therefore, staff also can see the total leave balance left.

```

Session.RemoveAll();
}

//read the string/command of query in database table
String item = "select username,leavebalance from employeesinfo where username='" + session.Text + "' ";

// To connect and execute the query command
SqlCommand cmd = new SqlCommand(item, conn);

//Read the data in the database
SqlDataReader dr;
dr = cmd.ExecuteReader();

try
{
    // Get/read data in the database
    while (dr.Read())
    {
        // Insert data to the textbox
        username.Text = dr.GetString(0);
        balance.Text = dr[1].ToString();
    }
}
catch (Exception)
{
}

```

Figure 4.10: Coding for View Leave Status of E-LMSP web application

Figure 4.10 shows the coding for view leave status implemented of E-LMSP web application.

Figure 4.11: New Registration of E-LMSP web application

Figure 4.11 shows the new registration interface of E-LMSP web application which is developed by using Microsoft Visual Studio. The new registration page is used by admin to register new user into the system.

```

//To connect the sql database
SqlConnection conn = new SqlConnection(ConfigurationManager.ConnectionStrings["MyDbconn"].ToString());
conn.Open();

//read the string/command of query in database table
string login = "select username from loginform";
string loginform = "insert into loginform " + " (id,username,password,category) values (@id,@username,@password,@category) ";
string newregister = "insert into employeesinfo " + " (id, username,gender, email,phone,address,designation,workingdate,salary,leavebalance) values (@id,@username,@gender,@email,@phone,@address,@designation,@workingdate,@salary,@leavebalance) ";
string allowedcededuction = "insert into allowedcededuction " + " (id,username,designation,basicsalary,amountsalary,lastdate) values (@id,@username,@designation,@basicsalary,@amountsalary,@lastdate) ";

//command to read query with connect to database
SqlCommand cmd1 = new SqlCommand(loginform, conn);
SqlCommand cmd2 = new SqlCommand(newregister, conn);
SqlCommand cmd3 = new SqlCommand(allowedcededuction, conn);
SqlCommand cmd4 = new SqlCommand(login, conn);

try
{
//To insert the data into loginform table at database
cmd1.Parameters.AddWithValue("@id", id.Text);
cmd1.Parameters.AddWithValue("@username", username.Text);
cmd1.Parameters.AddWithValue("@password", password.Text);
cmd1.Parameters.AddWithValue("@category", category.Text);
}

```

Figure 4.12: Coding for New Registration of E-LMSP web application

Figure 4.12 shows the coding for new registration implemented of E-LMSP web application.

Figure 4.13: Update Information of E-LMSP web application

Figure 4.13 shows the update information interface of E-LMSP web application which is developed by using Microsoft Visual Studio. The update information page is use by staff and admin. The staff it can update personal information and password. Therefore, admin is use to update salary and leave balance of employees.

```

@_update_Click(object sender, EventArgs e)
{
    HttpContext.Current.Response.Write("<script>alert('Please select the designation...');</script>");
}
else if (salary.Text == "" || salary.Text == "0.00" || salary.Text == "0")
{
    HttpContext.Current.Response.Write("<script>alert('Please enter the amount of the salary...');</script>");
}
else if (leavebalance.Text == "")
{
    HttpContext.Current.Response.Write("<script>alert('Leave Balance cannot be Empty...');</script>");
}
else
{
    try
    {
        //nothing happen if deleted
        db.DatabaseConn1();

        //To connect to the sql database
        SqlConnection conn = new SqlConnection(ConfigurationManager.ConnectionStrings["MyDbconn"].ToString());
        conn.Open();

        //read the string/command of query in database table
        // string updateinfo = "update name,age,gender,email,phone,address,department,category,salary from employeesinfo where id="
        string updateinfo = "update employeesinfo set username=" + username.Text + ", gender=" + gender.Text + ", email=" + ema
        string updateallowancededuction = "update allowance deduction set id=" + id.Text + ", usernames=" + username.Text + ", de
        string loginform = "update loginform set id=" + id.Text + ", username=" + username.Text + ", category=" + category
    }
}

```

Figure 4.14: Coding for Update Information of E-LMSP web application

Figure 4.14 shows the coding for update information implemented of E-LMSP web application.

Request Leave Information												
Id	Username	Department	L_Balance	Date_Apply	Leave_Type	Day	Date	Day	Salary(RM)	S_Deduct(RM)	Comme	
0	abc	abc	0	27-10-2018	abc	abc	10-2018	0	0	0	abc	
1	abc	abc	1	27-10-2018	abc	abc	10-2018	1	0.1	0.1	abc	
2	abc	abc	2	27-10-2018	abc	abc	10-2018	2	0.2	0.2	abc	
3	abc	abc	3	27-10-2018	abc	abc	10-2018	3	0.3	0.3	abc	
4	abc	abc	4	27-10-2018	abc	abc	10-2018	4	0.4	0.4	abc	
5	abc	abc	5	27-10-2018	abc	abc	10-2018	5	0.5	0.5	abc	
6	abc	abc	6	27-10-2018	abc	abc	27-10-2018	27-10-2018	6	0.6	0.6	abc

Figure 4.15: Manage Leave of E-LMSP web application

Figure 4.15 shows the manage leave interface of E-LMSP web application which is developed by using Microsoft Visual Studio. The manage leave form is use by admin to approve or reject leave request of the employees.

```

try
{
    //configure the button in gridview
    Button btn = (Button)sender;
    GridViewRow row = (GridViewRow)btn.NamingContainer;
    int id = Convert.ToInt16(row.Cells[0].Text); //Get value row in grid view
    string dateapply = row.Cells[4].Text; //Get value row in grid view
    DateTime dt = DateTime.ParseExact(dateapply, "dd-mm-yyyy", null); // get the date format in gridview
    string dateapply1 = dt.ToString("yyyy-mm-dd"); // convert the date that match with database date format
    // DateTime dt = Convert.ToDateTime(dateapply).Date; (this is use when gridview date format same with database)

    int lbalance = Convert.ToInt16(row.Cells[3].Text);

    //To connect to the sql database
    SqlConnection conn = new SqlConnection(ConfigurationManager.ConnectionStrings["MyDbconn"].ToString());
    conn.Open();

    //read the string/command of query in database table
    String leavestatusrecord = "update leavestatusrecord set leavestatus = @leavestatus where id=" + id + " and applydate= " + dateapply1
    // String deleteleave = "delete from applyandmanageleave where id=" + id + " ";
    String deleteleave = "delete from applyandmanageleave where id=" + id + " and dateapply= " + dateapply1 + " and leavebalance = " + l

    //command to read query with connect to database
    SqlCommand cmd = new SqlCommand(leavestatusrecord, conn);
    SqlCommand cmd1 = new SqlCommand(deleteleave, conn);
}
}

```

Figure 4.16: Coding for Manage Leave of E-LMSP web application

Figure 4.16 shows the coding for manage leave implemented of E-LMSP web application.

Employees Details	
Enter Employee Id: <input type="text"/>	Date : dd/mm/yyyy
Staff ID : <input type="text"/>	Staff Name : <input type="text"/>
	Designation : <input type="text"/>
Allowance Details	
<u>Bonus</u>	<u>Overtime(Hours)</u>
Bonus : RM <input type="text" value="0.00"/>	Pay Overtime per Hours : RM <input type="text" value="0.00"/> Total Pay OT H RM 0.00
	Total OT per Hours(Month) : <input type="text" value="0"/>
<u>Claims</u>	<u>Overtime(Days)</u>
Oil Vehicle : RM <input type="text" value="0.00"/>	Pay Overtime per Days : RM <input type="text" value="0.00"/> Total Pav OT D

Figure 4.17: Payroll of E-LMSP web application

Figure 4.17 shows the payroll interface of E-LMSP web application which is developed by using Microsoft Visual Studio. The payroll form is use by admin to calculate total salary of the employees.

```

else if (socso.Text == "" || socso.Text == "-")
{
    //message
    HttpContext.Current.Response.Write("<script>alert('Socso cannot be empty !!! If not have socso insert value zero (0)');</script>");
}
else if (epf.Text == "" || epf.Text == "-")
{
    //message
    HttpContext.Current.Response.Write("<script>alert('EPF cannot be empty !!! If not have EPF/KMSP insert value zero (0)');</script>");
}
else
{
    try
    {
        // Calculate total allowance
        //Declare data members for allowance (allowance table)
        //Declare data members
        double bonus1;
        double claimoil1;
        double claimitem1;

        double payotperhour1;
        int totaltohour2;
        double totalpayothour1;

        double payotday1;
        int totalotday2;
    }
}

```

Figure 4.18: Coding for Payroll of E-LMSP web application

Figure 4.18 shows the coding for payroll implemented of E-LMSP web application.

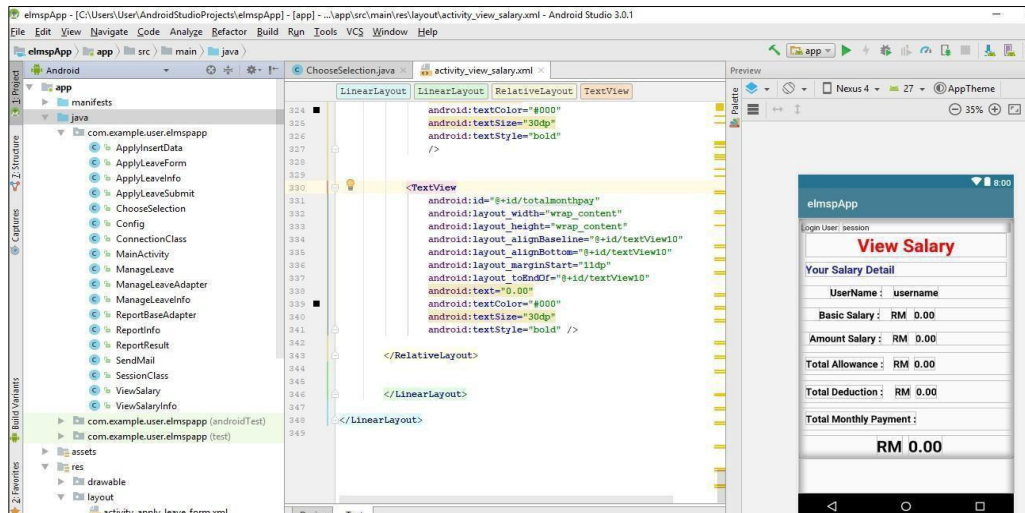


Figure 4.19: Android Studio

Figure 4.19 shows the android studio. Android studio is use to develop the E-LMSP mobile application. The interface of E-LMSP mobile application is using the android language and the function code is use java language. E-LMSP mobile application will be connecting with Microsoft SQL Server that uses to store all data into the database.

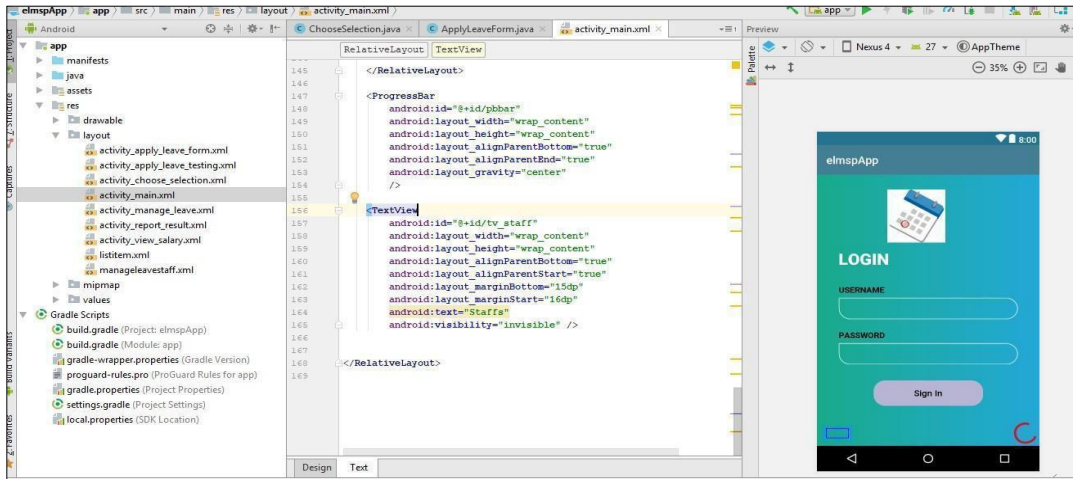


Figure 4.20: Login Page of E-LMSP mobile application

Figure 4.20 shows the login page of E-LMSP mobile application which is developed by using android studio. Login Page is design that to allow the staff and admin to login into E-LMSP.

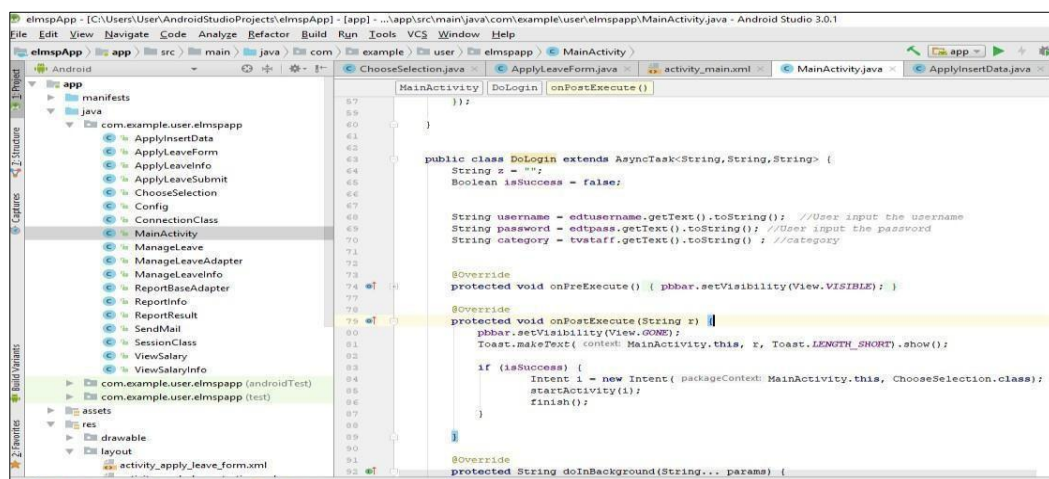


Figure 4.21: Coding for Login Page of E-LMSP mobile application

Figure 4.21 shows the coding for login page implemented of E-LMSP mobile application.

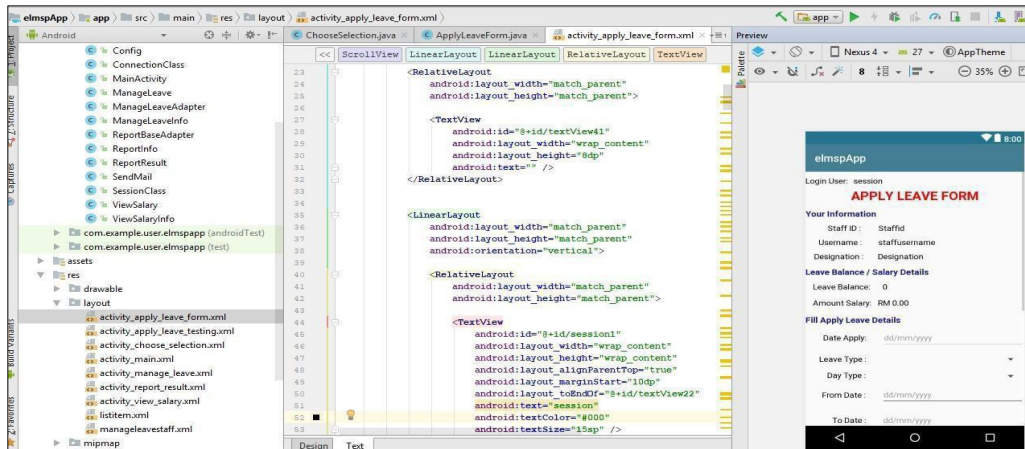


Figure 4.22: Apply Leave of E-LMSP mobile application

Figure 4.22 shows the apply leave interface of E-LMSP mobile application which is developed by using android studio. In apply leave form, the staffs need to fill in the detail information and submit leave request to the admin.

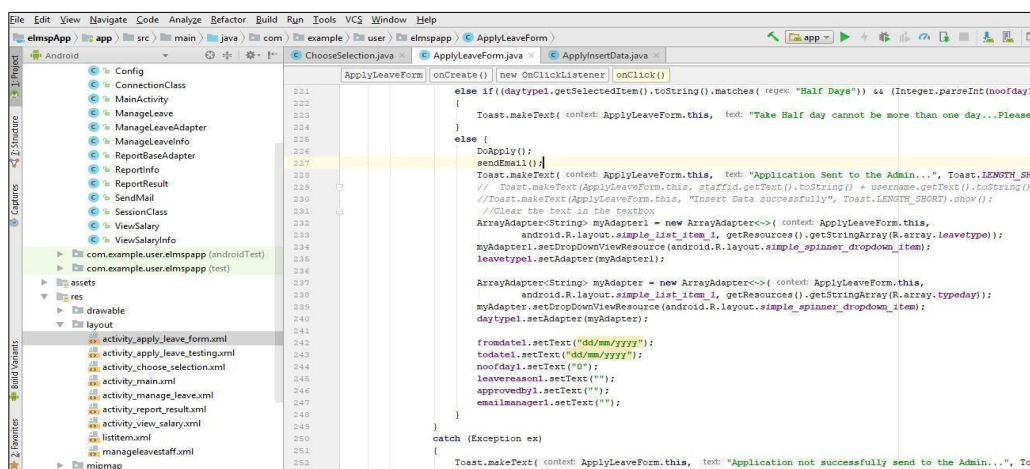


Figure 4.23: Coding for Apply Leave of E-LMSP mobile application

Figure 4.23 shows the coding for apply leave implemented of E-LMSP mobile application.

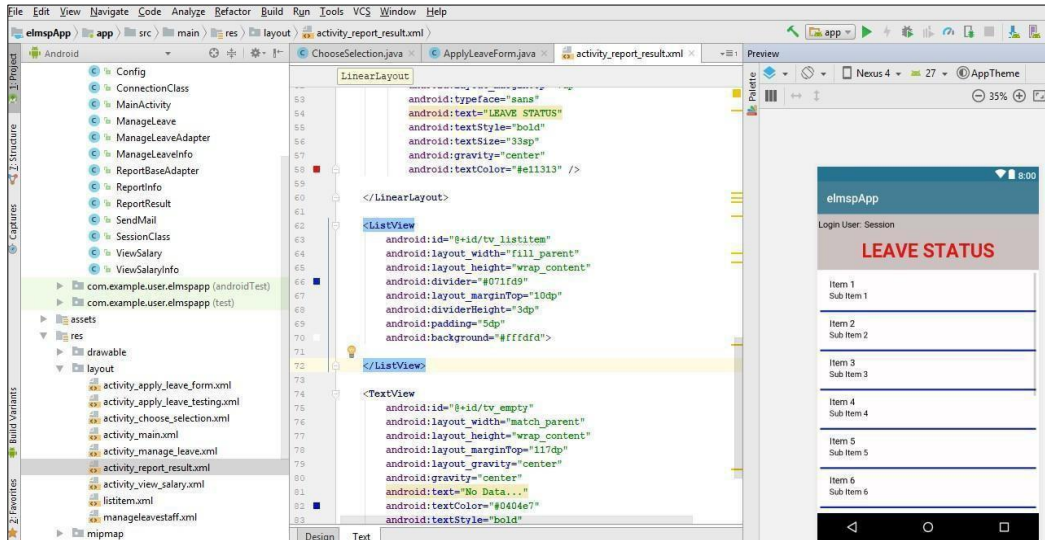


Figure 4.24: View Leave Status of E-LMSP mobile application

Figure 4.24 shows the view leave status of E-LMSP mobile application which is developed by using android studio. In view leave status form, the staff can view leave status whether is approve or reject. Therefore, staff also can see the total leave balance left.

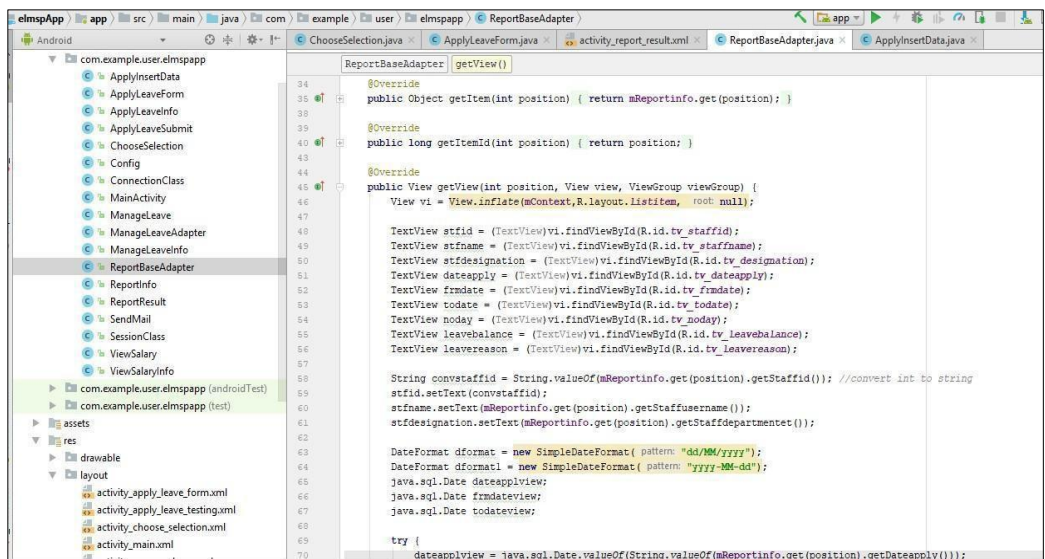


Figure 4.25: Coding for View Leave Status of E-LMSP mobile application

Figure 4.25 shows the coding for view leave status implemented of E-LMSP mobile application.

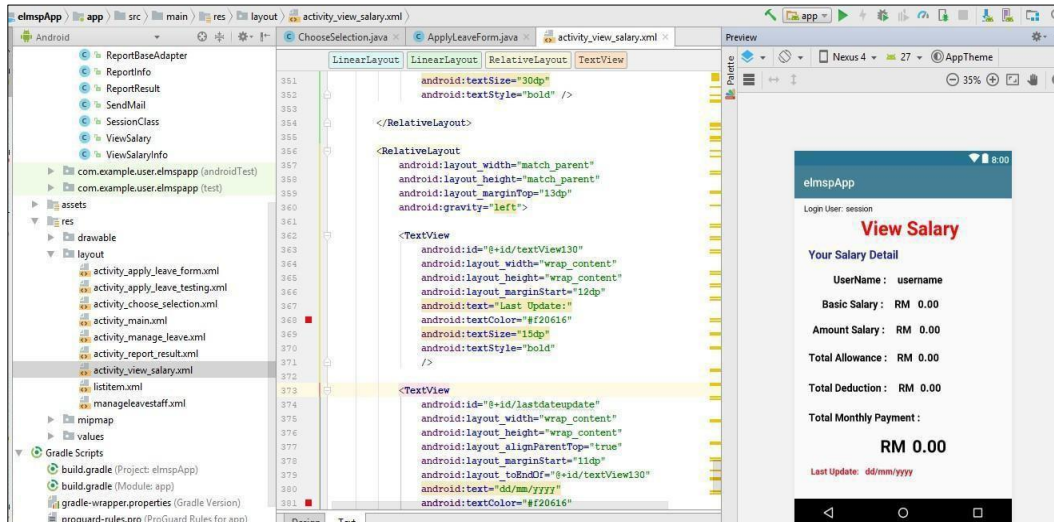


Figure 4.26: View Salary of E-LMSP mobile application

Figure 4.26 shows the view salary interface of E-LMSP mobile application which is developed by using android studio. In view salary form, the staff can see total salary in monthly.

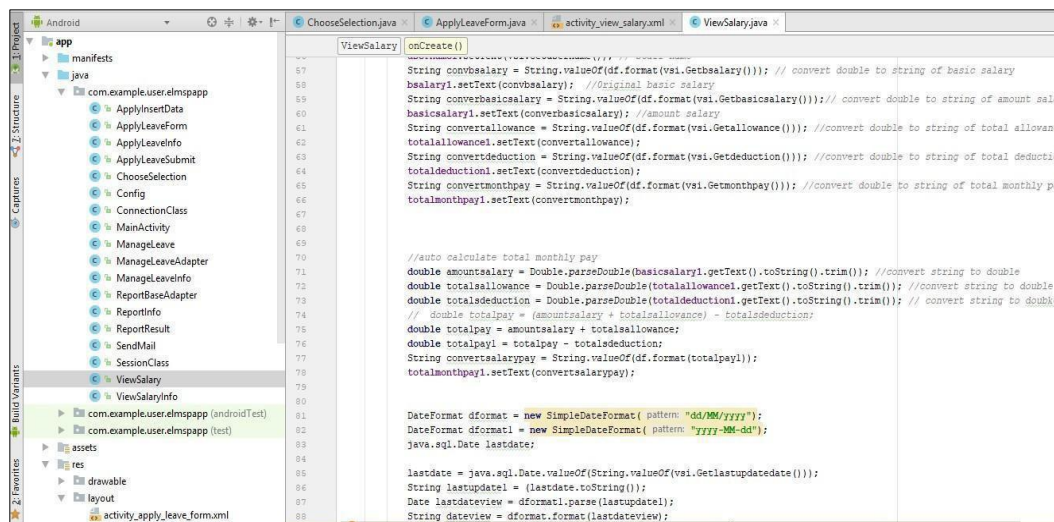


Figure 4.27: Coding for View Salary of E-LMSP mobile application

Figure 4.27 shows the coding for view salary implemented of E-LMSP mobile application.

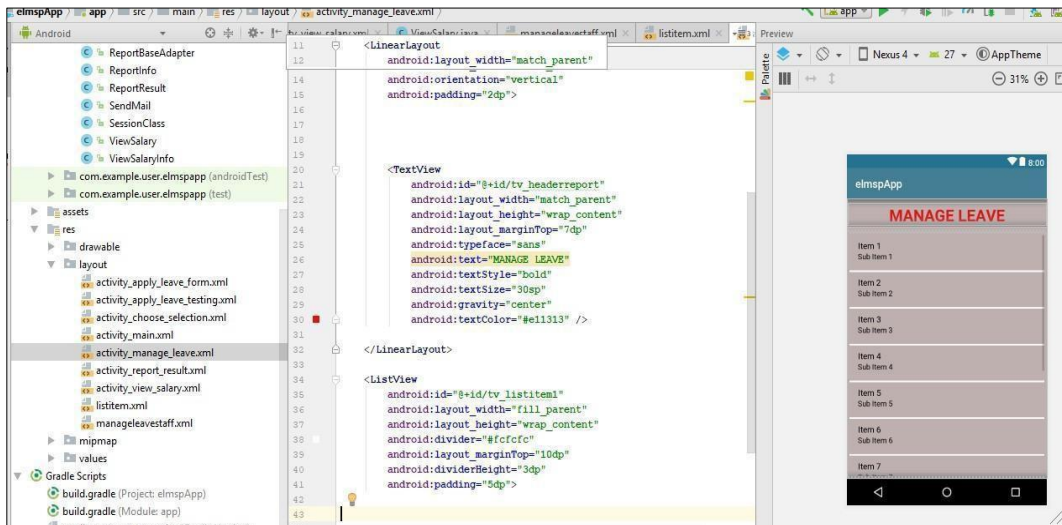


Figure 4.28: Manage Leave of E-LMSP mobile application

Figure 4.28 shows the manage leave interface of E-LMSP mobile application which is developed by using android studio. The manage leave form is use by admin to approve or reject leave request of the employees.

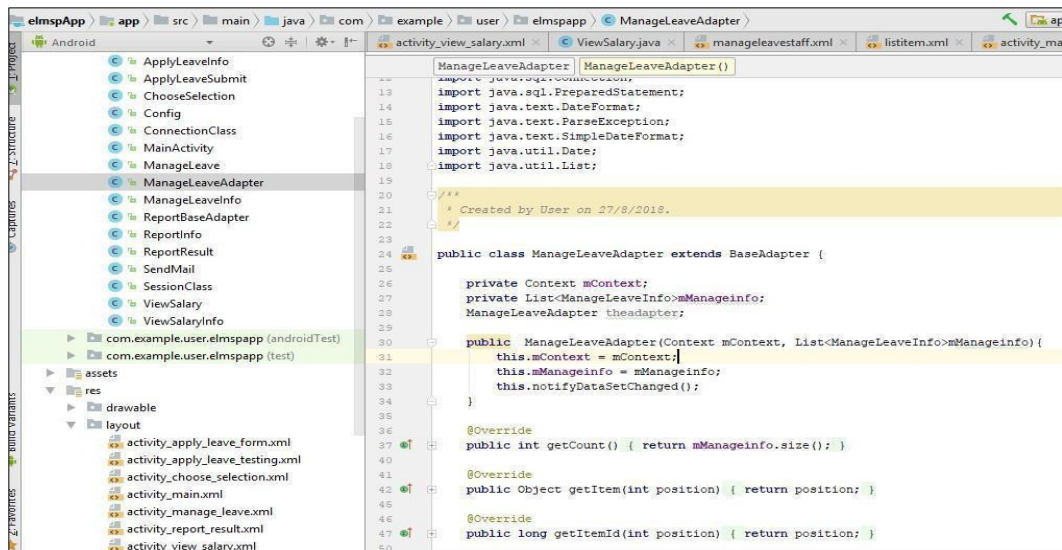


Figure 4.29: Coding for Manage Leave of E-LMSP mobile application

Figure 4.29 shows the coding for manage leave implemented of E-LMSP web application.

4.2.2 STRENGTH OF E-LMSP APPLICATION

The strength of E-LMSP application are have two platforms that employee can be used which is web based application and mobile application. In E-LMSP application it divides into two category of user which is staff and admin. E-LMSP application for staff and admin is use the different page and function to avoid the confusing. Which this E-LMSP application, the staff can easy for apply leave when have emergency case. Therefore, the staff also can update information, view leave status and salary in monthly. Besides that, the admin can easy to manage leave request and calculate salary of the employees based on the leave request. Lastly, admin can easy to update the employee information and delete user from the system.

4.2.3 WEAKNESS OF E-LMSP APPLICATION

The weakness of E-LMSP application is staff cannot apply leave more than seven days in one day. Therefore, the staff also cannot apply leave in two times when the first leave request is not approve by the admin. Besides that, approve or reject leave request does not send the notification for the staff. Other than that, the employees only can access the E-LMSP application in local area network (LAN) only. After that, E-LMSP mobile application is only can support the android phone only. Lastly, the weakness of E-LMSP application will be improved on future work.

4.2.4 CHALLENGES IMPLEMENTATION OF E-LMSP APPLICATION

The challenges of develop E-LMSP application are connection with database through the internet connection. Therefore, the E-LMSP of mobile application and web application is always needed to test that ensure getting data is accurate. The developed and testing is needed a longer time to ensure no errors or bugs occur during the implementation of the system. Lastly, implementation plan only can be done until the system can be run successfully.

4.3 TESTING AND RESULT DISCUSSION

After finish development of E-LMSP application, the testing will be done to getting the results of the application to determine whether the E-LMSP application is successfully developed or get the vulnerability or errors during the testing phase. Therefore, this testing phase also to make sure all the process and function have meet or fulfilled with the user requirement and whether the objective and scope is achieved.

In testing phase, it will divide into two types of users to test the E-LMSP application which is developer and client. In the E-LMSP application the developer will test are coding and all function unit and whole systems module to ensure can run successfully without any errors or bug occur during testing. Therefore, developer also needs to make sure the objective and scope has been fulfilled in this system. The detail of testing will be described in the unit testing and integration testing.

Meanwhile, the client is to test all the interface and functionality in the E-LMSP application that are provided by developer that to determine all requirement have meet the user requirement and no bug or error occur. To get more details, this testing will provide the questionnaire for the client that will describe in the user acceptance test (UAT) and system testing.

4.3.1 INTEGRATION TESTING

The purpose of integration testing is executed in E-LMSP application to ensure data is retrieve from database is correctly and determine whether each interface and components or function have interact each other without any mistake. For instance, a apply leave class and manage leave class will be test to make sure the manage leave class can retrieve data from apply leave class when staff apply leave.

4.3.2 UNIT TESTING

The unit testing is done to test on each of the individual functional or component in the E-LMSP application. The testing of functional or component includes the form of each module to ensure it has working properly. The purpose of unit testing is to ensure no error or bug occurs during the usage of E-LMSP application. At the same time, if bug or error is occurs, it have to fixed the bug or error immediately and reduce the number of fault in the system. This kind of testing can also be used to check on the input value in the form to ensure that the correct format is being entered into the system and database to producing high integrity record. Table below as demonstrate the test case/data that to test each of component or functional in the E-LMSP application.

Table 4.1: Unit testing for Login

No.	Test Data/Case	Attribute and value	Expected Result	Actual Result	Pass/Fail
1	Verify user login after click on the “Sign In” button on Login form with correct input data.	Username: Chua Password: 1234 Category: staff/admin	Successfully login into the main page of E-LMSP system.	Successfully access to the main page of E-LMSP system.	Pass
2	Verify user login after click on “Sign In” button on login form with null value.	Username: Null Password: Null Category: Staff/admin	Login failed. The error messages will pop-up the wrong input username, password or category.	Not successfully login into the main page of E-LMSP system.	Pass
3	Verify user login after click on “Sign In” button on login form with invalid username, password or category.	Username: Chua Password: 1234 Category: staff/admin	Login failed. The error messages will pop-up the wrong input username, password or	Not successfully login into the main page of E-LMSP system.	Pass

			category.		
4	Reset/clear all text in the textbox on login form, click “Reset” button.	Username: Chua Password: 1234 Category: staff/admin	The textbox of username, password and category on Login form is clear/reset successfully.	The textbox of username, password and category will be clear/reset.	Pass

In login form, the users need to assign the correct of username, password and category. After all the information is fulfilled, the users need to click “Sign In” button to log in to the main page. To clear username and password, click the “Reset” button. Tables 4.1 above is demonstrate the test result for login in E-LMSP application is working properly and actual result is obtained similar with expected result.

Table 4.2: Unit testing for Registration

No.	Test Data/Case	Attribute and value	Expected Result	Actual Result	Pass/Fail
1	Register new employees into the system and click “submit” button with fill the information of employee and correct info/data.	Staff Id : 1 Username: Chua Gender: Male/Female Phone: 0179227099 Email: mfei38656@gmail.com Address: 1518, Jalan Bharu, wakaf bharu, Kelantan. Working date: 4/8/2018 Designation: IT administrator Category: admin Basic Salary: RM 5000.00 Leave Balance: 15	The data is enter are successfully saved into the database and message will show the registration successfully save into the database.	The data is successfully store into the database.	Pass

2	Register new employees into the system and click “submit” button with null value.	Staff Id : 1 Username: null Gender: null Phone: null Email: null Address: null Working date: null Designation: null Category: null Basic Salary: null Leave Balance: null	The data is not successfully save into database and error message will pop up the username, gender, phone, email, working data, designation, category, basic salary and leave balance cannot be null value or not fill in all information requirements.	The data is not successfully saved into the database.	Pass
3	Register new employees into the system and click “submit” button with not fill all the information of employee, incorrect value or null value.	Staff Id : 1 Username: Chua Gender: Male/Female Phone: 01792270999 Email: mfei38656@gmail.com Address: 1518, Jalan Bharu, wakaf bharu, Kelantan. Working date: 4/8/2018 Designation: IT administrator Category: admin Basic Salary:	The data is not successfully store into the database and error message will pop up the entire information requirement is given need to fill in, incorrect value/info or cannot be null	The data is not successfully store into the database.	Pass

		RM 5000.00 Leave Balance: 15	value.		
4	Reset/clear all text in the textbox on Registration form, click “Reset” button.	Staff Id : 1 Username: Chua Gender: Male/Female Phone: 0179227099 Email: mfei38656@gmail.com Address: 1518, Jalan Bharu, wakaf bharu, Kelantan. Working date: 4/8/2018 Designation: IT administrator Category: admin Basic Salary: RM 5000.00 Leave Balance: 15	The all text in the textbox on Registration form is clear/reset successfully	The all text in the textbox has been clear/reset.	Pass

In registration form, the admin need to fill the information of employee such as username, gender, phone, email, address, working date, designation, category, basic salary and leave balance. After fill in the information of employee with correct data or info and then click “Save” button to store into the database. If want to reset or clear all text in the textbox, click “Reset” button. Table 4.2 above is demonstrate the test result for registration in E-LMSP application is working properly and actual result is obtained similar with the expected result.

Table 4.3: Unit testing for Update Information

No.	Test Data/Case	Attribute and value	Expected Result	Actual Result	Pass/Fail
1	Search the staff	Search Staff Id : 1 Staff Id : 1	Successfully determine or	Successfully determine or	Pass

	information, click “Search” button with input correct staff id.	Username: Chua Gender: Male/Female Phone: 0179227099 Email: mfei38656@gmail.com Address: 1518, Jalan Bharu, wakaf baru, Kelantan. Working date: 4/8/2018 Designation: IT administrator Category: admin Basic Salary: RM 5000.00 Leave Balance: 15	find the staff information based on the staff id.	find the staff information based on the staff id.	
2	Search the staff information, click “Search” button with input incorrect staff id.	Search Staff Id : 1 Staff Id : null Username: null Gender: null Phone: null Email: null Address: null Working date: dd/mm/yyyy Designation: null Category: null Basic Salary: RM 0.00 Leave Balance: 0	Fail to determine or find the staff information and error message will pop up the staff id is not found in the database or incorrect staff id.	Fail to determine or find the staff information.	Pass
3	Allow admin update the information of	Staff Id : 1 Username: Chua Gender: Male/Female	The data is successfully updated and	The data is successfully updated.	Pass

	employee and click “Update Info” button with correct data/info.	Phone: 0179227099 Email: mfei38656@gmail.com Address: 1518, Jalan Bharu, wakaf bharu, Kelantan. Working date: 4/8/2018 Designation: IT administrator Category: admin Basic Salary: RM 5000.00 Leave Balance: 15	message will pop up update is success.		
4	Allow admin update the information of employee and click “Update Info” button with not fill all the information, incorrect value or null value.	Staff Id : 1 Username: Chua Gender: Male/Female Phone: 01792270999 Email: mfei38656@gmail.com Address: null Working date: 4/8/2018 Designation: IT administrator Category: admin Basic Salary: null Leave Balance: null	The data is not successfully update and error message will pop up the entire information requirement is given need to fill in, incorrect value/info or cannot be null value.	The data cannot be update.	Pass
5	Reset/clear all text in the textbox on update	Staff Id : 1 Username: Chua Gender: Male/Female Phone: 0179227099	The all text in the textbox on Registration form is	The text in the textbox has been clear/reset.	Pass

	information form, click “Reset” button.	Email: mfei38656@gmail.com Address: 1518, Jalan Bharu, wakaf baru, Kelantan. Working date: 4/8/2018 Designation: IT administrator Category: admin Basic Salary: RM 5000.00 Leave Balance: 15	clear/reset successfully		
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In update information form, the admin allow to use staff id to find or determine staff information by using “Search” button and update information such as username, gender, phone, email, address, working date, designation, category, basic salary and leave balance. After the information of employee is changing correctly and then clicks “Update Info” button to update information in the database. If want to reset or clear all text in the textbox, click “Reset” button. Table 4.3 above is demonstrate the test result for update information in E-LMSP application is working properly and actual result is obtained similar with the expected result.

Table 4.4: Unit testing for Apply Leave

No.	Test Data/Case	Attribute and value	Expected Result	Actual Result	Pass/Fail
1	Verify user apply leave successfully sent	Staff Id : 1 Username: Chua Designation : IT	The apply leave is successfully	The apply leave is successfully	Pass

	to the admin when click “Apply” button with fill all information and correct value/info.	Administrator Leave Balance : 15 Amount Salary: RM 5000.00 Date Apply: 6/8/2018 Leave Type: Sick Leave Day Type : Full day/Half day From date : 6/82018 To Date : 8/8/2018 No of days : 2 Leave Reason : sick Approved by: Tan Email manager: mfei38656@gmail.com	sent to the admin and the message will pop up apply leave is successfully sent to the admin and email also will sent to the admin.	sent to the admin.	
2	Verify user apply leave not successfully sent to the admin when click “Apply” button with not fill all information requirement, incorrect value/info or null value.	Staff Id : 1 Username: Chua Designation : IT Administrator Leave Balance : 15 Amount Salary: RM 5000.00 Date Apply: 6/8/2018 Leave Type: Sick Leave Day Type : Full day/Half day From date : null To Date : null No of days : null Leave Reason : sick Approved by: null	The apply leave is not successfully sent to the admin and error message will pop up the entire information requirement is given need to fill in, incorrect value/info or cannot be null value.	The apply leave is not successfully sent to the admin	Pass

		Email manager: mfei38656@gmail			
3	Reset/clear all text in the textbox such as leave type, day type, from date, to date, no of days, leave reason, approved by and email manager on Apply Leave form, click the “Reset” button.	Staff Id : 1 Username: Chua Designation : IT Administrator Leave Balance : 15 Amount Salary: RM 5000.00 Date Apply: 6/8/2018 Leave Type: Sick Leave Day Type : Full day/Half day From date : 6/82018 To Date : 8/8/2018 No of days : 2 Leave Reason : sick Approved by: Tan Email manager: mfei38656@gmail.com	The text in the textbox such as leave type, day type, from date, to date, no of days, leave reason, approved by and email manager has been clear/reset successfully.	The all text in the textbox is reset/clear successfully.	Pass

In apply leave form, the staff need to fill up all information requirement is given such as leave type, day type, from date, to date, no of days, leave reason, approve by and email manager. After filled all the information with the correct value or info and then click “Apply” button to send leave application to the admin to get approver. If want to reset or clear all text in the textbox, click “Reset” button. Table 4.4 above is demonstrate the test result for apply leave in E-LMSP application is working properly and actual result is obtained similar with the expected result.

Table 4.5: Unit testing for Mange leave

No.	Test Data/Case	Attribute and value	Expected Result	Actual Result	Pass/ Fail
1	Approving leave of employees, click “Approve” button.	Staff Id : 1 Username: Chua Designation : IT Administrator Leave Balance : 15 Amount Salary: RM 5000.00 Date Apply: 6/8/2018 Leave Type: Sick Leave Days Type : Full day/Half day From date : 6/82018 To Date : 8/8/2018 No of days : 2 Leave Reason : sick	The leave of employees is successfully approved.	The leave of employees is successfully approved.	Pass
2	Reject leave of employees, click “Reject” button.	Staff Id : 1 Username: Chua Designation : IT Administrator Leave Balance : 15 Amount Salary: RM 5000.00 Date Apply: 6/8/2018 Leave Type: Sick Leave Days Type : Full day/Half day	The leave of employees is successfully rejected.	The leave of employees is successfully rejected.	Pass

		From date : 6/82018 To Date : 8/8/2018 No of days : 2 Leave Reason : sick			
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In manage leave form, the admin can approve or reject the leave application of the employee, click “Approve” or “Reject” button. Table 4.5 above is demonstrate the test result for manage leave in E-LMSP application is working properly and actual result is obtained similar with the expected result.

Table 4.6: Unit testing for Calculate Total Payment/Salary

No.	Test Data/Case	Attribute and value	Expected Result	Actual Result	Pass/Fail
1	Search the staff information, click “Search” button with input correct staff id.	Search Staff id : 1 Staff Id: 1 Username : Chua Designation : IT administrator Bonus : RM500.00 Claim oil vehicle: RM 100.00 Claim Items : RM100.00 Pay OT per Hours : RM 20.00 Total OT per Hours (monthly): 3 Pay OT per Days: RM 100.00 Total OT per days (monthly) : 1	Successfully determine or find the staff information based on the staff id.	Successfully determine or find the staff information based on the staff id.	Pass

		<p>Medical : RM 100.00</p> <p>Socso : RM 10.00</p> <p>Epf/KWSP : 11%</p> <p>Amount Salary : RM 4000.00</p> <p>Total Allowance : RM 860.00</p> <p>Total Deduction : RM 660.00</p> <p>Total Payment : RM 5520.00</p>			
2	Search the staff information, click “Search” button with input incorrect staff id.	<p>Search Staff id : 1</p> <p>Staff Id: null</p> <p>Username : null</p> <p>Designation : null</p> <p>Bonus : RM 0.00</p> <p>Claim oil vehicle: RM 0.00</p> <p>Claim Items : RM 0.00</p> <p>Pay OT per Hours : RM 0.00</p> <p>Total OT per Hours (monthly): 0</p> <p>Pay OT per Days: RM 0.00</p> <p>Total OT per days (monthly) : 0</p> <p>Medical : RM 0.00</p> <p>Socso : RM 0.00</p> <p>Epf/KWSP : 11%</p>	Fail to determine or find the staff information and error message will pop up the staff id is not found in the database or incorrect staff id.	Fail to determine or find the staff information.	Pass

		Amount Salary : RM 0.00 Total Allowance : RM 0.00 Total Deduction : RM 0.00 Total Payment : RM 0.00			
3	Verify calculate total payment/salary of employees, click “Calculate Total Salary” button with fill the salary information and correct data.	Staff Id: 1 Username : Chua Designation : IT administrator Bonus : RM500.00 Claim oil vehicle: RM 100.00 Claim Items : RM100.00 Pay OT per Hours : RM 20.00 Total OT per Hours (monthly): 3 Pay OT per Days: RM 100.00 Total OT per days (monthly) : 1 Medical : RM 100.00 Socso : RM 10.00 Epf/KWSP : 11% Amount Salary : RM 4000.00 Total Allowance : RM 860.00	The total payment/salary of employees is calculated successfully and message will pop up the total payment/salary is successfully store/updated in database.	The total payment/salary of employees is calculated successfully.	Pass

		Total Deduction : RM 660.00 Total Payment : RM 5520.00			
4	Verify calculate total payment/salary of employees, click “Calculate Total Salary” button with not fill the salary information, incorrect value/info or null value.	Staff Id: 1 Username : Chua Designation : IT administrator Bonus : RM500.00 Claim oil vehicle: RM 100.00 Claim Items : RM100.00 Pay OT per Hours : RM 20.00 Total OT per Hours (monthly): null Pay OT per Days: RM 100.00 Total OT per days (monthly) : null Medical : RM 100.00 Socso : RM 10.00 Epf/KWSP : null Amount Salary : RM 4000.00 Total Allowance : RM 0.00 Total Deduction : RM 0.00 Total Payment : RM 0.00	The total payment/salary of employees is fail to calculated and error message will pop up the information requirement is not fill in, incorrect value/info or null value.	The total payment/salary of employees is failed to calculate.	Pass

5	Reset/clear all value in the textbox on Calculate Total Payment/Salary form, click the “Reset” button.	Staff Id: 1 Username : Chua Designation : IT administrator Bonus : RM500.00 Claim oil vehicle: RM 100.00 Claim Items : RM100.00 Pay OT per Hours : RM 20.00 Total OT per Hours (monthly): 3 Pay OT per Days: RM 100.00 Total OT per days (monthly) : 1 Medical : RM 100.00 Socso : RM 10.00 Epf/KWSP : 11% Amount Salary : RM 4000.00 Total Allowance : RM 860.00 Total Deduction : RM 660.00 Total Payment : RM 5520.0	The all value in the textbox on Calculate Total Payment/Salary form is clear/reset successfully.	The all value in textbox on Calculate Total Payment/Salary form is clear/reset successfully	Pass
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In calculating the total payment/salary form, the admin allow using staff id to find or determine staff information by using “Search” button. Besides that, admin also allow changing or updating the allowance, deduction of information and calculate total

payment/salary of employees, click “Calculate Total Payment” button to get total of payment/salary. If want to reset or clear all value in the textbox, click “Reset” button. Table 4.6 above is demonstrate the test result for calculate total payment/salary in E-LMSP application is working properly and actual result is obtained similar with the expected result.

Table 4.7: Unit testing for Generate Report/Slip

No.	Test Data/Case	Attribute and value	Expected Result	Actual Result	Pass/Fail
1	Search the staff information, click “Search” button with input correct staff id.	Search Staff id : 1 Staff id: 1 Date : 7/8/2018 Username : Chua Designation : IT administrator Phone : 0179227099 Email : mfei38656@gmail.com Basic Salary : RM 5000.00 Bonus : RM 100.00 Total Claims : RM 600.00 Total Overtime : RM 200.00 Medical : RM 100.00 Socso : RM 10.00 EPF/KWSP : 11.00% Amount Salary : RM 5000.00 Total Allowance : RM 900.00	Successfully determine or find the staff information based on the staff id.	Successfully determine or find the staff information based on the staff id.	Pass

		Total Deduction : RM 660.00 Total Monthly Payment : RM 5240.00			
2	Search the staff information, click “Search” button with input incorrect staff id.	Search Staff id : 1 Staff id: null Date : null Username : null Designation : null Phone : null Email : null Basic Salary : RM 0.00 Bonus : RM 0.00 Total Claims : RM 0.00 Total Overtime : RM 0.00 Medical : RM 0.00 Socso : RM 0.00 EPF/KWSP : 11.00% Amount Salary : RM 0.00 Total Allowance : RM 0.00 Total Deduction : RM 0.00 Total Monthly Payment : RM 0.00	Fail to determine or find the staff information and error message will pop up the staff id is not found in the database or incorrect staff id.	Fail to determine or find the staff information.	Pass
3	Generate report/slip salary to pdf format,	Staff id: 1 Date : 7/8/2018 Username : Chua	Successfully generate report/slip to	Successfully generate report/slip to	Pass

	click “Generate/print” button.	Designation : IT administrator Phone : 0179227099 Email : mfei38656@gmail.com Basic Salary : RM 5000.00 Bonus : RM 100.00 Total Claims : RM 600.00 Total Overtime : RM 200.00 Medical : RM 100.00 Socso : RM 10.00 EPF/KWSP : 11.00% Amount Salary : RM 5000.00 Total Allowance : RM 900.00 Total Deduction : RM 660.00 Total Monthly Payment : RM 5240.00	the pdf format.	the pdf format.	
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In report/slip form, the admin allow using staff id to find or determine staff information by using “Search” button and view the total salary of employee and generate report/slip or print out the report/slip with click “Generate report/slip” button. Table 4.7 above is demonstrate the test result for generate report/slip in E-LMSP application is working properly and actual result is obtained similar with the expected result.

Table 4.8: Unit testing for View Leave Status

No.	Test Data/Case	Attribute and value	Expected Result	Actual Result	Pass/Fail
1	Able to view leave record status whether is approve or reject.	Staff Id : 1 Username : Chua Department : IT administrator Apply date : 5/8/2018 From date : 6/8/2018 Last Date : 7/8/2018 Days : 1 Leave Status : Approve	Successfully view the leave status whether is approve or reject.	Successfully view the leave status whether is approve or reject.	Pass

In view leave status form, the staff can view the leave balance and leave status he/she applied whether is approved or reject by admin. Table 4.8 above is demonstrate the test result for view leave status/record or balance in E-LMSP application is working properly and actual result is obtained similar with the expected result.

Table 4.9: Unit testing for Delete

No.	Test Data/Case	Attribute and value	Expected Result	Actual Result	Pass/Fail
1	Search the staff information, click “Search” button with input correct staff id.	Search Staff Id : 1 Staff Id : 1 Username : Chua Gender : Male Phone : 0179227099 Designation : IT	Successfully determine or find the staff information based on the staff id.	Successfully determine or find the staff information based on the staff id.	Pass

		Administrator Address: 1518, Jalan Bharu 16250 Wakaf Bharu, Kelantan.			
2	Search the staff information, click “Search” button with input incorrect staff id.	Search Staff Id : 1 Staff Id : null Username : null Gender : null Phone : null Designation : null Administrator:null	Fail to determine or find the staff information and error message will pop up the staff id is not found in the database or incorrect staff id.	Fail to determine or find the staff information and message will pop up tell the user staff id is not in database or incorrect id.	Pass
3	Delete user from system/database, click “Delete” button.	Staff Id : 1 Username : Chua Gender : Male Phone : 0179227099 Designation : IT Administrator Address: 1518, Jalan Bharu 16250 Wakaf Bharu, Kelantan.	The user is successfully removed/delete in the database/system and message will show delete is successfully.	The user is successfully removed/delete in the database/system.	Pass
4	Reset/clear all text in the textbox on delete form, click the “Reset” button	Staff Id : 1 Username : Chua Gender : Male Phone : 0179227099 Designation : IT	The all value in textbox on Delete form is clear/reset successfully.	The all value in textbox on Delete form is clear/reset successfully.	Pass

		Administrator Address: 1518, Jalan Bharu 16250 Wakaf Bharu, Kelantan.			
--	--	---	--	--	--

In delete form, the admin allow using staff id to find or determine staff information by using “Search” button and delete the employees in the database or system with click “Delete” button. If want to reset or clear all text in the textbox, click “Reset” button. Table 4.9 above is demonstrate the test result for deleted user in E-LMSP application is working properly and actual result is obtained similar with the expected result.

4.3.3 USER ACCEPTANCE TEST (UAT)

User Acceptance Test (UAT) is tested by the users which is staff and administrator at Seri Barat Mixed. The E-LMSP application testing is done that to ensure this project has meet the user requirement and verify all functioning with no bugs or error during the tested and ready for operational use the E-LMSP application. The questionnaire will provide that to get the feedback from the user.

(Refer to **Appendix D – User Acceptance Test (UAT)**)

4.3.4 SYSTEM TESTING

The systems testing (E-LMSP) which is mobile application and web based application will be done to get realistic results and ensure no error or problem occurs of all function before using the application. For instances, the E-LMSP testing will done to make sure the staff can use the web based or mobile application to apply for leave and view the salary in monthly. Therefore, the administrator can use the web based application to register new users, update information, calculate wages and manage leave without any errors occur when using the application.

4.3.5 USER MANUAL

User Manual is known as a guideline that help user to using the particular application. In this user manual will describe the explanation all function of E-LMSP application and guide the user how to use the particular application to ensure user can easily to understand and do the refer before using the application. Therefore, user also can use when need a help when face some errors in this application.

(Refer to **Appendix E – User Manual**)

CHAPTER 5

CONCLUSION

5.1 INTRODUCTION

This chapter concludes the overall process of development project of E-Leave Management System and Payroll (E-LMSP). The purpose of developing this project is to replace the manual method that the employees are using the paper-based to apply leave and make administrator easy to manage leave and calculate the salary based on leave applied by employees. The using manual method is not competent and effective because using the paper based can cause damage or lose, employees does not know amount of leave balance left, leave will be delayed when approve officer is not in office and need some cause to buy the inks, files and drawer. After that, the employees also can apply leave at home. Therefore, with this project it provides the convenient way and helps the organization easy to manage the leave and calculation salary of the employees without any mistakes. E-LMSP applications that are developed into two platforms which are mobile application and web based application.

E-LMSP is developed based on collected from user requirements in Seri Barat Mixed. These user requirements were collected by conducting the interview session with staff and manager. Each of the functions is implemented in E-LMSP application will be fulfill of the user requirements and the project objectives. This project is implemented based on the procedure of selected methodology which is waterfall methodology that uses as a guideline to develop the project from stating until the last phase.

Moreover, the advantage of E-LMSP application it can use for both staff and administrator. In the systems, the staff can use to apply the leave and view the total leave balance left. It can able to view the leave status are applied whether approve or reject, update the information and view the total salary in monthly. Then, the administrator it can control all the system such as registration, update information, apply leave, manage leave, view and calculate the salary of the employees. Other than that, the mobile application is develop to make the staff easy to apply leave and view the total leave balance left, view the leave status and view the total salary. Therefore, admin can use to manage leave of staff by using the tablet or Smartphone.

The future enhancement and suggestion of this project is attendance will be providing in this system. After that, make the mobile application can support the IOS version and add functionality in mobile application of admin to facilitate employee management. Lastly, all requirements and objective of this project are successfully implemented and fulfilled the user requirements. I also would like to thank you Seri Barat Mixed to support and provide some ideas for our project.

5.2 PROJECT CONSTRAINT

The constraints during development of this project as the following:

- i. Time constraints

The development of this project it still need more time to add new function in application. Therefore, this application is also still can getting more advances or better with add the attendance function but this function cannot be implement because due to the time constraint. Though of time constraints, this project is still fulfilled with the objective and scope of the project. Other than that, the mobile application for administrator to manage leave cannot develop in nearest time because due with the time constraints.

ii. Internet constraints

E-LMSP has been implementing into two platforms which are mobile application and web based application. These two platforms cannot access in offline it requires internet connection to access to the database. With the slowest speed of the internet it will transfer or retrieve the data from database become slowly. Therefore, these two platforms only can access in local area network (LAN) or same network only.

iii. Android Studio constraints

E-LMSP mobile application is developed with using android studio tools and it only can support android phone only. The other version like IOS it cannot be supported by this application. Therefore, E-LSMP mobile application it only can use for staff to apply leave, update information and view the salary in monthly.

5.3 FUTURE WORK

Based on the interview session and analysis of the other systems, the future improvement or enhancement of E-LMSP application as the following:

- i. Added new function in this project such as attendance function that will combine with this application function to make it more effective for the organization.
- ii. Added functionality in mobile application for admin to facilitate manages the employees.
- iii. Develop the mobile application that can support other operating system like IOS.

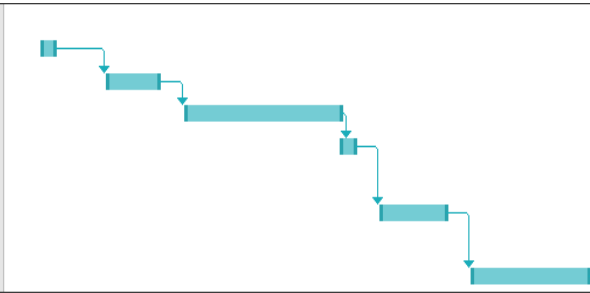
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APPENDIX A

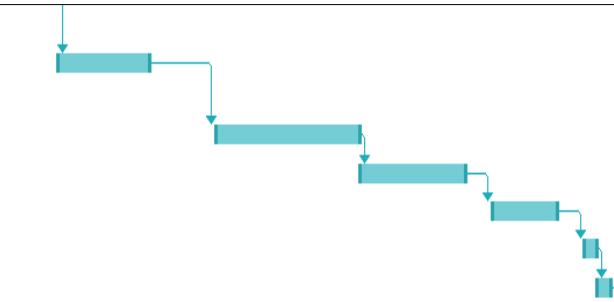
GANTTCHART

Planning				
Title finding	1 day	Wed 6/9/17	Wed 6/9/17	
Plan the requirement	4 days	Mon 11/9/17	Thu 14/9/17	2
Prepare Proposal	10 days	Sun 17/9/17	Thu 28/9/17	3
Proposal Submission	1 day	Fri 29/9/17	Fri 29/9/17	4
Analysis				
Identify requirement & gather information of systems	5 days	Mon 2/10/17	Fri 6/10/17	5
Analyze gather information	7 days	Mon 9/10/17	Tue 17/10/17	7




Requirements and Analysis Phase

Design				
Design system flow & architecture	5 days	Wed 18/10/17	Tue 24/10/17	8
Draft of interface design	9 days	Mon 30/10/17	Thu 9/11/17	10
Prepare SRS	6 days	Fri 10/11/17	Fri 17/11/17	11
Prepare SRD	5 days	Mon 20/11/17	Fri 24/11/17	12
submission psm1 report	1 day	Mon 27/11/17	Mon 27/11/17	13
psm 1 presentation	1 day	Tue 28/11/17	Tue 28/11/17	14



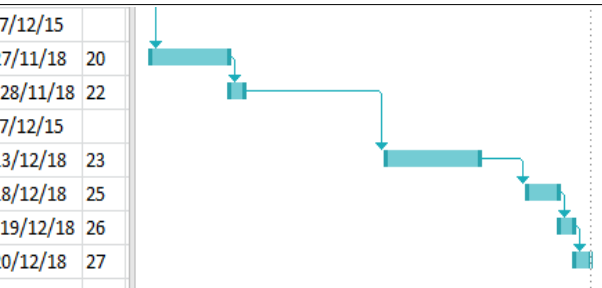
Design Phase

Implementation & Testing				
Develop interface	30 days	Tue 20/2/18	Mon 2/4/18	15
Develop coding/function	150 days	Tue 3/4/18	Mon 29/10/18	17
Develop system database	10 days	Tue 30/10/18	Mon 12/11/18	18
Testing and Debugging	8 days	Tue 13/11/18	Thu 22/11/18	19



Implementation and Testing Phase

Deployment				
User acceptance test	3 days	Fri 23/11/18	Tue 27/11/18	20
Collect Feedback	1 day	Wed 28/11/18	Wed 28/11/18	22
Documentation				
Complete documentation	5 days	Sat 8/12/18	Thu 13/12/18	23
prepare user manual	2 days	Mon 17/12/18	Tue 18/12/18	25
Submission Report	1 day	Wed 19/12/18	Wed 19/12/18	26
Present Project	1 day	Thu 20/12/18	Thu 20/12/18	27



Deployment Phase and Documentation

APPENDIX B

SOFTWARE REQUIREMENT AND SPECIFICATION (SRS)

2018
V 1.0

SOFTWARE REQUIREMENT SPECIFICATION (SRS)

**E-LEAVE MANAGEMENT SYSTEM AND
PAYROLL (E-LMSP)**

AUTHOR NAME :

CHUA MENG FEI CA15134

Bachelor of Computer Science (Network)



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1.1 PRODUCT DESCRIPTION

1.2 Product Perspective

E-Leave Management System and Payroll (E-LMSP) is a web-based application system and mobile application. The develop of E-LMSP application is will help the organization easy to manage the leave of employees. With this E-LMSP application, the staff can easy to apply leave or take a leave when have emergency case. After that, the administration is also easy to manage leave of employee and the system will provide auto-calculate the salary of employee based on leave applied by employee. In E-LMSP system, it have two category of users which is staff and administration. The staff and administration it have different kind of function.

In the Figure 1.0 show the staff is use to apply leave, update info ,view leave status and salary. Besides that, the administrator use to register new user, update information, manage leaves, view employee information, calculate salary and generate report.

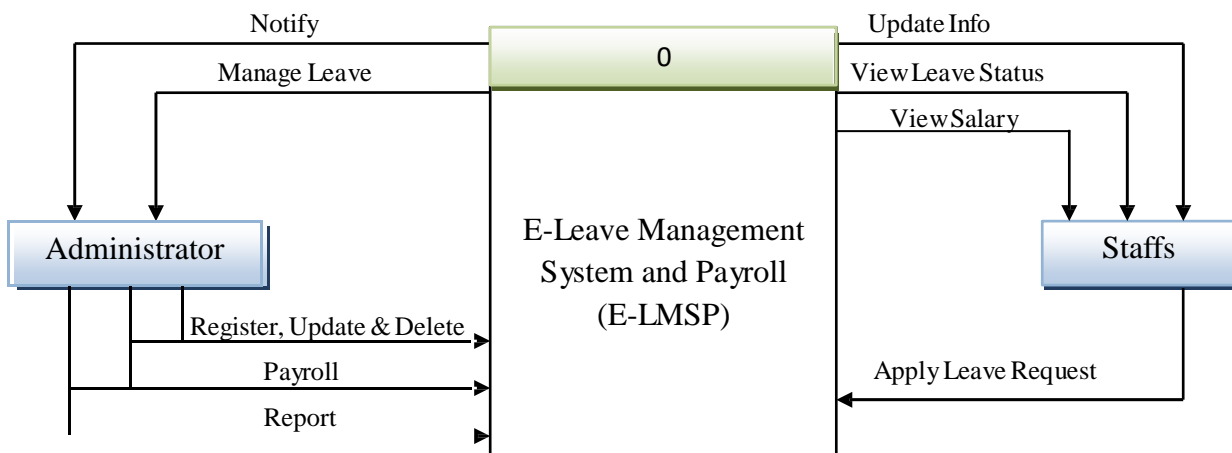


Figure 1.0: Context Diagram of E-LMSP system

1.3 Product Functions

The use case in figure 1.1 shows the system boundary of E-Leave Management System and Payroll (E-LMSP) application. The explanation of the system boundary will be briefly explained in table 1.0.

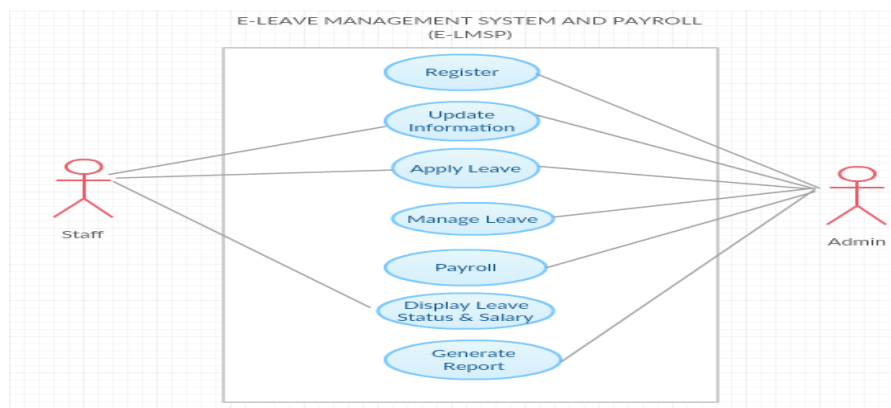


Figure 1.1 : System Boundary for E-LMSP system

Table 1.0: List of system context

System Context	Explanation
Staff	Allow to apply leave, update information, view leave status and salary.
Admin	Allow register new user, update information, Apply Leave, manage leaves, calculate salary and generate report.
Register	Admin need to fill in the information of the employee.
Update information	- Allow staff update personal detail and password. - Allow admin update staff information such as salary, leave balances, employee information and password.
Apply Leave	Allow staff and admin to apply leave.
Payroll	Allow admin to calculate salary of the employees.
Manage Leave	Allow admin to approve or reject leave request by staff.
Display Leave Status and salary	Allow staff to view salary and leave status whether is approve or reject by admin.
Generate Report	Allow admin to generate report to easily view the information of employee.

1.4 User characteristics

This subsection will describe those general characteristics of the intended user of E-Leave Management System and Payroll (E-LMSP). E-LMSP have 2 category user which are staff and administrator. Each users use this system must have education level and basic background experiences that show in Table 1.1.

Table 1.1 : User Characteristics

User	Education Level	Background Experiences
Staff	SPM and higher	Have basic knowledge use the computer and surf the web site.
Administrator	Diploma and higher	Have basic knowledge use the computer and surf the web site.

1.5 Constrains

There are some constrains in order to fulfill the basic requirements of the system.

- i. Login username, password and category is used to identification of users.
- ii. Internet is needed to access the system.
- iii. Only the employee of organization can access into the system.
- iv. The maintenance cannot be done within 5 days.

1.6 Assumptions and Dependencies

i) Assumptions

- 1) The code should be free with compilation erros/syntax erros.
- 2) The system must have an interface which is simple enough to understand.

ii) Dependencies

- 1) The dependencies of this system is depends on the internet connection, if the internet connection down the users cannot access to the E-LMSP.
- 2) The system design, developed and implemented must based on the software requirement specification document.

2.0 DATA FLOW DIAGRAM LEVEL 0 (DFD-LEVEL 0)

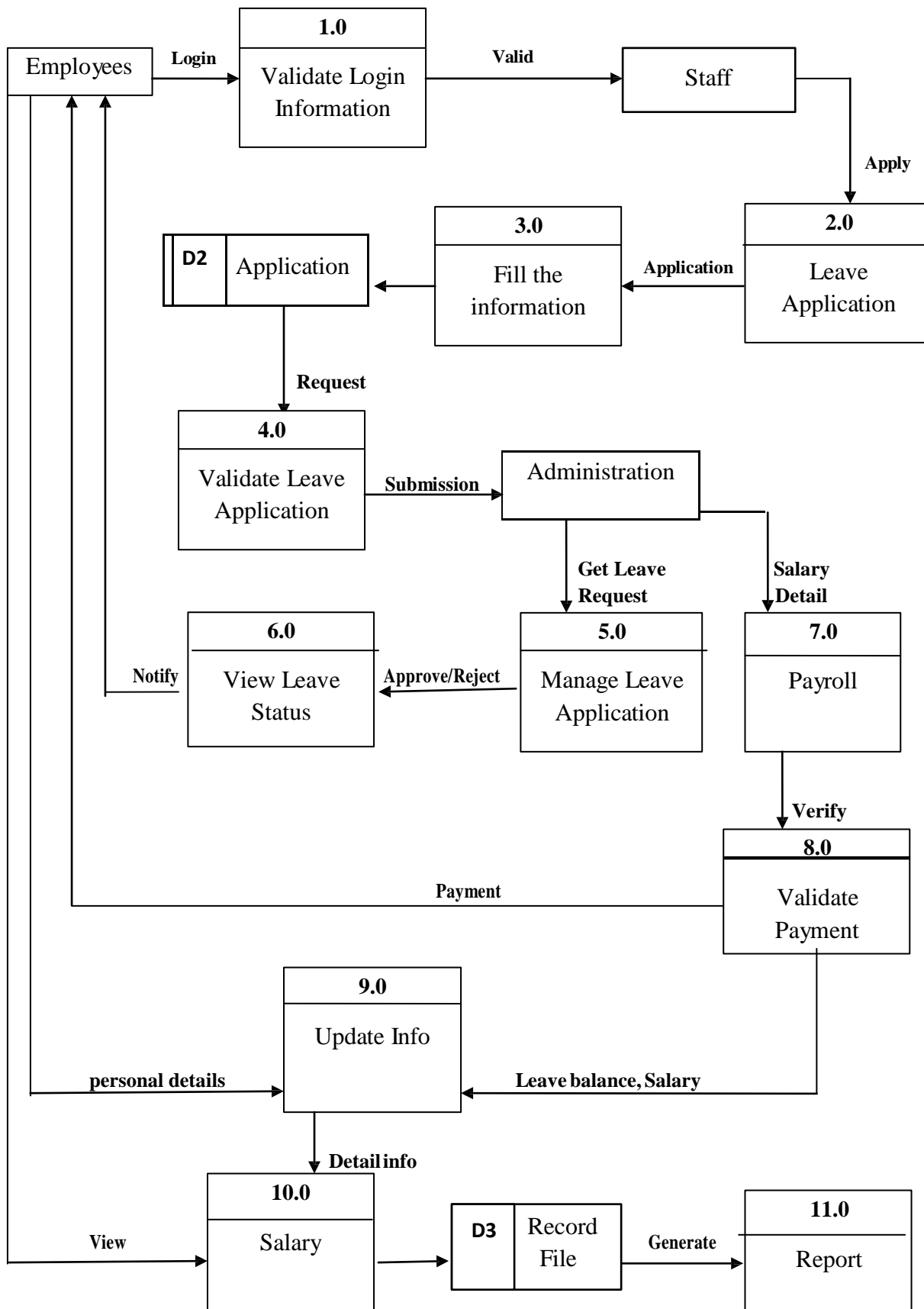


Figure 2.0 : DFD LEVEL 0 FOR E-LMSP

Figure 2.0 above illustrates the E-Leave Management System and Payroll (E-LMSP) data flow diagram Level 0. This diagram introduced the process that can be performed by E-LMSP. Overall, the process that has been identified such as Login Page, apply leave, manage leave, payroll, update information, view record and generate report.

3.0 DATA FLOW DIAGRAM LEVEL 1 (DFD-LEVEL 1)

1) DFD Level 1 : Login Page

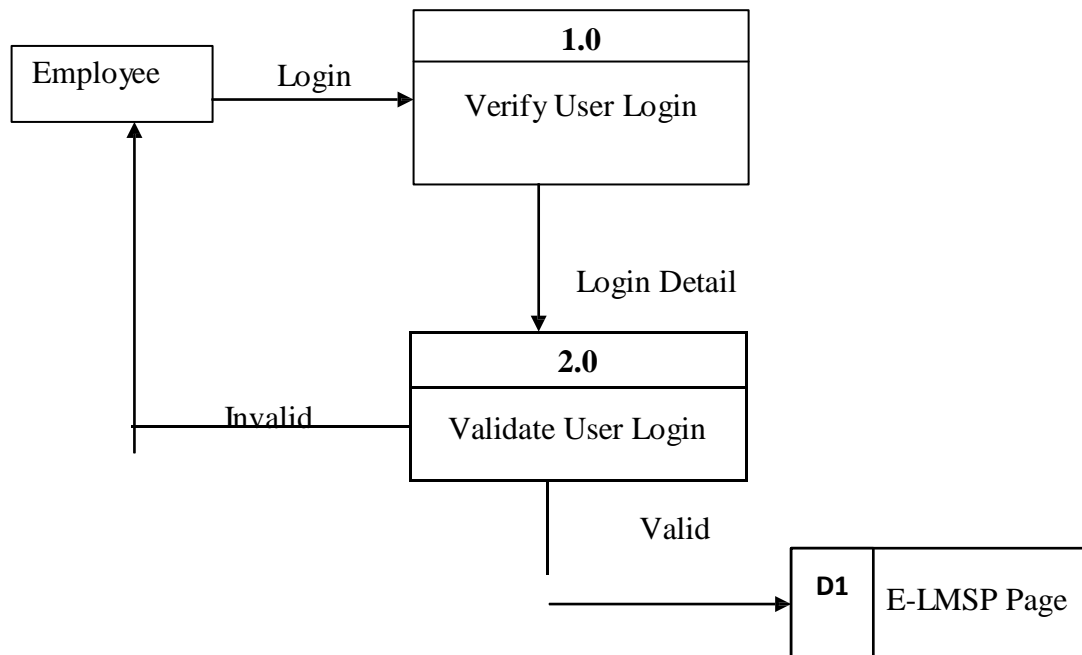
**Figure 3.0 : DFD Level 1 Login Page**

Figure 3.0 above show the DFD Level 1 Login Page of E-LMSP system. Before login to the E-LMSP, Employee need to assign the username and password correctly to access the system.

2) DFD Level 1 : Apply Leave

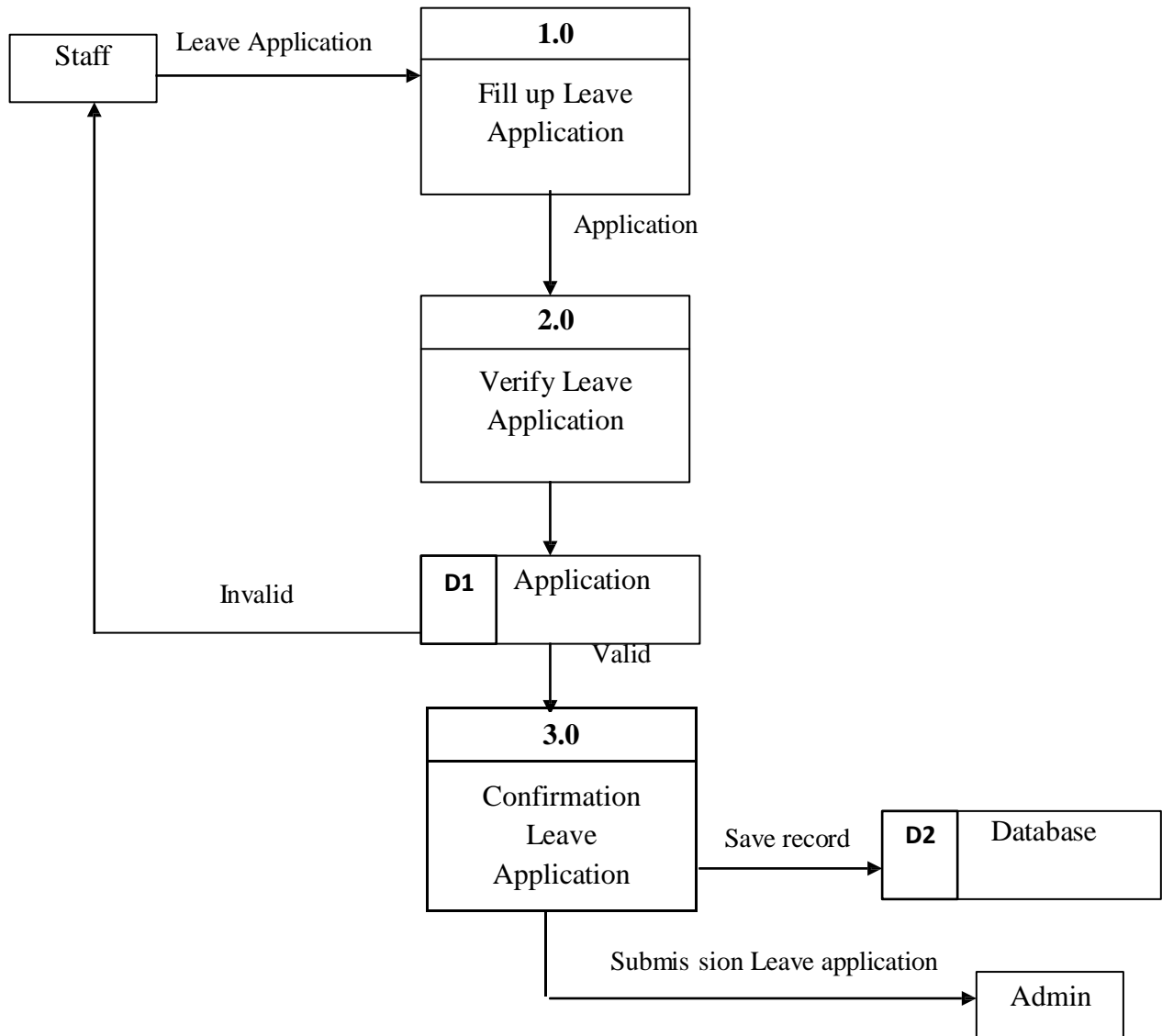


Figure 3.1 : DFD Level 1 Apply Leave

Figure 3.1 above show the DFD level 1 apply leave. The staff want to apply their leave it need to fill up the leave application and then it need verify or confirmation the leave application has been fill up all the requirement and select the date that he/she want to be apply their leave. Lastly, submit the leave application to the administrator to make approved and the data will be save record into database.

3) DFD Level 1 : Update Information

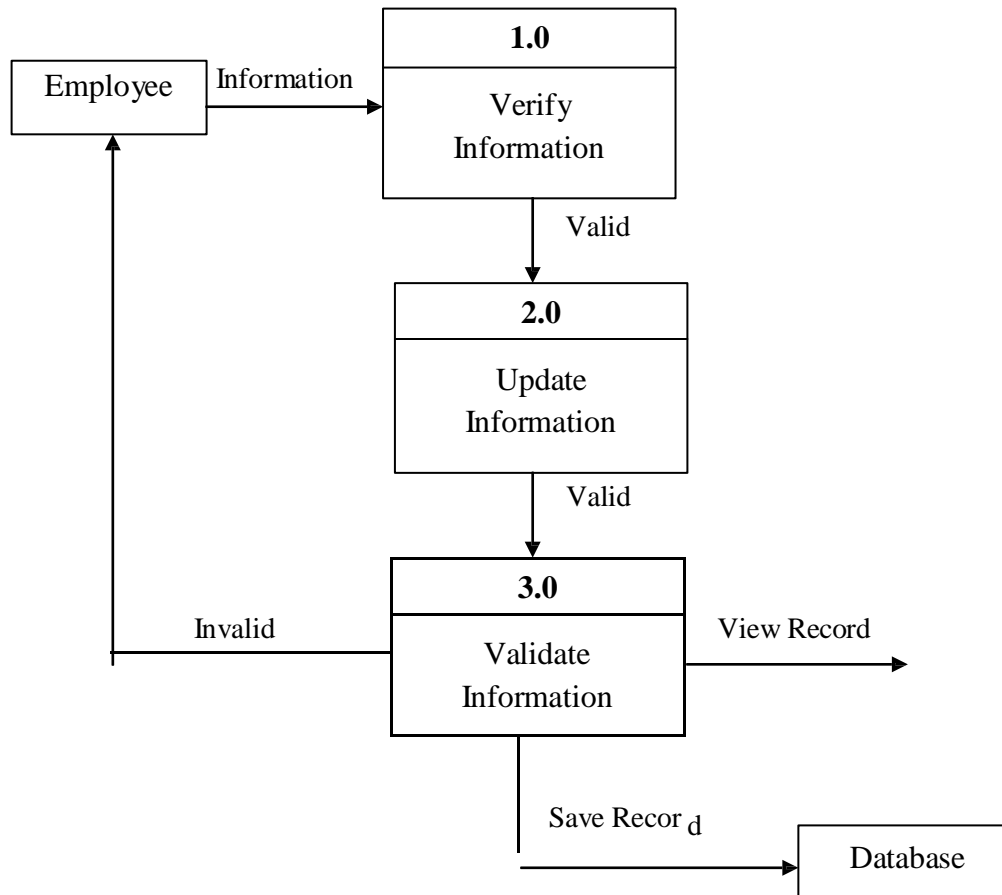


Figure 3.2 : DFD Level 1 Update Information

Figure 3.2 above show the DFD Level 1 update Information. The employee want to update the information, it need to assign the username and password correctly. In the E-LMSP, the staff only allow to update the personal details and password while administrator it allow to update all information of staff such as leave balances, salary and personal detail of staff. Lastly, the staff and administrator need to validate the update information has been correctly before save record into database.

4) DFD Level 1 : Manage Leave

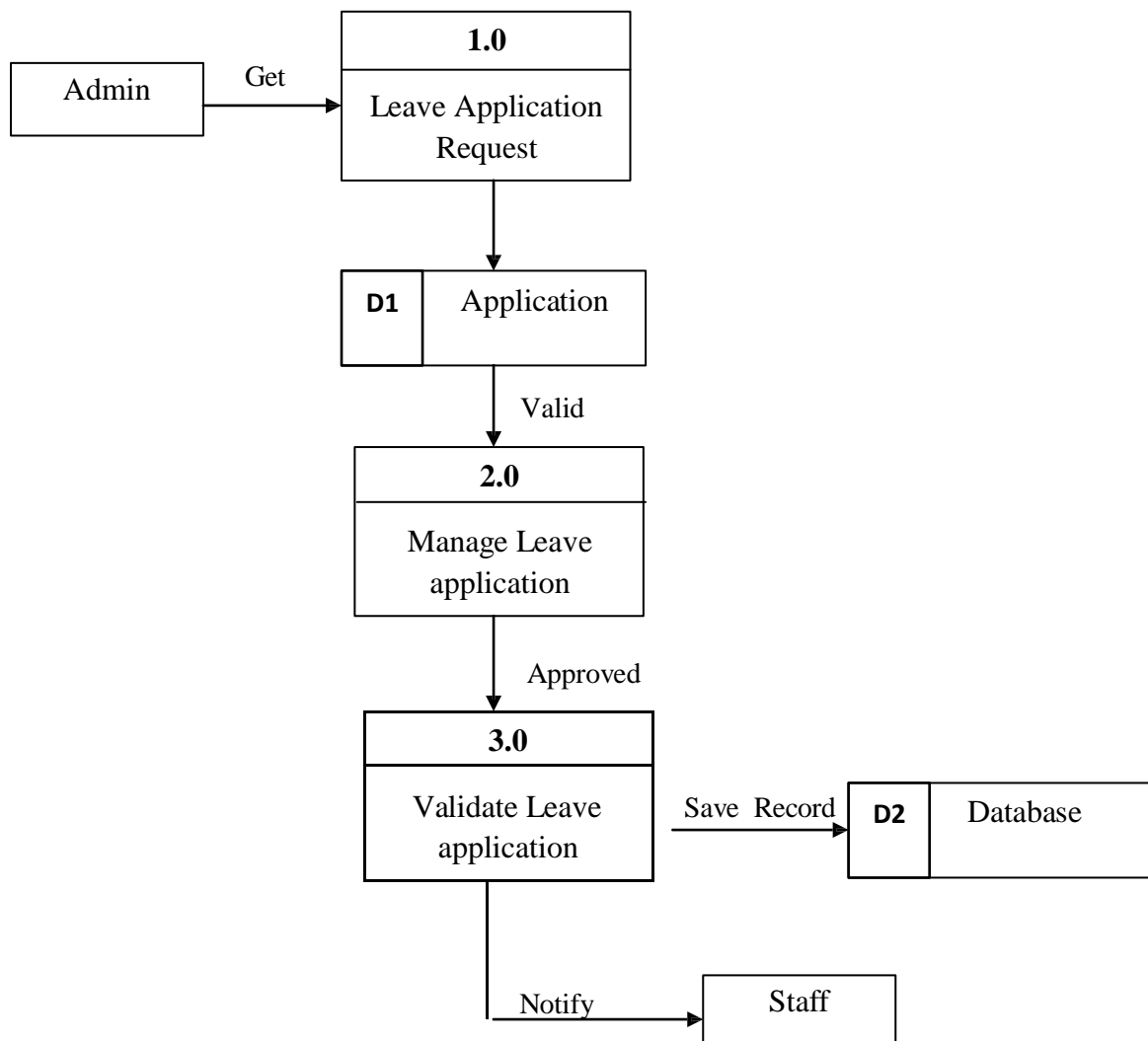
**Figure 3.3 : DFD Level 1 Manage Leave**

Figure 3.3 above show the DFD Level 1 Manage Leave. This process is use by the administrator to manage the leave application that request by staff and the leave approved status will be notify to the staff.

5) DFD Level 1 : Payroll

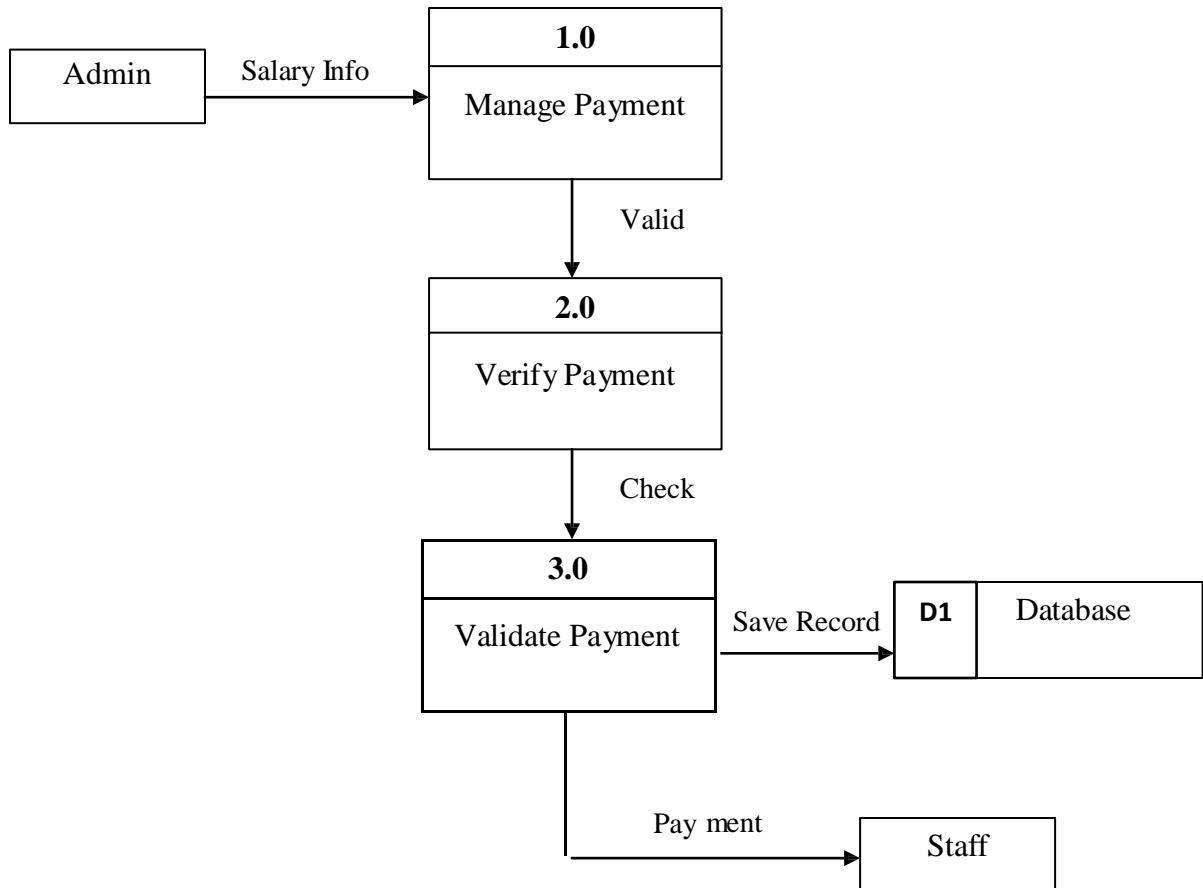
**Figure 3.4 : DFD Level 1 payroll**

Figure 3.4 above show the DFD Level 1 payroll. This process is used by administrator to manage the salary based on the leave taken by staff. Then, administrator also need to validate payment before do the payment of the staff and the record will be save into database.

6) DFD Level 1 : View Information and Generate Report

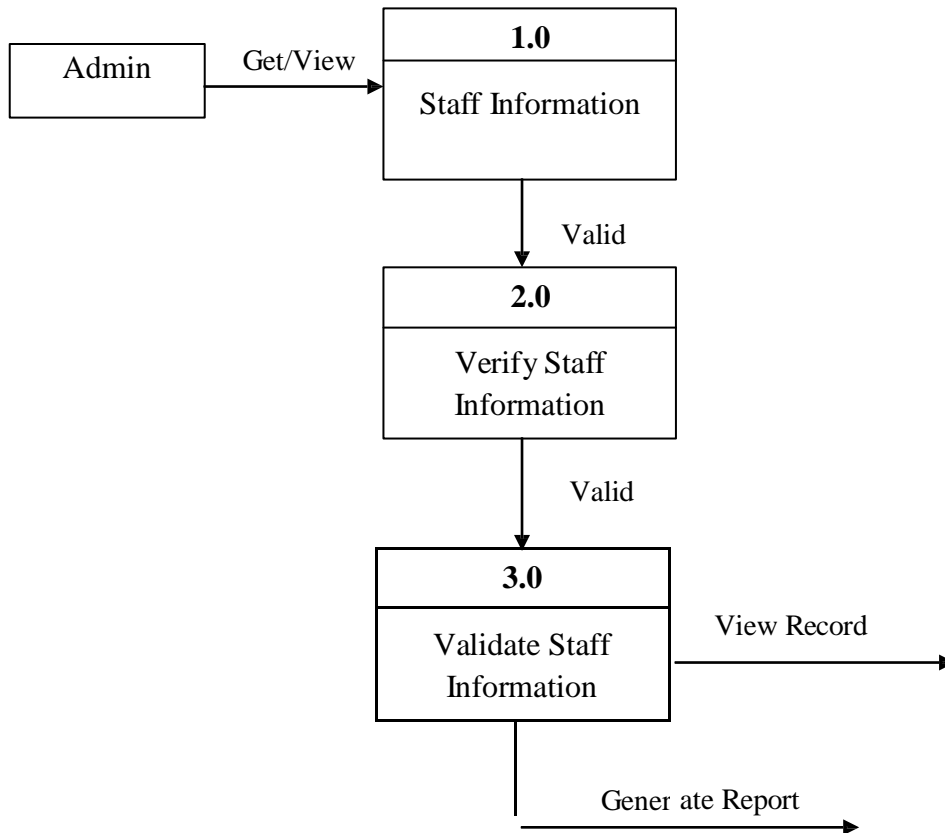


Figure 3.5 : DFD Level 1 View Information and Generate Report

Figure 3.5 above show the DFD Level 1 view information and generate report. This process is use by the administrator to view information and generate report of the staff information.

4.0 ALGORITHMS OR STRUCTURE ENGLISH

A. Login Page

```
BEGIN
    LOGIN PAGE
    ENTER USERNAME AND PASSWORD
    IF USERNAME AND PASSWORD = VALID
        DISPLAY SUCCESSFULLY
    ELSE
        DISPLAY INVALID
    END IF
END
```

B. Register

```
BEGIN
    NEW REGISTRATION
    ENTER ALL INFORMATION REQUIREMENT
    IF INSERT = VALID
        DISPLAY CREATE SUCCESSFULLY
    ELSE
        DISLAY INVALID
    END IF
END
```

C. Update Information

BEGIN

 UPDATE INFORMATION

 OBTAINED STAFF INFORMATION

 IF INFORMATION = VALID

 UPDATE SATFF INFORMATION

 DISPLAY UPDATE SUCCESSFUL

 ELSE

 DISPLAY INVALID

 END IF

END

D. Apply Leave

BEGIN

 APPLY LEAVE

 ENTER ALL INFORMATION REQUIREMENT

 IF LEAVE = CHOOSE THE DATE NEED TO APPLY LEAVE

 DISPLAY SELECTED DATE LEAVE TO BE APPLY

 ELSE

 DISPLAY INVALID

 END IF

END

E. Manage Leave

```
BEGIN

    MANAGE LEAVE

    DISPLAY LEAVE APPLICATION OF STAFF

    IF LEAVE STATUS = APPROVED

        DISPLAY LEAVE APPROVED

    ELSE

        DISPLAY LEAVE REJECTED

    END IF

END
```

F. Payroll

```
BEGIN

    PAYROLL

    IF STAFF APPLY LEAVE EXCEED THE LIMIT THEN

        DISPLAY SALARY IS DEDUCT

    ELSE

        DISPLAY SALARY IS NOT DEDUCT

    END IF

END
```

G. View Record/Generate Report

BEGIN

VIEW RECORD

IF SELECTED STAFF = VALID

DISPLAY THE INFORMATION OF STAFF THEN

GENERATE REPORT

ELSE

DISPLAY INVALID

END IF

END

5.0 DATA MODELLING (ERD)

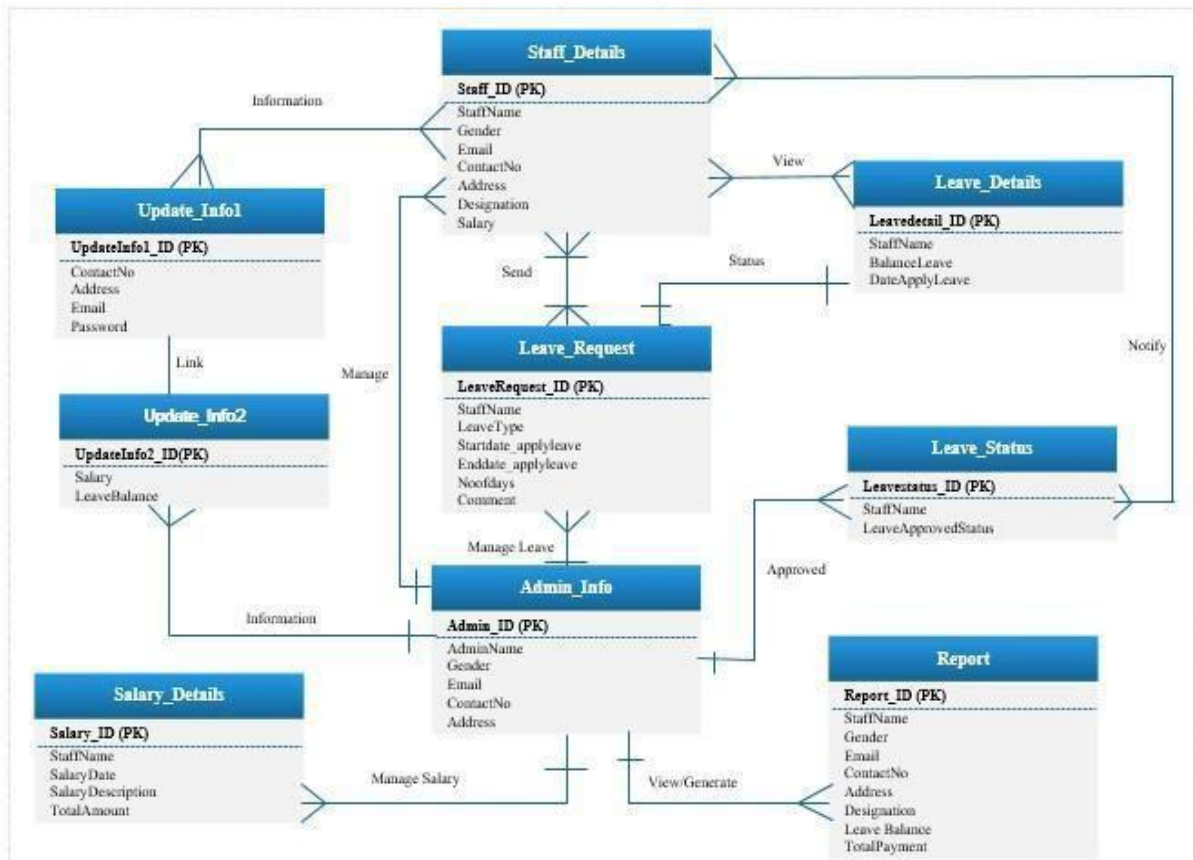


Figure 4.0 : ERD OF E-LMSP

Figure 4.0 above show the ERD of E-LMSP. This ERD will describe all the process of the system that will link each others. For example, all staff leave application and salary will manage by only one administrator, all staff can only update the personal detail and password while administrator can update all information like leave balance, salary, and personal detail of the staff. Administrator also can generate report all the staff to see detail information. Besides that, all staff can send many leave request and view the leave details such as leave approved status, leave balance and date of apply leave.

6.0 SOFTWARE PRODUCT FEATURE

6.1 Use Case 1 : Register

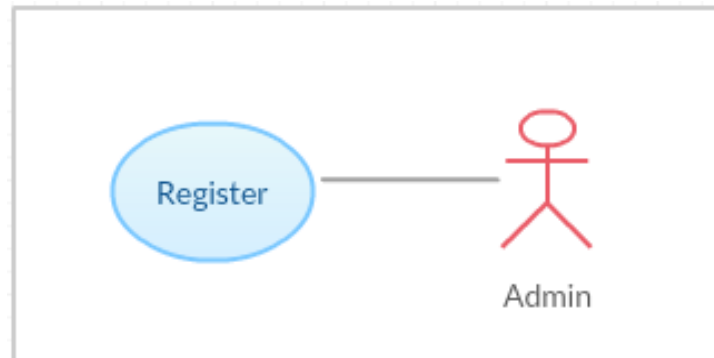


Figure 5.0 : Register new employee diagram

Table 2.0 Register new employee details

Use Case ID	E-LMSP_UC_01
Brief Description	Administrator is use to register the staff infromation into the database.
Actor	Administrator
Pre-Conditions	User must log in as a administrator.
Basic Flow	<ol style="list-style-type: none"> 1. User log in as administrator 2. User log in is valid. 3. Click on “Register” button. 4. Fill all the information of staff. 5. Click “Save” button to store the staff information into database.
Alternative Flow	None
Exception Flow	Incomplete fill up the information the system will inform admin to complete all requirement.
Post-Conditions	The staff details are been save.
Rules	None
Constraints	None
Sequence Diagram (if any)	Refer Appendix A – 2 : Admin Register/Add New Employee Page

6.2 Use Case 2 : Update information

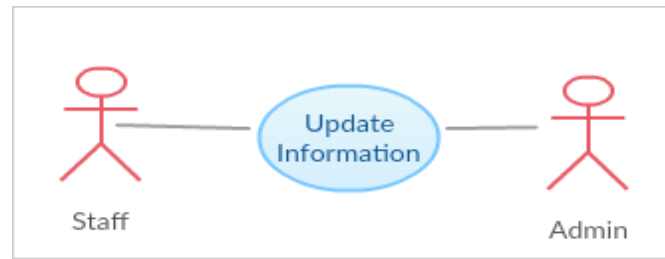


Figure 5.1 : Update information diagram

Table 2.1 : Update information

Use Case ID	E-LMSP_UC_02
Brief Description	Staff can update their update their profile information. Administrator will update the leave balance and salary of staff into the system.
Actor	Staff and administrator
Pre-Conditions	User must log in based on category which are staff or administrator.
Basic Flow	<p>1) Staff</p> <ul style="list-style-type: none"> i. User log in as a Staff. ii. User click on “ Update information” button. iii. User can update ther contact number, address, email, password and so on. iv. Press “Save” button to save the data. <p>2) Administration</p> <ul style="list-style-type: none"> i. User log in as a Administration. ii. User click on “ Update information” button. iii. User can update the leave balances and salary of staff. iv. Press “Save” button to save the data.
Alternative Flow	User note down the information that need to update by using manually.

Exception Flow	Not fill up the information requirement.
Post-Conditions	Update profiled is successfully
Rules	None
Constraints	None

6.3 Use Case 3 : Apply Leave

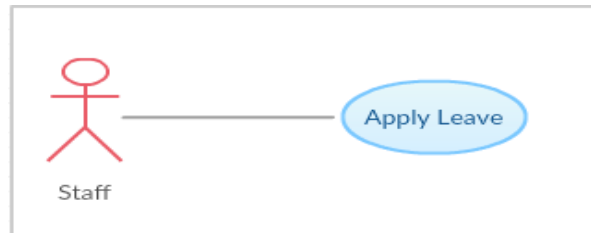


Figure 5.2 : Apply Leave diagram

Table 2.2 : Apply Leave

Use Case ID	E-LMSP_UC_03
Brief Description	Staff apply for their leave by choosing date through the E-LMSP.
Actor	Staff
Pre-Conditions	User must log in as a staff
Basic Flow	<ol style="list-style-type: none"> 1. User log in as staff by entering their username, password. 2. Username and password is valid. 3. User click on “Apply Leave” button. 4. User fill all information and choose the date of leave desired. 5. User click on the “confirm” button for leave confirmation.
Alternative Flow	<ol style="list-style-type: none"> 1. When the system is down, user will fill in form for applying leave manually. 2. User will submit the form to administrator.
Exception Flow	Invalid username and password cause the system not to display leave applying function.

Post-Conditions	Request for leave is submit to the administration and save record into the system.
Rules	None
Constraints	None
Sequence Diagram (if any)	Refer Appendix A -3 : Staff Apply Leave and View Leave Record Page

6.4 Use Case 4 : Manage Leave



Figure 5.3 : Manage Leave diagram

Table 2.3 : Manage Leave

Use Case ID	E-LMSP_UC_04
Brief Description	Administrator use to managed the leave that request by Staff.
Actor	Administrator
Pre-Conditions	User must log in as administrator
Basic Flow	<ol style="list-style-type: none"> 1. User log in as administrator by entering their username, password. 2. Username and password is valid. 3. User click on “Manage Leave” button. 4. User choose the “approve or reject” button. 5. Then click “ confirmation” button to save record and sent the satus of leave to the staff.
Alternative Flow	<ol style="list-style-type: none"> 1. When the system is down, user will sign the form using manually.

Exception Flow	Invalid username and password cause the system not to display manage leave function.
Post-Conditions	Leave approved is submit into the system and sent to the staff.
Rules	None
Constraints	None
Sequence Diagram (if any)	Refer Appendix A -4 : Admin Manage Leave approved page

6.5 Use Case 5 : View Leave Status and Salary

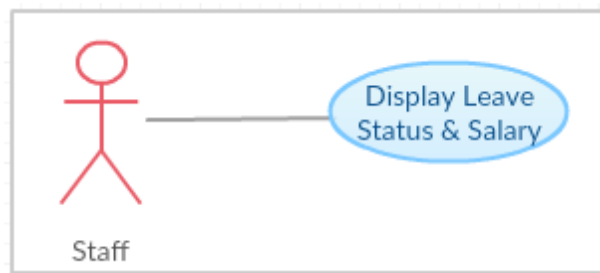


Figure 5.4 : View Leave Status and Salary diagram

Table 2.4 : View Leave Status and Salary

Use Case ID	E-LMSP_UC_05
Brief Description	Staff can view the leave status and salary..
Actor	Staff
Pre-Conditions	User must log in based on category which is staff .
Basic Flow	<ol style="list-style-type: none"> 1. User log in as staff by entering their username, password. 2. Username and password is valid. 3. User click on “View Leave Record” button. 4. User click on “View Salary” button.
Alternative Flow	None
Exception Flow	The system failed to view when data not in database.

Post-Conditions	View leave record is successfully.
Rules	None
Constraints	None

6.6 Use Case 6 : Payroll

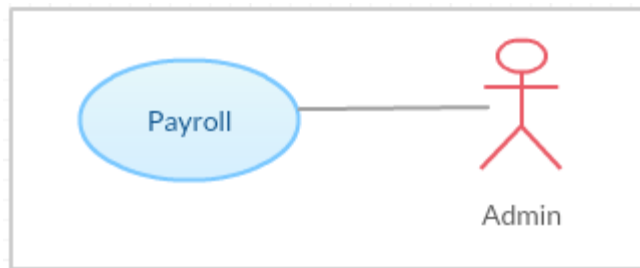


Figure 5.5 : Payroll diagram

Table 2.5 : Payroll

Use Case ID	E-LMSP_UC_06
Brief Description	Administrator allow to calculate the salary of staff based on their attendance.
Actor	Administrator
Pre-Conditions	User must log in as administrator
Basic Flow	<ol style="list-style-type: none"> 1. User log in as administrator 2. User log in is valid. 3. User click on “calculate payment” button. 6. System will calculate salary for the staff based on their working days. 7. Salary information is obtained. 8. Salary information is printed.
Alternative Flow	Administrator will manually calculate the salary for staff based on their working hours.
Exception Flow	Username, password and category is invalid, system will

	not allow the user to calculate the salary.
Post-Conditions	Salary information for staff is obtained.
Rules	<ol style="list-style-type: none"> 1. Salary information will be calculated at end of each month. 2. Only currency of Ringgit Malaysia is accepted
Constraints	<ol style="list-style-type: none"> 1. No online payment. 2. No online calculation.
Sequence Diagram (if any)	Refer Appendix A -6 : Admin Manage Salary Page

6.7 Use Case 7 : Generate Report/Slip



Figure 5.6 : Generate Report/Slip diagram

Table 2.6: Generate Report

Use Case ID	E-LMSP_UC_07
Brief Description	Administrator can generate report and print out.
Actor	Administrator
Pre-Conditions	User must log in as administrator
Basic Flow	<ol style="list-style-type: none"> 1. User log in as administrator 2. User log in is valid. 3. User click on “Generate Report” button. 4. Then click “Print” button to print out the report.
Alternative Flow	None
Exception Flow	Username, password and category is invalid, system will

	not allow the user to generate report.
Post-Conditions	Generate report is successfully.
Rules	None
Constraints	None
Sequence Diagram (if any)	Refer Appendix A -7 : Admin Generate Report Page

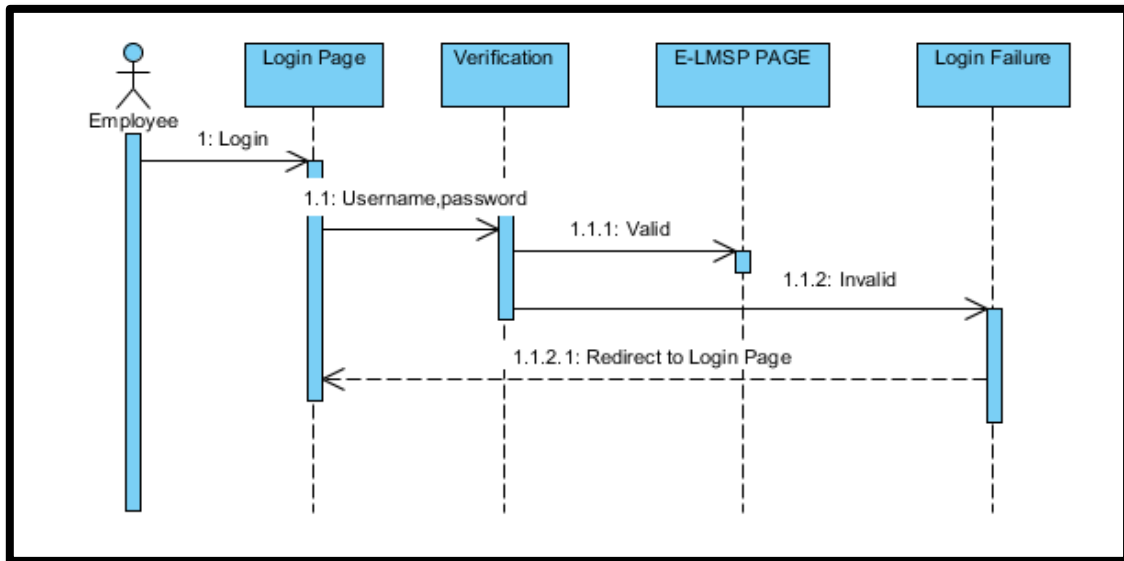
7.0 SYSTEM REQUIREMENT APPROVAL

	Name	Date
Verified by: _____ Developer		
Approved by: _____ Client		

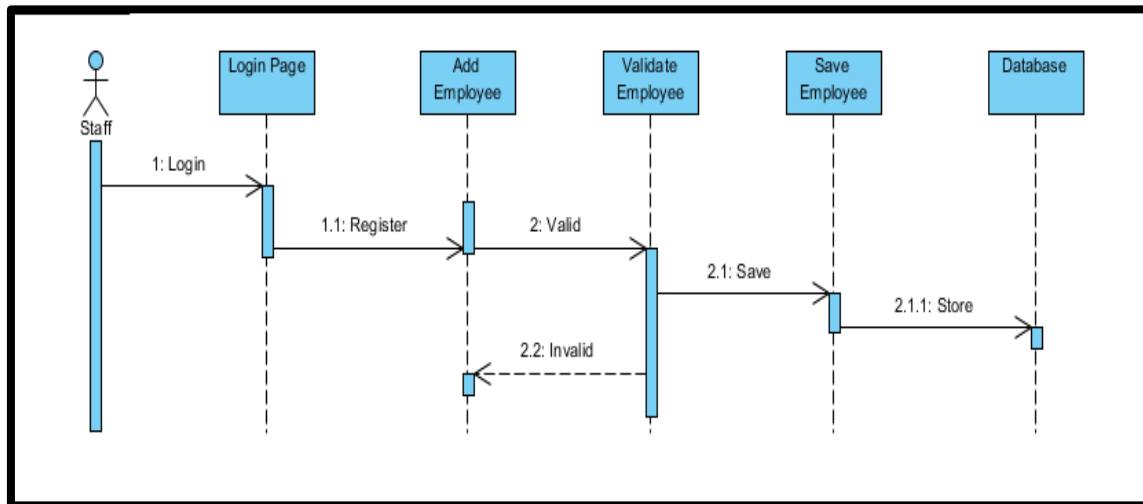
APPENDIX A

Sequence Diagram

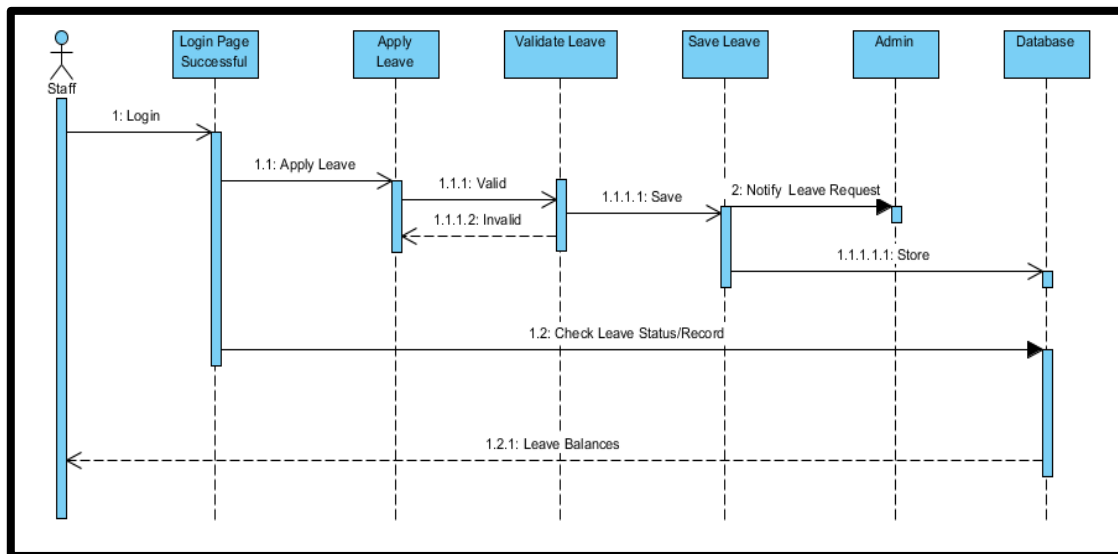
1) Employees Login Page



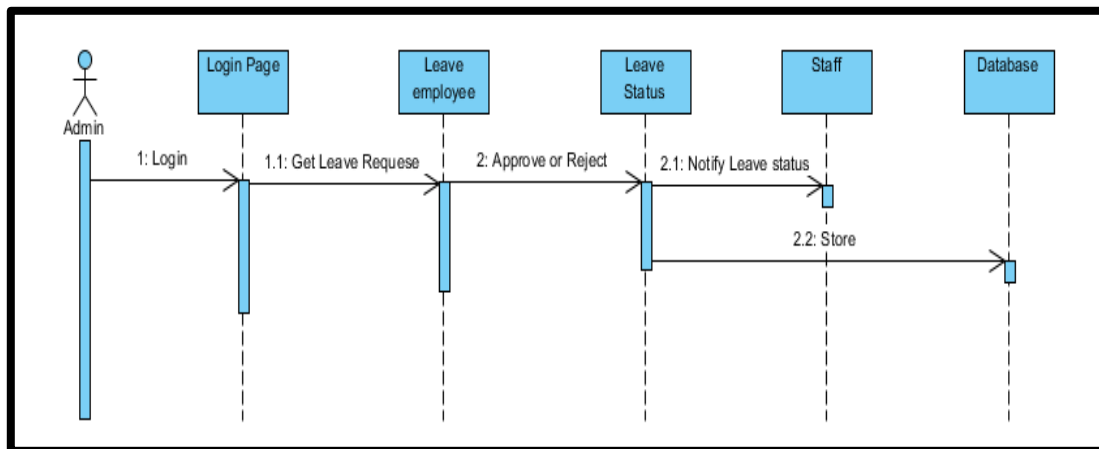
2) Admin Register/Add New Employee Page



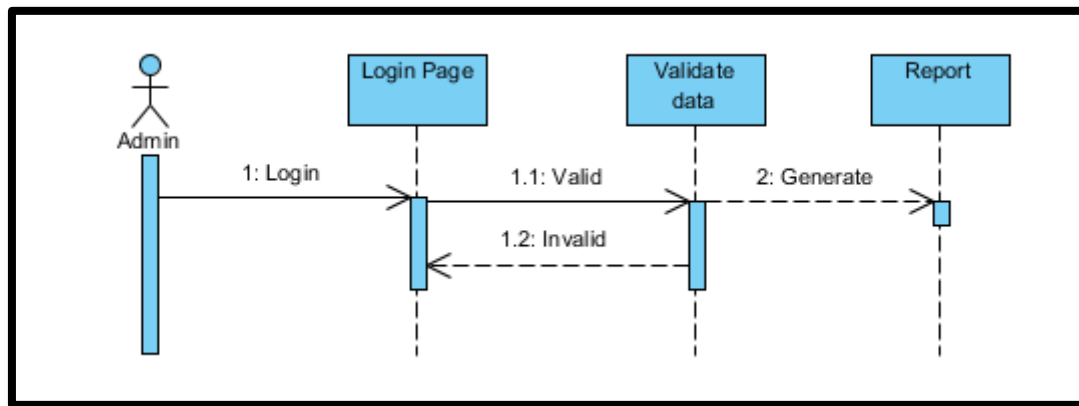
3) Staff Apply Leave and View Leave Record Page



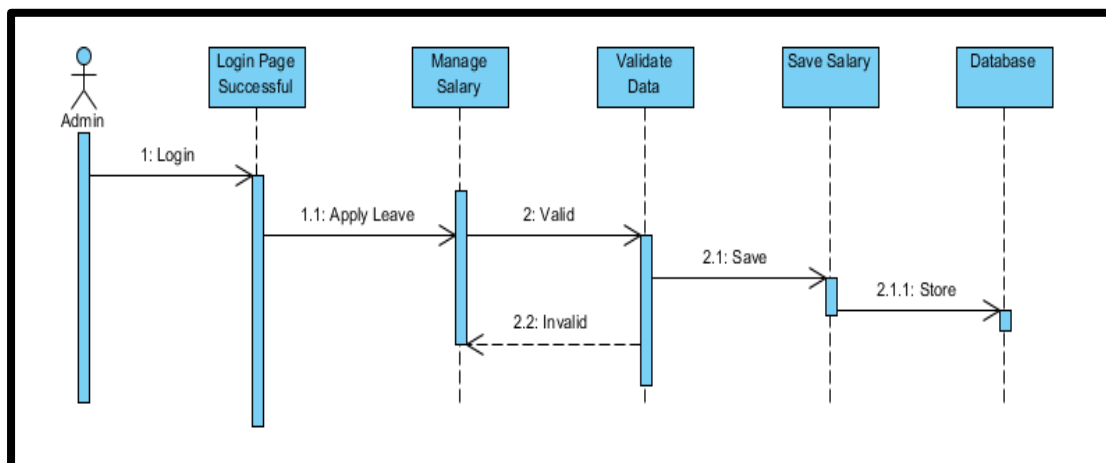
4) Admin Manage Leave approved page



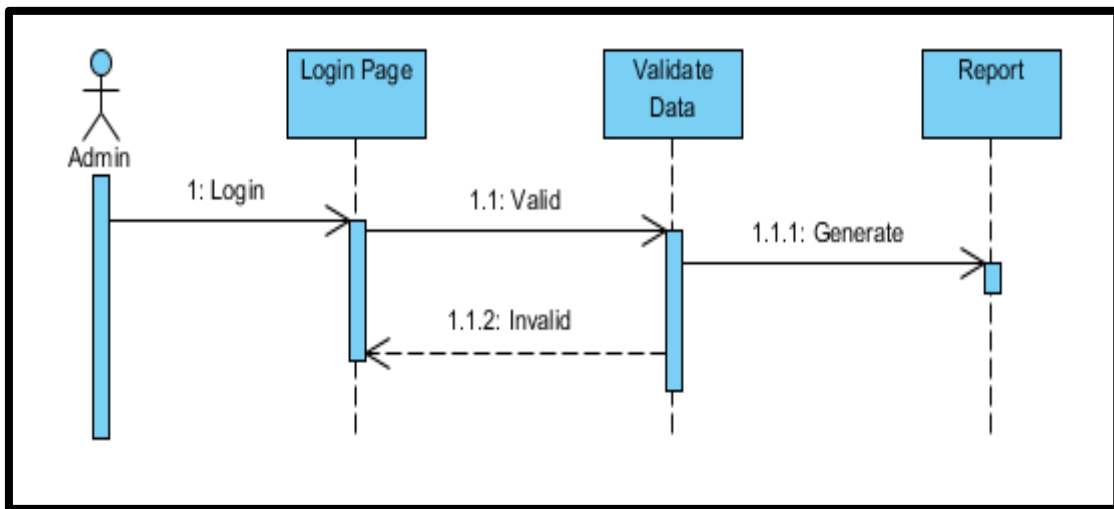
5) Admin View Leave Record Page



6) Admin Manage Salary Page



7) Admin Generate Report Page



APPENDIX C

SOFTWARE DESIGN DOCUMENT (SDD)

2018
V 1.0

SOFTWARE DESIGN DOCUMENT (SDD) E-

**LEAVE MANAGEMENT SYSTEM AND
PAYROLL (E-LMSP)**

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DATA DICTIONARY

Data Dictionary is use to describe the contents, format, and structure database and relationship between in elements and manipulation of the database. Table below show the list of attribute, description, data type and constraint. Data Dictionary of E-Leave Management System and Payroll application are consists Login page, employee information, apply leave, manage leave, view leave status, payroll and Generate report.

Table 1.0 shows the data dictionary of Login Page which contains 4 attributes are emp_id, emp_username, emp_password and emp_category. The primary key of data dictionary for login page is employee id.

Table 1.0 : Data Dictionary for Login Page

Attribute	Description	Data Type	Constraint
EMP_ID	ID is used to determine the user access to the system.	Integer	PK
EMP_USERNAME	Employee username	Nvarchar (50)	NULL
EMP_PASS	Employee password	Nvarchar (50)	NULL
EMP_CATEGORY	Employee category to Choose whether is staff or admin.	Nvarchar (50)	NULL

Table 1.1 shows the data dictionary of employees information which contain 10 attributes are emp_id, emp_username, emp_gender, emp_email, emp_contactno, emp_address, emp_designation, emp_workingdate, emp_leavebalance and emp_basicsalary. The primary key of data dictionary for employees information is emp_id.

Table 1.1 : Data Dictionary for Employee Information

Attribute	Description	Data Type	Constraint
EMP_ID	ID used to determine who login into the system.	Integer	PK
EMP_USERNAME	Employee name.	Nvarchar (50)	NULL
EMP_GENDER	Employee Gender	Nvarchar (50)	NULL
EMP_EMAIL	Employee Email	Nvarchar (50)	NULL
EMP_CONTACTNO	Employee Contact Number	Nvarchar (50)	NULL
EMP_ADDRESS	Employee Address	Nvarchar (50)	NULL
EMP_DESIGNATION	Employee Designation	Nvarchar (50)	NULL
EMP_WORKINGDATE	Employee start working date.	Date	NULL
EMP_LEAVEBALANCE	Employee leave balance.	Integer	NULL
EMP_BASICSALARY	Employee basic salary.	Decimal	NULL

Table 1.2 shows the data dictionary of apply leave by staff which contain 14 attributes are applyleave_id, applyleave_username, applyleave_department, applyleave_leavebalance, applyleave_amountsalary, applyleave_dateapply, applyleave_leavetype, applyleave_daystype, applyleave_fromdate, applyleave_todate, applyleave_noofdays, applyleave_comment, applyleave_managername and applyleave_emailmanager. The primary key of data dictionary for apply leave is applyleave_id.

Table 1.2 : Data Dictionary for Apply Leave

Attribute	Description	Data Type	Constraint
APPLYLEAVE_ID	ID to determine the staff request the leave.	Integer	PK
APPLYLEAVE_USERNAME	Staff name.	Nvarchar (50)	NULL
APPLYLEAVE_DESIGNATION	Staff designation.	Nvarchar (50)	NULL
APPLYLEAVE_LEAVEBALANCE	Leave Balance.	Integer	NULL
APPLYLEAVE_AMOUNTSALARY	Amount Salary.	Decimal	NULL
APPLYLEAVE_DATEAPPLY	Date Apply.	Date	NULL
APPLYLEAVE_LEAVETYPE	Leave Type .	Nvarchar (50)	NULL
APPLYLEAVE_DAYSTYPE	Days Type	Nvarchar (50)	NULL
APPLYLEAVE_FROMDATE	From date apply leave	Date	NULL
APPLYLEAVE_TODATE	To date apply leave	Date	NULL
APPLYLEAVE_NOOFDAYS	No of days leave apply by staff.	int	NULL
APPLYLEAVE_COMMENT	State the comment or reason why apply leave.	Nvarchar (50)	NULL
APPLYLEAVE_MANAGERNAME	Manager Name	Nvarchar (50)	NULL
APPLYLEAVE_EMAILMANAGER	Manager Email	Nvarchar (50)	NULL

Table 1.3 shows the data dictionary manage leave of staff which contain 10 attributes are manageleave_id,manageleave_username, manageleave_designation, manageleave_dateapply, manageleave_leavetype,manageleave_daystype,manageleave_fromdate, manageleave_todate, manageleave_noofdays and manageleave_comment. The primary key of data dictionary for manage leave is manageleave_id.

Table 1.3 : Data Dictionary for Manage Leave

Attribute	Description	Data Type	Constraint
MANAGELEAVE_ID	ID to determine the staff request the leave.	Integer	PK
MANAGELEAVE_USERNAME	Staff name.	Nvarchar (50)	NULL
MANAGELEAVE_DESIGNATION	Staff designation.	Nvarchar (50)	NULL
MANAGELEAVE_DATEAPPLY	Date apply leave.	Date	NULL
MANAGELEAVE_LEAVETYPE	Leave Type	Nvarchar (50)	NULL
MANAGELEAVE_DAYSTYPE	Days Type	Nvarchar (50)	NULL
MANAGELEAVE_FROMDATE	From date apply leave	Date	NULL
MANAGELEAVE_TODATE	To date apply leave	Date	NULL
MANAGELEAVE_NOOFDAYS	No of days leave apply by staff.	Integer	NULL
MANAGELEAVE_COMMENT	State the comment or reason why apply leave.	Nvarchar (50)	NULL

Table 1.4 shows the data dictionary of view leave status which contains 9 attributes are viewleavestatus_id,viewleavestatus_username,viewleavestatus_department,viewleavestatus_dateapply, viewleavestatus_fromdate, viewleavestatus_todate, viewleavestatus_noofdays, viewleavestatus_leavestatus and viewleavestatus_leavebalance. The primary key of data dictionary for view leave status is viewleavestatus_id.

Table 1.4 : Data Dictionary for View Leave Status

Attribute	Description	Data Type	Constraint
VIEWLEAVESTATUS_ID	ID to determine the leave detail of staff.	Integer	PK
VIEWLEAVESTATUS_USERNAME	Staff name.	Nvarchar (50)	NULL
VIEWLEAVESTATUS_DESIGNATION	Staff designation.	Nvarchar (50)	NULL
VIEWLEAVESTATUS_DATEAPPLY	Date apply leave.	Date	NULL
VIEWLEAVESTATUS_FROMDATE	From date apply leave.	Date	NULL
VIEWLEAVESTATUS_TODATE	To date apply leave.	Date	NULL
VIEWLEAVESTATUS_NOOFDAYS	No of days apply leave.	Integer	NULL
VIEWLEAVESTATUS_LEAVESTATUS	The status of leave request.	Nvarchar (50)	NULL
VIEWLEAVESTATUS_LEAVEBALANCE	The total leave balance left.	Integer	NULL

Table 1.5 shows the data dictionary of manage salary which contains 13 attributes are payroll_id, payroll_username, payroll_designation, payroll_basicsalary, payroll_bonus, payroll_claims, payroll_overtime, payroll_medical, payroll_socso, payroll_epf/kwsp, payroll_allowance, payroll_deduction and payroll_totalpayment. The primary key of data dictionary for payroll is payroll_id.

Table 1.5 : Data Dictionary for payroll

Attribute	Description	Data Type	Constraint
PAYROLL_ID	ID is used to determine the salary of staff.	Integer	PK
PAYROLL_USERNAME	Staff name	Nvarchar (50)	NULL
PAYROLL_DESIGNATION	Staff designation	Nvarchar (50)	NULL
PAYROLL_BASICSALARY	The basic salary.	Decimal	NULL
PAYROLL_BONUS	Bonus.	Decimal	NULL
PAYROLL_CLAIM	Total claims.	Decimal	NULL
PAYROLL_OVERTIME	Total pay Overtime.	Decimal	NULL
PAYROLL_MEDICAL	Medical	Decimal	NULL
PAYROLL_SOCSO	Socso	Decimal	NULL
PAYROLL_EPF/KWSP	EPF/KWSP	Decimal	NULL
PAYROLL_ALLOWANCE	Total Allowance	Decimal	NULL
PAYROLL_DEDUCTION	Total Salary Deduction.	Decimal	NULL
PAYROLL_TOTALPAYMENT	Total Payment for monthly.	Decimal	NULL

Table 1.6 shows the data dictionary of generate report/slip which contains 17 attributes are report_id, report_date, report_username, report_designation, report_email, report_contact no, report_address, report_basicsalary, report_bonus, report_claims, report_overtime, report_medical, report_socso, report_epf/kwsp, report_allowance, report_deduction, and report_payment. The primary key of data dictionary for generate report/slip is report_id.

Table 1.6 : Data Dictionary for Generate Report/Slip

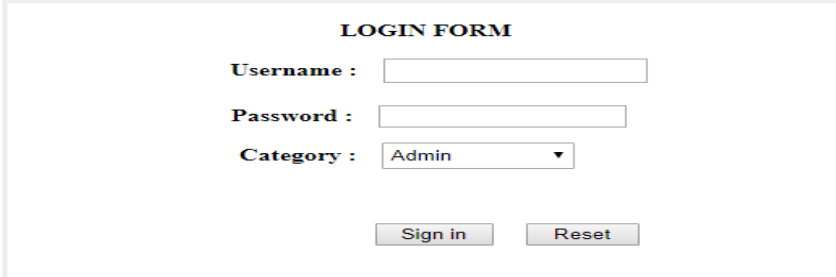
Attribute	Description	Data Type	Constraint
REPORT_ID	ID is use to determine the report of staff.	Integer	PK
REPORT_DATE	Date of generate report/slip	Date	NULL
REPORT_USERNAME	Staff name.	Nvarchar (50)	NULL
REPORT_DESIGNATION	Staff designation	Nvarchar (50)	NULL
REPORT_EMAIL	Staff email.	Nvarchar (50)	NULL
REPORT_CONTACTNO	Staff contact number.	Nvarchar (50)	NULL
REPORT_ADDRESS	Staff address.	Nvarchar (50)	NULL
REPORT_BASIC SALARY	Staff basic salary	Decimal	NULL
REPORT_BONUS	Bonus	Decimal	NULL
REPORT_CLAIMS	Total Claims.	Decimal	NULL
REPORT_OVERTIME	Total pay overtime.	Decimal	NULL
REPORT_MEDICAL	Total Medical.	Decimal	NULL
REPORT_SOCSO	Socso	Decimal	NULL
REPORT_EPF/KWSP	EPF/KWSP	Decimal	NULL
REPORT_ALLOWANCE	Total Allowance	Decimal	NULL
REPORT_DEDUCTION	Total Salary Deduction.	Decimal	NULL
REPORT_PAYMENT	Total Payment Monthly for staff.	Decimal	NULL

2.0 USER INTERFACE

The diagram below are shows the user interface of E-Leave Management System and Payroll (E-LMSP). E-LMSP is develop with two platform which is web-based application and mobile application.

2.1 Login Page (Web Based Application)

Figure 2.1 shows Login Page of E-LMSP web application. Before access to the system, the staff and admin need to enter the correct username, password and category.



LOGIN FORM

Username :


Password :

Category :

Figure 2.1 : Login Page(Web Based Application)

2.2 Apply Leave

Figure 2.2 shows apply leave of E-LMSP web application. This page is use by staff to apply leave.



WELCOME TO STAFF PAGE (E-LMSP)

Leave Management System

HOME APPLY LEAVES LEAVES RECORD/BALANCES VIEW SALARY UPDATE INFORMATION LOGOUT

APPLICANT LEAVE FORM

APPLICANT DETAILS
Staff ID : Name : Department :

OTHER INFORMATIONS
Leave Balance : Amount Salary :

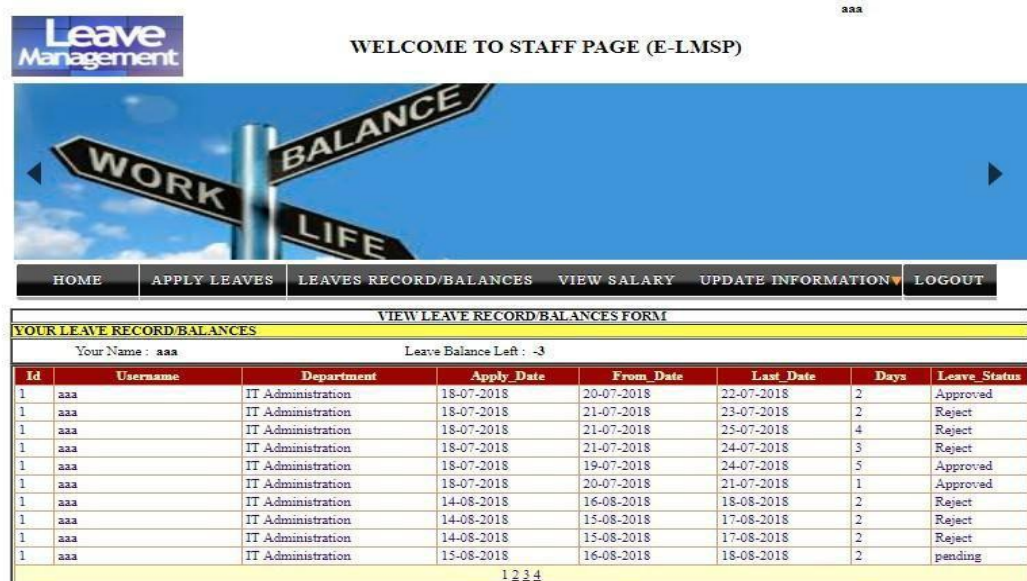
DETAILS OF EVENT
Date Apply :
Leave Type :
Day Type :
From Date : To Date :
No of Days :
Leave Reason :

VERIFICATION OR APPROVAL
Manager Name :
Email Manager :

Figure 2.2 : Apply Leave

2.3 View Leave Status

Figure 2.3 shows the view leave status of E-LMSP web application. This page is use by staff to view leave request status and total leave balance left.



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Leave Management

WELCOME TO STAFF PAGE (E-LMSP)

HOME APPLY LEAVES LEAVES RECORD/BALANCES VIEW SALARY UPDATE INFORMATION LOGOUT

VIEW LEAVE RECORD/BALANCES FORM

YOUR LEAVE RECORD/BALANCES

Your Name : aaa Leave Balance Left : -3

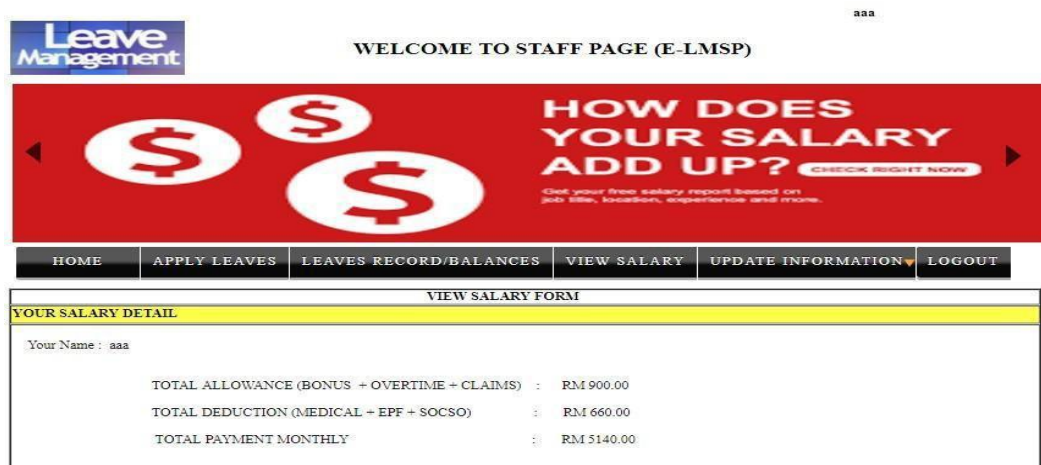
Id	Username	Department	Apply Date	From Date	Last Date	Days	Leave Status
1	aaa	IT Administration	18-07-2018	20-07-2018	22-07-2018	2	Approved
1	aaa	IT Administration	18-07-2018	21-07-2018	23-07-2018	2	Reject
1	aaa	IT Administration	18-07-2018	21-07-2018	25-07-2018	4	Reject
1	aaa	IT Administration	18-07-2018	21-07-2018	24-07-2018	3	Reject
1	aaa	IT Administration	18-07-2018	19-07-2018	24-07-2018	5	Approved
1	aaa	IT Administration	18-07-2018	20-07-2018	21-07-2018	1	Approved
1	aaa	IT Administration	14-08-2018	16-08-2018	18-08-2018	2	Reject
1	aaa	IT Administration	14-08-2018	15-08-2018	17-08-2018	2	Reject
1	aaa	IT Administration	14-08-2018	15-08-2018	17-08-2018	2	Reject
1	aaa	IT Administration	15-08-2018	16-08-2018	18-08-2018	2	pending

1 2 3 4

Figure 2.3 : View Leave Status

2.4 View Salary

Figure 24 shows the view salary of E-LMSP web application. This page is use by staff to view total salary of every month.



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Leave Management

WELCOME TO STAFF PAGE (E-LMSP)

HOME APPLY LEAVES LEAVES RECORD/BALANCES VIEW SALARY UPDATE INFORMATION LOGOUT

VIEW SALARY FORM

YOUR SALARY DETAIL

Your Name : aaa

TOTAL ALLOWANCE (BONUS + OVERTIME + CLAIMS) : RM 900.00

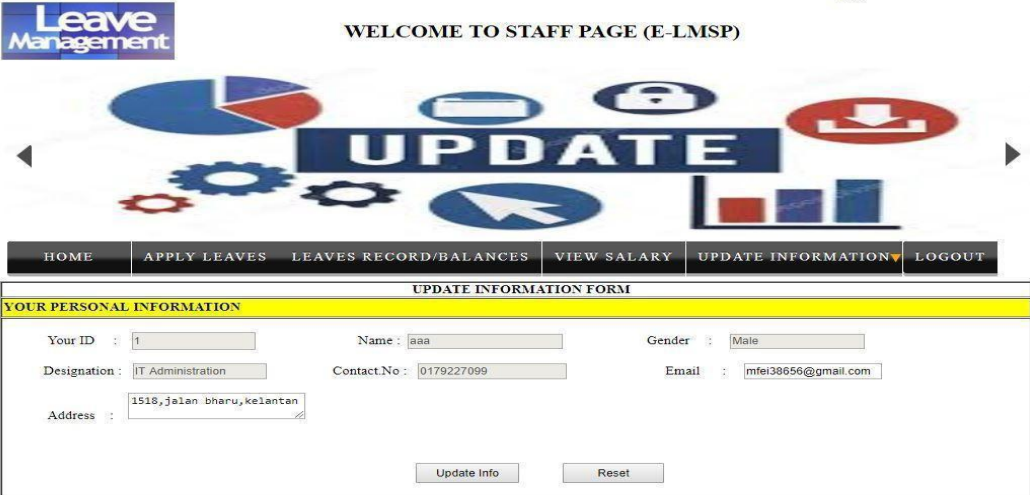
TOTAL DEDUCTION (MEDICAL + EPF + SOCSO) : RM 660.00

TOTAL PAYMENT MONTHLY : RM 5140.00

Figure 2.4: View Salary

2.5 Update Information

Figure 2.5 shows the update information of E-LMSP web application. This page is used by staff and admin to update information. Staff is used to update personal information and admin is used to update the leave balance and salary of the employees.



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Leave Management

WELCOME TO STAFF PAGE (E-LMSP)

HOME APPLY LEAVES LEAVES RECORD/BALANCES VIEW SALARY UPDATE INFORMATION LOGOUT

UPDATE INFORMATION FORM

YOUR PERSONAL INFORMATION

Your ID : Name : Gender :

Designation : Contact.No : Email :

Address :



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Leave Management

WELCOME TO ADMINISTRATOR PAGE (E-LMSP)

Online Leave Management

NEW REGISTRATION UPDATE INFORMATION MANAGE LEAVE PAYROLL REPORT DELETE USER LOGOUT

UPDATE INFORMATION FORM

STAFF DETAILS INFORMATION

Enter Staff Id :

Staff Id : Username : Gender :

Email : Phone : Address :

OTHER INFORMATIONS

Start Working Date : Designation : Salary(RM) :

Leave Balance : Category :

Figure 2.5 Update Information

2.6 Register New Employee

Figure 2.6 shows the register new employee of E-LMSP web application. This page is use by administration to register new employee into the system.

Figure 2.6 : Register New Employee

2.7 Manage Leave

Figure 2.7 shows the manage leave of E-LMSP web application. This page is use by administrator to manage leave request of employee.

Id	Username	Department	L_Balance	Date_Apply	Leave_Type	Day_Type	Frm_Date	To_Date	Day	Salary(RM)	S_Deduct(RM)	Comment	Approve	Reject
1	aaa	IT Administration	-5	15-08-2018	Sick/Medical Leave	Half Days	16-08-2018	19-08-2018	3	4333.36	249.99	iuo	Approve	Reject

Figure 2.7 : Manage Leave

2.8 Payroll

Figure 2.8 shows payroll of E-LMSP web application. This page is use by administrator to calculate the salary of employee.

CALCULATE TOTAL PAYMENT FORM		
Employees Details		
Enter Employee Id: <input type="text"/> <input type="button" value="Search"/>		
Staff ID : <input type="text" value="1"/>	Staff Name : <input type="text" value="aaa"/>	Designation : <input type="text" value="IT Administration"/>
Allowance Details		
Bonus		Overtime(Hours)
Bonus : RM <input type="text" value="100.00"/>		Pay Overtime per Hours : RM <input type="text" value="100.00"/>
		Total OT per Hours(Month) : <input type="text" value="1"/>
Claims		Overtime(Days)
Oil Vehicle : RM <input type="text" value="300.00"/>		Pay Overtime per Days : RM <input type="text" value="100.00"/>
Items : RM <input type="text" value="300.00"/>		Total OT per days (Month) : <input type="text" value="1"/>
Deduction Details		
Medical(RM) : <input type="text" value="100.00"/>	Socso (RM) : <input type="text" value="10.00"/>	EPF/KWSP (%) : <input type="text" value="11.00"/>
Basic Salary : RM 5000.00	Total Deduction : RM 660.00	
Total Payment Details		
Amount Salary : RM 4416.67	Total Allowance : RM 900.00	Total Deduction : RM 660.00
Total Payment : RM 4656.67		
<input type="button" value="Cal Total Payment/ Update"/>		<input type="button" value="Reset"/>

Figure 2.8 : Payroll

2.9 Generate Report/Slip

Figure 2.9 shows generate report/slip of E-LMSP web application. This page is use by administrator to generate report/slip of employee.

REPORT/SLIP FORM		
Employee Details		
Enter Employees Id : <input type="text"/> <input type="button" value="Search"/>		
Staff Id : <input type="text" value="1"/>	Username : <input type="text" value="aaa"/>	Designation : <input type="text" value="IT Administration"/>
No.Phone : <input type="text" value="0179227099"/>	Email : <input type="text" value="info@38959@gmail.com"/>	Basic Salary : RM <input type="text" value="5000.00"/>
Allowance Details		
Bonus		Overtime(Hours)
Bonus : RM <input type="text" value="100.00"/>		Pay Overtime per Hours : RM <input type="text" value="100.00"/>
		Total OT per Hours(Month) : <input type="text" value="1"/>
Claims		Overtime(Days)
Oil Vehicle : RM <input type="text" value="300.00"/>		Pay Overtime per Days : RM <input type="text" value="100.00"/>
Items : RM <input type="text" value="300.00"/>		Total OT per days (Month) : <input type="text" value="1"/>
Deduction Details		
Medical : RM 100.00	Socso : RM 10.00	EPF/KWSP : 11.00 %
Total Payment Details		
Amount Salary : RM 4416.67	Total Allowance : RM 900.00	Total Deduction : RM 660.00
Total Monthly Payment : RM 4656.67		
<input type="button" value="Generate Report/ Print"/>		

Figure 2.9 : Generate Report/Slip

2.10 Login Page (Mobile App : Staff)

Figure 2.10 shows login page of E-LMSP mobile application for staff. Before access to the system, the staff need to enter the correct username and password.



Figure 2.10 : Login Page (Mobile App : Staff)

2.11 Apply Leave

Figure 2.11 shows apply leave of E-LMSP mobile application for staff. This page is use by staff to apply leave.

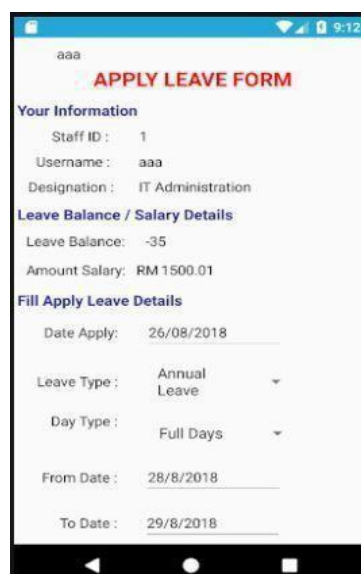


Figure 2.11 Apply Leave

2.12 View Leave Status

Figure 2.12 shows the view leave status of E-LMSP mobile application. This page is use by staff to view leave request status and total leave balance left.



Figure 2.12 : View Leave Status

2.13 View Salary

Figure 2.13 shows the view salary of E-LMSP mobile application. This page is use by staff to view total salary of every month.



Figure 2.13 : View Salary

2.14 Login Page (Mobile App : Admin)

Figure 2.14 shows login page of E-LMSP mobile application for administrator. Before access to the system, the admin need to enter the correct username and password.

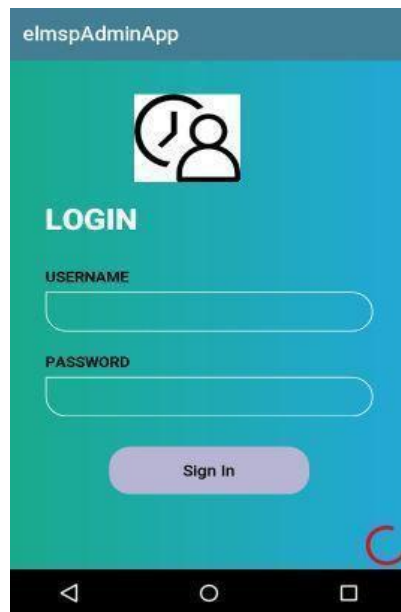


Figure 2.14 : Login Page(Mobile App : Admin)

2.15 Manage Leave

Figure 2.15 shows manage leave of E-LMSP mobile application for administrator. This page is use by admin to manage leave of the staff.



Figure 2.15 : Manage Leave

3.0 SYSTEM REQUIREMENT APPROVAL

	Name	Date
Verified by: _____ Developer		
Approved by: _____ Client		

APPENDIX D

USERACCEPTANCETEST(UAT)

2018

V 1.0

USER ACCEPTANCE TEST (UAT)

**E-LEAVE MANAGEMENT SYSTEM AND
PAYROLL (E-LMSP)**

AUTHOR NAME :

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1.0 INTRODUCTION

The testing of the E-LMSP application will be done by staff and admin of Seri Barat Mixed to certify the system is can be operational for use. The testing will be done by the client is to test all function in the E-LMSP application is can working properly without any bugs or errors occur during the tested. Besides that, the interface also will be test whether it is user friendly or not and also verify the system is consistent with the requirements.

The testing results will be recorded in this UAT report such as the bug or error is found during testing. Other than that, each functions in the system are working properly will also be state in UAT report to make developer easy for review. Therefore, the questionnaire will also be provided to the client during testing session to get feedback from him.

2.0 TESTING RESULTS

The testing result below is obtained from the client during test the E-LMSP application. In the result will describe whether each of function is working properly or not during tested the E-LMSP application. When bugs or error is discovered and it will fix immediately to improve the overall quality of the system.

2.1 Testing Login

Table 2.1 show the testing result of login as an E-LMSP application is tested by client.

Table 2.1: Testing for Login with different category

No.	Event	Test Data/Case	Expected Result	Actual Result	Pass/ Fail	Comment
1	Login to the administrator page in E-LMSP application.	Enter the correct username, password and category and click “Sign in” button.	Successfully login into the Administrator page of E-LMSP system.	Successfully access to the Administrator page of E-LMSP system.	Pass	-
2	Login to the administrator page in E-LMSP application.	Enter the incorrect username, password and category and click “Sign in” button.	Login failed. The error messages will pop-up tell user the username, password or category is incorrect.	Not successfully login into the staff/admin page of E-LMSP system.	Pass	-
3	Login to the staff page in E-LMSP application.	Enter the correct username, password and category and click “Sign in” button.	Successfully login into the Staff page of E-LMSP system.	Successfully access to the Staff page of E-LMSP system.	Pass	-
4	Login to the staff page in E-LMSP application.	Enter the incorrect username, password and category and click “Sign in” button.	Login failed. The error messages will pop-up the username, password or	Not successfully login into the staff/admin page of E-LMSP	Pass	-

		in” button.	category is incorrect.	system.		
5	Reset/clear the value in the textbox.	Reset/clear all value in textbox with click the “Reset” button.	The textbox of username, password and category is successfully reset/clear.	The textbox of username and password will be reset/clear.	Pass	-

2.2 Testing Registration

Table 2.2 show the testing result of register new employee into the system or database is tested by client.

Table 2.2: Testing for Register New Employee

No.	Event	Test Data/Case	Expected Result	Actual Result	Pass/Fail	Comment
1	Register new employees into the system or database.	Fill the information of employee with correct value/info and click “Save” button.	The all information is register are successfully saved into the database and message will show registration is successfully save into database.	The all information is successfully store into database.	Pass	-

2	Register new employees into the system or database.	Not fill all the information of employee or incorrect value/info and click "Save" button.	Fail to register of employees into the system/databas e and error message will show the information is not fill up or incorrect value/info.	The all information is failed to store into database.	Pass	-
3	Reset/clear the value in the textbox.	Reset/clear all value in textbox with click the "Reset" button.	The all value in textbox is clear/reset successfully	The all value in textbox has been clear/reset.	Pass	-

2.3 Testing Update Information

Table 2.3 show the testing result of update information of employee in the system is tested by client.

Table 2.3: Testing for Update Information Employee

No.	Event	Test Data/Case	Expected Result	Actual Result	Pass/ Fail	Comment
1	Search the staff information.	Enter the staff id and click "Search" button with input correct staff id.	Successfully find the staff information based on the staff id.	Successfully find the staff information based on the staff id.	Pass	-

2	Search the staff information.	Enter the staff id and click “Search” button with input incorrect staff id.	Fail to find the staff information and error message will pop up the staff id is not found in the database or incorrect staff id.	Fail to find the staff information .	Pass	-
3	Update employee information.	Changing the information of employee with correct data/info and click “Update Info” button.	The data is update successfully and message will pop up update is success.	The data is successfully updated.	Pass	-
4	Update employee information.	Changing the information of employee with incorrect data/info and click “Update Info” button.	The data is not update successfully and error message will pop up the entire information requirement is given need to fill in, incorrect value/info or cannot be null	The data cannot be update.	Pass	-

			value.			
5	Reset/clear the text in the textbox.	Reset/clear the text in the textbox with click "Reset" button.	The text in the textbox has been clear/reset successfully	All the text in the textbox has been clear/reset.	Pass	-

2.4 Testing Apply Leave

Table 2.4 show the testing result of apply leave send to the admin to get approver is tested by client.

Table 2.4: Testing for Apply Leave

No.	Event	Test Data/Case	Expected Result	Actual Result	Pass/ Fail	Comment
1	Take a leave or apply leave.	Fill the information requirement and correct data/info and click "Apply" button.	The apply leave is successfully sent to the admin and message will pop up apply leave is successfully sent to the admin and email also will sent to the admin	The apply leave is successfully sent to the admin.	Pass	-

2	Take a leave or apply leave.	Not fill all the information requirement or incorrect data/info and click “Apply” button.	The apply leave is not successfully sent to the admin and error message will pop up the entire information requirement is given need to fill in, incorrect value/info or cannot be null value.	The apply leave is not successfully sent to the admin.	Pass	-
3	Reset/clear the text in the textbox.	Reset/clear the text in the textbox with click “Reset” button.	The text in the textbox is clear/reset successfully	All the text in the textbox has been clear/reset.	Pass	-

2.5 Testing Manage Leave

Table 2.5 show the testing result of manage leave of the employee is tested by client.

Table 2.5: Testing for Manage Leave

No.	Event	Test Data/Case	Expected Result	Actual Result	Pass/ Fail	Comment
-----	-------	----------------	-----------------	---------------	---------------	---------

1	Manage Leave of employee.	To approve leave, click “Approve” button.	The leave of employees is successfully approved.	The leave of employees is successfully approved.	Pass	-
2	Manage Leave of employee.	To reject leave, click “Reject” button.	The leave of employees is successfully rejected.	The leave of employees is successfully rejected.	Pass	-

2.6 Testing Payroll

Table 2.6 shows the testing result of calculate total payment/salary of employee is tested by client.

Table 2.6: Testing for Calculate Total Payment/Salary

No.	Event	Test Data/Case	Expected Result	Actual Result	Pass/Fail	Comment
1	Search the staff information.	Enter the staff id and click “Search” button with input correct staff id.	Successfully find the staff information based on the staff id.	Successfully find the staff information based on the staff id.	Pass	-
2	Search the staff information.	Enter the staff id and click “Search” button with	Fail to find the staff information and error message will	Fail to find the staff information.	Pass	-

		input incorrect staff id.	pop up the staff id is not found in the database or incorrect staff id			
3	Calculate Total payment/salary of employee.	Fill the salary information with correct value/info and click “Calculate Total Salary” button.	The total payment/salary of employees is calculated successfully and message will pop up the total payment/salary is successfully store/updated in database.	The total payment/salary of employees is calculated successfully.	Pass	-
4	Calculate Total payment/salary of employee.	Not fill all the salary information or incorrect data/info and click “Calculate Total Salary” button.	The total payment/salary of employees is fail to calculated and error message will pop up the information requirement is not fill in, incorrect value/info or null value.	The total payment/salary of employees is failed to calculate.	Pass	-
5	Reset/clear the value in the	Reset/clear all value in	The all value in textbox is	The all value in textbox has	Pass	-

	textbox.	the textbox with click “Reset” button.	clear/reset successfully	been clear/reset.		
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2.7 Testing Generate Report/Slip

Table 2.7 show the testing result of generate report/slip is tested by client.

Table 2.7: Testing for Generate Report/Slip

No.	Event	Test Data/Case	Expected Result	Actual Result	Pass/Fail	Comment
1	Search the staff information.	Enter the staff id and click “Search” button with input correct staff id.	Successfully find the staff information based on the staff id.	Successfully find the staff information based on the staff id.	Pass	-
2	Search the staff information.	Enter the staff id and click “Search” button with input incorrect staff id.	Fail to find the staff information and error message will pop up the staff id is not found in the database or incorrect staff id	Fail to find the staff information.	Pass	-
3	Generate report/slip	Generate report/slip to pdf	Successfully generate	Successfully generate	Pass	-

		format, click “Generate/print” button.	report/slip to the pdf format.	report/slip to the pdf format.		
--	--	--	--------------------------------------	--------------------------------------	--	--

2.8 Testing View Leave Status

Table 2.8 shows the testing result of view leave status is tested by client.

Table 2.8: Testing for View Leave Status and Leave Balance

No.	Event	Test Data/Case	Expected Result	Actual Result	Pass/ Fail	Comment
1	Views leave status.	Able to view leave record status whether is approve or reject.	Successfully view the leave status whether is approve or reject.	Successfully view the leave status whether is approve or reject.	Pass	-

2.9 Testing Delete

Table 2.9 show the testing result of delete user from the system or database is tested by client.

Table 2.9: Testing for Delete User

No.	Event	Test Data/Case	Expected Result	Actual Result	Pass/ Fail	Comment
1	Search the staff	Enter the staff id and click	Successfully find the staff	Successfully find the staff	Pass	-

	information.	“Search” button with input correct staff id.	information based on the staff id.	information based on the staff id.		
2	Search the staff information.	Enter the staff id and click “Search” button with input incorrect staff id.	Fail to find the staff information and error message will pop up the staff id is not found in the database or incorrect staff id	Fail to find the staff information .	Pass	-
3	Delete user from the system/database.	Delete user from the system/database, click “Delete” button.	The user is successfully removed/delete in the database/system and message will show delete is successfully.	The user is successfully removed/delete in the database/system.	Pass	-
4	Reset/clear the text in the textbox.	Reset/clear the text in the textbox with click “Reset” button.	The text in the textbox is clear/reset successfully	All the text in the textbox has been clear/reset.	Pass	-

3.0 QUESTIONNAIRE

Table 3.1 demonstrate the questionnaire is provided to the client at Seri Barat Mixed. The questionnaire is use to get feedback from the client when using the E-LMSP application

1-Strongly Disagree	2-Disagree	3-Neutral	4-Agree	5- Strongly Agree	
Question	1	2	3	4	5
1. Does this E-LMSP application is easy for use and use friendly?					
2. Does this E-LMSP application provide the employees with convenient way for apply leave?					
2. Does this E-LMSP application is can let employees to know the leave status is approved or reject in shortest time and know the amount leave balance left?					
4. Does this E-LMSP application is help admin easy to manage the leave application and calculate salary of the employees?					
5. Does this E-LMSP application is more secure?					
6. Does this E-LMSP application is meet the user requirements?					
7. Does this E-LMSP application all function and button is working properly?					
8. Does this E-LMSP application is suitable use in organization?					
9. Do you enjoy using the E-LMSP application?					
10. Are you satisfied with this E-LMSP application?					
11. Does this E-LMSP application is better for use apply leave compare with manual method or using paper based for apply leave?					

Table 3.1: Questionnaire

4.0 USER ACCEPTANCE TEST APPROVAL

	Name	Date
Verified by: _____ Developer		
Approved by: _____ Client		

APPENDIX E

USER MANUAL

2018
V 1.0

USER MANUAL

**E-LEAVE MANAGEMENT SYSTEM AND
PAYROLL (E-LMSP)**

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1.0 INTRODUCTION

The user manual is contains all essential information or give a guide line for the user to easy make full use of the E-LMSP application. This manual include a description of the system requirement, system function and capabilities, contingencies and alternate modes of operation and step by step for access or use the the system.

2.1 COMPUTER REQUIREMENTS

The computer and smartphome need to meet the following requirement before access to the E-LMSP application.

- i) Computer
 - ✓ Windows 95 or higher
 - ✓ 32MB RAM
 - ✓ 500KB disk space
 - ✓ Pentium 166MHZ
 - or
 - higher ✓ Internet connection
 - ✓ Internet browser

- ii) Smartphone
 - ✓ Android OS
 - ✓ API 18 or higher

3.0 SYSTEM SUMMARY

In E-LMSP application is divide into two category of user which are staff and admin to access the system. Besides that, the E-LMSP application is also produce two platforms which are web browser and mobile app. In the system, staff able to use the web browser or mobile app to apply leave, view leave status, view leave balance and total salary. After that, admin only can use the web browser to manage leave and calculate salary of employee.

4.0 GETTING STARTED

This section is provides detailed or step by step to use the E-LMSP application. In the E-LMSP, it provide two platforms which are web application and mobile application.

4.1 E-LMSP Web Application

To access the E-LMSP application, the user require the internet connection and browser to open the E-LMSP web application. The figure below show the steps to use the E-LMSP in web application.

4.1.1 Home Page

Figure 4.1.1 demonstrate home page of E-LMSP in web application. In the home page, the user can see the overview, vision and mission of the company. Therefore, the user also can search location, view calendar, view gallery, view about us and view contact us in navigation bar.

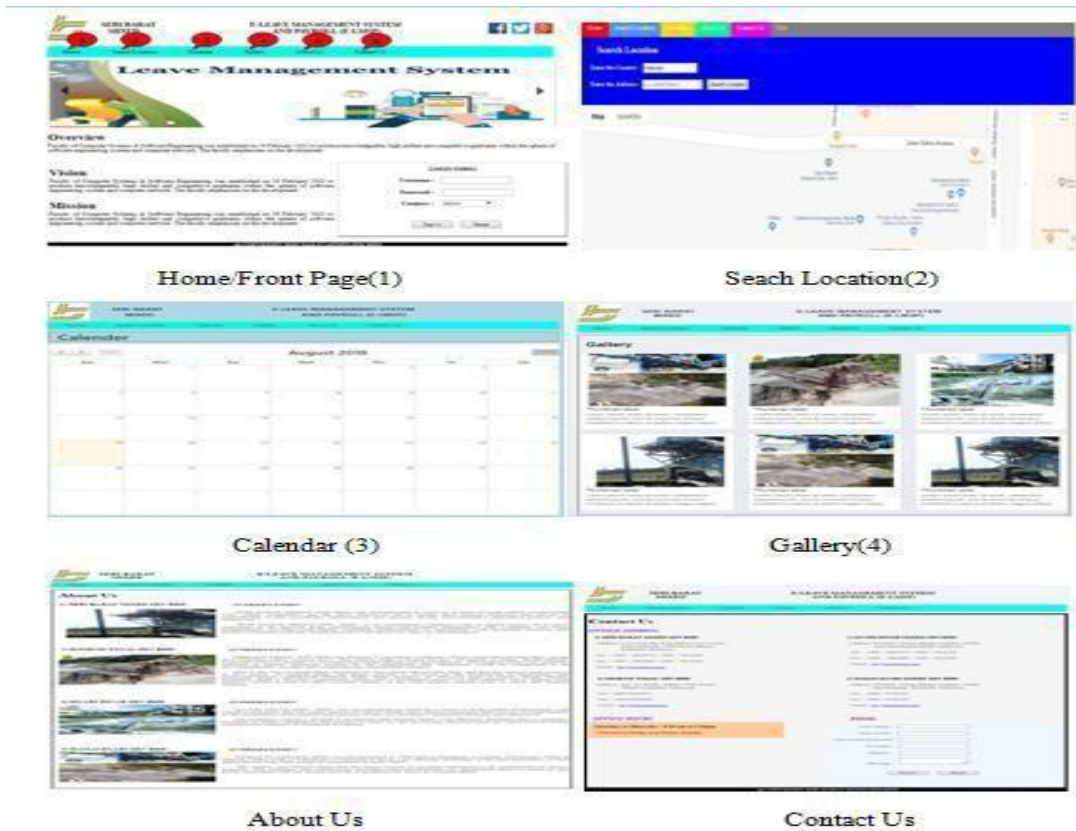


Figure 4.1.1 Home Page

- 11 Button “Home” on navigation bar, is use back to the home page.
- 22 Button “Search Location” on navigation bar, the user can search location with enter the address location and click “Search Location” button to find the place.
- 33 Button “Calendar” on navigation bar, the user can see the date.
- 44 Button “Gallery” on navigation bar, the user can see the photo of the company.
- 55 Button “About Us” on navigation bar, the user can see the information or history of the company.
- 66 Button “Contact Us” on navigation bar, the user can see the phone and address of the company. Therefore, the user also can send the email is provided in the contact us form.

4.1.2 Login Page (Web App)

Figure 4.1.2 demonstrate login page of E-LMSP in web application. To access the system, the user need to sign in.

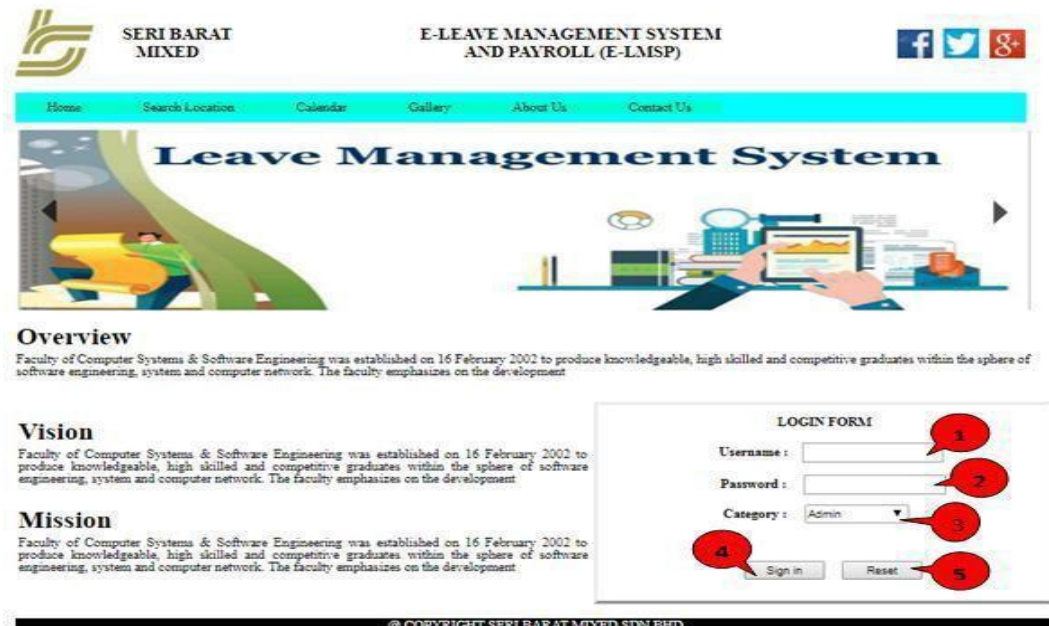


Figure 4.1.2 Login Page

1. Enter the correct username that is registered by the admin.
2. Enter the correct password. The first register to the E-LSMP application, the default password is “seribarat”.
3. Choose the correct category. The staff need to select “Staff” while admin need to select “Admin”.
4. After finish enter the username, password and category, click “Sign In” button to access the system.
5. To clear all text on the textbox, click “Reset” button.

4.1.3 Staff Page

Figure 4.1.3 demonstrate staff page of E-LMSP in web application. In staff page on navigation bar, it have six different function of buttons that are provided for the staffs such as home, apply leave, view leave status/balances, view salary, update the information and logout.



Figure 4.1.3 Staff Page

1. Button “Home” on navigation bar, is back to home of the staff page.
2. Button “Apply Leave” on navigation bar, staff is use to apply leave.
3. Button “Leave Record/Balances” on navigation bar, staff can view the leave status whether is approved or rejected. After that, the staff also can see the total leave balance left.
4. Button “View Salary” on navigation bar, staff can view the salary of monthly.
5. Button “Update Information” on navigation bar, staff can update the information.
6. Button “Logout” on navigation bar, is to exit the system.

4.1.4 Apply Leave(staff)

Figure 4.1.4 demonstrate apply leave of the staff page. To apply leave, the staff need to fill the information requirement on the application form.

The screenshot shows the 'APPLICANT LEAVE FORM' interface. At the top, there is a navigation bar with options: HOME, APPLY LEAVES, LEAVES RECORD/BALANCES, VIEW SALARY, UPDATE INFORMATION, and LOGOUT. The form itself is titled 'APPLICANT LEAVE FORM' and contains the following sections:

- APPLICANT DETAILS:** Fields for Staff ID, Name, and Department.
- OTHER INFORMATIONS:** Fields for Leave Balance and Amount Salary.
- DETAILS OF EVENT:** Fields for Date Apply, Leave Type (dropdown), Day Type (dropdown), From Date, To Date, No of Days, and Leave Reason (text area).
- VERIFICATION OR APPROVAL:** Fields for Manager Name and Email Manager.

At the bottom of the form, there are two buttons: 'Apply' and 'Reset'. Red callout boxes with numbers 1 through 5 highlight these key elements.

Figure 4.1.4 Apply Leave(Staff)

1. The staff can see the information such as staff id, name, department, leave balance and amount salary.
2. Fill the information requirement on detail of event such as date apply, leave type, day type, from date, to date, no of days and leave reason.
3. Fill the information requirement on verification or approval such as manager name and email manager.
4. After finish fill the information requirement with correct data/info, click “Apply” button to send application to the admin for get approval.
5. To clear all text on the textbox, click “Reset” button.

4.1.5 View Leave Status

Figure 4.1.5 demonstrate view leave status of the staff page. The staff can see the leave he/she apply whether is approved or rejected. After that, the staff also can view the total leave balance left.

Leave Management

WELCOME TO STAFF PAGE (E-LMSP)

WORK BALANCE LIFE

HOME APPLY LEAVES LEAVES RECORD/BALANCES VIEW SALARY UPDATE INFORMATION LOGOUT

YOUR LEAVE RECORD/BALANCES VIEW LEAVE RECORD/BALANCES FORM

Your Name : aaa Leave Balance Left : -3

Id	Username	Department	Apply Date	From Date	Last Date	Days	Leave Status
1	aaa	IT Administration	18-07-2018	20-07-2018	22-07-2018	2	Approved
1	aaa	IT Administration	18-07-2018	21-07-2018	23-07-2018	2	Reject
1	aaa	IT Administration	18-07-2018	21-07-2018	25-07-2018	4	Reject
1	aaa	IT Administration	18-07-2018	21-07-2018	24-07-2018	3	Reject
1	aaa	IT Administration	18-07-2018	19-07-2018	24-07-2018	5	Approved
1	aaa	IT Administration	18-07-2018	20-07-2018	21-07-2018	1	Approved
1	aaa	IT Administration	14-08-2018	16-08-2018	18-08-2018	2	Reject
1	aaa	IT Administration	14-08-2018	15-08-2018	17-08-2018	2	Reject
1	aaa	IT Administration	14-08-2018	15-08-2018	17-08-2018	2	Reject
1	aaa	IT Administration	15-08-2018	16-08-2018	18-08-2018	2	pending

Figure 4.1.5 View Leave Status

1. The staff can see the total leave balance left.
2. The staff can see the leave status whether is pending, approved or rejected.

4.1.6 View Salary

Figure 4.1.6 demonstrate view salary of the staff page. The staff is able to see the total of salary in monthly.



Figure 4.1.6 View Salary

1. The staff can see basic salary is given by organization.
2. The staff can see amount salary in monthly.
3. The staff can see total allowance in monthly.
4. The staff can see total deduction in monthly.
5. The staff can see total salary or payment in monthly.

4.1.7 Update Information (Staff)

In staff page of update information, it divide into two categories which is update personal information and update/changing the password.

4.1.7.1 Update Personal Information

Figure 4.1.7.1 demonstrate update personal information of the staff page. The staff is allow to update or change the personal information.

Leave Management

WELCOME TO STAFF PAGE (E-LMSP)

UPDATE

HOME APPLY LEAVES LEAVES RECORD/BALANCES VIEW SALARY UPDATE INFORMATION LOGOUT

UPDATE INFORMATION FORM

YOUR PERSONAL INFORMATION

Your ID : Name : Gender :

Designation : Contact No : Email :

Address :

Figure 4.1.7.1 Update Personal Information

1. The staff allow to change the personal nformation such as contact no, email and address.
2. After finish changing the personal information, click “Update Info” button.
3. To clear all text on the textbox, click “Reset” button.

4.1.7.2 Changing Paaword

Figure 4.1.7.2 demonstrate changing password of the staff page. The staff is allow to change or update the password.

CHANGING PASSWORD

Change Your Password

UserName : aaa

NEW PASSWORD :

CONFIRM PASSWORD :

Figure 4.1.7.2 Changing Password

1. Enter the new password.
2. Enter the confirm password. The confirm password must be same or match with new password.
3. After finish change new password, click “Submit” button.

4.1.8 Administration Page

Figure 4.1.8 demonstrate administration page of E-LMSP in web application. In admin page on navigation bar, it have seven different function of buttons that are provided for the admin such as new registration, update information, manage leave, payroll, report, delte user and logout.



Figure 4.1.8 Admin Page

1. Button “Home” on navigation bar, is back to home of the administration page.
2. Button “New Registration” on navigation bar, admin is use to register new employee into the system.
3. Button “Update Information” on navigation bar, admin can update information of the employee. After that, admin also can view detail information of the employee.
4. Button “Manage Leave” on navigation bar, admin is use to approve or reject leave application of the employee. After that, admin also can use to apply leave.
5. Button “Payroll” on navigation bar, admin can use to calculate total allowance, total deduction and total salary of the employees.
6. Button “Report” on navigation bar, admin can generate report or print the salary/payment detail of the employee.
7. Button “Logout” on navigation bar, is to exit the system.

4.1.9 Register New Employee

Figure 4.1.9 demonstrate new registration employee of the administration page. In new registration form, the admin is register new employees into the system that allow user can access to the E-LMSP application.

Leave Management

WELCOME TO ADMINISTRATOR PAGE (E-LMSP)

HR

NEW REGISTRATION | UPDATE INFORMATION | MANAGE LEAVE | PAYROLL | REPORT | DELETE USER | LOGOUT

NEW REGISTRATION FORM

STAFF DETAILS INFORMATION

Staff Id : 2 Nickname : jengfei Gender : Male

Email : jeng38555@gmail.com Phone : 0179227099 Address : 1518, Jalan Bharu, Kelantan

OTHER INFORMATIONS

Start Working Date : 28/08/2018 Designation : IT Administration Category : Staffs

Basic Salary (RM) : 8000.00 Leave Balance : 15

Save Reset

Figure 4.1.9 Register New Employee

1. Fill the information of employee such as username, gender, email, phone no, address, start working date, designation, category, basic salary, and leave balance.
2. After finish fill in the employee information with correct data/info, click “Save” button to store data into database.
3. To clear all text on the textbox, click “Reset” button.

4.1.10 Update Information(Admin)

In admin page of update information, it divide into three categories which are update employee info, update/changing password and view employee information.

4.1.10.1 Update Employee Information

Figure 4.1.10.1 demonstrate update employee information of the administration page. The admin is allow to update or change the employee information.

Leave Management

WELCOME TO ADMINISTRATOR PAGE (E-LMSP)

Online Leave Management

NEW REGISTRATION UPDATE INFORMATION MANAGE LEAVE PATROLL REPORT DELETE USER LOGOUT

STAFF DETAILS INFORMATION UPDATE INFORMATION FORM

Enter Staff Id : Search

Staff Id : Username : Gender :

Email : Phone : Address :

OTHER INFORMATIONS

Start Working Date : Designation : Salary (R.M) :

Leave Balance : Category :

Figure 4.1.10.1 Update Employee Info

1. Enter the staff id to find staff information.
2. After enter the staff id, click “Search” button.
3. Change or update the information of employee such as username, gender, email, phone no, address, start working date, designation, basic salary, leave balance and category.
4. After finish change the information of employee, click “Update Info” button.
5. To clear all text on the textbox, click “Reset” button.

4.1.10.2 Changing Password

Figure 4.1.10.2 demonstrate changing password of the administration page. The admin can change or update the password of employees.

Figure 4.1.10.2 Changing Password

1. Enter the staff id to find staff information.
2. After enter the staff id, click “Search” button.
3. Enter the new password.
4. Enter the confirm password. The confirm password must be same or match with new password.
5. After finish change new password, click “Submit” button.

4.1.10.3 View Employee Information

Figure 4.1.10.3 demonstrate view employee information of the administration page. The admin is allow to see the information of employees such as staff id, username, gender, phone no, address, designation, working, leave balance, category, and basic salary.

WELCOME TO ADMINISTRATOR PAGE (E-LMSP)

Online Leave Management

NEW REGISTRATION | UPDATE INFORMATION | MANAGE LEAVE | PAYROLL | REPORT | DELETE USER | LOGOUT

VIEW STAFF INFORMATION

Staff Id	Username	Gender	Email	Phone	Address	Designation	Working Date	Leave Balance	Category	Basic Salary (RM)
1	aaa	Male	mfei38656@gmail.com	0179227099	1518 jalan bharu.kelantan	IT Administration	18-07-2018	-3	Staffs	5000.00

Print/Export pdf

Figure 4.1.10.3 View Employee Information

1. The information of employee.
2. To print or export file the information of employee, click "Print/Export pdf" button.

4.1.11 Apply Leave(Admin)

Figure 4.1.11 demonstrate apply leave of the administration page. The admin can help the employee to apply leave and he/she also can apply leave for himself. To apply leave, the admin need to fill the information requirement on the application form.

Figure 4.1.11 Apply Leave(Admin)

1. Enter the staff id to find staff information.
2. After enter the staff id, click “Search” button.
3. The staff information such as staff id, name, department, leave balance and amount salary.
4. Fill the information requirement on detail of event such as date apply, leave type, day type, from date, to date, no of days and leave reason.
5. Fill the information requirement on verification or approval such as manager name and email manager.
6. After finish fill the information requirement with correct data/info, click “Apply” button.
7. To clear all text on the textbox, click “Reset” button.

4.1.12 Manage Leave

Figure 4.1.12 demonstrate manage leave of the administration page. The admin is use to approve or reject leave of the employees.

The screenshot shows the 'Manage Leave Form' interface. At the top, there is a navigation bar with buttons for 'NEW REGISTRATION', 'UPDATE INFORMATION', 'MANAGE LEAVE', 'PAYROLL', 'REPORT', 'DELETE USER', and 'LOGOUT'. Below this is a table titled 'MANAGE LEAVE FORM' with a yellow header row 'Request Leave Information'. The table contains one row of data for an employee named 'aaa' in the 'IT Administration' department. The table has columns for 'Id', 'Username', 'Department', 'L_Balance', 'Date_Apply', 'Leave_Type', 'Day_Type', 'Frm_Date', 'To_Date', 'Day', 'Salary(RM)', 'S_Deduct(RM)', 'Comments', 'Approve', and 'Reject'. The 'Approve' and 'Reject' columns contain buttons labeled 'Approve' and 'Reject' respectively. Three red circles with numbers 1, 2, and 3 are overlaid on the image: circle 1 points to the 'Request Leave Information' header, circle 2 points to the 'Approve' button, and circle 3 points to the 'Reject' button.

MANAGE LEAVE FORM														
Request Leave Information														
Id	Username	Department	L_Balance	Date_Apply	Leave_Type	Day_Type	Frm_Date	To_Date	Day	Salary(RM)	S_Deduct(RM)	Comments	Approve	Reject
1	aaa	IT Administration	-5	15-08-2018	Sick/Medical Leave	Half Days	16-08-2018	19-08-2018	3	4333.36	249.99	100	Approve	Reject

Figure 4.1.12 Manage Leave

1. The leave application information of the employees.
2. To approve leave application, click “Approve” button.
3. To reject leave application, click “Reject” button.

4.1.13 Payroll

In administration page of payroll, it divide into three categories which are calculate total allowance, calculate total salary deduction and calculate total salary/payment of the employee.

4.1.13.1 calculate Total Payment/Salary

Figure 4.1.13.1 demonstrate calculate total payment/salary of the administration page. The admin is use to calculate the total payment/salary which include the total allowance and salary deduction of the employees. Therefore, admin also can change or update the value of allowance and salary deduction of the employees.

Figure 4.1.13.1 Calculate Total Payment/Salary

1. Enter the staff id to find staff information.
2. After enter the staff id, click “Search” button.
3. The staff information.
4. The information of bonus and claims.
5. The information of overtime (Hours and Days).
6. The information of salary deduction such as medical, socso and epf/kwsp.

- 7. The salary information such as amount salary, total allowance and total salary deduction
- 8. Total payment/salary of the employee.
- 9. After fill all the information, click “Cal Total Payment” button to calculate total salary of the employee.
- 10. To clear all value on the textbox, click “Reset” button.

4.1.14 Generate Report

Figure 4.1.14 demonstrate generate report/slip of the administration page. The admin can generate file or print the salary information of employees.

REPORT/SLIP FORM

Employee Details

Enter Employees Id :

Staff Id : Username : Designation :

No Phone : Email : Basic Salary : RM

Allowance Details

Bonus

Bonus : RM

Claims

Oil Vehicle : RM

Items : RM

Overtime(Hours)

Pay Overtime per Hours : RM

Total OT per Hours(Month) :

Overtime(Days)

Pay Overtime per Days : RM

Total OT per days (Month) :

Deduction Details

Medical : RM 100.00 Socso : RM 10.00 EPF/KWSP : 11.00 %

Total Payment Details

Amount Salary : RM 4416.67 Total Allowance : RM 900.00 Total Deduction : RM 660.00

Total Monthly Payment : RM 4656.67

Figure 4.1.14 Generate Report

1. Enter the staff id to find staff information.
2. After enter the staff id, click “Search” button.
3. The staff information.
4. The information of bonus and claims.
5. The information of overtime (Hours and Days).
6. The information of salary deduction such as medical, socso, and epf/kwsp.
7. The salary information such as amount salary, total allowance and total salary deduction.
8. Total monthly payment/salary of the employee.
9. To print or generate report the salary information of employee, click “Generate report/print” button.

4.1.15 Delete User

Figure 4.1.15 demonstrate delete user of the administration page. The admin can delete or remove user from the system.

The screenshot shows the 'Leave Management' system's administrator interface. At the top, it says 'WELCOME TO ADMINISTRATOR PAGE (E-LMSP)'. Below this is a navigation menu with buttons for 'NEW REGISTRATION', 'UPDATE INFORMATION', 'MANAGE LEAVE', 'PAYROLL', 'REPORT', 'DELETE USER', and 'LOGOUT'. The main content area is titled 'DELETE DESIGNATION STAFF FORM' and contains a 'STAFF DETAIL INFORMATION' section. This section includes a search field for 'Enter Staff Id' with a 'Search' button, and several input fields for 'Staff Id', 'Name', 'Gender', 'No Phone', 'Designation', and 'Address'. At the bottom of the form are 'Delete' and 'Reset' buttons. Five red callout boxes with numbers 1 through 5 point to the search field, the search button, the staff information fields, the delete button, and the reset button respectively.

Figure 4.1.15 Delete User

1. Enter the staff id to find staff information.
2. After enter the staff id, click “Search” button.
3. The staff information.
4. To delete user from the system, click “Delete” button.
5. To clear all text on the textbox, click “Reset” button.

4.2 E-LMSP Mobile Application

To access the E-LMSP application, the user require the internet conection and browser to open the E-LMSP mobile application. The figure below show the steps to use the E-LMSP in mobile application.

4.2.1 Login Page (Staff)

Figure 4.2.1 demonstrate login page of E-LMSP mobile application for staff. To access the system, the user need to sign in.



Figure 4.2.1 : Login Page (Mobile App : Staff)

1. Enter the correct username that is registered by the admin.
2. Enter the correct password. The first register to the E-LSMP application, the default password is “seribarat”.
3. After finish enter the username and password, click “Sign In” button to access the system.

4.2.2 Menu Page

Figure 4.2.2 demonstrate menu page of E-LMSP mobile application for staff. The staff can select on the menu such as apply leave, view salary, view leave status, and exit the system.



Figure 4.2.2 : Menu Page

1. To apply leave, click “Apply Leave” button.
2. To view salary, click “View Salary” button.
3. To view leave status and leave balance, click “Leave Status” button.
4. To exit the system, click “Exit System” button.

4.2.3 Apply Leave

Figure 4.2.3 demonstrate apply leave of E-LMSP mobile application for staff. To apply leave, the staff need to fill the information requirement on the application form.

The figure consists of two side-by-side screenshots of a mobile application interface for applying leave. The left screenshot shows the 'APPLY LEAVE FORM' with the following sections: 'Your Information' (Staff ID: 1, Username: aaa, Designation: IT Administration), 'Leave Balance / Salary Details' (Leave Balance: -35, Amount Salary: RM 1500.01), and 'Fill Apply Leave Details' (Date Apply: 26/08/2018, Leave Type: Annual Leave, Day Type: Full Days, From Date: 28/8/2018, To Date: 29/8/2018). A red callout box with the number '1' points to the 'Date Apply' field. The right screenshot shows the continuation of the form with 'Day Type: Full Days', 'From Date: 28/8/2018', 'To Date: 29/8/2018', 'No of Days: 1', 'Leave reason: sick', 'Manager Name: tan', and 'Email Manager: i38656@gmail.com'. Below these fields are 'SUBMIT' and 'RESET' buttons. Red callout boxes with numbers '2' and '3' point to the 'SUBMIT' and 'RESET' buttons respectively.

Figure 4.2.3 : Apply Leave

1. Fill all the information such as date apply, leave type, day type, from date, to date, no of days, leave reason, manager name, and email manager.
2. After fill the information with correct data/info, click “Apply” button to send to the admin for get approval.
3. To clear all text on the textbox, click “Reset” button.

4.2.4 View Leave Status

Figure 4.2.4 demonstrate view leave status of E-LMSP mobile application for staff. The staff can see the leave status whether is approved or rejected. After that, the staff also can view the total leave balance left.



Figure 4.2.4 : View Leave Status

1. The staff can see the total leave balance left and leave status whether is pending, approved or rejected.

4.2.5 View Salary

Figure 4.2.5 demonstrate view salary of E-LMSP in mobile application for staff. The staff is able to see the total of salary in monthly.



Figure 4.2.5 : View Salary

1. The staff can see basic salary is given by organization.
2. The staff can see amount salary in monthly.
3. The staff can see total allowance in monthly.
4. The staff can see total deduction in monthly.
5. The staff can see total salary or payment in monthly.

4.2.6 Login Page (Admin)

Figure 4.2.6 demonstrate login page of E-LMSP mobile application for administrator. To access the system, the user need to sign in.



Figure 4.2.6 : Login Page (Mobile App : Admin)

1. Enter the correct username.
2. Enter the correct password. The first register to the E-LSMP application, the default password is “seribarat”.
3. After finish enter the username and password, click “Sign In” button to access the system.

4.2.7 Menu Page

Figure 4.2.7 demonstrate menu page of E-LMSP mobile application for administrator. Admin can use to manage leave all the staff and exit system.



Figure 4.2.7 : Menu Page

1. To manage leave, click “Manage Leave” button.
2. To exit the system, click “Exit System” button.

4.2.8 Manage Leave

Figure 4.2.8 demonstrate manage leave of E-LMSP mobile application for administrator. Admin is use to approve or reject the leave request by staff.



Figure 4.2.8 : Manage Leave

1. The leave request information of staff.
2. To approve leave request, click “Approve” button.
3. To reject leave request, click “Reject” button.