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Employee Management System for Smart Voice Limited

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An Undergraduate Internship/Project on Employee Management System for Smart Voice Limited

By

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Spring 2022

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September 14,2022

Dissertation submitted in partial fulfillment of the degree of bachelor of science in computer science

Department of computer science & engineering

Independent university of Bangladesh

Attestation

This is to attest that the report was done by me, Arzu Faysal (1731087), and that it was submitted in partial fulfillment of the requirements for a Bachelor's Degree in Computer Science and Engineering from Independent University, Bangladesh (IUB). It was finished under the supervision of Mr. Bijoy Rahman Arif. I also confirm that all of my work is authentic, as I learned through my internship. This project's and report's information sources have all been properly acknowledged.



14-09-2022

Signature Date

Md. Arzu Faysal

Name

Acknowledgement

At first, I would like to thank Almighty Allah (SWT), for giving me the ability to carry out my duties as an intern and finish the report on schedule. I would like to express my gratitude to the Faculty of Computer Science and Engineering department for continuing to include an internship requirement in the graduation program curriculum after having provided me with a variety of taste-testing opportunities in activities geared toward industry and the field of work that interests me. I would like to express my sincere gratitude to my supervisor, Mr. Bijoy Rahman Arif, Lecturer, Department of Computer Science and Engineering, Independent University, Bangladesh, who inspired and guided me with his progress, advice, supportive instructions, encouraging suggestions, and timely follow this application and update this report. Thanks again to my technical manager Md. Marufur Rahman, Lead Software Engineer, Smart-voice, for his excellent support, direction, inspiration, uplift, guiding, instructing, advising, and motivating me to work efficiently at Smart voice limited. I feel proud and satisfied that I have been closely monitored by the Web Application Development team and received direct advice from my supervisor. Here, with daily reporting and psychological and professional support enhances my knowledge in internship life.

Letter of Transmittal

Mr. Bijoy Rahman Arif
Lecturer
Department of Computer Science and Engineering
School of Engineering and Computer Science
Independent University, Bangladesh
Subject: **Submission of Internship Report for the completion of Graduation.**

Dear sir,

I am glad to submit my internship report on "Employee Management System" for Smart Voice Limited in accordance with your instructions in order to complete the CSE499 course requirement. I tried my best to incorporate all important information, justifications, things I learnt from the organization, and my contribution to the system in order to achieve the report helpful and thorough. Without your help, I would not have been able to finish this report, for which I am grateful. Working with Smart Voice Limited for three months was an incredible experience and a fantastic learning opportunity for me. Also, preparing this report was a fantastic experience, and I will be accessible for any clarification needed.

Therefore, I sincerely hope and pray that you will accept and act upon my Internship Report.

Sincerely Yours,
Md. Arzu Faysal
ID: 1731087
Department of Computer Science and Engineering
Independent University, Bangladesh

Evaluation Committee

.....Bijoy Rahman Arif.....

Signature

.....Bijoy Arif..... September 25, 2022

Name

.....

Supervision

.....Sabrina Alam.....

Signature

.....SABRINA ALAM.....

Name

.....

Internal Examiner-1 / Panel Member-1

.....Muhammad Mostin Rahman.....

Signature

.....Muhammad Mostin Rahman.....

Name

.....

External examiner / Organization Supervisor / Panel Member-2

.....

Signature

.....

Name

.....

Head of the Department / Convener

Dr. Mahady Hasan
Head, Department of CSE
School of Engineering & Computer Science
Independent University, Bangladesh (IUB)

Abstract

This internship report focuses on my contribution to my company during my internship as a Web Developer. Also, it will provide information about what I achieved during this time from the internship program. Furthermore, it shows the progress and process of Web Development at Smart-voice Limited. I was given the responsibility to work in a web development project of an employee management system of the company. The task of my team for the project was to gather requirements, design the data, develop, test and implement. We developed this web application with an incremental model method, and uses Laravel framework with the concept of MVC (Model, View, Controller) which can separate applications based on application components, such as: manipulation data, controller, and user interface. As an intern, I gained a lot of professional knowledge and experience working with Smart-Voice Limited. This report also reflects my contribution to the projects I worked on. Not only it shows the outcome of my work, but also it shows the experience I gathered.

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Chapter 1

Introduction

An internship gives practical job experience. An internship provides the work experience that helps us to put our education into practice, develop our leadership skills and gives us a competitive advantage as we pursue a permanent position. Internship also gives us the chance to apply our academic knowledge to challenging real-world situations.

Currently I am studying in Independent University, Bangladesh (IUB), and my Major is computer science and engineering (CSE). In my university we must complete a course called Internship Program (CSE499). I must successfully complete my internship with a reputable organization so that in the future, I might work in that field or other. I worked as an intern for around 3 months.

1.1 Overview/Background of the Work

An organization needs to manage the leave and attendance of its employees. Attendance has a direct relation with employees and their leave. The Employee management system makes it easier to keep track of all records. This web application allows the administrator to edit employees, add new employees as well as take attendance and leaves. Employees can be managed efficiently without having to retype back their information in the database. This web application makes it simple to keep track of the information on the people who work for the organization. Anyone, even those who are unfamiliar with the basics of the employee management system, can utilize it because it is easy to understand. It is user-friendly and only requires the user to follow step-by-step instructions by providing options that are simple to understand. It is fast and capable of doing a variety of tasks for a company.

1.2 Objectives

The purpose of this project is to offer a comprehensive approach to managing employee information.

This will be done by designing and implementing an employee management system that will bring up a major paradigm shift in the way that employee information is handled.

The objectives of this system include:

- Design of a web-based employee management system to fulfill requirements such as attendance management, leave management, Holiday management etc.
- Well-designed database to store employee information.
- A user friendly front-end for the user to interact with the system.

1.3 Scopes

The scope of this project will be limited to the following:

Add Employee: Only Admin can add new employees to the system and admin have permission to access the employee's profile.

Employee profiles: Employees will have access to their personal profiles and will be able to edit their details.

leave application: Employees can apply for leave as well as check their leave status through the system. Admin can accept/reject leave application through the system

Expense claim application: Employees can apply for claim expenses as well as check their expense claim status through the system. Admin can accept/reject expense claim application through the system

Register attendance: Employee can give his own attendance. Employee have to login with office IP address to record the attendance. Admin can view the employee attendance

Add Holiday: Admin can add holiday. Employee can view list of the holiday

Chapter 2

Literature Review

2.1 Relationship with Undergraduate Studies

My university courses have been really helpful for my project during my internship. I have learnt a lot of knowledge from my university experience, and now I am able to apply it to my internship. Here are a few examples of the courses that are very relevant to my topic for my internship:

1. **Database Management (CSE303):** I've learned in this course what needs to be done before starting a project. I learnt how to draw rich pictures, how to write Six Element Analysis, Problem analysis and how to solve the problems. I learned ERD, which enables us to understand the relationships between the Entities in our system. In this course I also learned about SQL. SQL is the most common language used by Database. When I will be working with the Database of my project, SQL will be really useful.
2. **System Analysis and Design (CSE307):** I learned about functional and nonfunctional system requirements in this course. I have learned about UML diagrams and how to draw them properly. I have also learned about SDLC which is very important when beginning a new Project.
3. **Web Application and Internet (CSE309)**: This course is among the most important. I have learnt how to build a website from scratch. The fundamental concepts of HTML, CSS, Bootstrap, PHP, JavaScript, and JQuery were taught to me in this course. All of These languages are useful when implementing a website,
4. **Software Engineering (CSE451):** This course covered a variety of topics. For me I think, Software testing and the SDLC will be a beneficial topic for my internship project. Software testing is a method in which we can test the entire system in an organized way and find out if there is any fault.

2.2 Related works

1. **HR Manager:** HRM is a Modern and responsive Human Resource Management System. It is developed by PHP and CodeIgniter framework. It is designed and developed for office management and company employee management.HR manager features include: Employee Attendance System, Employee Leave System, Employee Leave System, Notification System Payroll System, Tax System, Lots of Reports, Role Permission System etc.

2. **Simple HRM:** Simple HRM offers an open-source version of its professional platform. This version offers time management, and it can be installed on either a WAMP (Windows Apache MySQL PHP) or XAMPP (Linux Apache MySQL PHP) server. Once installed, Simple HRM offers every feature you need to solidify your HRM department: employee information, leave management, travel management, expense management, benefit management, and task reporting. Simple HRM allows you to assign a CV to an employee and define eligibility for rehire.

3. **Orange HRM:** Orange HRM is a powerhouse human resources tool that any small or midsize business can benefit from using. With Orange HRM, you have options: Orange HRM's features include: fully modular, addons (e.g., benefits, employee self-service, training, budget, job and salary history, etc.) for purchase, all standard HR functions (employees, leave, benefits, performance, etc.), and more.

Chapter 3

Project Management & Financing

3.1 Work Breakdown Structure

A Work breakdown structure (WBS) is a method for completing a complicated, multi-step project. It's a strategy for segmenting big projects into smaller pieces so you can finish them more quickly and effectively. A large project can be more easily managed with the use of a work breakdown structure (WBS). It can be completed more quickly as a team when it is divided into smaller portions since multiple team members can work on it concurrently. Our project also has a WBS, which divides it into smaller parts and will help us to finish it quickly and effectively. Five processes have been used to manage our work: Requirement Analysis, Design, Development, Testing, And Deployment.

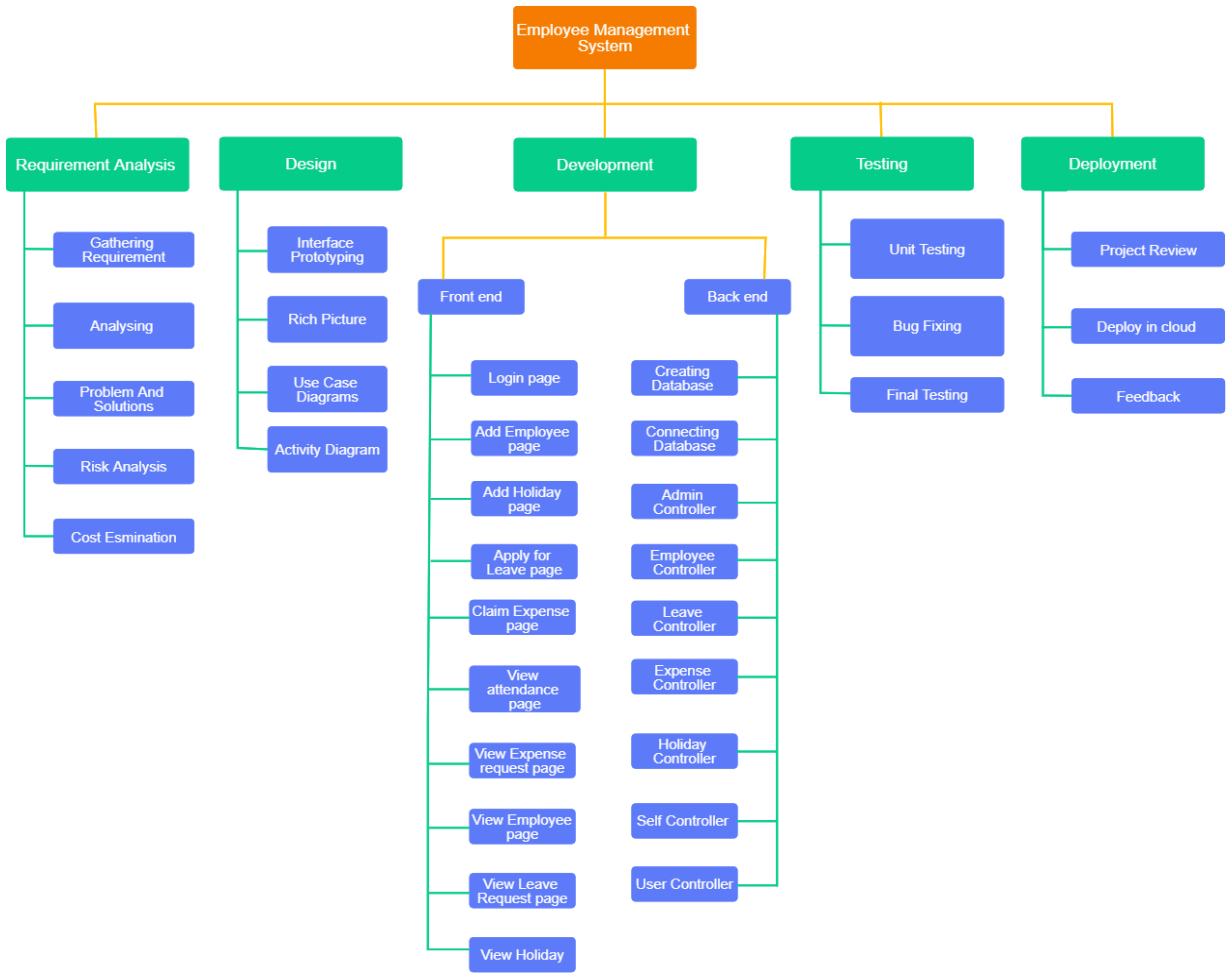


Figure 3.1: Work Breakdown Structure

3.2 Process/Activity wise Time Distribution

According to my WBS, there are 5 processes in the project. Each process has a deadline by which it must be finished. The work will be finished effectively if the project is divided into smaller parts and given a set certain time to complete. The project can take longer than is required if there is no time frame specified. For Each Section we have described in the WBS Diagram for EMS System we made a time allocation. The Table below shows them in details:

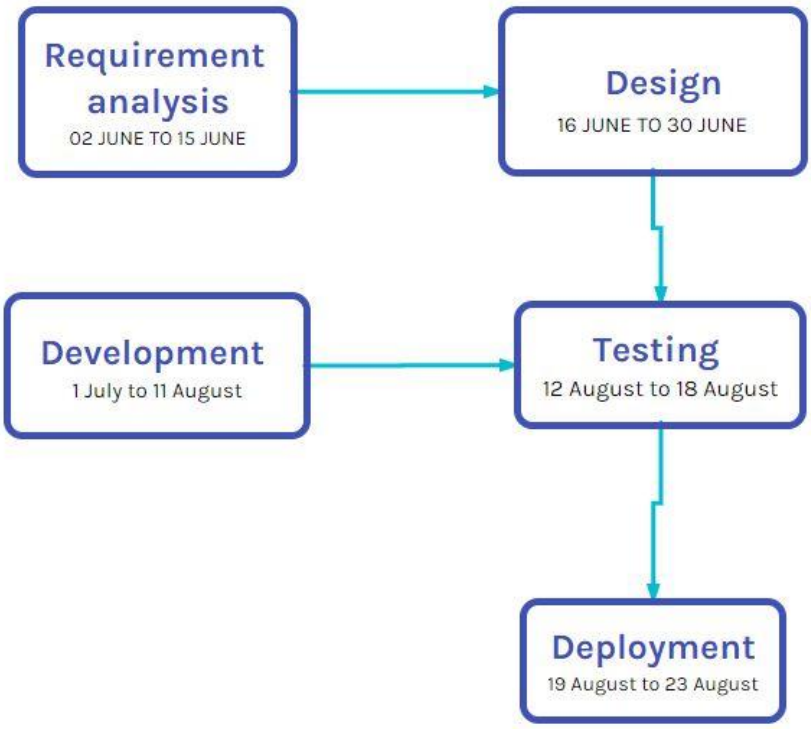


Figure 3.2: Critical Path Method for EMS

This table shows that the Requirements analysis will be completed in approximately 14 working days, the project design will be completed in 15 working days. It will take approximately 42 working days to finish the deployment phase of the project. It may take roughly 7 working days to test and solve all the bugs in the project. We kept 4 days in hand for the deployment. Overall, it is clear that the project must be finished in 82 working days. The project will take about 3 months to complete.

3.3 Gantt Chart

Gantt charts are a visual approach to display a project's progress. The management of a project is simplified by breaking it down into smaller, more manageable pieces, where the dependencies are graphically represented, parallel processes are discovered, the overall processing time is

determined, and the progress is tracked. A project's tasks might be quite complex and dependent. All of a task's subtasks can be seen graphically with a project management tool like a Gantt chart. We have also created a Gantt chart for our Project, so that it gets easier to plan and work accordingly.

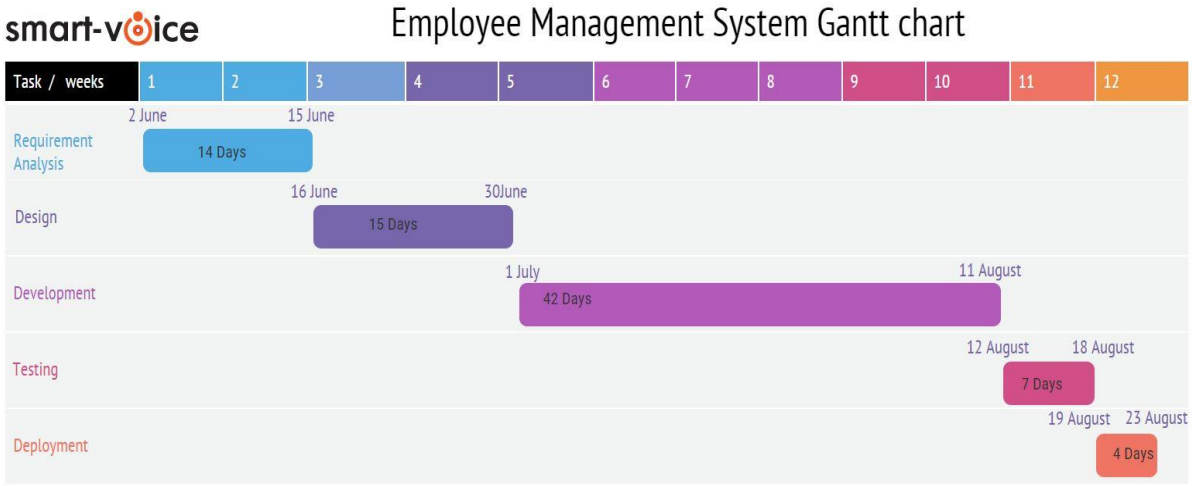


Figure 3.3: Gantt Chart of EMS

The weekly progress and the processes are both shown in the Gantt chart above. Requirement analysis is completed in the first two weeks, and project design is completed in the fourth week. The project's development phase lasts from weeks 5 to 10. Testing will take place in weeks 10 and 11, and project deployment will take place in the final week.

3.4 Process/Activity wise Resource Allocation

The resource is an important factor in a project. If we have all the proper resources, it will be much easier for us to complete the project properly in a short period. Lack of resources will take a lot of time to complete a project.

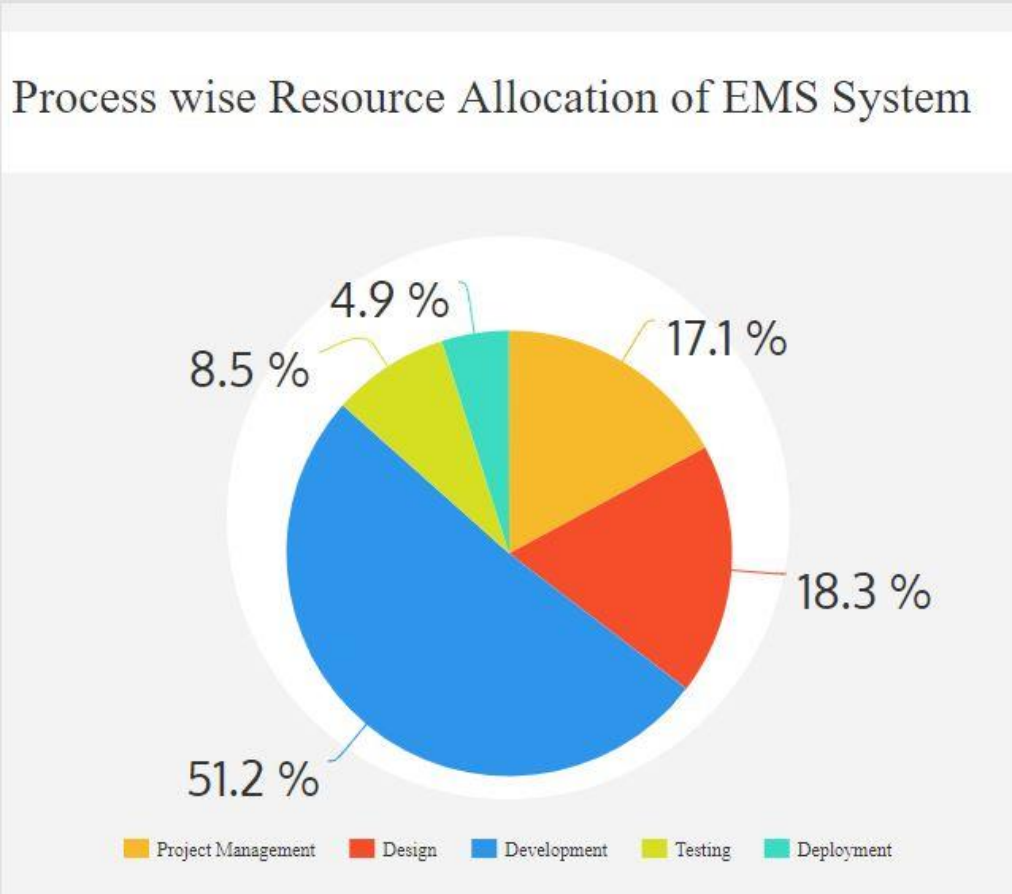


Figure 3.4: Process wise Resource Allocation

3.5 Estimated Costing

The success of project management depends on accurate cost estimation. We can predict the amount of money required to complete the project. We can determine how much money should be spent on each section of the project. We have created an estimated costing that will help us determine how much money will be needed to complete the project.

Work Distribution	Costing (TK)
Designer	15000
Frontend and Backend Developer	35000
Project Manager	22000
Domain Bill	900
Hosting Bill	2000
Total	74900

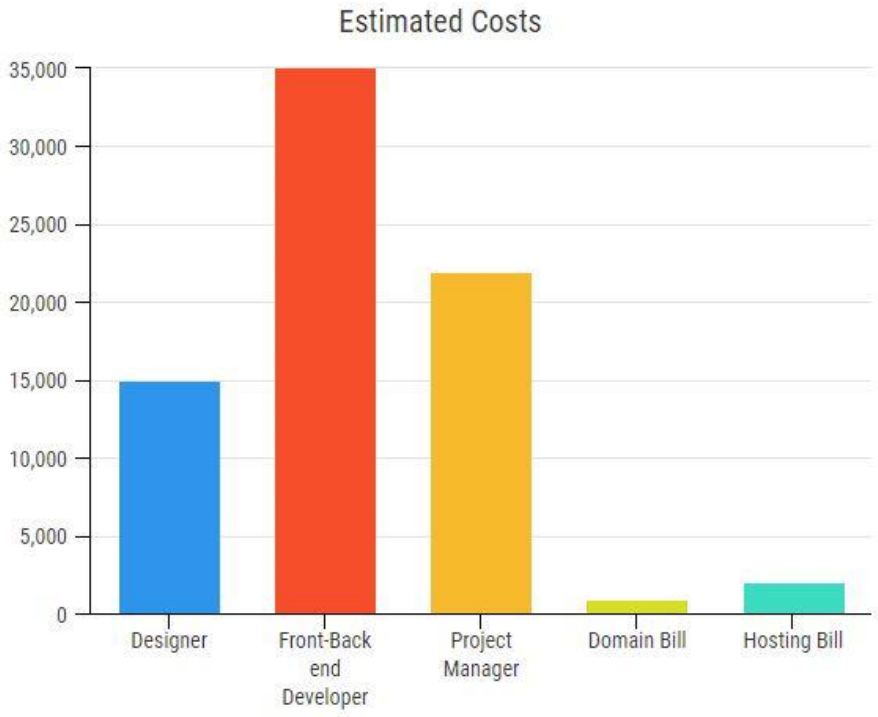


Figure 3.5: Estimated Costing

Chapter 4

Methodology

A software development methodology is a collection of procedures, techniques, tools, and documentation aids which will help the systems developers in their efforts to implement a new information system. There are a number of software development methodology each of which are adopted based on a number of factors relating to the project e.g. Time, cost, incorporation of requirement changes during the development process, system complexity, communication between customers and developers, software criticality, size of the development team. These generic models are not definitive descriptions of software processes. Rather, they are abstractions of the process that can be used to explain different approaches to software development. You can think of them as process frameworks that may be extended and adapted to create more specific software engineering processes. Below are a selected number of models:

- **The Waterfall Mode**l: The waterfall model is a sequential design process, often used in software development processes. It takes the fundamental process activities of specification, development, validation, and evolution and represents them as separate process phases such as requirements specification, software design, implementation, testing, and so on.
- **Incremental Model:** This approach interleaves the activities of specification, development, and validation. The system is developed as a series of versions (increments), with each version adding functionality to the previous version.
- **Reuse-oriented methodology:** This approach is based on the existence of a significant number of reusable components. The system development process focuses on integrating these components into a system rather than developing them from scratch.

Each model has its own benefits and effectiveness. I used the Iterative model of the Software Development Life Cycle for this project. Having briefly discussed a few software development methodologies, the incremental method was favored for the following reasons:

- Since the object will be divided into incremental stages, it will be made sure that 100% requirements are achieved and 100% objective of the software.
- Throughout the development stages changes can be done
- This model is less costly compared to others
- Errors are easy to be identified
- A customer can respond to each building

Chapter 5

Body of the Project

5.1 Work Description

The project that I will be working on is the Employee Management system. This system will offer easy access to data as well as services such as online leave management, attendance management, expense management etc. The employee is expected to have direct interaction with this system through a password protected user account therefore proposed system is web based to enable accessibility from any location as long as internet connectivity is available.

Furthermore, the work is mainly related to research, design and deployment phases. At first, I was assigned to do requirements analysis where I did research on other similar web applications and their functionalities, following which I did technical documentation of system analysis and

design process of the system which contained use cases etc. which allowed me to proceed to development under the supervision of my external supervisor to implement the design. At this moment we are developing a web application.

The resources that I used for requirement analysis are, monitoring manual processes and asking my external supervisor about their requirement and for designing I used lucid chart, cacoo, info graph etc. In my project, I have used several languages and frameworks in my internship project. I have used HTML, CSS, JS, Bootstrap for frontend programming and PHP, Laravel for the backend.

5.2 Requirement Analysis

5.2.1 Functional Requirements

A functional requirement is a function or feature that must be included in an information system. They are related to the technical functionality of the system. The technical functionality of the system are:

<table>
<tr><td colspan="3">Name of the function: User must be able to login to the system</td></tr>
<tr><td>Input: User Email, password</td><td>Process: 1. The system requests that the user enter his/her name and password

2.The user enters his/her email and password

3.The system validates the entered email and password and logs the user into the system.</td><td>Output: 1. The system will show the Dashboard if successfully logged in.</td></tr>
<tr><td colspan="3">Precondition: None</td></tr>
<tr><td colspan="3">Postcondition:

If the use case was successful, the user is now logged into the system. If not, the system state is unchanged.</td></tr>
</table>

Table 5.2.1.1: functional requirement – login to the system

Table 5.2.1.2: functional requirement – Add employee from admin

Name of the function: Admin must be able to add employee		
Input: user name, email, date of birth, gender, join date, salary, password	**Process :**1. Admin will fill up the form 2.The system will check whether any information is missing and new employee will be added to the system	**Output :**1. Admin will be notified through a message that an employee is added
Precondition :1 Admin should have proper access to the system		
Postcondition: 1.all the input should be store in the database		

Table 5.2.1.3: functional requirement – Add holiday from admin

Name of the function: Admin must be able to add holiday

Input: **Name, Date**	**Process:** 1.Admin will fill up the Holiday form 2.The system will check the Required information and send it to the database.	**Output:** Holiday should be display in user interface
Precondition :1. Admin should have proper access to the system		
Postcondition: 1.all the input should be store in the database		

Table 5.2.1.4: functional requirement – Apply for leave from employee

Name of the function: Employee can Apply for Leave		
Input: Reason, Description, Date Range	**Process:** 1.Employee will fill up the leave Apply form 2.The system will check the Required information and send it to database	**Output :**1 Admin will receive a leave Request from employee
Precondition: Employee must log-in to the system		

Postcondition: 1.all the input should be store in the database

Table 5.2.1.5: functional requirement – Apply for claim expense from employee

Name of the function: Employee can Apply for Claim Expense		
Input: Reason, Description, Amount, Receipt Image	**Process:** 1.Employee will fill up the claim expense Apply form 2.The system will check the Required information and send it to the database.	**Output:** 1. Admin will receive a Claim Expense Request from employee
Precondition: Employee must log-in to the system		
Postcondition: 1.all the input should be store in the database		

Table 5.2.1.6: functional requirement – Register attendance from employee

<table>
<tr><td colspan="3">Name of the function: Employee can Register his Attendance</td></tr>
<tr><td>Input: Time, location, Ip</td><td>Process:
1. Employees have to provide Entry time, location and Ip.
2. If the IP address matches, then the attendance will be recorded to the system.</td><td>Output :1. Employee attendance will count in the system</td></tr>
<tr><td colspan="3">Precondition :1. Employee must log-in to the system</td></tr>
<tr><td colspan="3">Postcondition :1. Employee need to login from office Ip address</td></tr>
</table>

5.2.2 Non-functional requirements

1. **Usability:** The system is going to be user-friendly and aesthetically pleasing for the users.
2. **Maintenance:** This system is going to be maintained 2 times in a year, it runs smoothly and does not get slow or lag. Any bugs or problems can be fixed easily.
3. **Valid data**: All the information being updated in the system must be accurate and consistent for the users to take.

4. **Scalability:** The system can be accessed from any devices like: Computers, Smartphone's. Apps for smartphones and an aesthetically similar web App for computers are developed.
5. **Performance**: Performance should always be smooth and easy to understand, such as searching and browsing for officers, submitting information and many more. These should leave a positive experience for users
6. **Service:** Employees can use the system from all around the world.
7. **Reliability:** The system will be backed-up for safety reasons and will not hamper and data during this process
8. **Control**: As the system is initialized by the government, privacy will be maintained strictly. It will be completely secured and will be checked by the developer's time to time for any sort of irregularity
9. **Security**: The system will be secured and personal information like the user's phone numbers, the email address will be safe.

5.3 System Analysis

It is a process for gathering and analyzing data, determining the problems, and decomposition of a system into its components. System analysis is conducted to evaluate a system or its parts in order to pinpoint its objectives. It is a problem-solving technique that improves the system and ensures that all the components of the system work efficiently to accomplish their purpose.

5.3.1 Six Element Analysis

The six-element analysis is a technique that allows us to learn about the stakeholders, non-computing hardware, computing hardware, software, database, and network needed for a particular process.

Process	**System Roles**					
	Human	**Non-Comp Hardware**	**Computing Hardware**	**Software**	**Database**	**Network & Communication**
Add Employee	**Admin** 1) Log in to the system 2)Click on dropdown list 3) Go Add Employee page 4) fill up the form 5)click on submit button	**N/A**	**Computing Device:** Computer /Laptop /Mobile	**Browser** Chrome / Firefox / Opera /Microsoft Edge	**MySQL:** The Database used for EMS is MySQL	**Internet** Internet connection is required to access the EMS website.
View Employee Attendance	**Admin** 1)log in to the system	**N/A**	**Computing Device:** Computer /Laptop /Mobile	**Browser** Chrome / Firefox / Opera	**MySQL:** The Database used for EMS	**Internet** Internet connection is required to

	2)Click on dropdown list 3) Go list of attendance page 4) select attendance date 4)click on submit button			/Microsoft Edge	is MySQL	access the EMS website.
List of Leave request	**Admin** 1)log in to the system 2)Click on dropdown list 3)Goes list of leaves page 3.view list of leave **Employee** 1)log in to the system	**N/A**	**Computing Device:** Computer /Laptop /Mobile.	**Browser** Chrome / Firefox / Opera /Microsoft Edge	**MySQL:** The Database used for EMS is MySQL	**Internet** Internet connection is required to access the EMS website.

	2)Click on dropdown list 3)Go list of leaves page 3.view list of leave					
List of Expense Claim Request	**Admin** 1)log in to the system 2)Click on dropdown list 3)Go list of Expense page 3.view list of expense	**N/A**	**Computing Device:** Computer /Laptop /Mobile	**Browser** Chrome / Firefox / Opera /Microsoft Edge	**MySQL:** The Database used for EMS is MySQL	**Internet** Internet connection is required to access the EMS website.

	Employee 1)log in to the system 2)Click on dropdown list 3)Go list of Expense page 3.view list of expense					
Add holiday	**Admin** 1)log in to the system 2)Click on dropdown list 3)Go Add Holiday page 4)fill up the form with Name and date 5)click submit button	**N/A**	**Computing Device:** Computer /Laptop /Mobile.	**Browser** Chrome / Firefox / Opera /Microsoft Edge	**MySQL:** The Database used for EMS is MySQL	**Internet** Internet connection is required to access the EMS website.

Register Attendance	**Employee** 1)log in to the system 2)Click on dropdown list 3)Go Register Attendance page 4) click record entry Button 5)click record exit Button	**N/A**	**Computing Device:** Computer /Laptop /Mobile	**Browser** Chrome / Firefox / Opera /Microsoft Edge	**MySQL:** The Database used for EMS is MySQL	**Internet** Internet connection is required to access the EMS website.
Apply for Leaves	**Employee** 1)log in to the system 2)Click on dropdown list 3)Go Apply for leave page 4)fill up the form with reason,	**N/A**	**Computing Device:** Computer /Laptop /Mobile	**Browser** Chrome / Firefox / Opera /Microsoft Edge	**MySQL:** The Database used for EMS is MySQL	**Internet** Internet connection is required to access the EMS website.

	description and select date 4.click submit Button					
Apply for Claim Expense	**UGC** 1)log in to the system 2)Click on dropdown list 3)Go Apply for claim expense 4)fill up the form with reason description, amount and choose the receipt image. 4.click submit Button	**N/A**	**Computing Device:** Computer /Laptop /Mobile	**Browser** Chrome / Firefox / Opera /Microsoft Edge	**MySQL:** The Database used for EMS is MySQL	**Internet** Internet connection is required to access the EMS website.

View Employee List	**Admin** 1)log in to the system 2)Click on dropdown list 3)Go list of Employee page 3.view list of Employee	**N/A**	**Computing Device:** Computer /Laptop /Mobile	**Browser** Chrome / Firefox / Opera /Microsoft Edge	**MySQL:** The Database used for EMS is MySQL	**Internet** Internet connection is required to access the EMS website.
View Holiday List	**Admin** 1)log in to the system 2)Click on dropdown list 3)Go list of Holiday page 4)view list of Holiday **Employee** 1)log in to the system	**N/A**	**Computing Device:** Computer /Laptop /Mobile	**Browser** Chrome / Firefox / Opera /Microsoft Edge	**MySQL:** The Database used for EMS is MySQL	**Internet** Internet connection is required to access the EMS website.

	2)Click on dropdown list 3)Go list of Holiday page 3.view list of Holiday					

Figure 5.3.1: Six Elements Analysis of "EMS"

5.3.2 Feasibility Analysis

A feasibility analysis is a process of assessing and analyzing a project or system that has been suggested. The goal of the study is to see if the idea is technically and financially feasible. A feasibility study also analyzes whether or not a project is financially viable. The basic purpose of a feasibility study is to achieve the scope, not to solve the problem. Feasibility Analysis is categorized as: Technical Feasibility, Operational Feasibility, Economic Feasibility, and Schedule Feasibility

1. **Technical Feasibility:** The technical feasibility of this project is determined by the technical teams involved. Infotech Solutions BD is a Bangladeshi software firm with a staff of technical experts and system developers. They are highly qualified and have experience working on large projects. Since the company has a large number of resources. As a result, the development of this software is technically viable.
2. **Operational Feasibility:** The term "operational feasibility" refers to the software's ability to meet its requirements as well as how the solution affects the user's working environment. It takes a lot of effort to remember so many things. A significant amount of data must be kept up to date. Operating the system does not necessitate any particular training. As a result, we may conclude that this project is operationally feasible

3. **Economic Feasibility:** This analysis usually includes a cost-benefit analysis of the project. The cost of developing the website is estimated in full, with all cost breakdowns included. The company's economic benefit from the website is then compared to this cost. As it is a Telemedicine platform, there are high chances that a lot of people will be using the system. So, the system is Economically Feasible.
4. **Schedule Feasibility:** The time it takes to design and implement a solution is referred to as schedule feasibility. It calculates the length of time required to complete the project. This project must be completed within a certain amount of time. So, according to the estimates, this project is scheduled feasible.

5.3.3 Problem Solution Analysis

In every aspect of life, problems are bound to arise. In a workplace, problems can come in the form of client complaints or issues with teams. While developing the system using established tools and techniques helps us to improve our approach to solving the problems that our team is facing.

While every challenge is unique in its nature, there are a few methods to problem solving that are worthwhile to learn.

- **Define the Problem:** It's common to conflate symptoms of a problem with the problem itself. When understanding what the root of the problem is, be sure to ask the right questions. If you're problem solving in a workplace, get team feedback.
- **Generate alternatives:** Once you are aware of the problem you are experiencing, it is wise to think about possible alternatives. There are a variety of solutions to the same problem. Be sure to exhaust all possibilities. Teamwork and feedback are helpful at this stage as well.
- **Choose a Solution:** Determine which option will be most effective for you.
- **Implement the Solutions:** Once you've chosen the best solution to a problem, you can implement it. If more problems arise, you will have to solve the problem again.

Throughout the development phase, I have faced few problems. For me the main and the biggest problem was Laravel, as I was totally new to Laraevl, I had no idea how it worked. At the very beginning of the Internship, I had to self-study a lot about the framework. There were few things that were only specific to the framework, whenever I faced a problem and my codes were not working, I took help from Supervisor and fixed my problems.

5.3.4 Effect and Constraints Analysis

Effect

The Ems system helps to eliminate the manual process and saves a lot of time and money. It also securely stores and manages personal and other work-related details for employees. That makes it easier to store and access the data when there is a need. Employee can apply for leave requests from their home. They can record their own attendance. Without any hassle they can access ems system from anywhere.

Constraints

The system still has limitations which need modifications for further development. There are many modules that are needed but not considered hence, we are still thriving to bring out more changes and add more features/modules to our web application that would bring solutions to many issues and encourage more and more people to use this web app. This will not only make employee's lives easier but will also create a big advantage for the company.

5.4 System design

System design is the process of defining all of a system's requirements, including its architecture, modules, interface, and design. We might claim that system design encompasses everything from discussing system requirements to product development. By creating or changing

the system, system development modifies the processes, practices, and methodologies used to develop the system.

5.4.1 Rich Picture

A rich picture is a Diagram where we can see the relation between stakeholders and the system. We can see all the processes that are being done in the system.

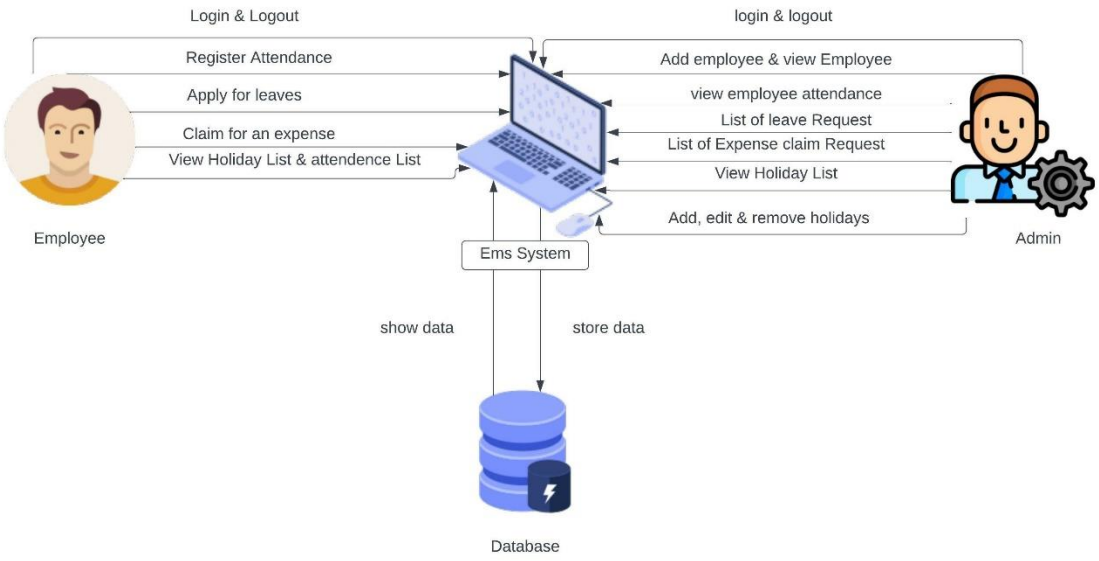


Figure 5.4.1: Rich picture

5.4.2 UML Diagrams

A UML diagram is a diagram based on the UML (Unified Modeling Language) that is used to visually represent a system, as well as its primary players, roles, actions, objects, or classes, in order to better understand, edit, maintain, or document system information. For this project I will

draw Three UML diagrams, they are Use Case Diagram, Activity Diagram and Entity Relationship Diagram

Use Case Diagram: Use Case Diagram captures the system's functionality and requirements by using actors and use cases. Use Cases model the services, tasks, functions that a system needs to perform. Use cases represent high-level functionalities and how a user will handle the system.

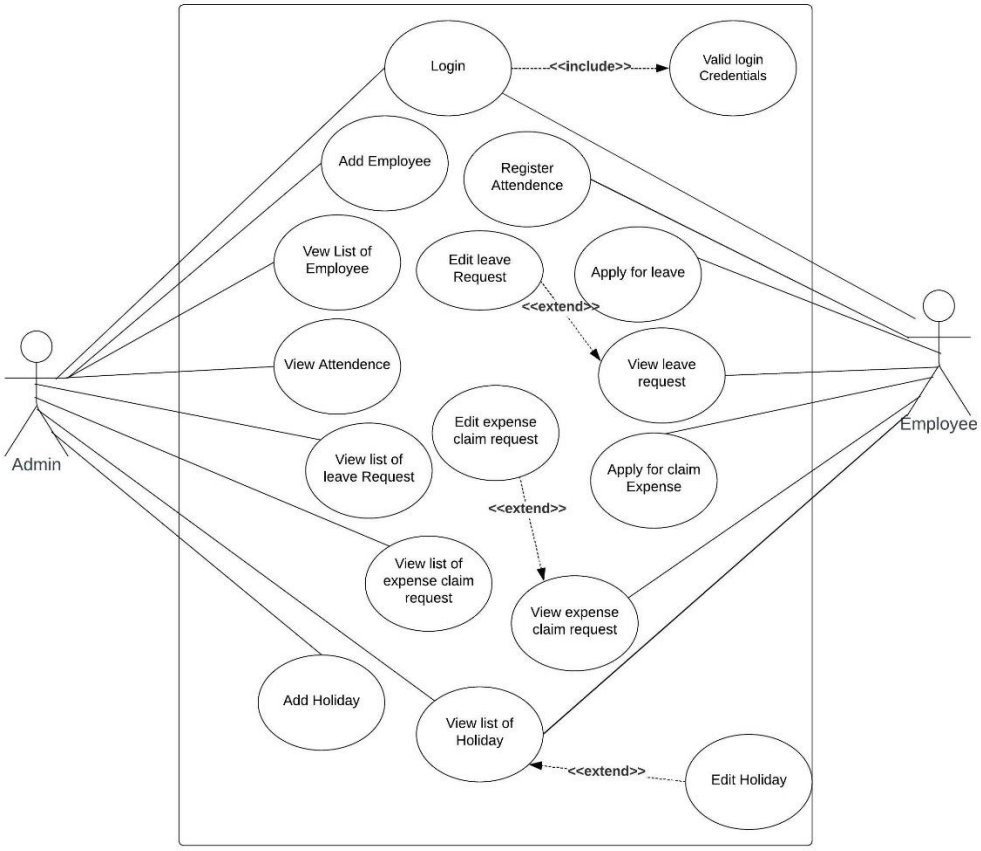


Figure 5.4.2.1: Use case diagram

Activity Diagram:

Activity diagram is basically a flowchart to represent the flow from one activity to another activity. The activity can be described as an operation of the system. An activity diagram for the Employee Management System is required so that programmers may decide how the software should interact

with its users. Considering that the activity diagram gives the programmer instructions on how to create the software and its required functionality.

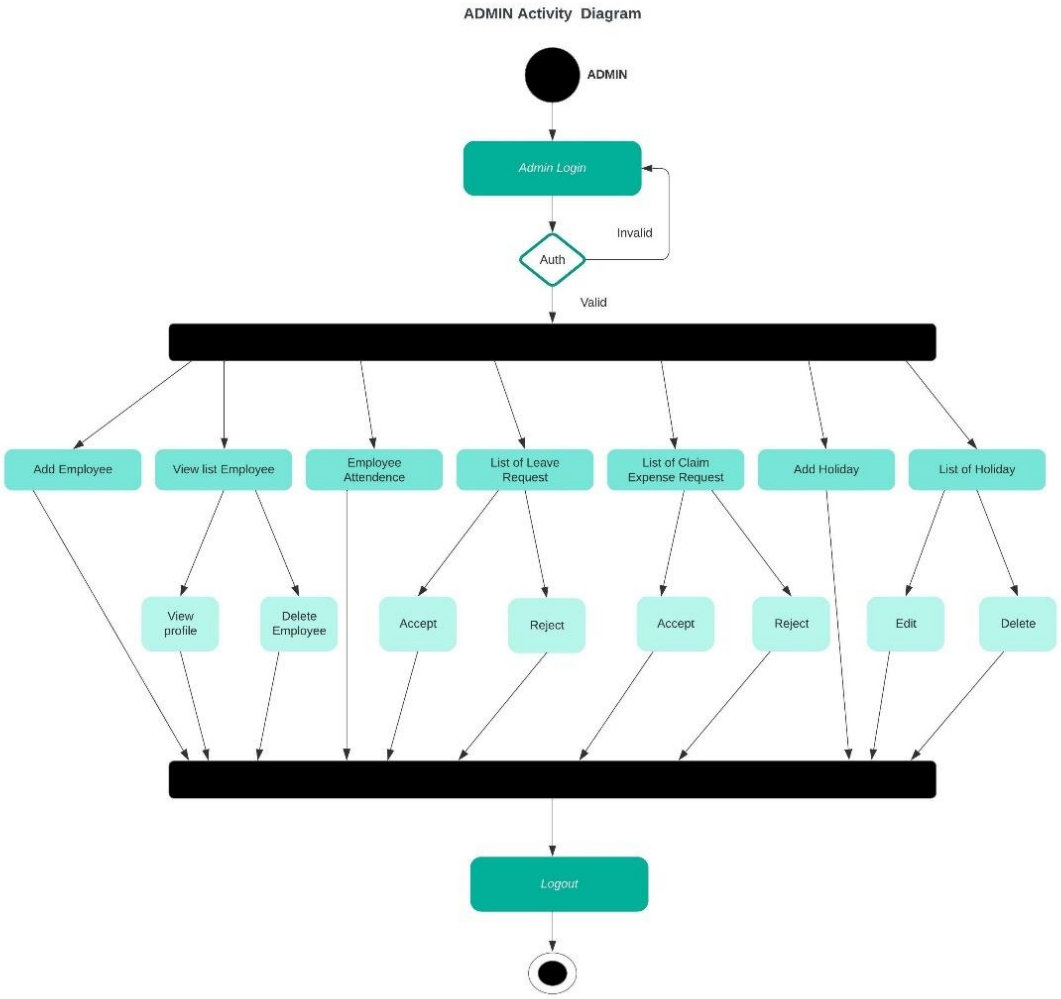


Figure 5.4.2.2: Activity diagram from admin

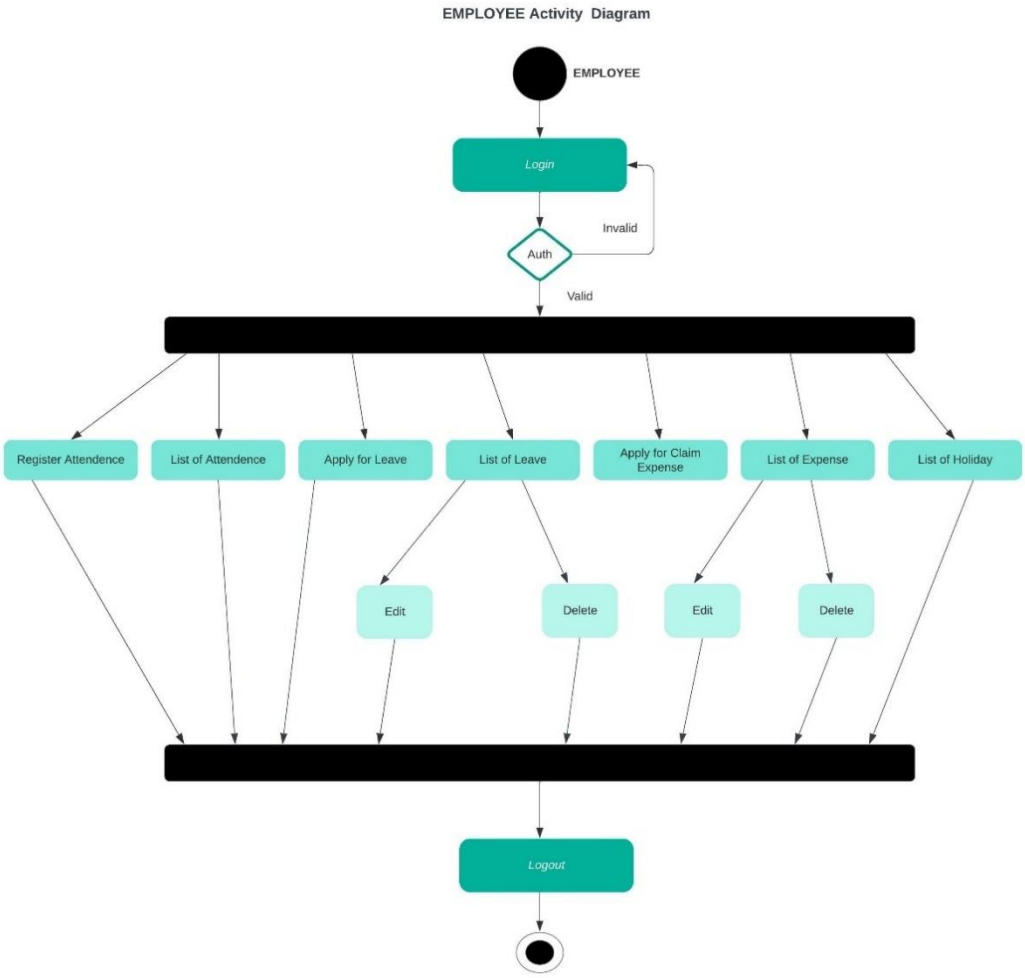


Figure 5.4.2.3: Activity diagram from employee

Entity Relationship Diagram: The entity relationship (ER) diagram represents the model of employee management system entity. The entity-relationship diagram of the employee management system shows all the visual instruments of database tables and the relations between attendance, holiday, employee, leave etc. it used structure data and to define the relationships between structured data groups of employee management system functionalities. The main entities of the employee management system are employee, leave, attendance and salary.

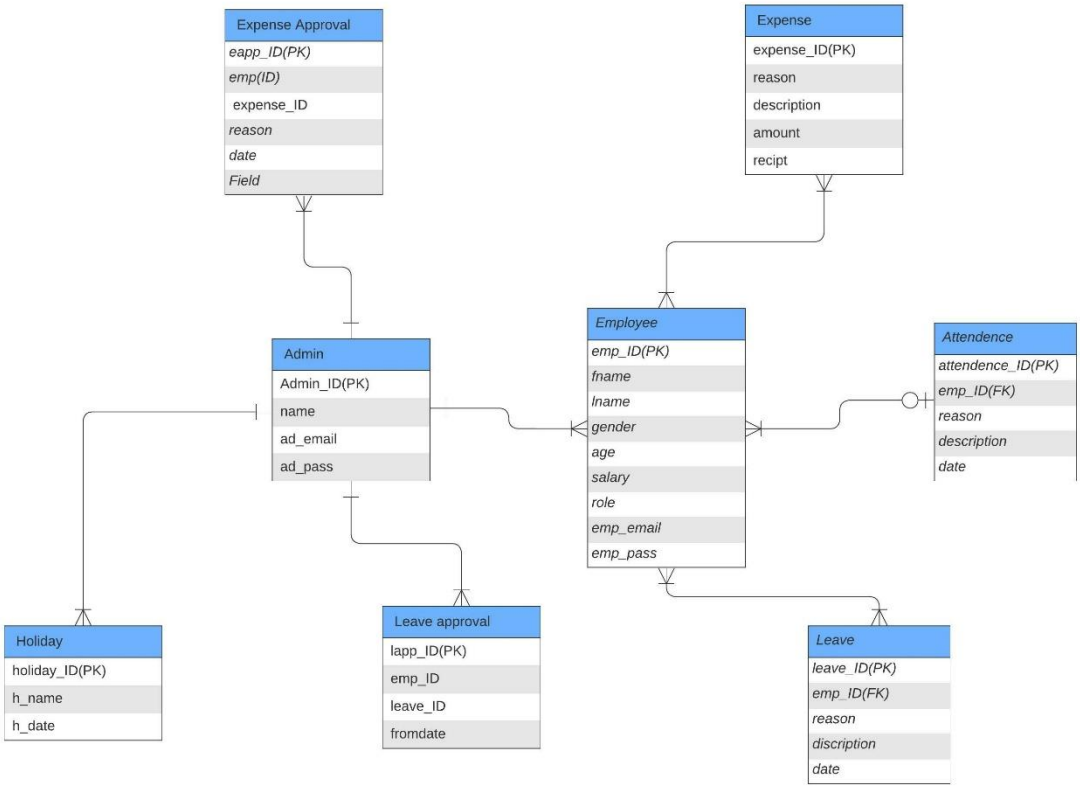


Figure 5.4.2.4: ERD for Employee Management System

5.5 Implementation

As I have already discussed before Laravel provides MVC out of the box. There are separate folders for Models, Views, and Controllers of the project. There are several other important files necessary for the project to work flawlessly like web.Php, .env, serviceprovider.php etc. To create any of these files I needed to use command codes. Also, there are naming conventions for each of the MVC files to work flawlessly inside the framework. Few of these commands are given below:

Name	Command
Create a controller	Php artisan make: controller EmployeeController
Create a model	Php artisan make: model Employee
Create migrations	Php artisan make : migration create_employees_table
Run Migrations	Php artisan migrate
Run Project	Php artisan serve

Figure 5.5: Basic Laravel Commands

- **Model**

Model files control the migrations and provide the controllers flexibility to work simultaneously in the framework. To run migrations which define the table structures and attributes for the MySQL database model is required. List of Models for my project is given below:

Model	Corresponding Controller
Attendance.php	AttendanceController
User.php	UserController
Employee.php	EmployeeController
Expense.php	ExpenseController
Holiday.php	HolidayController
Leave.php	LeaveController

Figure 5.5.1: Models and Corresponding Controllers of EMS

- **Controller**

Controllers work with Models to provide data to views to show and also hold the functions required to show the views to the correct corresponding Routes. Table 4. Models and Corresponding Controllers of EmsTable 4.2 shows all the controllers with their corresponding models. For example, HomeController contains an index function. When route('home') or url('\') is called as defined in the web.php index() function from HomeController is called. Below the codes from HomeController is provided,

```php
<?php

namespace App\Http\Controllers;

use Illuminate\Http\Request;
use Illuminate\Support\Facades\Gate;

class HomeController extends Controller
{
    /**
     * Create a new controller instance.
     *
     * @return void
     */
    public function __construct()
    {
        $this->middleware('auth');
    }

    /**
     * Show the application dashboard.
     *
     * @return \Illuminate\Contracts\Support\Renderable
     */
    public function index()
    {
        if(Gate::allows('employee-access'))
            return redirect()->route('employee.index');
        if(Gate::allows('admin-access'))
        return redirect()->route('admin.index');
    }
}
```

Figure 5.5.2: HomeController

So, when index () function is called, it returns home view from resources and with it several variables from HomeController. These variables contain various data to be shown in the view. Similarly, all the other controllers contain index function and might contain create, store, update, destroy functions based on the nature of the functions needed by the view.

- **Routes**

Routes are the address for navigation on the website. In Laravel, routes are defined in the web.php file inside the Routes folder. Routes defined in the project are given below:

```php
Route::get('/', function () {
    return redirect()->route('login');
});



Auth::routes(['register' => false]);

Route::get('/home', 'HomeController@index')->name('home');

Route::namespace('Admin')->prefix('admin')->name('admin.')->middleware(['auth','can:admin-access'])->group(function () {
    Route::get('/', 'AdminController@index')->name('index');
    Route::get('/reset-password', 'AdminController@reset_password')->name('reset-password');
    Route::put('/update-password', 'AdminController@update_password')->name('update-password');

    // Routes for employees //
    Route::get('/employees/list-employees', 'EmployeeController@index')->name('employees.index');
    Route::get('/employees/add-employee', 'EmployeeController@create')->name('employees.create');
    Route::post('/employees', 'EmployeeController@store')->name('employees.store');
    Route::get('/employees/attendance', 'EmployeeController@attendance')->name('employees.attendance');
    Route::post('/employees/attendance', 'EmployeeController@attendance')->name('employees.attendance');
    Route::delete('/employees/attendance/{attendance_id}', 'EmployeeController@attendanceDelete')->name('employees.attendance.delete');
    Route::get('/employees/profile/{employee_id}', 'EmployeeController@employeeProfile')->name('employees.profile');
    Route::delete('/employees/{employee_id}', 'EmployeeController@destroy')->name('employees.delete');
    // Routes for employees //

    // Routes for leaves //
    Route::get('/leaves/list-leaves', 'LeaveController@index')->name('leaves.index');
    Route::put('/leaves/{leave_id}', 'LeaveController@update')->name('leaves.update');
    // Routes for leaves //

    // Routes for expenses //
    Route::get('/expenses/list-expenses', 'ExpenseController@index')->name('expenses.index');
    Route::put('/expenses/{expense_id}', 'ExpenseController@update')->name('expenses.update');
    // Routes for expenses //

    // Routes for holidays //
    Route::get('/holidays/list-holidays', 'HolidayController@index')->name('holidays.index');
    Route::get('/holidays/add-holiday', 'HolidayController@create')->name('holidays.create');
    Route::post('/holidays', 'HolidayController@store')->name('holidays.store');
    Route::get('/holidays/edit-holiday/{holiday_id}', 'HolidayController@edit')->name('holidays.edit');
    Route::put('/holidays/{holiday_id}', 'HolidayController@update')->name('holidays.update');
    Route::delete('/holidays/{holiday_id}', 'HolidayController@destroy')->name('holidays.delete');
    // Routes for holidays //
});

Route::namespace('Employee')->prefix('employee')->name('employee.')->middleware(['auth','can:employee-access'])->group(function () {
    Route::get('/', 'EmployeeController@index')->name('index');
    Route::get('/profile', 'EmployeeController@profile')->name('profile');
    Route::get('/profile-edit/{employee_id}', 'EmployeeController@profile_edit')->name('profile-edit');
    Route::put('/profile/{employee_id}', 'EmployeeController@profile_update')->name('profile-update');
    // Routes for Attendances //
    Route::get('/attendance/list-attendances', 'AttendanceController@index')->name('attendance.index');
    Route::post('/attendance/list-attendances', 'AttendanceController@index')->name('attendance.index');
    Route::post('/attendance/get-location', 'AttendanceController@location')->name('attendance.get-location');
    Route::get('/attendance/register', 'AttendanceController@create')->name('attendance.create');
    Route::post('/attendance/{employee_id}', 'AttendanceController@store')->name('attendance.store');
    Route::put('/attendance/{attendance_id}', 'AttendanceController@update')->name('attendance.update');
```

Figure 5.5.3: All Routes

- Migrations

Migrations are the definitions of database tables. Using a migration new tables can be created or modified. Laravel migration names contain creation dates to maintain the order of creation. Also, the tables in the MySQL database will be created following this order. List of migration in the project is given below:

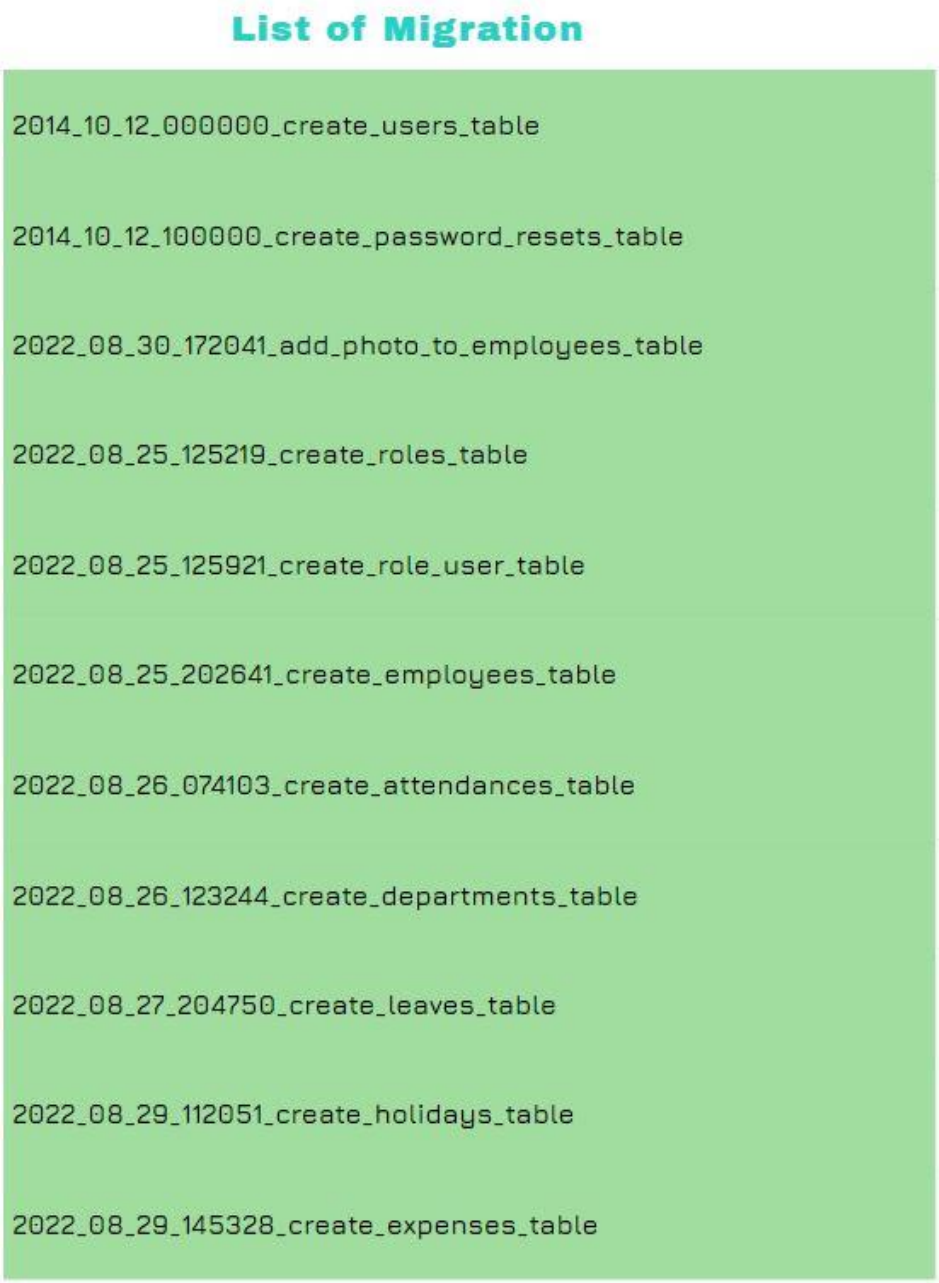


Figure 5.5.4: All Migration Tables

For example, a migration of create_employees_table.php is given below:

```php
<?php

use Illuminate\Database\Migrations\Migration;
use Illuminate\Database\Schema\Blueprint;
use Illuminate\Support\Facades\Schema;

class CreateEmployeesTable extends Migration
{
    /**
     * Run the migrations.
     *
     * @return void
     */
    public function up()
    {
        Schema::create('employees', function (Blueprint $table) {
            $table->id();
            $table->bigInteger('user_id');
            $table->string('first_name');
            $table->string('last_name');
            $table->dateTime('dob');
            $table->string('sex');
            $table->string('desg');
            $table->string('department_id');
            $table->dateTime('join_date');
            $table->float('salary');
            $table->timestamps();
        });
    }

    /**
     * Reverse the migrations.
     *
     * @return void
     */
    public function down()
    {
        Schema::dropIfExists('employees');
    }
}
```

- **Packages**

Laravel is a framework that offers to use packages developed by others to integrate into any project. These packages can be really helpful because they reduce development time and developers do not have to create programs that already exist. Rather they can focus on the important parts of the project. These packages are easy to use and can work standalone and part of a project as well.

- **AdminLTE**: AdminLTE is a popular open source WebApp template for admin dashboards and control panels. It is a responsive HTML template that is based on the CSS framework Bootstrap. It utilizes all of the Bootstrap components in its design and re-styles many commonly used plugins to create a consistent design that can be used as a user interface for backend applications. AdminLTE is based on a modular design, which allows it to be easily customized and built upon. It is free to use and offers a vast range of modifications and functionalities. I have used this package in my project. This saved me a lot of time regarding developing an Admin panel from scratch.

5.6 Software Testing

Software testing is the process of evaluating and verifying that a software product or application does what it is supposed to do. The benefits of testing include preventing bugs, reducing development costs and improving performance.

For my system, I've performed unit testing to ensure that all of the functionality is working properly and to identify any problems that need to be resolved.

Test ID	Test Case	Test Purpose	Test Step	Expected result	Actual result	Status (Pass/Fail)
1	Log in	Check User Email and Password	1)Go to website 2)Enter email and password 3)Click Login"	Grant Access to the applicable main system	User successfully logs into the system upon submission of correct login credentials	Pass
2	Add new Employee	To ensure that a new employee is added to the system successfully	1) Go Add Employee page 2) Fill-up the form 3)Click on submit button	New user should be successfully added to the system	Employee is successfully added.	Pass
3	Register Attendance	To ensure that employee's attendance is successfully recorded	1)Go Register Attendance page 2) Click record entry Button 3)Click record exit Button	Attendance should be Recorded to the system	Attendance entry is successfully logged	Pass
4	Apply for leaves	To test if all employees can successfully apply for leave	1)Go Apply for leave page 2)Fill up the form with reason , description and select date 3)click submit Button	Leave request should be sent when all required fields are submitted	Leave request is submitted as required and a message of success is displayed.	Pass
5	Apply for Claim expense	To test if all employees can successfully apply for claim expense	1)Go Apply for claim expense 2)Fill up the form with reason ,description, amount and choose the receipt image. 3)click submit Button	Expense claim request should be sent when all required fields are submitted	Expense claim request is submitted as required and a message of success is displayed	Pass
6	Add Holiday	To ensure that a Holiday is added to the system successfully	1)Go Add Holiday page 2)Fill up the form with Name and date 3)Click submit button	Holiday should be successfully added to the system	Holiday is successfully added.	Pass

Figure 5.6: testing

5.7 Product Features

5.7.1 Input

Input of "Employee Management System" are as follow:

Inputs of 'EMS'	
Process	Field Type
Login	User email-String Password-String
Add Employee	First name-String Last name-String Email-String Date of birth-date Gender-String Join date-date Department-String Salary-numeric Photo-String Password-String
Add Holiday	Name -String Days-date
Register Attendance	Time-time Location-String IP address -numeric
Apply for Leave	Reason-String Description-String Date range-date
Apply for Claim Expense	Reason-String Description-String Amount-numeric Image-String

Figure 5.7.1: Input

5.7.2 Output

Output of "Employee Management System" are as follow:

Outputs of 'EMS'

Process	Field Type
Login	**On Success** -Redirected ton user dashboard **On Failure** -show the following error message :"These credentials do not match our records".
Add Employee	**On Success** -show the following message :"employee this successfully added." **On Failure** -show the following error message : "fill up the required field".
Add Holiday	**On Success** -show the following message :"Holiday has been successfully added". **On Failure** -show the following error message : "The name field is required".
Register Attendance	**On Success** - show the following message: "Attendance entry successfully logged" **On Failure** -show the following error message: "fill up the required field"
Apply for Leave	**On Success** -show the following message "Your Leave has been successfully applied, wait for approval" **On Failure** -show the following error message :"fill-up the required".
Apply for Claim Expense	**On Success** -show the following message "Your expense claim has been successfully applied, wait for approval". **On Failure** -show the following error message :"fill up the required".

Figure5.7.2: Output

5.7.3 Architecture

The Laravel Framework follows MVC architecture. MVC is an architectural design pattern that helps to develop web applications faster. MVC stands for Model-View-Controller.

- **Model (M)**–A model handles data used by the web application.
- **View (V)**–A view helps to display data to the user.
- **Controller (C)**–A controller interacts with the model to create data for the view.

The following picture shows the interactions between Model, View, and Controller.

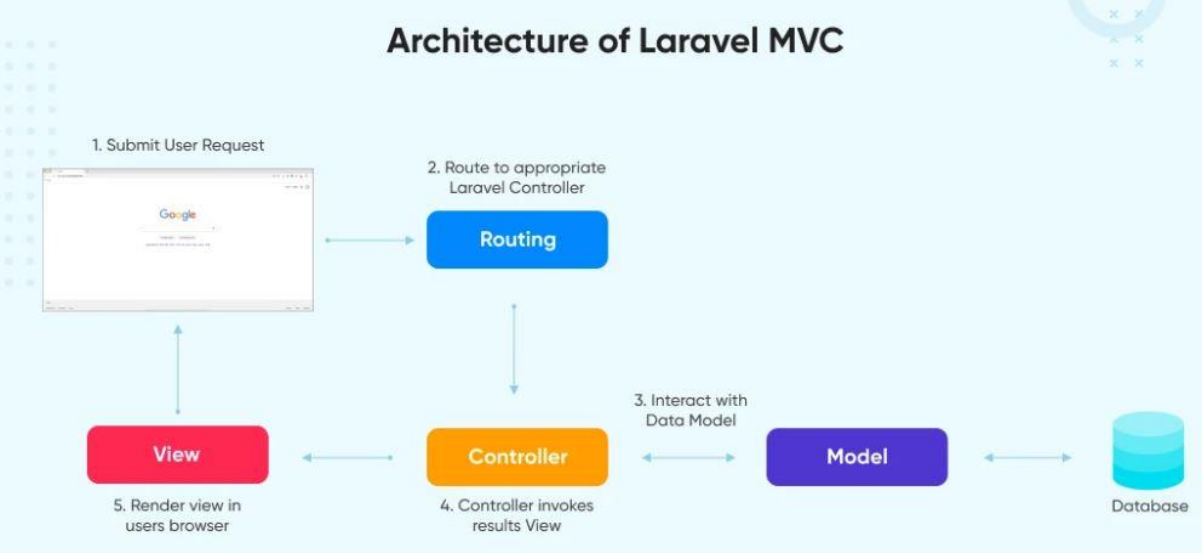


Figure 5.7.3: Architecture

Chapter 6

Results & Analysis

6.1 Results

1. **Login**: In this page the user can successfully login into the system.

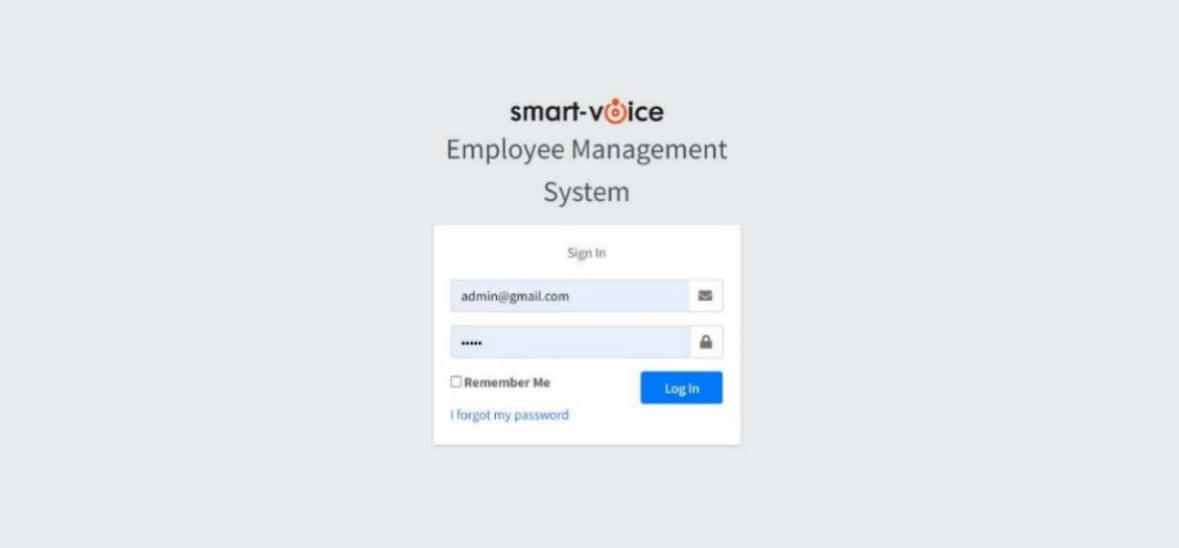


Figure 6.1.1: login

2. **Add Employee page**: In this page the admin can add new employees.

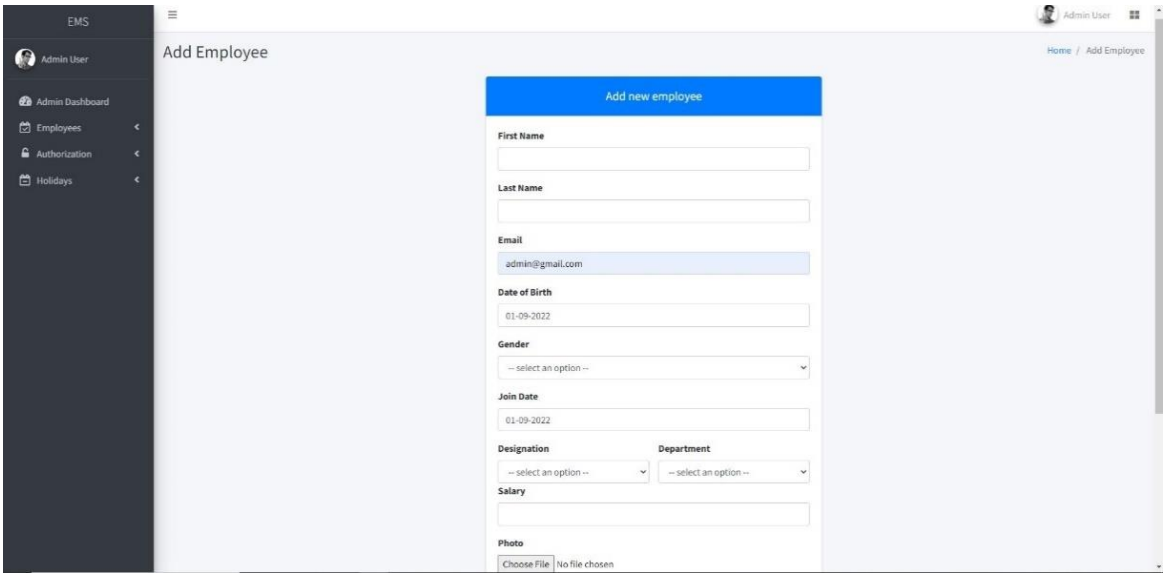


Figure 6.1.2: Add Employee Page

3. **Register Attendance page**: In this page an employee can register his own attendance.

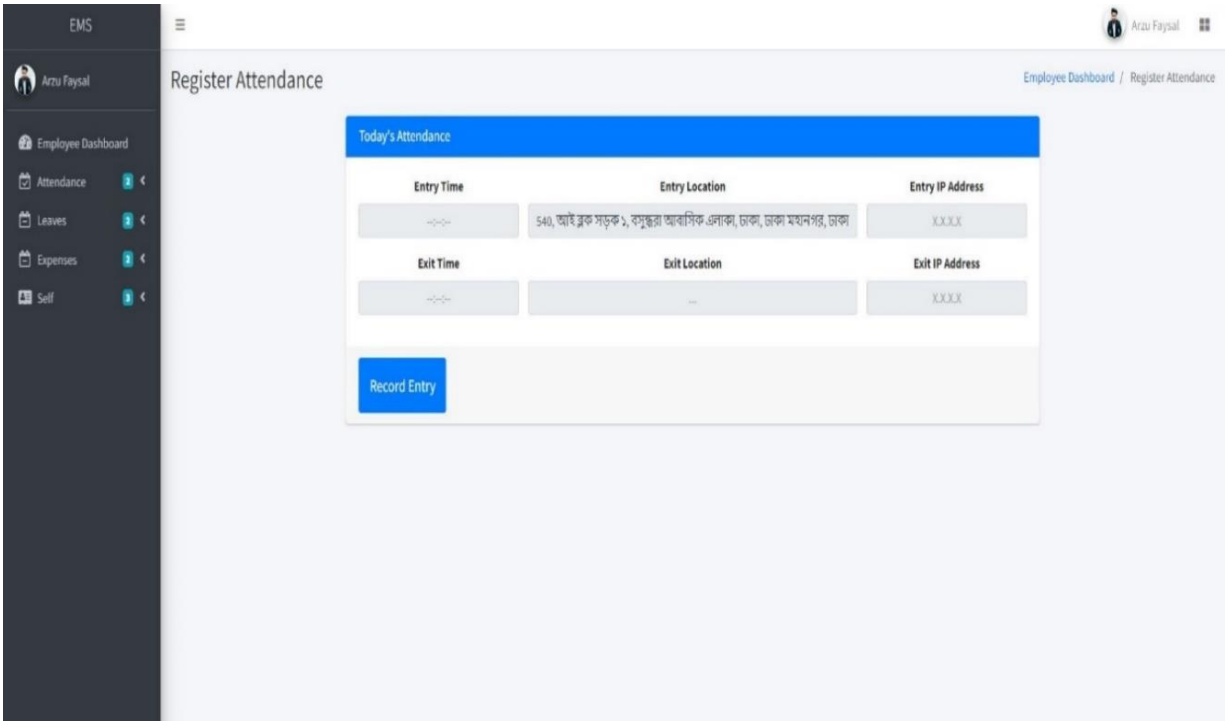


Figure 6.1.3: Register Attendance page

4. **leave page**: In this page employee can apply for leave

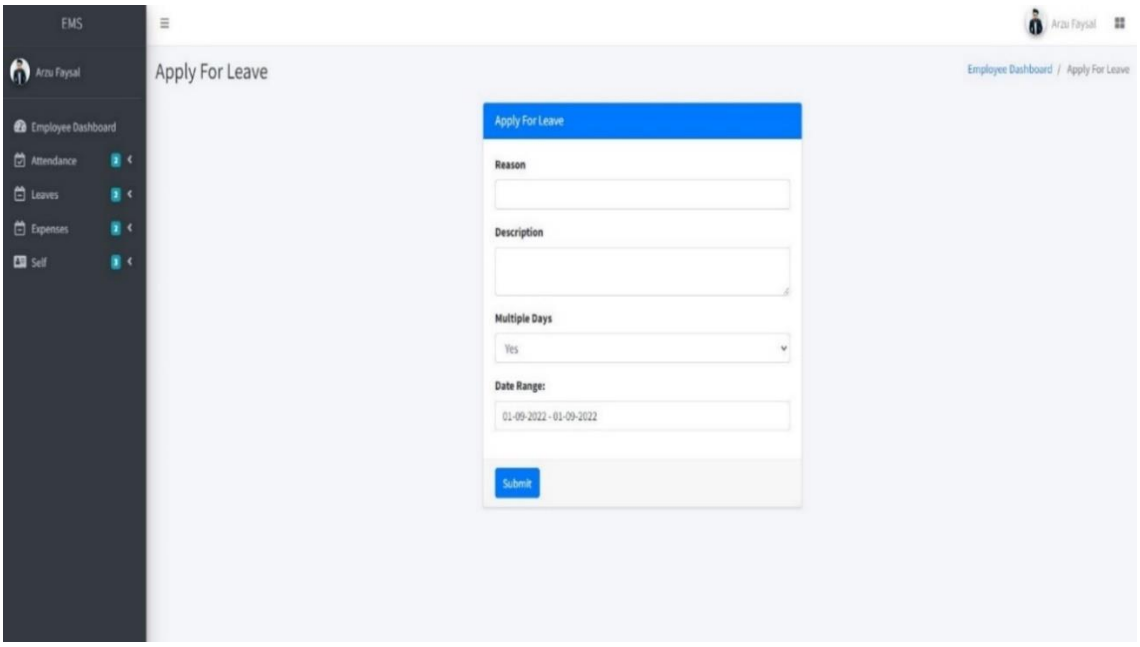


Figure 6.1.4: leave page

5. **Claim expense page**: In this page employee can claim for expense

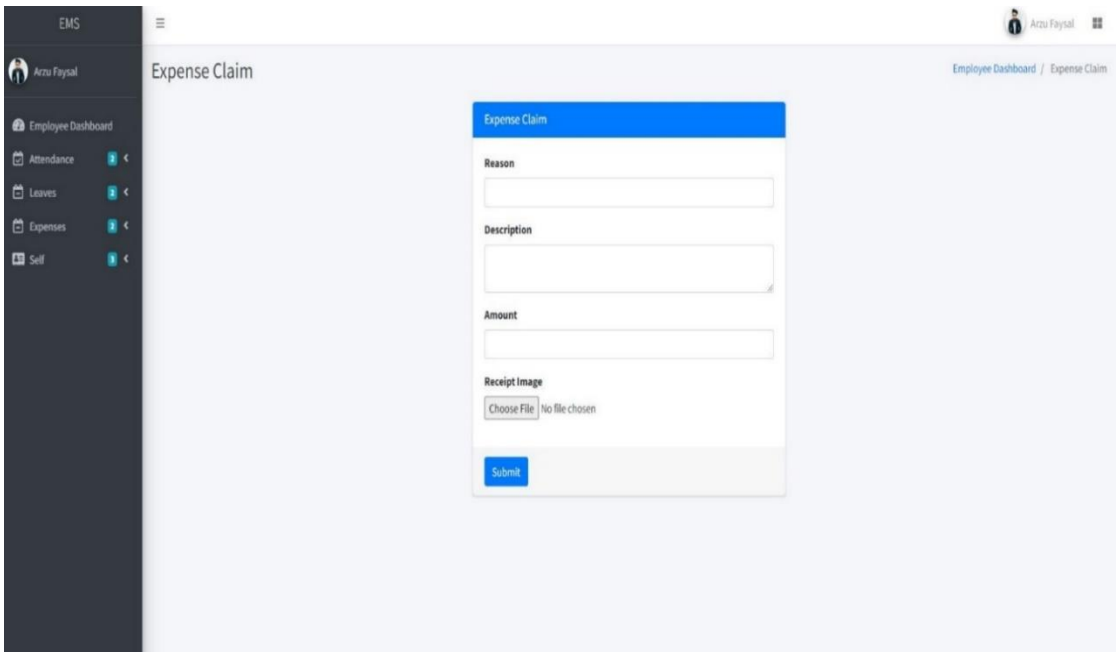


Figure 6.1.5: Claim Expense page

6. **Add holiday page**: In this page employee can add holiday

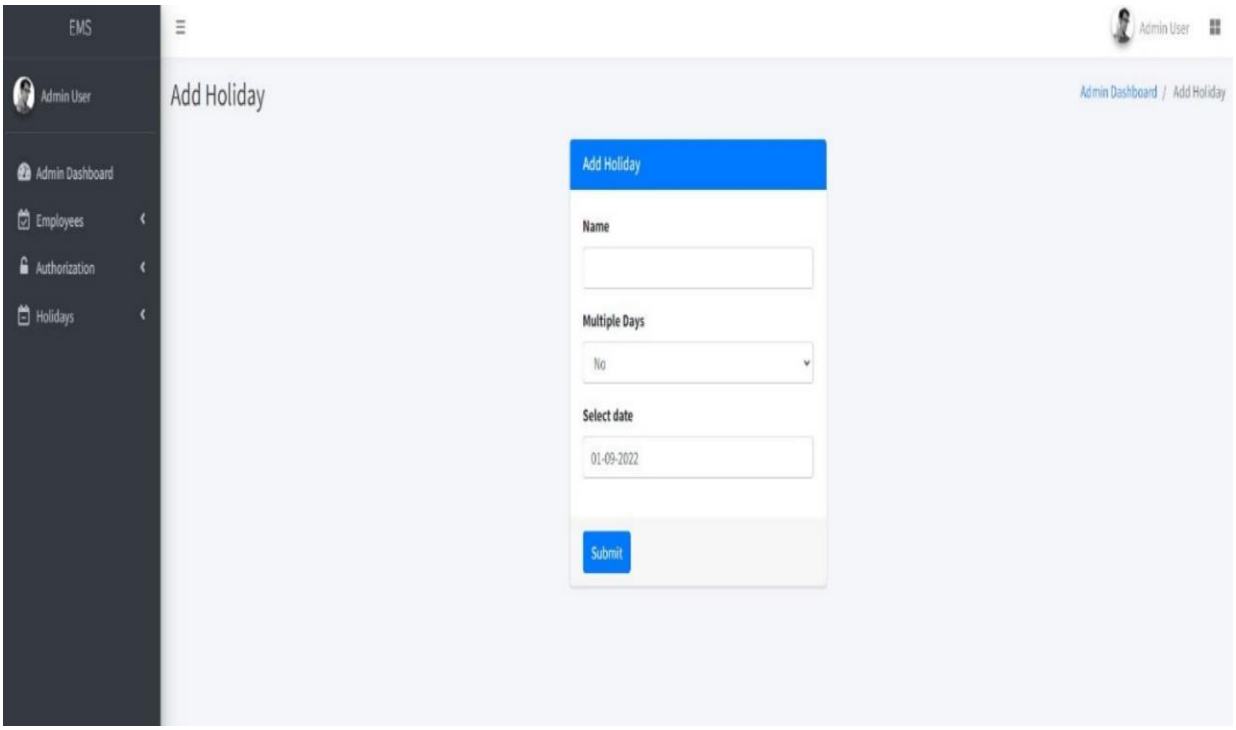


Figure 6.1.6: Add Holiday page

7. **List of employee page**: In this page Admin can view list of employees

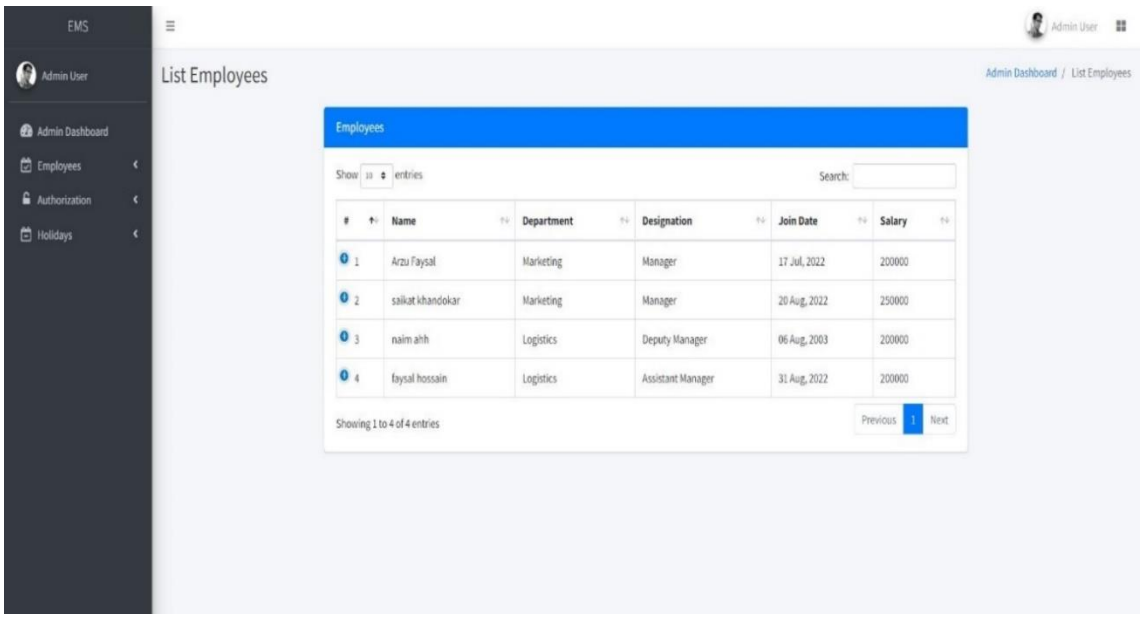


Figure 6.1.7: list of employee page

8. **Employee Attendance page**: In this page Admin can view employee's Attendance

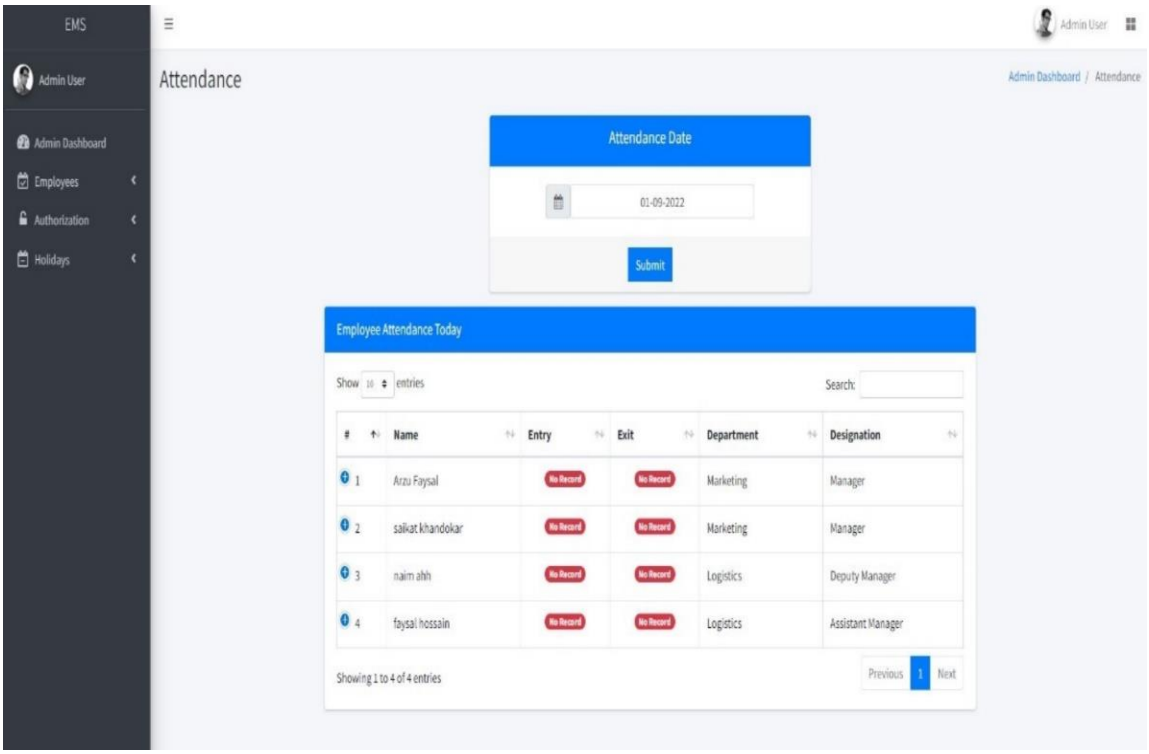


Figure 6.1.8: employee attendance page

9. **List of leaves page**: In this page Admin can view can list of leave request

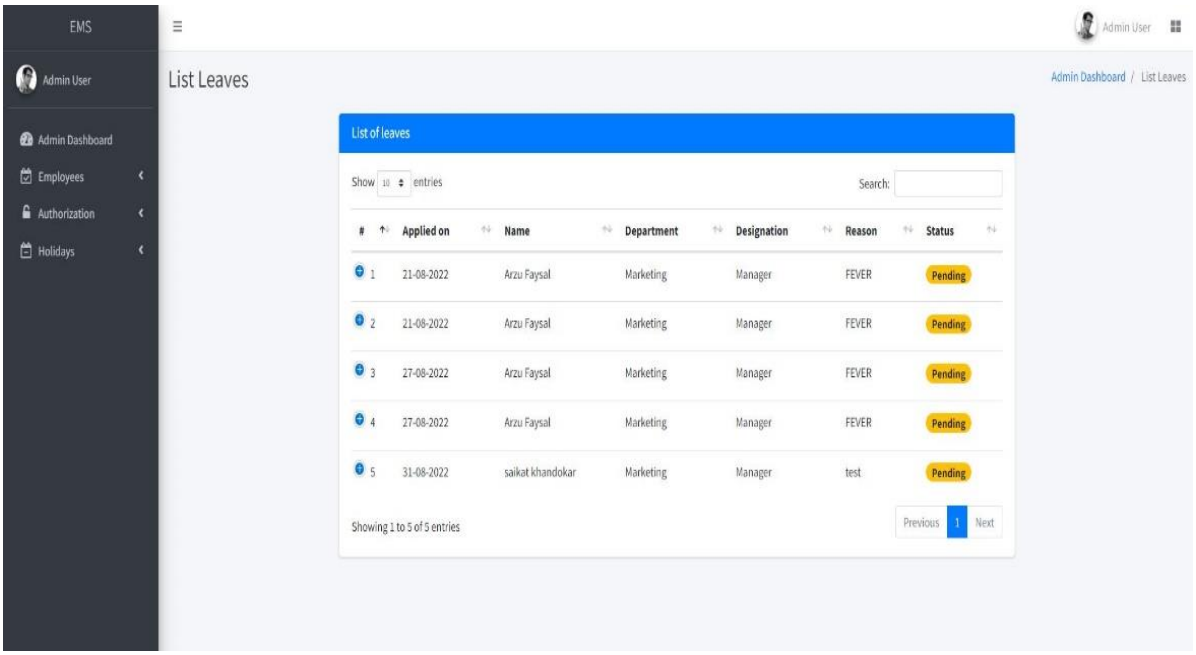


Figure 6.1.9: list of leave page

10. **List of expense page**: In this page Admin can view can list of expense claim request

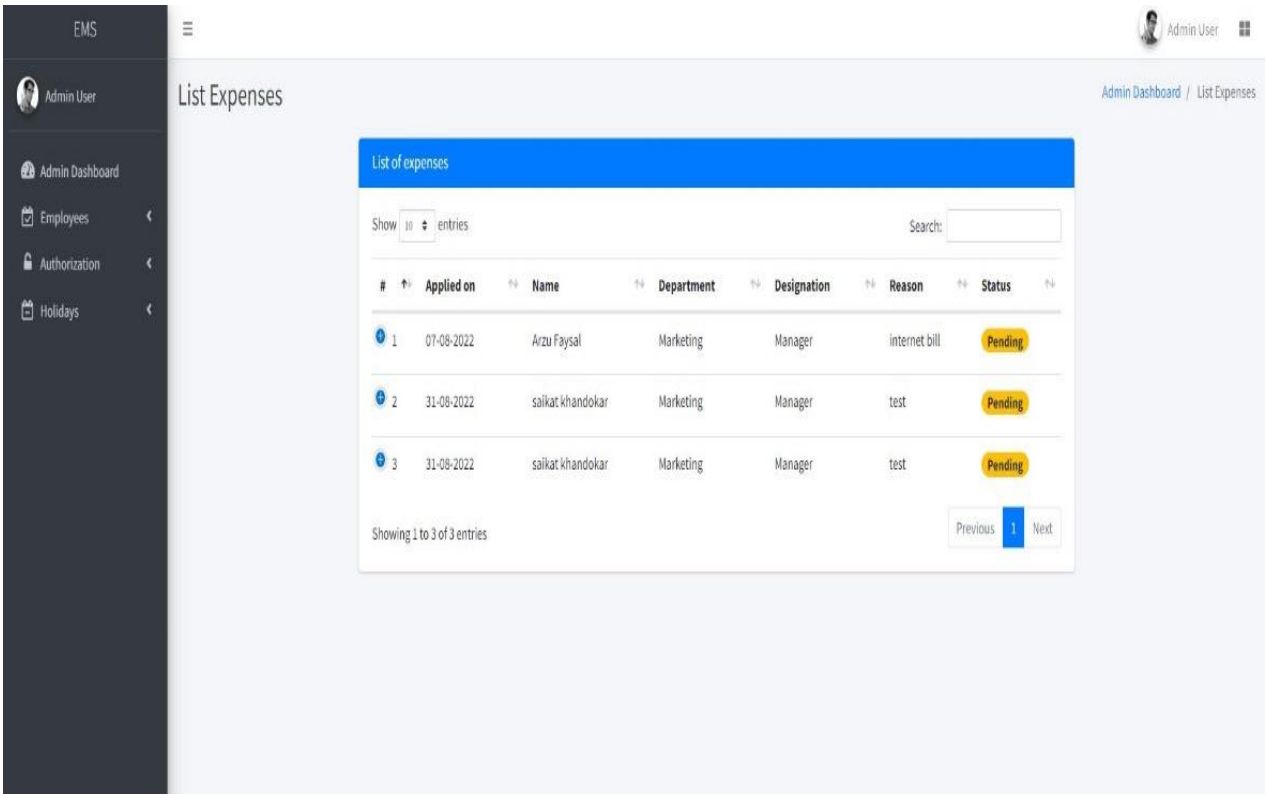


Figure 6.1.10: list of expense page

11. **List of Holiday page**: In this page Admin and employee can view can list of Holiday

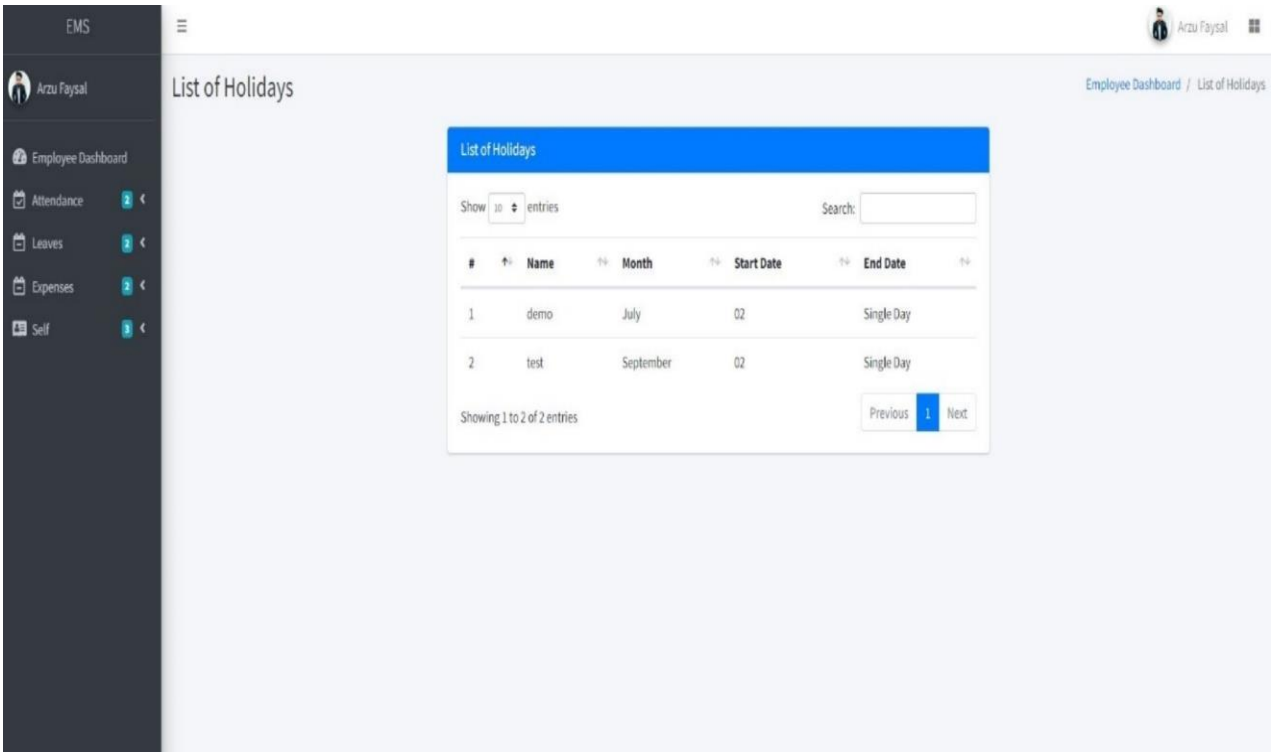


Figure 6.1.11: list of holiday page

Chapter 7

Project as Engineering Problem Analysis

7.1 Sustainability of the Project/Work

Project sustainability is currently a widely used method of project management. From project identification to feasibility studies, design, funding, implementation, and evaluation, specific criteria and standards must be established for projects to be sustained. The acceptability, viability, and flexibility of a project will be determined through a sustainability analysis. Prior to developing this project, the company has done a lot of requirement analysis for the project. There are few other Ems web applications from which they have analyzed and found what improvements could be done. The company will also take feedback from the users of the system, the user can tell the good and the bad sides of the system and according to the feedback we can make changes in the system. I believe that the project will sustain well.

7.2 Social and Environmental Effects and Analysis

- Social Effects: The project EMS is a system by which Employee will be able to connect with admin entirely online. Whenever an employee wants to apply for a leave, he can send an application through this application. otherwise, he/she needs to go to the office physically and apply for a leave and wait for approval but in our system, everything is done online. The person who wants to apply for leave or claim expenses, he just needs to log in from our EMS system and send an application.

- Environmental effect: As our EMS system has no carbon footprint as it is digitized, it helps to reduce paper waste and cause no damage to the environment while keeping records of all the information.

7.3 Addressing Ethics and Ethical Issues

The security of the system is one of the most crucial concerns when it is being developed. A lot of data will be transmitted continually through the system, so it is our responsibility as developers to ensure that the data is secure and that users may use the system without worrying that their data will be hacked or leaked. The senior developer handles all of the security-related work. For this system, the company has included numerous security measures. To prevent the codes from being shared, every employee working on this project must use the company's laptop instead of their personal ones. The system has several modules, and various employees are assigned to different modules, so even if an employee learns how to use one module, he or she will have no idea how the other module operates. The company protects all necessary document and source codes.

Chapter 8

Lesson Learned

8.1 Problem Faced During this Period

I have faced new challenges during the internship and have learned how to overcome them. Working five days a week from 9:00 AM to 6:00 PM was difficult for me. Because I'm not used to this kind of pressure, I often find it difficult to handle enormous workloads. The main problem for me was the framework that I was working with. The framework that I had to work with is Laravel (Framework of PHP). It was totally new for me. I had faced a lot of difficulties understanding the framework. At the very beginning I was learning that by myself and it was very confusing for me.

8.2 Solution of those Problems

There were a lot of issues, but I was aware that I needed to solve my own. I found it quite challenging to work from 9:00 AM to 6:00 PM every day at the office. I didn't have any energy left when I used to return from work for the first two weeks Eventually, I got used to it and now I am completely fine working from 10am-5pm.Several sections of the report that I was unfamiliar with required me to use Google to research. My supervisor helped me a lot when I faced any difficulties in the codes. At first he gave me a total overview and also taught me about Laravel. At first, I was very scared and also confused whether I could finish my work within the given time but I have completed my work within the time period. In the testing section, we found some bugs. Working with many individuals and observing various viewpoints during team meetings allowed me to better understand the conditions for a successful project deployment and the value of effective teamwork. I also learnt how to solve problems and give solution feedback.

Chapter 9

Future Work & Conclusion

9.1 Future work

As the project is still under development in order to make the website even more beneficial for the employees, the company plans to add more features and modules.

1. **Integration with payroll system:** I would suggest integrating the system with a payroll system so that employees can view and download their pay slips whenever they need to in order to make the system more complete.

2. **Information archiving:** A system that stores all employee data should have some sort of archiving mechanism so that employees who have been fired, suspended, or retired are archived rather than fully removed from the system. This is because there may be situations where information on an ex-employee is required, particularly when the employee worked on several projects and the information is required for future use.

3. **Employee Performance:** The designed system provides the admin with the ability to assign tasks to project members. If further worked on, this functionality can assist in determining the performance of employees based on their ability to finish tasks on time.

9.2 CONCLUSION

During my Internship at Smart-Voice Limited., I have learned many things related to programming, software development, and professional life which I could not have learned in academic study. I learned a completely new PHP Framework and developed a website using Laravel. Although I could not complete the entire project, I have learned so much from just working on it. Furthermore, I have learned to use new professional communication tools which I did not know existed. During Internship, I mostly focused on my web development project. Because I had to complete such a huge project in a small time. Although I had to work on other projects from time to time. I had to complete weekly objectives on one hand, on the other I had to read codes and fix bugs of a few other Junior web developers as well. All these works have given me a lot of experience and confidence. I feel I can work in both small- and large-scale projects due to my experience at Smart-voice Limited. Since I was new to using Laravel, I had to learn and watch a lot of online tutorials. I had to search through lots of unrelated problems to solve my problem. I wasted lots of time searching for solutions while being stuck in a minor problem. Although I thought it was a waste of time at the moment, I find it useful now. As those experiences have made me a better developer now. Easy solutions and learning without understanding the problem do not help in programming and prevent a programmer from evolving. In this age of technology, evolution is very important as every day new languages, frameworks, and technologies are being developed.

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An Undergraduate Internship/Project on Employee Management System for Smart Voice Limited

By

Md. Arzu Faysal

Student ID: **1731087**

Summer, 2022

Consent Form

The student modified the internship final report as per the recommendations made by his/her academic supervisor and/or panel members during final viva, and the department can use this version for archiving.

On recommendation of the board

(Signature of the Supervisor)

September 25, 2022

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