An Undergraduate Internship on Accounts and Admin Automation System

By

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Attestation

I Shad Ahmed bearing ID-1631220 state that this report is completely made by myself under the supervision of my respected faculty member Md. Abu Sayed. I have completed and submitted this document for the partial fulfilment of the requirement for the Degree of Computer Science and Engineering from Independent University, Bangladesh (IUB). All the works here are the result of my work experience in Sigma Solution BD and study from different blogs, research papers etc that are referenced in the report.

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Signature   Date

Write Your Name Here

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Name

Acknowledgement

First and foremost, I am grateful to Almighty Allah as I am able to complete the report within due time.

I am extremely grateful to the CEO MD. Mustafizur Rahman, Sigma Solutions BD as I was given an opportunity to work with their excellent development team as an intern. They have helped me to carry on with my work in a professional environment.

This report on my work could not have been possible without the help and guidance of my respected supervisor Md. Abu Sayed. He arranged several progress meetings during the full completion of the report from the very beginning. He helped me understand why this report is so crucial and how I can make sure to express my work through this report to the best possible way. He also gave feedback on different parts of the reports so that I can make the report as it is required.

I would also like to address my parents support and prayers for me that helped me to continue with my work patiently and without their help in every possible way I could not have come to the end of this Internship. Finally I must express my cordial gratitude to all my faculty members to help me carry on with the whole bachelors degree.

Letter of Transmittal

September 7,2021

Md. Abu Sayed

Lecturer, Department of Computer Science and Engineering, Independent University, Bangladesh

Subject: Submission of Internship report.

Dear Sir,

With due respect I would like to state that I am submitting my Internship Report to you. I have started working with Sigma Solutions Bd for a 3 month long period of time as a software development intern. I would like to inform you that I have worked on "Accounts and admin automation system" for Sigma Solutions Bd and made this report based on my work experience and under your supervision. I would be ever grateful to you if you would kindly evaluate my report.

I therefore pray and hope that your honor would be kind enough to grant my application and oblige thereby.

Yours Sincerely,

Shad Ahmed

ID: 1631220

Evaluation Committee

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Signature

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Name

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Supervisor

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Internal Examiner

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External Examiner

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Convener

Abstract

"Accounts and admin automation system" is a software inspired by different ongoing similar projects and modified for Sigma solutions BD as per the requirements of the company. This system is integrated with an in built employee management system that helps all the employee to be supervised in an online platform which is a must required option for any business during this pandemic situation and also for regular times.

The system keeps records of all the assets of the company in a personal recording manner. This helps to get the view of assets to the management as they want to see it. Technologies used to build this software are very familiar to current world. So maintenance or upgrading of the system in future will be easy.

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Chapter 1

Introduction

1.1 Overview/Background of the Work

This report shows what work I have done during my Internship period with Sigma Solutions BD. I will be describing about the project I have worked on in details as much as the company permits me. The project ensures easy automation of accounting system. Also an automated employee management system is included that helps the management to get the perfect picture of the costing and helps to take decisions based on the outputs generated by the application.

1.2 Objectives

Objectives are mainly goals of a project. The certain things that maybe achieved with the application are as follows:
1. Accounting system
2. Cost management(includes payment, billings, expenditures etc.)
3. Payroll system
4. Employee management system(Includes Time card, leave managements and so on)
5. Assets management system(Includes Fixed assets, Depreciations etc.)
6. Database management system(required to build up the whole system)

1.3 Scopes

Accounts and Admin Automation System is a fully online system. The application keeps record of all the transactions of all its stakeholders. It also keeps record of all assets. Any kind of expenditure or payment is also saved.
The employee management system keeps record of all employee information. Their time

cards, work tickets leave cards everything's information is recorded. Admin can add remove or edit any employer. Only authorised persons can have their own dashboards according to their authorization power.

Chapter 2

Literature Review

2.1 Relationship with Undergraduate Studies

To implement the application we mainly require HTML, CSS, JavaScript for designing. I learned basics of these from CSE309 Course. For back-end support and database PHP(Laravel Framework) and MySql is used. CSE 309 and CSE 303 Course helped me to learn these things. For planning of the project and analysis of the project CSE307 course was really helpful.

2.2 Related works

There are so many on going projects on accounting and admin for different organization. Each organization has their own requirements. So all of them are different than others. Basically it is a project that can be a result of integration of different sub projects.

In this section I will be precisely give some examples of ongoing projects similar to my project:

For example a document on "WATERMARKING TECHNIQUES FOR ROYALTY ACCOUNTS IN CONTENT MANAGEMENT WEBSITES FOR IOT IMAGE ASSOCIATION" is cited in this report. IOT (Internet of Things) is a much talked technology in this current world. The document shows us how watermarking method accounts for royalty in content management website. Different IOT based websites has contents and images that has copyrights. So these things are analysed in he document.

[1]

Chapter 3

Project Management & Financing

3.1 Work Breakdown Structure

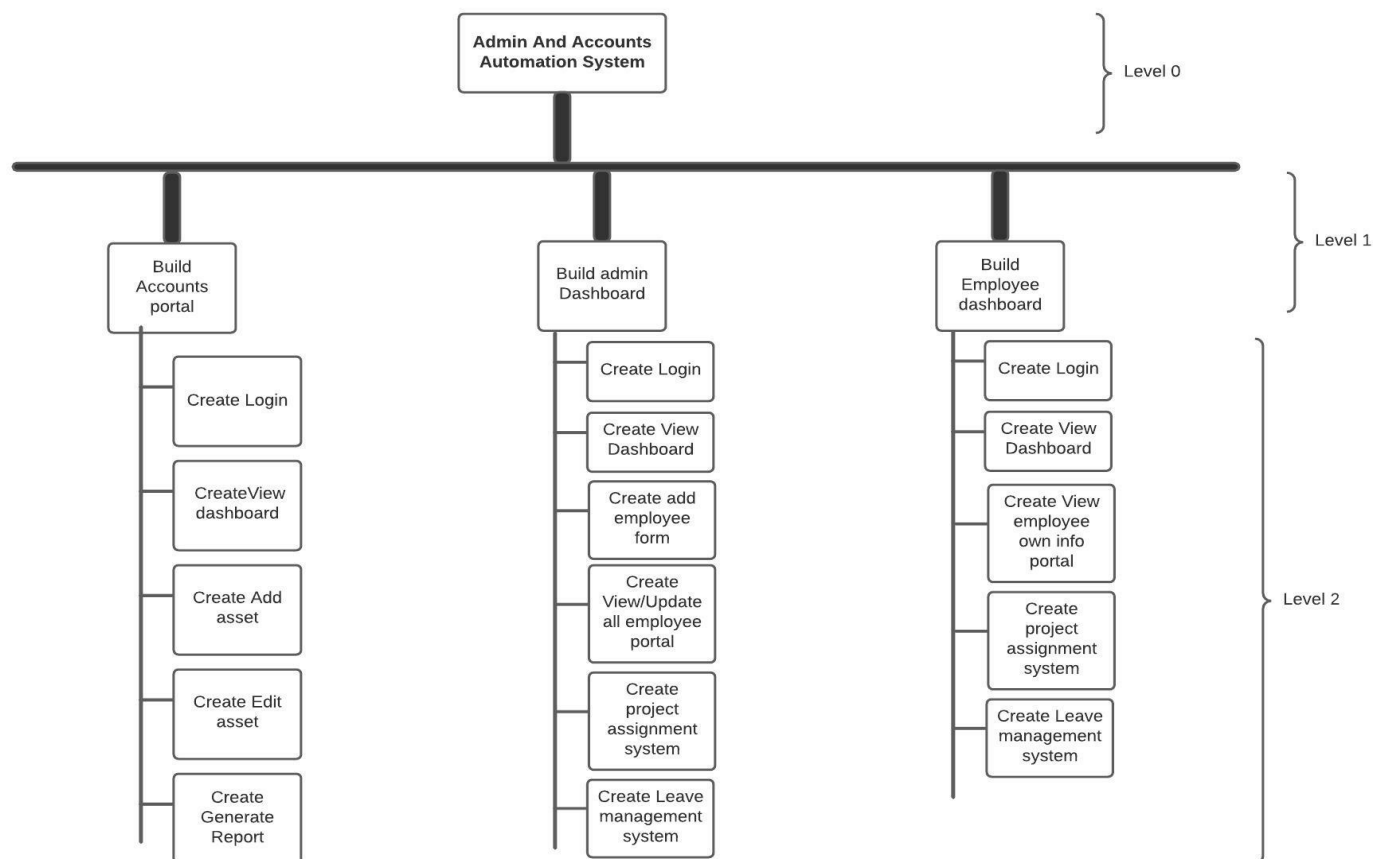We used WBS after analyzing few documents and researches online.

Figure 3.1: Work Breakdown Structure

As planned we started working with the full system step by step. At first we made the accounts system then the admin section and then the employee section. In each step we implemented all the necessary requirements and features by the project manager.

3.2 Process/Activity wise Time Distribution

The work and time distribution of our project is as follows:

Index	Activity description	Dependency	Duration
A	Proposal	none	1 Week
B	Acceptance	A	3days
C	Planning	A,B	1week
D	UI Generation	C	1week
E	Database making	A,B	2Week
F	Connecting Project to database	D,E	2 Week
G	Final Project integration	F	1 week
H	Testing by project group	G	2days
I	Solving bugs	H	1week
J	Re -Testing	I	2 days
K	Final test	J	2 days
L	Submission	K	1 day

Figure 3.2: Time Distribution

3.3 Gantt Chart

The gantt chart is made from the WBS mentioned in the earlier section. It shows How we have implemented the work. We started at July 1, 2021 for this project and finally after almost 9 weeks at August 7th,2021 we implemented the system.

Figure 3.3: GANTT Chart

We tried to meet all the deadlines and fortunately we met all of them. Whatever problem arose we tried to find solutions for all of them.

Even we were using SDLC so we had the flexibility somewhere to make changes to our schedule as we went ahead of schedule some times. And there were fewer occasions that we failed to meet our deadline.

3.4 Estimated Costing

We tried to complete the whole project within the costing . The initial budget for this project was not more than thirty five thousand BDT. And we could cover the work within the budget.

Following is the Table that shows the estimation of the project:

Work Distribution	Costing
Front-End Development	7000 BDT
Back-End Development	13000 BDT
Hosting	10000 BDT
Miscellaneous expenses	2000 BDT
Total	32000 BDT

Figure 3.4: Costing

[2]

Chapter 4

Methodology

We used Software Development Life Cycle(SDLC). Following are the way we are implementing the application:

1. Identifying the problem
2. Determining the requirements
3. Analyzing all the system needs
4. Designing the recommended system
5. Developing the system
6. Testing and maintenance
7. Evaluation of the system

Our plan is to find out the problem statement as precise as it can be. Then We will analyze the requirements engineering. Then the design of the system needs to be done. Once completed finally it is connected to the database. Then testing of the system and finally evaluation by the organization.

Chapter 5

Body of the Project

5.1 Work Description

This application is basically built for internal use of Sigma Solutions BD. It is built to keep record of all the assets management ,expenses of the company along with an employee management system through which all employee records are kept and employee and admin can perform almost everything via online that previously required offline channels(Man to Man interaction).

Not anybody from anywhere can become an admin or employee. So an admin is set by default and only admin can add or delete any employee. So there is no registration page. Only intended user can login and have their own dashboards.

Admin can view all the employee details and a summary of cost management of the company in the admin dashboard home page.Admin can view and edit any expenses and also add new fixed assets or sold assets etc. He can add or delete any employee. Admin can assign projects to employee. This involves project name, and due date etc. Admin can view any employee leave application and approve or disapprove them.Admin can also edit any change in salary of the employee. Admin can view all the due and submitted projects and mark them.

An employee can update few info about himself. Employee can apply for leave and also view if they are approved or not. Employee can view assigned projects to him and mark them when completed.He can see other employee progress and his position too.

5.2 System Analysis

5.2.1 Six Element Analysis

The six element analysis of the project is as follows:

Process	System Roles					
	Human	Non-Comp Hardware	Computing Hardware	Software	Database	Network & communication
Login	Admin and Employee can login	N/A	Computer	PhpStorm,Chrome,PHP and Mysql environment	Mysql	Internet
View Employee leaderboard	Admin and employee can view them	N/A	Computer	PhpStorm,Chrome,PHP and Mysql environment	Mysql	Internet
View/Update/Edit Assets and expenses	Admin can view and update or edit	N/A	Computer	PhpStorm,Chrome,PHP and Mysql environment	Mysql	Internet
Add/Delete Employee	Admin can add or edit or delete employee	N/A	Computer	PhpStorm,Chrome,PHP and Mysql environment	Mysql	Internet
Assign project	Admin can assign project to employee	N/A	Computer	PhpStorm,Chrome,PHP and Mysql environment	Mysql	Internet
View and approve or disapprove leave	Admin can view and approve or disapprove leave	N/A	Computer	PhpStorm,Chrome,PHP and Mysql environment	Mysql	Internet
Submit project	Employee can submit assigned project	N/A	Computer	PhpStorm,Chrome,PHP and Mysql environment	Mysql	Internet
Apply leave	Employee can apply for leave	N/A	Computer	PhpStorm,Chrome,PHP and Mysql environment	Mysql	Internet

Figure 5.1: Six element analysis

5.2.2 Feasibility Analysis

We have completed feasibility analysis and found that this software is quite feasible to the organization. We have done the feasibility analysis on Operational Feasibility,Technical Feasibility and Economic Feasibility.

Operational Feasibility Analysis: It passed the operational feasibility as it will keep record in a database that is safe and during pandemic the online activities can be easily maintained mostly through the software. Each user has their own dashboards to view and do inputs and get output through the software.

Technical Feasibility Analysis: It also passed the technical feasibility as no hardware device is required. It only uses Php (laravel framework) and mysql databse.And as it is online based so no need of any installation or updates and both PC and mobile users can use this software via only a internet connection.

Economic Feasibility Analysis: It passed the economic feasibility too.As it was built with open source and free of cost development environment the company the budget didn't exceed and the output software really meets the requirements of the company.also no need of extra maintenance if not required to add any new feature in future.

5.2.3 Problem Solution Analysis

During the project implementation various problems occurred. We tried to solve them and implement them. For all problems we followed some basic steps. They are as follows:

- **Identification:** Identifying the problem as precisely as possible.

- **Requirements that are affected:** The project requirements that are affected by the problem.

- **Solution:** Finding the most accurate and precise solution.

- **Implementation:** Implementing the particular solution.

- **Testing:** Testing if the solution solved the problem. If not then previous steps are followed again.

5.2.4 Effect and Constraints Analysis

We tried to transform all the manual works into online. But there are still some constraints. We could not implement online order and payment for the system. Online meetings through the software could not be established due to some reasons. Still the organization is dependent to other platforms for these services. As some projects carry huge amount of data(projects that contain videos or lot of files etc.) could not be managed to save in the database. So some time is required to make it fully online.

5.3 System Design

We will be describing some models and figures in this section and try to visualise the software through them.

So we are going to add rich pictures, use cases, activity diagrams etc.

5.3.1 Rich Picture

The rich picture shows how the system should work. All the actors, databases and functionalities of the system is shown here and it depicts how everything is going to work.
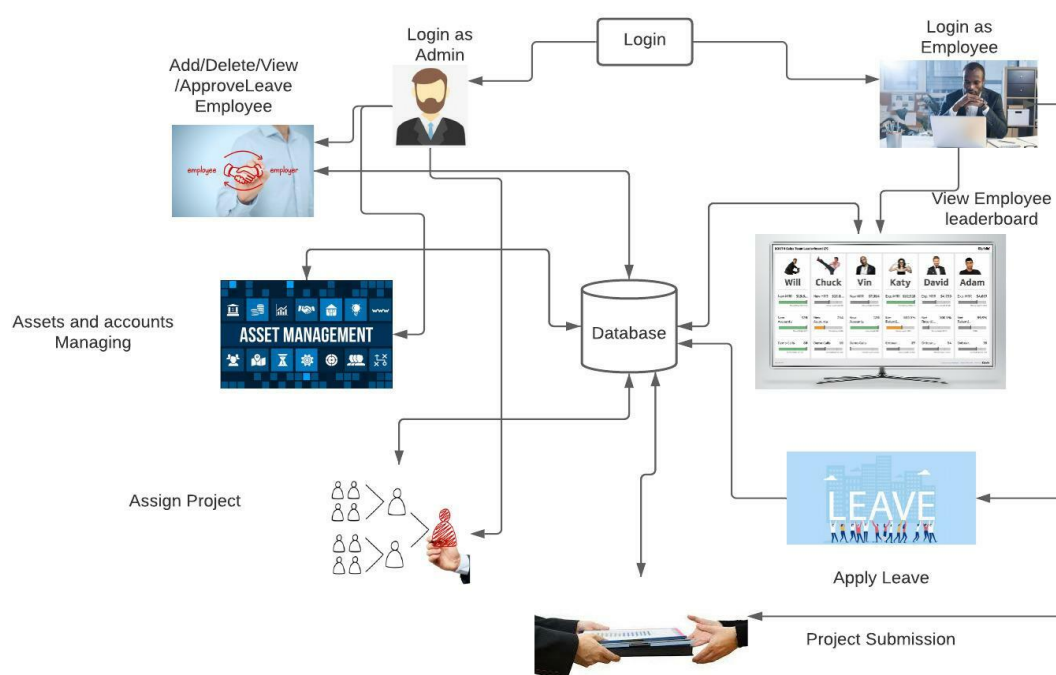
Figure 5.2: Rich Picture

Rich picture contains photos, actions, relations . So it actually helps to determine the complexity of the system and how everything is connected to each other in the system.

5.3.2 UML Diagrams

An use case diagram normally depicts all the functionalities of an user.Following we are giving two use case diagram for the software.

Admin Use Case Diagram:
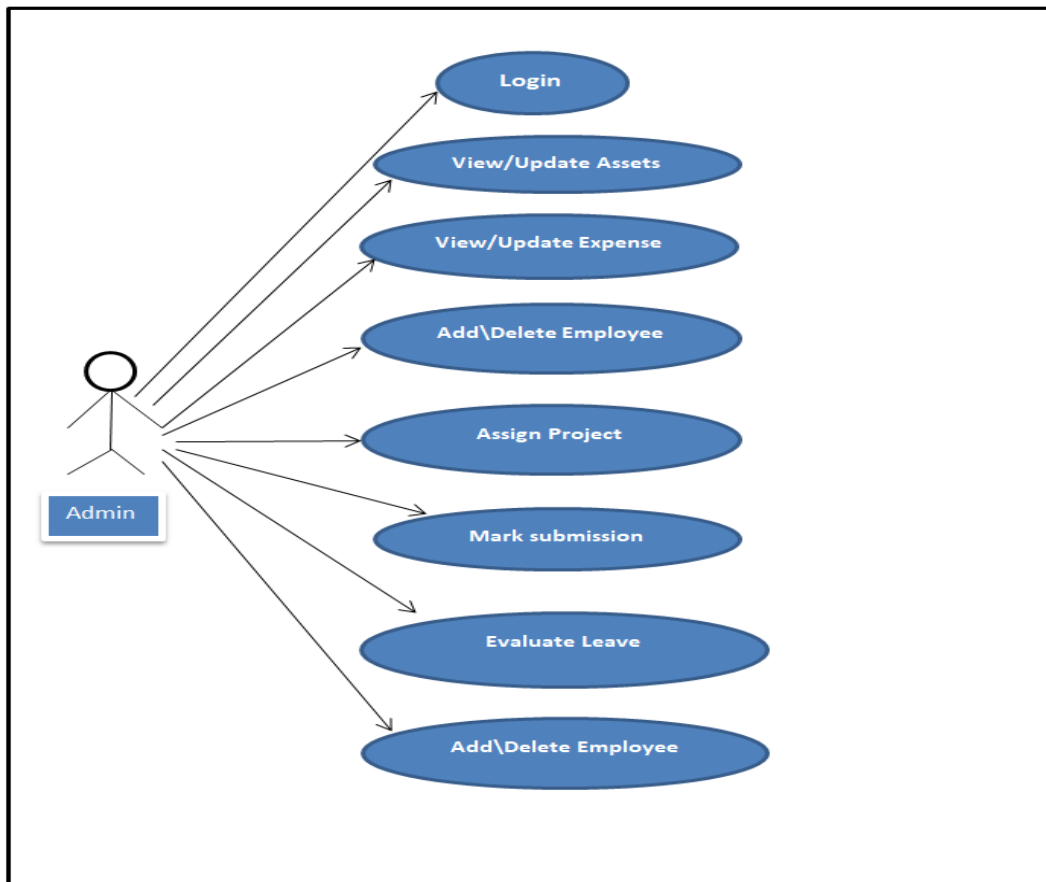
Figure 5.2: Admin Use Case Diagram

Employee Use Case Diagram:
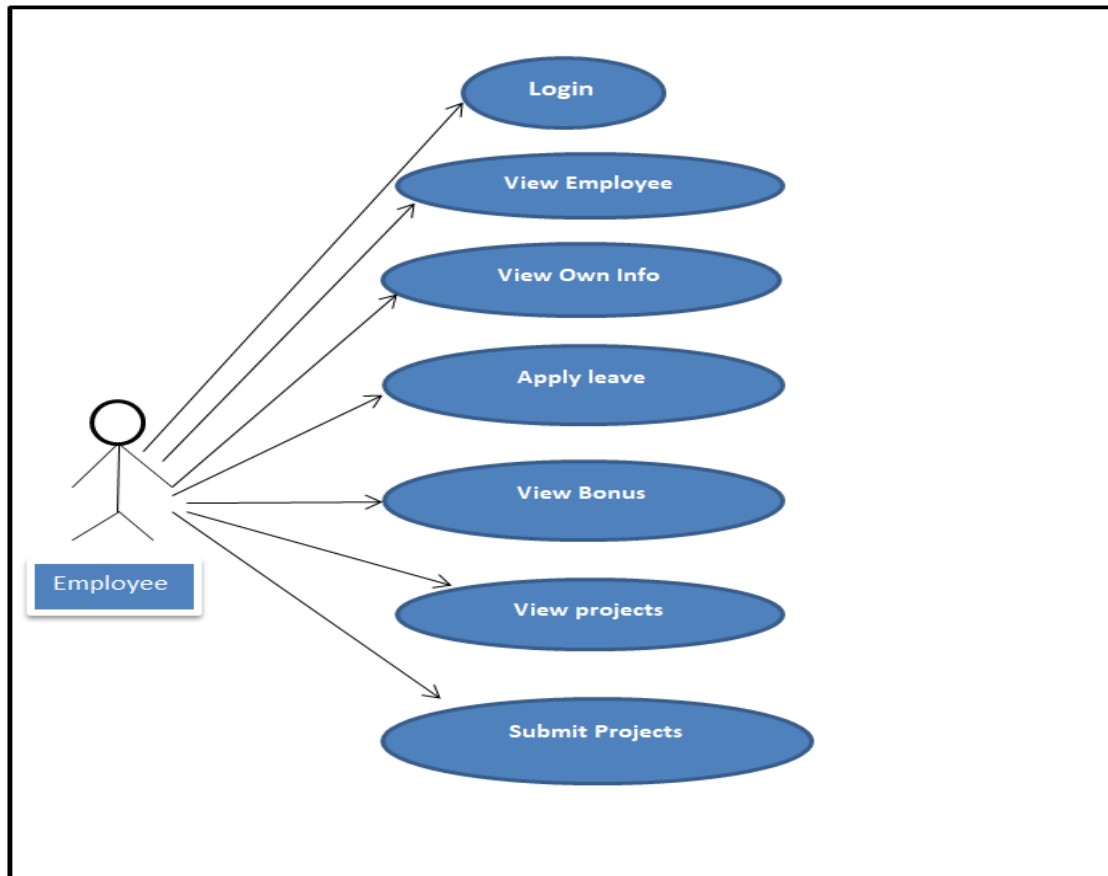
Figure 5.3: Employee Use Case Diagram

Activity Diagram:

An activity diagram shows how the flow of activities run through in a software.Following is an activity diagram for the software.
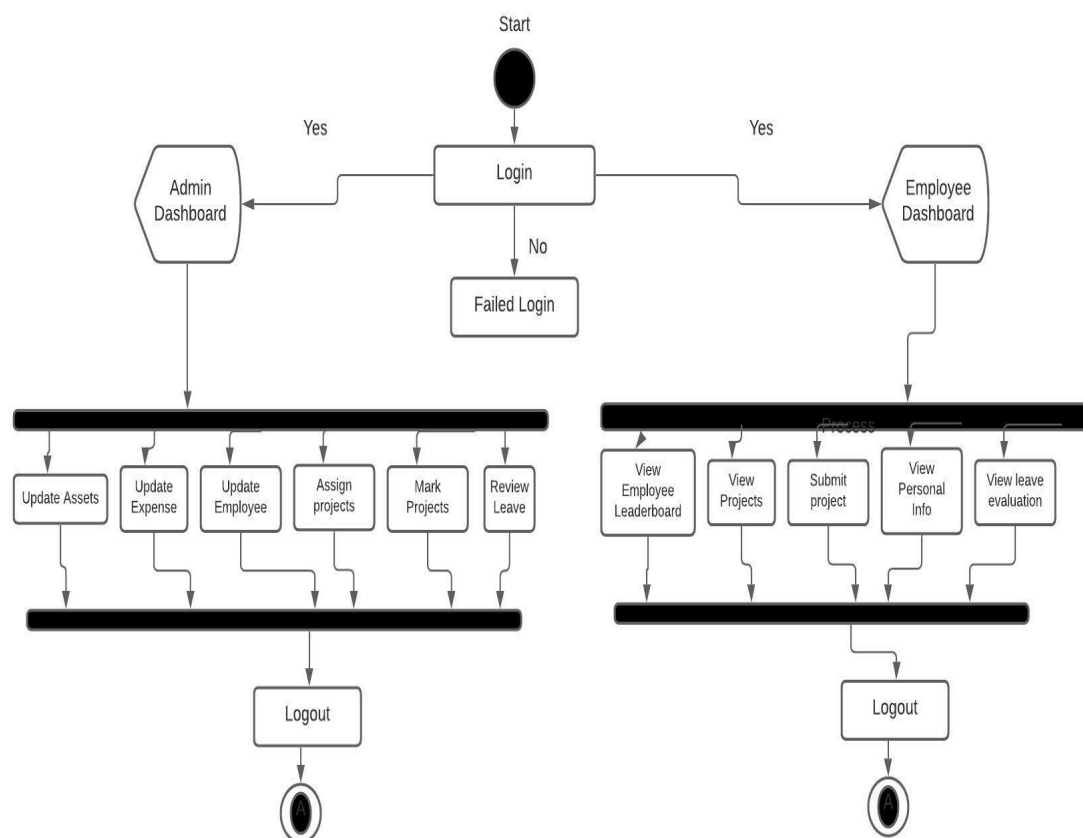
Figure 5.3: Activity Diagram

5.3.3 Functional and Non-Functional Requirements

Functional Requirements

A functional requirement is a function or feature that must be included in an information system to satisfy the business need and be acceptable to the users. The functional requirements for this project are:

- **Login:** Only intended people can log into the system. An admin login system and another one is for the employee of the company.

- **View Assets:** Admin can view all the assets of the company.

- **View Expenses:** All the expenses incurred by the company is only visible to the admin.

- **View Employee:** Both admin and employee can see the employee leader-board. But all employee information is limited only to the admin. Other employees will view few intended info about other employee.

- **View projects:** All ongoing and previous projects information are visible to the admin. An employee may view only those projects that are assigned to him/her.

- **Edit/Update Assets:** Only admin can update any changes in company assets.

- **Edit/Update Expense:** Only admin can make changes to expenses directory.

- **Add/Delete/Update Employee:** Admin can add or delete or update info an employee.

- **Assign Project:** Admin can assign projects to anyone.

- **Apply leave:** Employee can only apply for leave.

- **Evaluate leave Application:** Admin can approve or cancel a leave request.

- **Submission of project:** Employee can submit a completed project.

- **Evaluate Submission:** Admin evaluates the submission of projects.

Non-Functional Requirements

A nonfunctional requirement is a description of the features, characteristics, and attributes of the system as well as any constraints that may limit the boundaries of the proposed solution. The non-functional requirements for the project are given below:

- **Performance:** The system will provide better performance. Performance requirement represents the performance. The system is required to exhibit to meet the need of users. The response time of the system system should be quicker to save the time.

- **Information:** Information is an important resource. It represents the information that is pertinent to the users in terms of content, time accuracy and format. All the information will be kept in the database.

- **Control and Security:**The information will be automatically saved in the database .The control unit of accessing the details is the administrator of the software. It ensures the data accuracy and data security.

- **Availability:** It is a online software. So it can be accessed anytime from anywhere.

- **Usability:** The software is quite user friendly.

5.4 Product Features

5.4.1 Input
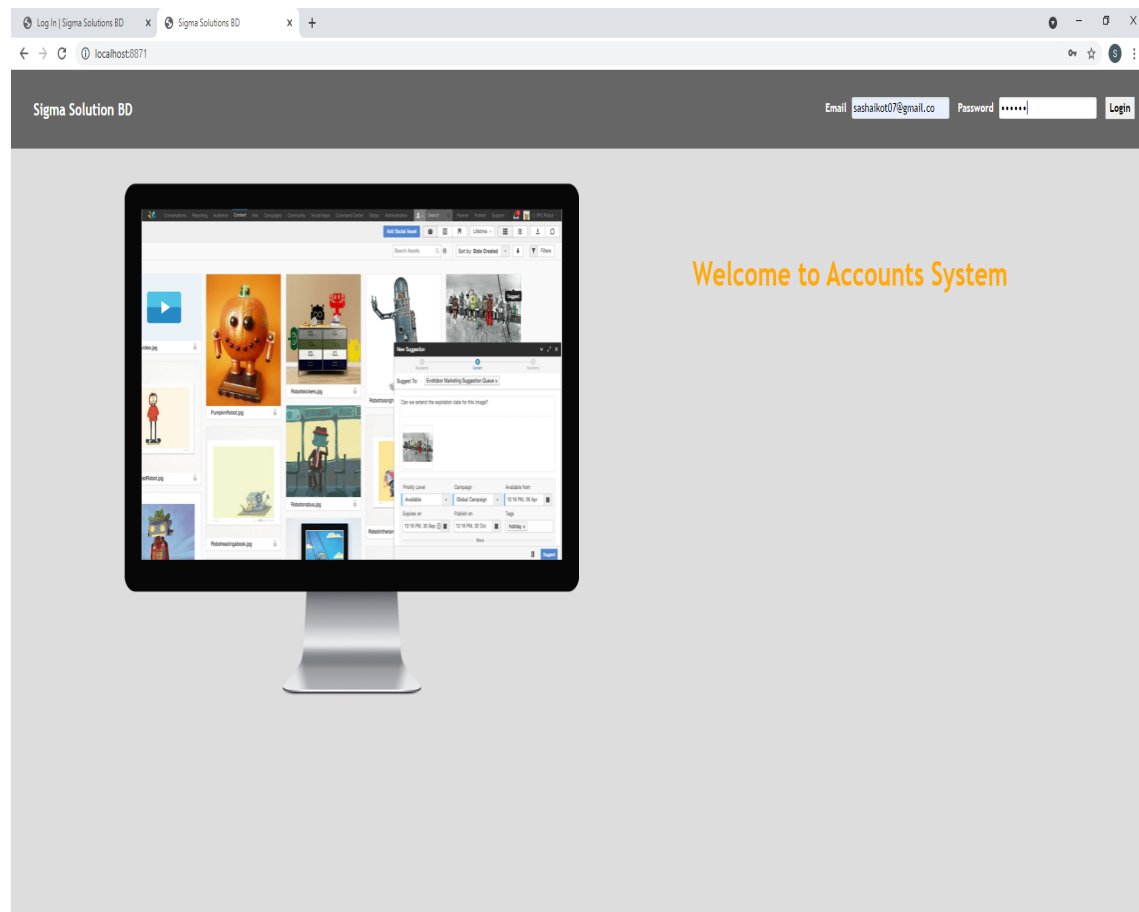
Figure 5.5

Accounts person will login from this page using email and password.
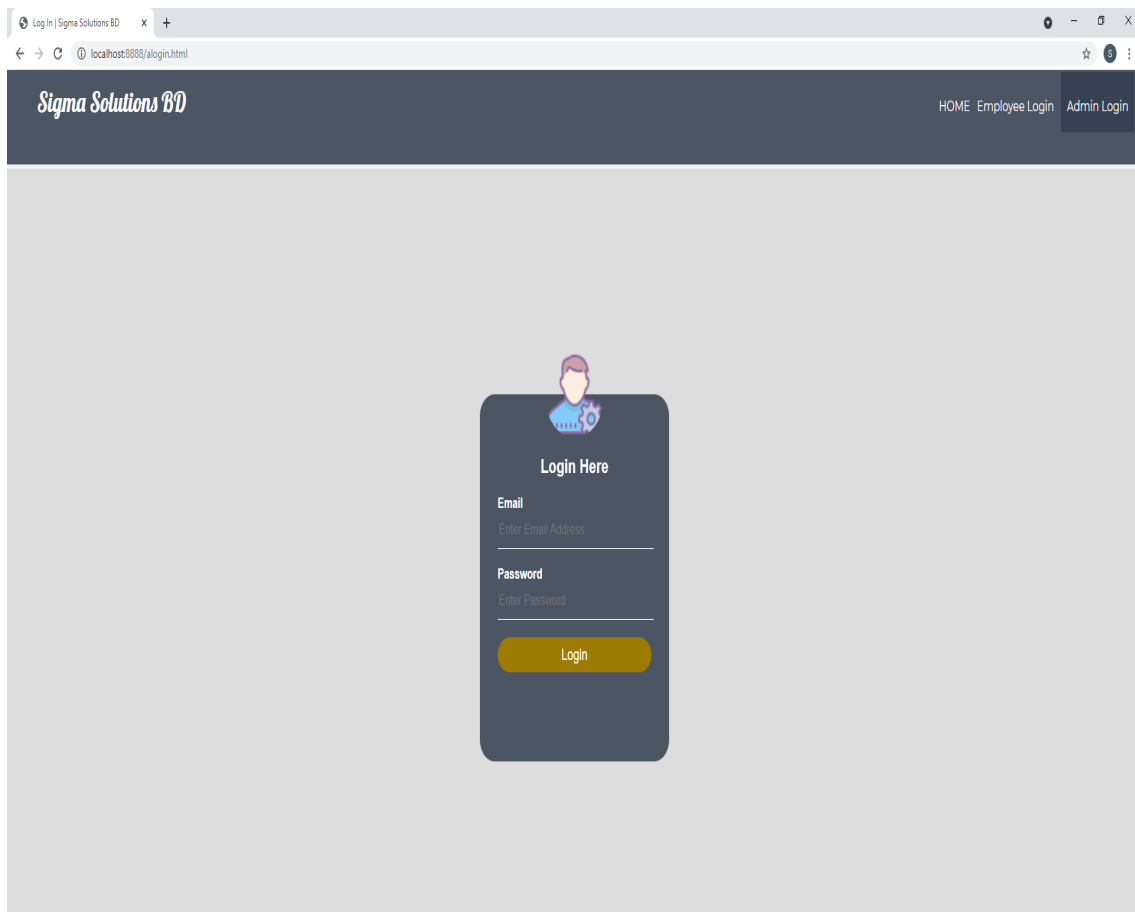
Figure 5.6

Admin will login from this page using email and password.
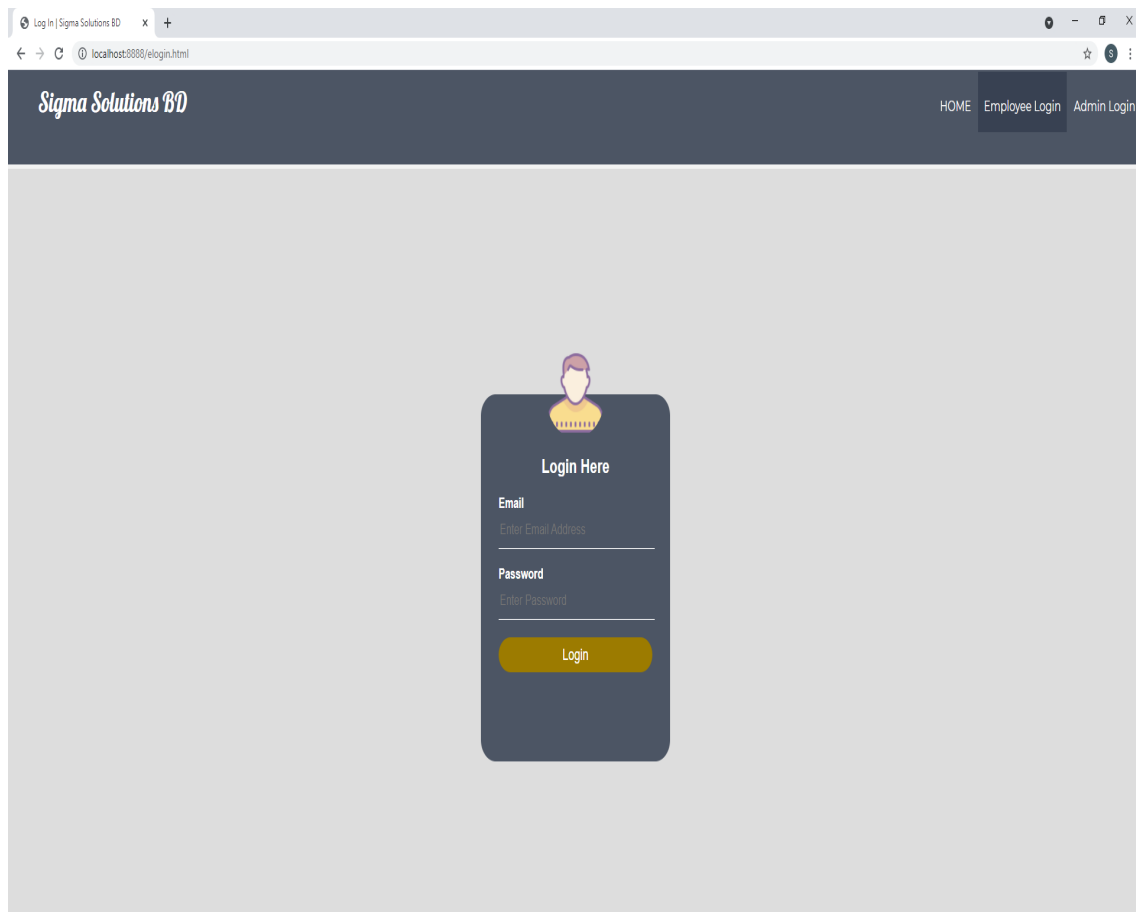
Figure 5.7

Employee will login from this page using email and password.

Figure 5.8

Any asset can be added as input in this page.

Figure 5.9

Admin can give info of an employee here to add an employee

Figure 5.10

Admin can assign an employee a project

Figure 5.11

Employee can request leave here
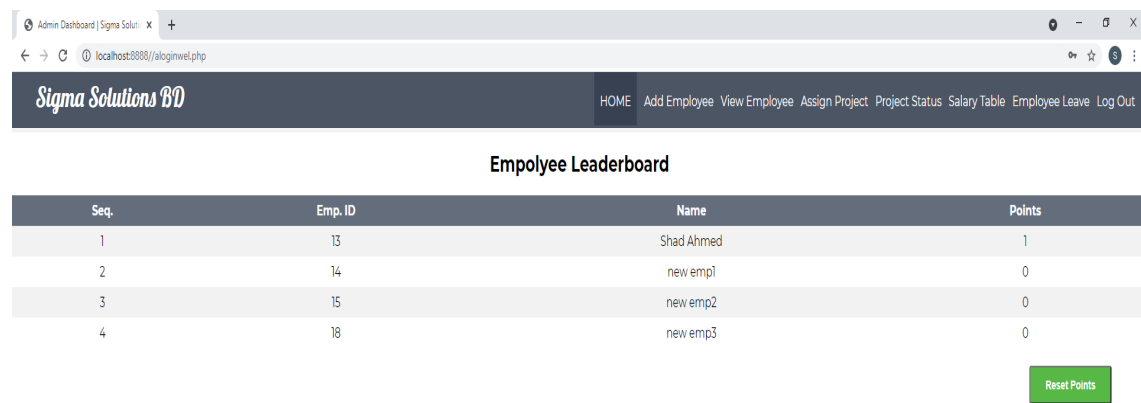
5.4.2 Output

Figure 5.12

Accounts person Dashboard

Figure 5.13

Admin will view this page after login

Figure 5.14

Employee will view this page after login
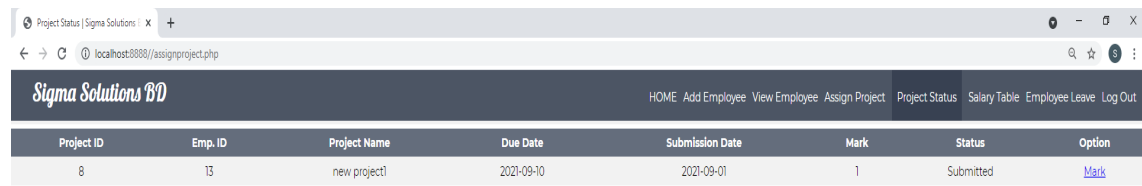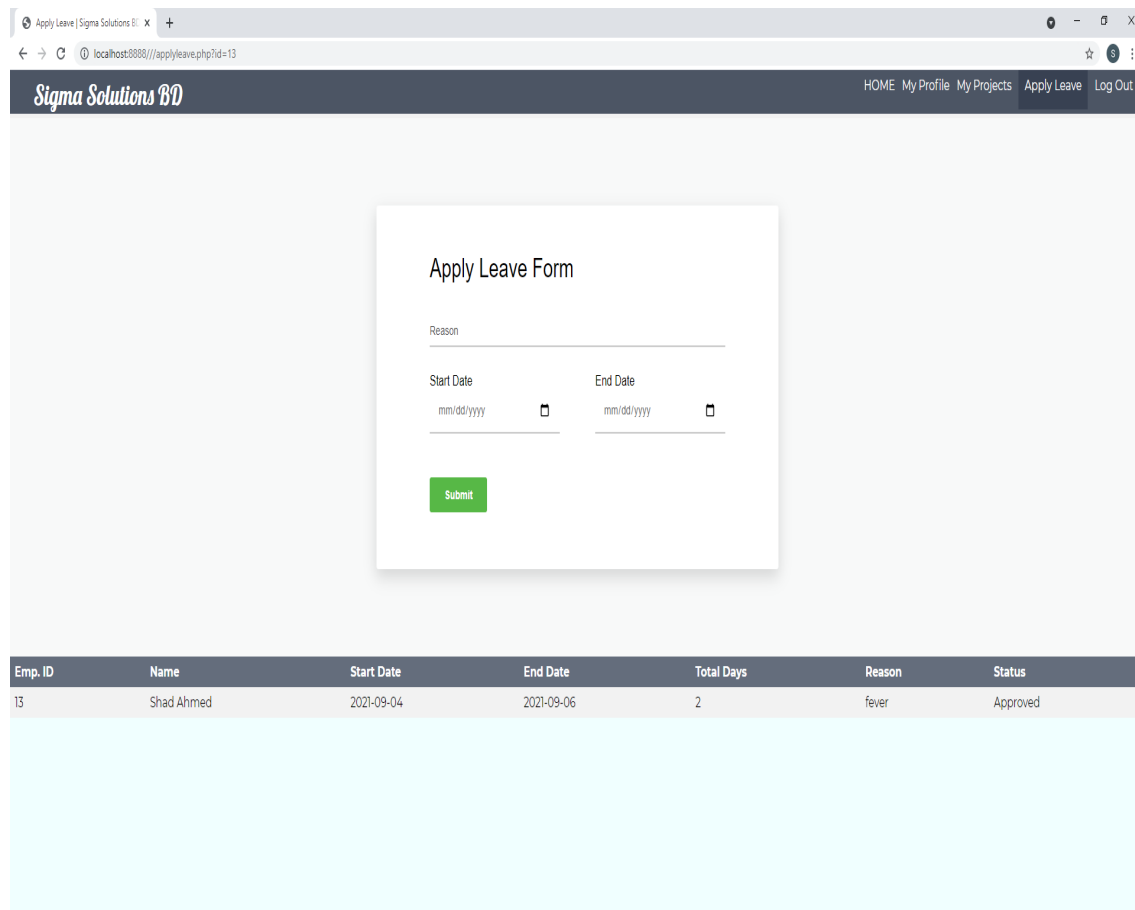
Figure 5.15

An asset report is generated here

Figure 5.16

Employee will see only the project assigned to him and admin can view all projects

Figure 5.17

Employee will view if leave is granted or not

5.4.3 Architecture

An MVC architecture was used during the build up of this project. That means a CRUD system is playing a key role in this project. All the inputs are saved in the database. And with given authority only intended users can access those data accordingly and update edit or delete them.

So data that are used as input in the software is processed into valuable information. Thus it works as an information system.

Chapter 6

Results & Analysis

In this section results or outcomes and their analysis is shown. For any project this type of analysis on the result is very crucial as it will motivate possible business analysts and clients engaged with the software and thus it may pave success path for the software itself.

The final software product is the result of our efforts.Actually an analysis has started at the very beginning and carried out whole through the project and it should be carried on by the development team. We've devised a rudimentary strategy for analysis:

•What are the questions we want to respond (e.g., did we obtain our specific goals?).
•How will we respond to them after the information we have?
•Who should be the one to accomplish it?
•When they're going to do it?
•How will the outcomes easily be applied?

We decided that we will ask the questions based on our software requirements (both functional and non-Functional). For example : What is the main goal? Who Are the users? What data we want to store and process? and so on. We tried to answer all of them via the final software. It seemed fit that the final outcome of the software could easily accomplish all of the requirements asked by the project manager. The software development team was responsible for accomplishing the questions asked and also we solved them in due times and a document(User manual) is ready on how to use the software. So it seems quite feasible for the software to best suite the need of the company.

We glanced at the maximum and minimum values in the data in quantitative data to

Figure 6.1: Asset report
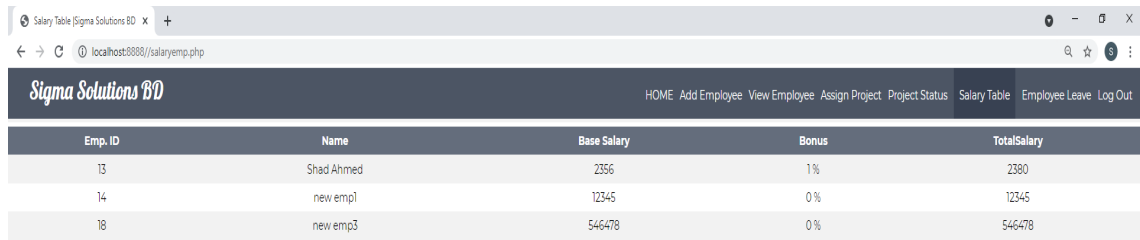
determine if they made sense in the proper data sets. Additional information was read or looked at. In either scenario, I discussed the results of the descriptive analyses with members of our team.If we discover gaps or inaccuracies in our data, we go back to the source and complete or repair them.

For example, our comparisons were:
• Evaluating your project against itself over time
• Comparing one or more research papers that relates to our project
• Comparing actual work with planned progress.

After those we concluded that if we implemented an activity and the desired impact or outcome did not occur, there could be few possibilities to explain what we did and what went wrong and thus a final solution may be achieved:

• Our initial logic was solid, but we executed the activity poorly.
•Our initial logic was solid, and we carried out the activity flawlessly, but our observation was lacking.

Figure 6.2: Salary Table

•We made a mistake in our reasoning.

For every activity performed by the software these logical steps were followed. Thus after rigorous programming and brainstorming each of the activities worked perfectly as required by the Project manager.

At whatever point examination has been done and detailed, I have imparted the outcomes to the whole gathering, associates and accomplices, close by nuances of activities learned. This helped us with ensuring a wide understanding of what's happening inside the project, what changes need to happen and why – thus adding to buy in for any changes required.

Chapter 7

Project as Engineering Problem Analysis

7.1 Sustainability of the Project/Work

Sustainability is the ability to be maintained at a certain rate or level. The project that I have worked on is not different than current world other projects. It's not like something that will be kept as it is forever. Over time requirements may change and with them the software is easily changeable. Thus it meets the highest level of sustainability possible.

The technology used for this project is PHP (Laravel Framework). From internet we researched that PHP is used by 78.9% of all destinations with a realized server side programming language. So practically 8 out of every 10 destinations that you visit on the Internet are using PHP by one way or another or another. So we can rely that The software can grow for a long time without any difficulty.

7.2 Social and Environmental Effects and Analysis

The social and environmental effects of the software is analysed below:

7.2.1 Social Effects Analysis

The software fully works internally in an organization. The software binds or integrates all the employee working in the organization. As it is an information system,

limited but valuable information of all the employee is shared to each other on how employee are growing inside the organization. This really motivates or triggers everyone to work to their fullest.

7.2.2 Environmental Effects Analysis

Any PC programming that unequivocally hopes to exchange or decrease the necessity for mental activity runs the peril of wiping out the limit of individuals to endeavor these activities for themselves. In like manner, moreover, with the customer being clueless of it, as experience of a particular programming group grows, any weakness in reasoning or cycle that is made into the item is inclined to be passed on forward as show.

Our software is fully online. So no use of extra pen ,paper ,plastic etc that can harm the natural environment. Also as data access is restricted and maintained by admin so not anyone can simply have access to the system and can use forgery of data or steal data or interrupt the data.
And as admin have power to restrict employee from the org that means previous employees cannot access to the system anymore. Thus cannot spread toxicity or distractions in the system.

7.3 Addressing Ethics and Ethical Issues

Moral issues happen when a given decision, circumstance or development unveils a conflict with an overall's moral guidelines. The two individuals and associations can be locked in with these conflicts, since any of their activities might be put to address from an ethical viewpoint. Individuals are subject to these issues in their relationship with others or in their relationship with affiliations and same goes for affiliations.

Here in our software as admin or manager of the company himself monitors everything so this kind of conflict may never happen. An everything is automated. So no excuse of not doing that thing or done earlier things. But the accounts section manager must be loyal and hence need much more look up over that field and audit is compulsory.
[3] [4]

Chapter 8

Lesson Learned

8.1 Problems Faced During this Period

During the work period there were few problems. I will try to elaborate those probles faced by me here.

Planning phase: During the planning phase there were several ways to implement the idea. So there were conflicts on which methodology we will be following.

Designning the navigation system: As there are several users of the system so it was difficult to come out with the best possible solution.

Making the erd: During our plan we made the ERD and Class diagram of our project. BUt the problem was there were some dependency errror(found out later on). That later on while making the Database, was ambiguity in the database. this was one of the major problems faced by the development team.

Get used to with PHP(laravel) development Environment: As I was totally a new member and laravel was new to me so at the very beginning I had difficulties keeping in pace with the work.

8.2 Solution of those Problems

The problems faced were solved as my teammates were professionals in this field and they helped me to learn better and encouraged me to have believe on me. Thus it helped me to overcome the problems easily.

We always had weekly testing and revising of earlier works. So that we don't have

to suffer in the long run. This technique helped us to find out the error in ER diagram and then we immediately corrected those. So we need not had to do everything from beginning again.

It was difficult to get used to with laravel. But I patiently worked and tried to get on with everything that need to match the requirement.

Chapter 9

Future Work & Conclusion

9.1 Future Works

Our future goals are as follows: 1. The software was made for personal use form the company. But it is already decided that the accounts section of the project will be expanded vastly to an ERP system for the company.

2. For time constraint we could not come up with the best idea of password protection system by ourselves. Our development team is keen to generate a method through which password protection will be implemented later on.

3. We plan to integrate hardware devices to take automatic attendance through this software.

4. As budget is limited we could not implement the project submission in online. Rather a notification is sent to the admin. We hope to increase budget with time so that we can implement the process where the project maybe submitted as a whole in the software. Thus helping to use a cloud server to edit update the projects over time via this system only.

9.2 Conclusion

This intern opportunity was my first ever professional level experience with trained professionals. Till now whatever I have learnt or implemented was some requirements for particular courses or only for learning purposes. But finally I got a chance to implement my academic knowledge to practical life. Finally some contribution of mine will be used

in real life.

Though there were time constraint, still I really loved to work against new challenges. Life is an ever going school of learning and experience. I learnt new technologies, Office ethics, Communication skills etc. Loyalty, honesty and integrity was some virtues that I could practice during my internship period.

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