A WEB BASED PROJECT ON COMPLETE AUTO RICE MILL MAINTENANCE SYSTEM

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This Report Presented in Partial Fulfillment of the Requirements for the Degree of Bachelor of Science in Computer Science and Engineering

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DHAKA, BANGLADESH

MAY, 2019

APPROVAL

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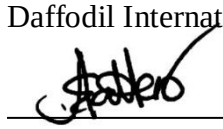

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We hereby declare that, this project has been done by us under the supervision of **Nusrat Jahan, Lecturer, Department of CSE** Daffodil International University. We also declare that neither this project nor any part of this project has been submitted elsewhere for award of any degree or diploma.

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ACKNOWLEDGEMENT

At the beginning, we disclose our gratefulness and our heartiest thanks to almighty Allah for His heavenly blessing causes us to be facile to complete the conclusive year project successfully.

Notwithstanding, this would not happen to make this possible without the help of abundant individuals, so we would like to propagate our sincere thanks to all of abundant individuals. In reality, we are thankful and need our profound our liability to supervisor madam **"Nusrat Jahan"** lecturer, Department of CSE Daffodil International University, Dhaka. She has deep perception and lot of interest in the field of "*Web Application*" that influenced us to take this project. Her endless assiduity, scholarly guidance, constant and energetic supervision, construct critique, valuable advice, continual encouragement, studying many inferior drafts and correcting them whatsoever stage have made it feasible to accomplish this project.

We would also like to wish our deepest heartiest gratitude to **Dr. Syed Akhter Hossain,** Professor, and Head, Department of CSE for his lot of deepest help to fulfill our final year project and also thanks to other faculty members and the employees of CSE dept. of Daffodil International University.

At last, we need to disclose our gratefulness towards our parents and supervisor Nusrat Jahan for their greatest co-operation, encouragement and gave us brave to successfully complete our project.

ABSTRACT

In most cases, present lifestyles of mankind are legitimately digital and automated that people want to find anything faster and easier than before it was, where internet has a sweeping impact for human race. “Management System software” plays an important role to give them ease. Again ours is an agro-based country. Crops are one of those product categories which hold the major economy for Bangladesh. Though the country is being digitalized, the agro-based system is still in the ancient period. Every count is of manual calculation here. For this and fusing these ideas, we thought to build something in web based management form that has practical use to agricultural product related users which will help them in strenuous situation of calculation of their product. Our project name is “A Web Based Project on Complete Auto Rice Mill Maintenance System”, reading the name of our project we can conveniently speculate that this project is about managing a rice mill’s A to Z calculation. And this is the main purpose of our project. The main purpose behind our project is that, Rice is our staple food. Huge amount of rice is produced and exported to foreign world from Bangladesh that affects our base economy. An automated system of auto rice mill will shorten the time of management and calculation. Though we have ameliorated our agricultural science but still now it has less connection with than we expected especially in export and import issues. One of the major features of our web based application is implementation of Accountant activities like statements, ledgers, investment, profits and loss measurement to see the overall progress of a rice producing company. Our web based application is very user friendly. We used HTML, CSS, Bootstrap, Java Script, j query, angular JS etc. for front-end design and PHP server language, MySQL, angular JS for back-end design. At the finishing, we did a white and black box testing which was very much successful.

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CHAPTER 1

Introduction

1.1 Introduction

The name of the project has been given “Auto Rice Mill Management System”. The project name has represented a unique purpose as there is hardly any agro-based automated system can be found focusing on crops. Whole work is being done on focusing an auto rice mill. For working purpose we visited on sight a rice mill. To say it more clearly it can be said that we are going to make an auto rice mill management system with a dynamic view. Some terminologies must be more clarified before writing a single word more. Let the discussion be started from very basic level.

Auto rice mill management system is a web based application (in short web-app) which is used to manage the full rice mill system activity to do some ease in our daily life.

As ours is an agro based country one of the major part of economy of the country is export of produced crops. As this country runs an average type of development still now, the farming community leads an ancient method. Though many rice mill companies have been established after the liberation war but in case of production calculation and vice versa they use normal ink and paper which may cause risk issues. So, we need automated management system to speed up the working and calculation procedure of whole auto rice mill.

The whole system will be developed by using mainly HTML, CSS, Bootstrap, Java Script, j query, angular JS, PHP server language and MySQL.

1.2 Motivation

Now the burning question is “What did motivate us to develop such kind of software?”
Certainly before making software, a software engineer or a developer or the total team sometimes called “the entire stockholder” goes through the following questions.

1. What is the necessity of such software?

2. What is the bunch of lacking found?
3. What can our software do in this purpose?
4. Are we that much motivated and really felt that new software can remove the selected odds?

The four questions are mainly focused on the Motivational issue of making new software. We questioned ourselves by them too and found some very strong reasons that raised the inner technical skills (roughly says inner beast) of us and inspired us to build such a system.

These are some major points of getting motivated. Wish we could solve all the issues from which we got motivated.

1. The common time killing process: Suppose, a shopkeeper is recording all the daily records in paper by handwriting. It is of course a very lengthy, confused and brain-storming issue for that keeper. Every day he has to go through a number of mathematical and logical issues through putting the pressure on his brain. It is not apart from the number of activities a hostel in charge does. Using paper and handwriting System is very time killing process where software can perform the task easily.

2. Lack of digitalization: In our auto rice mill area, software using for management is not that much popular. We want to give them a view of digitalization and make it familiar to them. Already in many superstores or markets are familiar with the management software though they are too much limited and static but not dynamic.

3. Questionable security: Recording data in papers are insecure. Yes, that's true. Suppose a record of another person has been added to my record though I am not eligible for the record. As it is in handwriting method with so many record books, the auto rice mill authority needs to find the specific books and the specific record of that particular person which is sometimes a very hard task for them and may not be found easily. In this regard if it was software the record would be in more secure place than handwriting books. Again every employee would have a personal profile to distinguish between the records.

4. Management complexity: It's not an easy task to maintain a mill easily. This point does not need to be explained much as this issue is cleared from above three points.

5. Lack of easiness to retrieve anything: Retrieving data with software is easier than manual search. Just log in or visit profile and with the records. One does not need to go through page by page of paper books to retrieve data.

6. Agricultural economy: As Bangladesh is an agricultural country with one of the highest percentage of fertile soil. We wanted to emphasis on agricultural economy.

7. Save greenery, save earth: Suppose, we now use paper to keep record. Just think how many trees are being cut to make them. Daily a huge amount of trees are being processed to make papers which are used for written records to be preserved. If software is used then huge number of trees can be saved and we can let our mother nature to beautify herself. Here is discrete information that, at least twenty five percent of total land of a country must be covered with green forest to keep it ecologically balanced.

1.3 Objectives

Our main objective is to remove all the issues and problems from where we got motivated. Besides that we have some other objectives too.

More specifically these are called technical objectives which are as follow:

1. To make a complete management system for auto rice mill.
2. To give a digital and automated look to auto rice mill area.
3. To add many auto rice mill related features to the system.
4. To fuse the agricultural and ICT field together.
5. To enhance and speed up agricultural economy.
6. To make the company processes easier.
7. To ensure security of the system.
8. To show a projected profit and loss of an auto rice mill.

These all are the main objectives we wish to fulfill.

1.4 Expected Outcome

At the end of the project these will be our expected outcome.

1. Virtual Management will be familiar in auto rice mill type arena.
2. Ancient system of pen and paper will be vanquished so that it will reduce threat on environment.
3. Data accuracy will be increased. Overwritten data will be fresh as there is no paper and pen.
4. Time efficiency will be increased. It is easier to type than write.
5. Agro-based economy will be speed up by the system.

These are what we expect at the end of the project.

1.5 Report Layout

This section will include total report summary point by point according to every chapter.

Chapter 1: Introduction

In this chapter the introduction, motivation, objectives and expected outcome of the project have been discussed which was followed by the report layout later.

Chapter 2: Background

We discussed about the background circumstances of our project. We also talked about the related works, comparison to other candidate systems, the scope of the problem and challenges of the project.

Chapter 3: Requirement Specification

This chapter is all about the requirements like business process modeling, the requirement collection and analysis, the use case model of the project and their description, the logical data model and the design requirements.

Chapter 4: Design Specification

In this chapter we have all the designs of the project such as Front-end design, back-end design, interaction design and UI and the implementation requirements.

Chapter 5: Implementation and Testing

This chapter includes the implementation of database, front-end designs, interactions, test implementation and the test results of the project.

Chapter 6: Conclusion and Future Scope

We discussed about the conclusion and the scope for further developments which pretty much derive about the project.

CHAPTER 2

Background

2.1 Introduction

Before going to main activity there should be a chance to do background study. Study that is done before going to set up structure, managing plans and performing practical activity can be called the background study for the project but it must be related to the past activities. More formally we are going to skim through the history of our work with a very conscious mind in order to make ourselves clear and clarify what have our ancestors done and what we are going to do.

There is a saying, “The history teaches us nothing.” The sentence is fifty- fifty true. We should not be so much concerned about our history it’s true but we are going to learn from past. Background study is going to give us a chance to study of the history and activities done so far about our project to learn about our doings. We cannot throw the experience of past fellows because there is also a saying, “Old is gold.”

2.2 Related Works

Peter Ferdinand Drucker is considered as the first person to bring the concept of modern management theory. He was an American who was also an Austrian by birth [1]. His theory was of business purpose which made a revolutionary change in business and made management as a concerned field of study. He introduced 3 major methods of management such as MBO, Smart Method and Knowledge Worker which are still very successful for commercial sectors [2].

Frederick Winslow Taylor was the first person who is called the father of scientific management system which combines the engineering and industrial issues. The thoughts of this mechanical engineer are also known as Taylorism [3].

The main purpose of Taylorism was to examine the flow of continuous work in order to positive efficiency of economy, especially the productivity of labor. It was the first attempt known to apply science on engineering management [4].

Some facts will come now when we will deal with the word ‘system’ in the field of computer science. The word ‘system’ came from the Latin word ‘systema’ [5]. When a set of entity integrates altogether to reach a specific goal then the entire configuration can be called a system. Management system or information management system is such a kind of system where data and information are managed.

It was database which gave the concept of management system in computational issues. Dr. Edgar F. Codd was the inventor of database system who gave twelve rules which eventually gave the concept of management system [6].

In today’s world, computer-based management system has been developed in many fields long way. Here which one was the first management type software is still now inconclusive.

We hardly found about any web based software like ours planned. Only two or three were found which has limitation and again they just implemented a part of our system [7], [8].

2.3 Comparative Studies

In this section we will discuss about how our system is better than the ancient ones and the present ones. We should bear in mind that mere software cannot bring us profit until it is furnished with extraordinary features. Our agricultural arena is not that much familiar with automatic production management and maintenance software system. In the very beginning it keeping all records and computation was handmade manual process. With computerized technology’s evolution, we found tally software to keep records. For the first time we found this kind of software to keep pace with modern recording system.

Tally software had a great impact in case of business calculation but this kind of software had limitations. It must be understood that business is a combined field of marketing, economics and most importantly accounting. Tally software was strong enough to deal only with accounting issues. It was mainly software of commerce background. First of all when it was the eve of production mill evolution and auto rice

mills were about to establish, they used this kind of tally software at the very beginning. Another problem was this kind of tally software was non web based offline system. After a specific time the records were to be removed to do a new calculation [9].

Nowadays, we can see so many auto rice mill companies. We also find so many management and maintenance systems in every aspects of our life but don't know why we do not find complete auto rice mill management software which is also online, dynamic and web based.

Bank terms and policy which will be implemented and reminder about paying them will also be added there so corresponding individuals do not need to remind again about bank payment.

In real life till now we failed to find such software like this.

2.4 Scope of the Problem

We are focusing to develop a dynamic web application for the auto rice mill authorities and owners by which they can get ease for all auto rice mill related problem in one single dynamic platform. There are hardly any existing or related solutions are already available, but there are much more limitation and problems of that existing application as mentioned in comparative studies. That's why we were planning to make a dynamic web application that the user can get help with all auto rice mill related problems in one place. Here we can find so many scope of the problem we are going to develop. We expect our system to be the finest and the easiest one to deal with.

2.5 Challenges

When we want to do something then definitely we have to face some challenges and obstacles. Thus our project has some challenges too. Some major challenges are given below:

1. New Sector: We face some problem while development as we are very new in this arena. Although building a web based software is easy but the sector auto rice mill is new. We never tried to implement software for this sector.

2. Keeping pace with daily activities: We are students, so our main challenge is maintaining time besides our other necessary works at our daily basis. If we were unable to complete the project on time it would be a great regret for us. So we had to divide our time to complete each of the tasks to complete the whole project.

3. Study of Accounting: For implementation of banking calculation part we had to go through a huge study of Accounting. As we are students of science background and as we are of course not from commerce background, it was the hardest part we ever gone through.

4. Testing Issues: Finding a features' reaction at a critical input is not easy. In some case it is the hardest part to find the critical input.

5. Simplest UI: We tried to make sure to the user comfortable with application's UI. And we tried hard to make sure to provide the best experience to our users.

CHAPTER 3

Requirement Specification

3.1 Business Process Modeling

This may seems the heading is related to Business Administrative activities but the truth is the term represents a model that is very important to represent how the users will interact with the system after making software. This model will also represent how the server will be connected to the user also. It is very essential to understand the sequential processes of software activity. Some terminologies must be clarified before going to the visual BPM diagram [10].

Actors: All the users and hardware or sub software systems who are using and being used in a system can be called actors. Example: I am using Facebook where I am an actor. Facebook server verifies my passwords each time I log in. Here Facebook server is also an actor.

Swim Lane: A box is drawn which is named after each actor. In every swim lane, process and features are written.

Arrow: Arrows are the representation of connectivity. In same swim lane the arrow will be solid and in different swim lane arrow will be dotted in different activity or features. To be noted that, each activity will be in rectangular box. When a new activity will start independently it will start with O and in case of finishing it will end with o into O symbol.

The list of actors of our Auto Rice Mill is given below:

Administrator: Administrator is the highest rank here who can do almost everything. He is the supreme user here.

HR Admin: HR Admin is the second highest user here whose activities are almost same as Administrator except some features. As they both are almost same, we will see the BPM of HR Admin only.

Seller: He will manage the selling section.

Client: Client can do any kind of client related activity.

Employee: This section is for employee management.

Server: Server is the non-human actor used for verifying activities.

Business Process Model of HR Admin

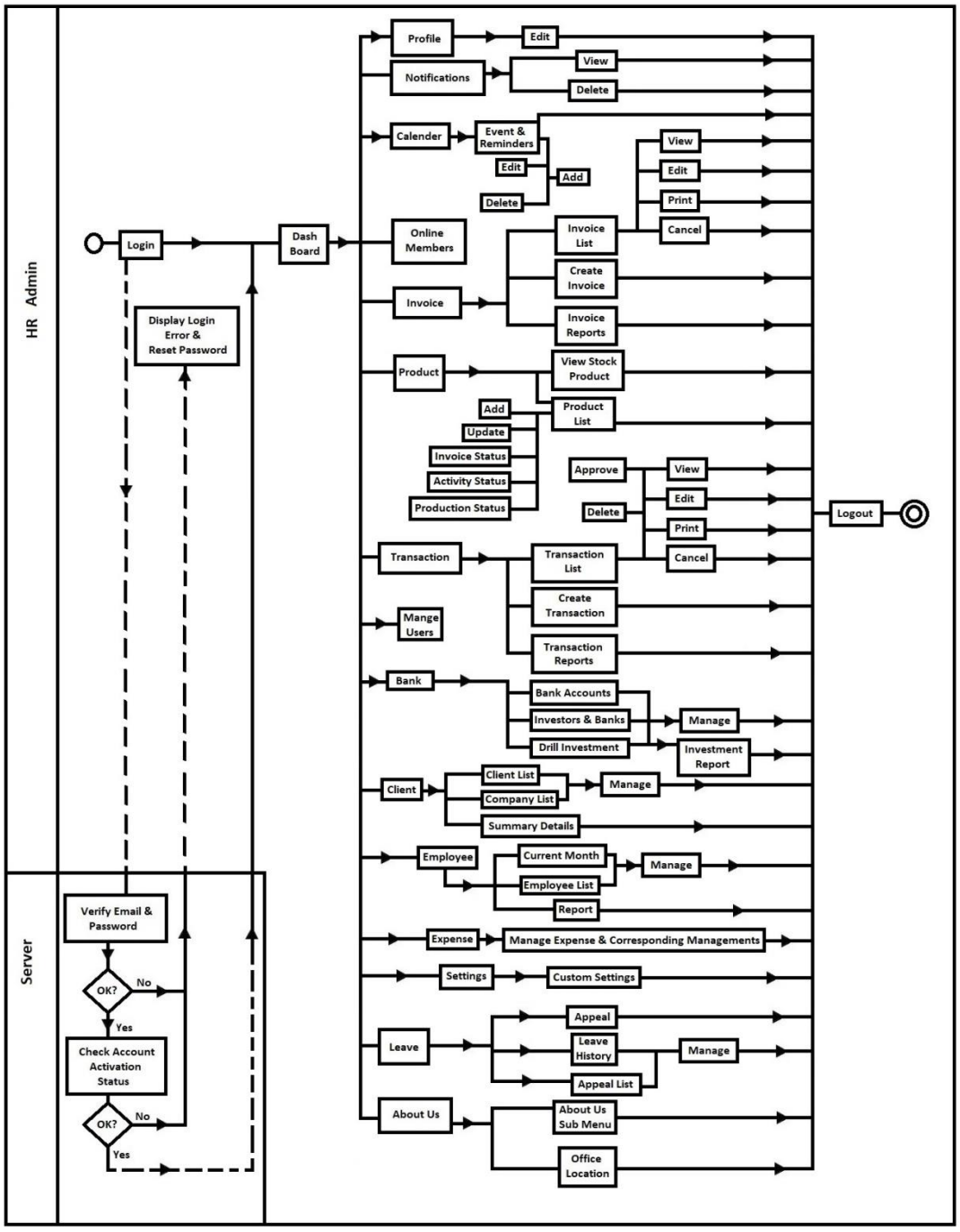


Figure 3.1.1: Business Process Model of HR Admin

Business Process Model of Seller

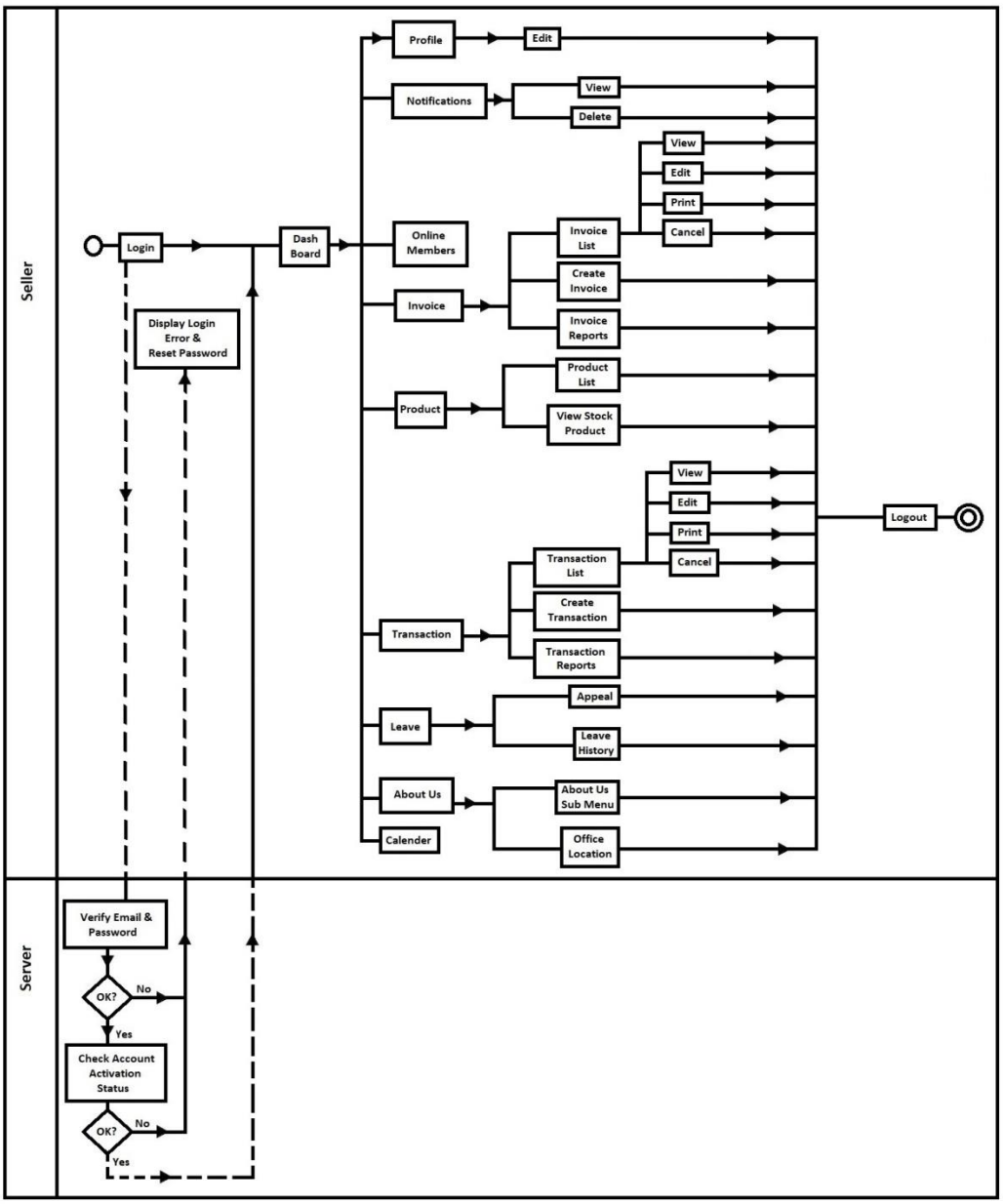


Figure 3.1.2: Business Process Model of Seller

Business Process Model of Client

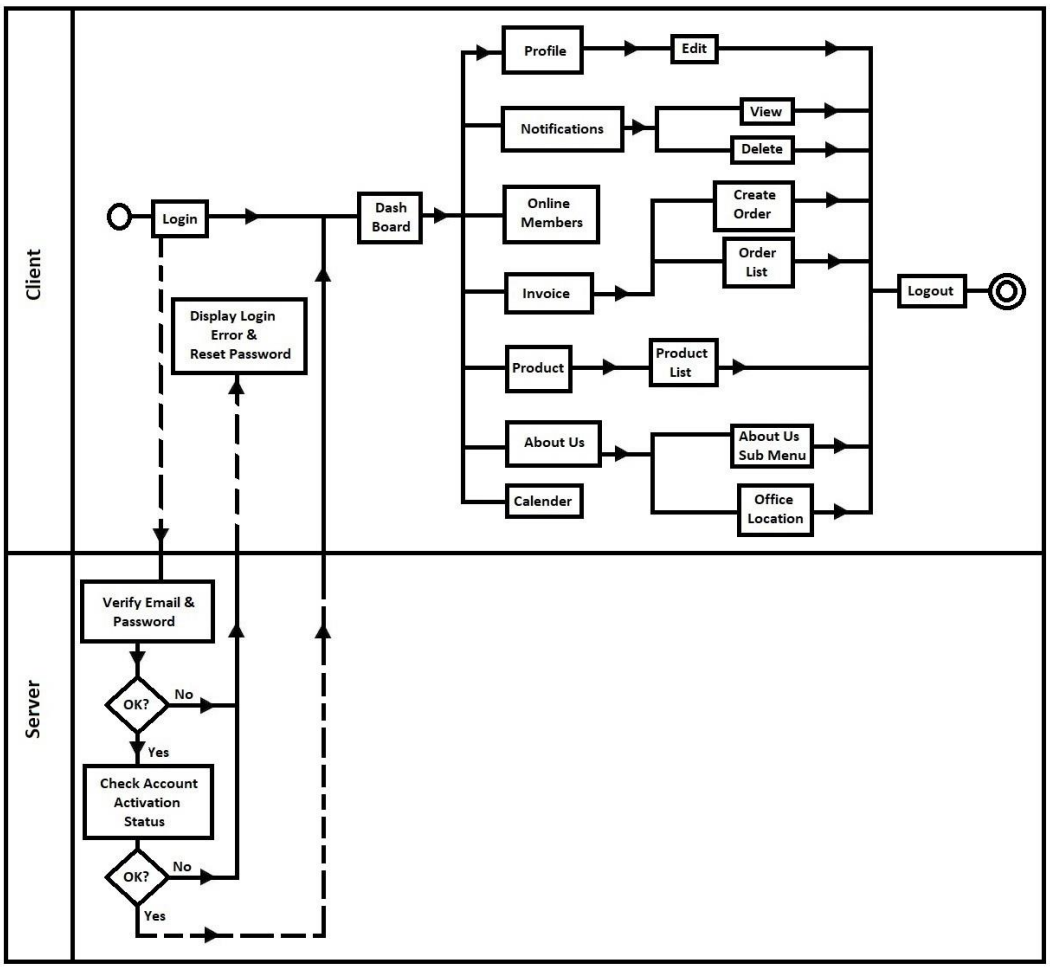


Figure 3.1.3: Business Process Model of Client

Business Process Model Employee

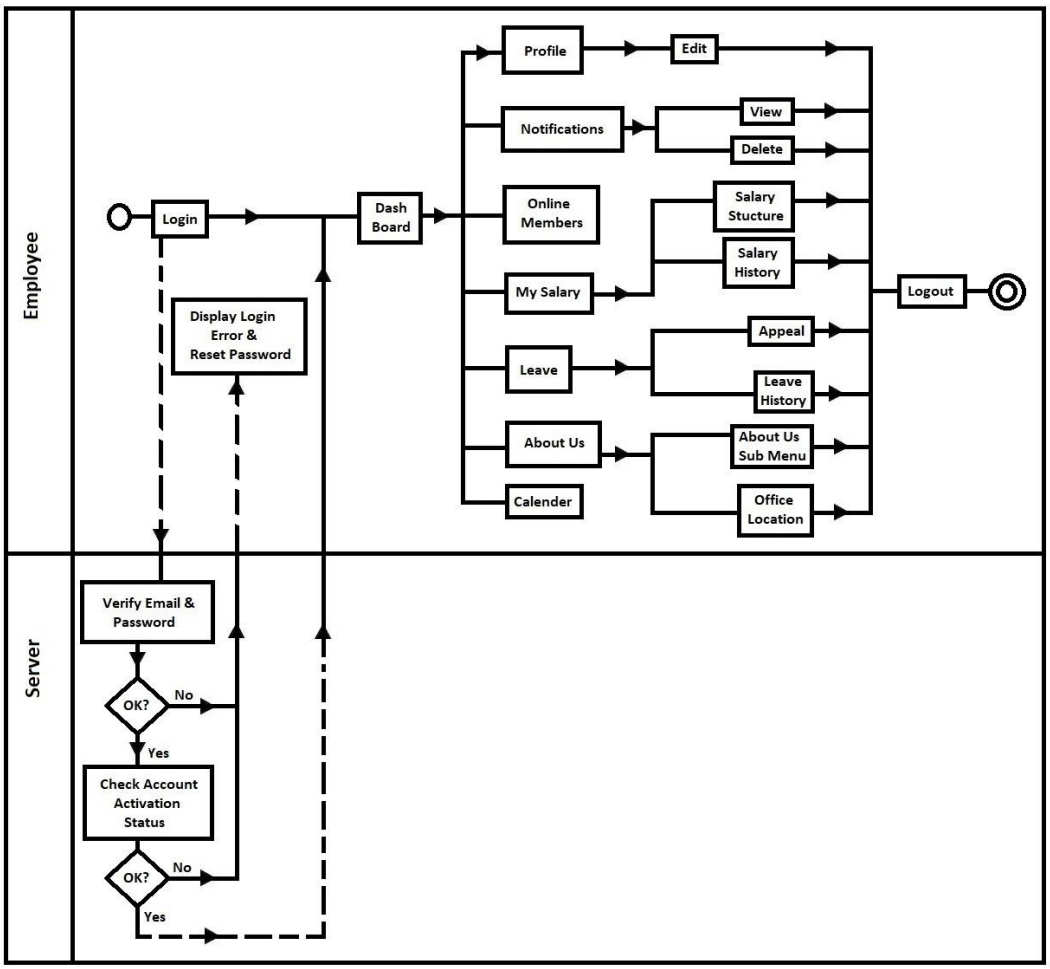


Figure 3.1.4: Business Process Model of Employee

These are the all Business Process Models of every human actor who are interacting the system. To get more details, please have a look in Use Case modeling and Description at 3.3.

3.2 Requirement Collection and Analysis

Collecting requirements is another important part before beginning the work. It mainly deals with those requirements what actually the users want. Then an analyst analyzes those requirements and optimizes them into a fruitful manner. Technically these are known as follows:

Non-Functional Requirements: These kind of requirements helps a user much to interact with the system. No functional requirements are designed based on functional requirements mainly. It mainly deals with front-end design which has been showed in Front-end design at 4.1 and Implementation of Front-end Design at 5.2.

Functional Requirements: These requirements are written actually based on the features a user wants. We not going to write the features here individually as our Business Process Modeling at 3.1 already represent the features. Please have a look there. Again they will be discussed in Use Case Modeling at 3.3.

3.3 Use Case Modeling and Description

Use Case Modeling is important for representing an idea of software into the simplest form. It's a kind of high level diagram which makes even a complex idea into a fair basic one. This diagram mainly shows a simple and basic flow of work that shows how a use will interact with an application. Some terminologies must be clarified before going to the visual Use Case Modeling diagram.

System: A system is whatever is being developed. A system is represented by a rectangle where name of the system is written on the top.

Actors: An actor is someone or something that uses the system to achieve a goal.

Use Cases: Use cases are written in oval shapes within the system and it represents an action that accomplishes some sort of task within the system. These are placed within the rectangle [11].

Relationships: Relationships are of four types. The relations come from the actors hand are association. An ‘include’ and ‘extend’ relationship are indirect relations. Difference is ‘include’ happens every time but ‘extend’ happens not every time. They are dotted arrows and reversed dotted arrows respectively [12].

We have already known much about our actors in Business Process Modeling at 3.1. So, let us show the Use Case Modeling diagram of each actor. Description will be given later in unison after showing all the use cases. Point to be noted that, as the activities of HR Admin and Administrator all most same we are skipping the Use Case of Administrator.

Use Case Model of HR Admin

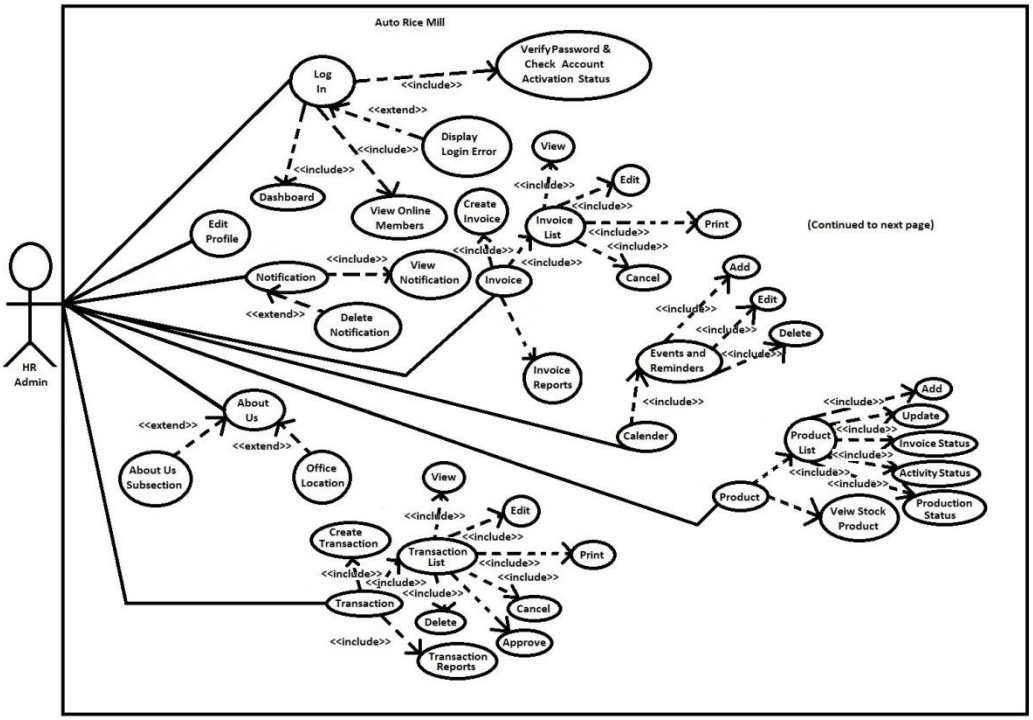


Figure 3.3.1: Use Case Model of HR Admin (Part 1)

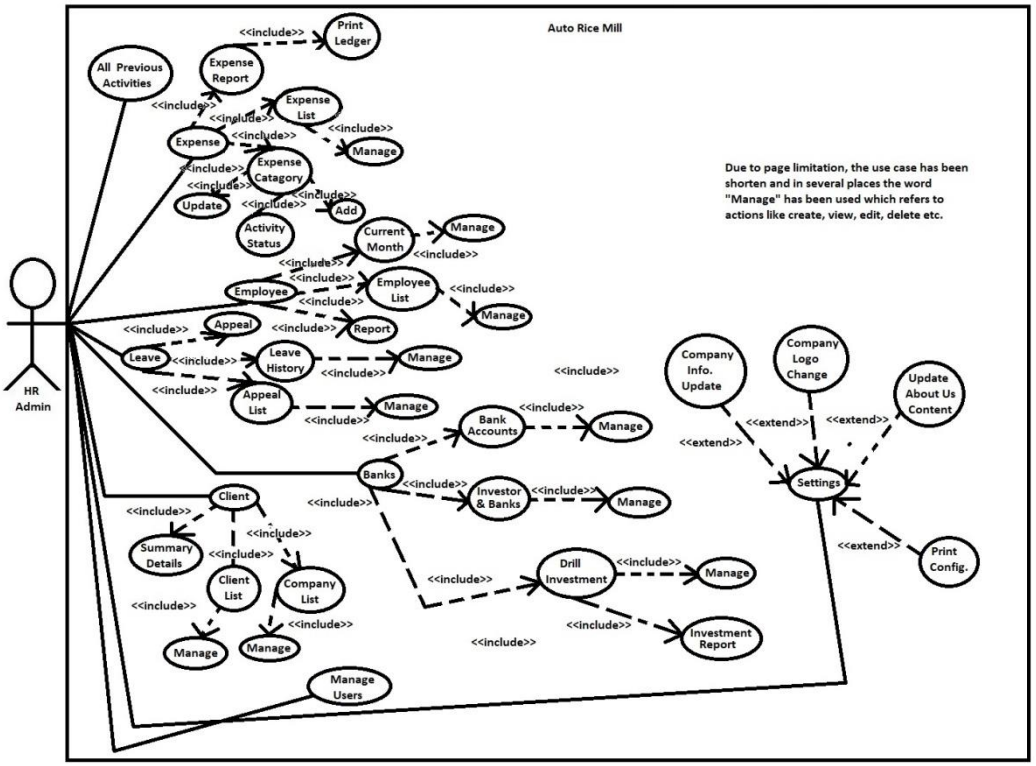


Figure 3.3.2: Use Case Model of HR Admin (Part 2)

Use Case Model of Seller

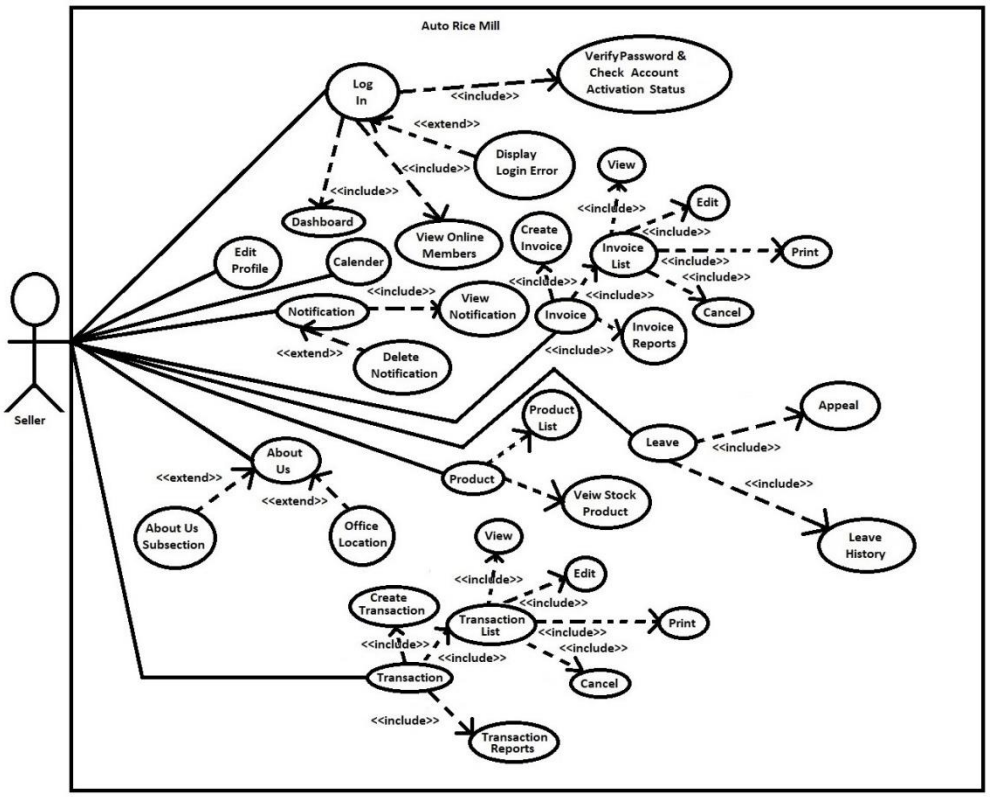


Figure 3.3.3: Use Case Model of Seller

Use Case Model of Employee

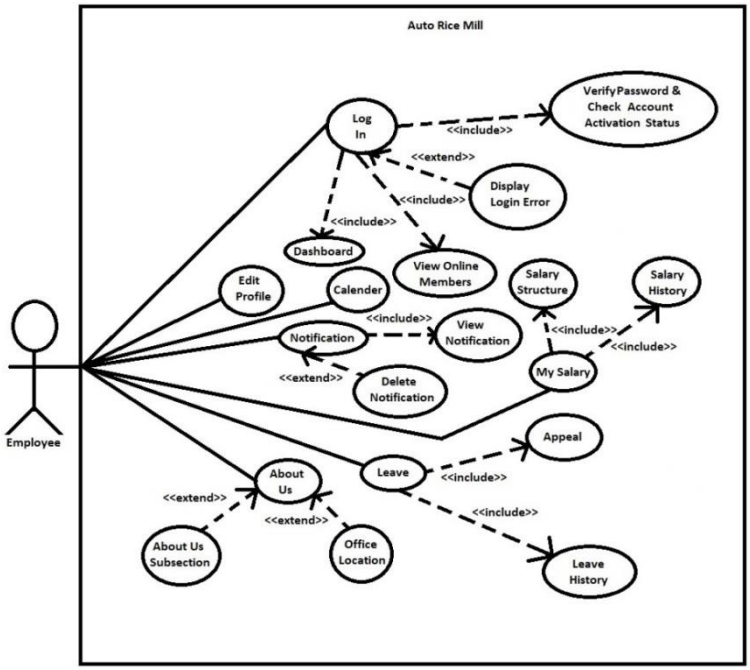


Figure 3.3.4: Use Case Model of Employee

Use Case Model of Client

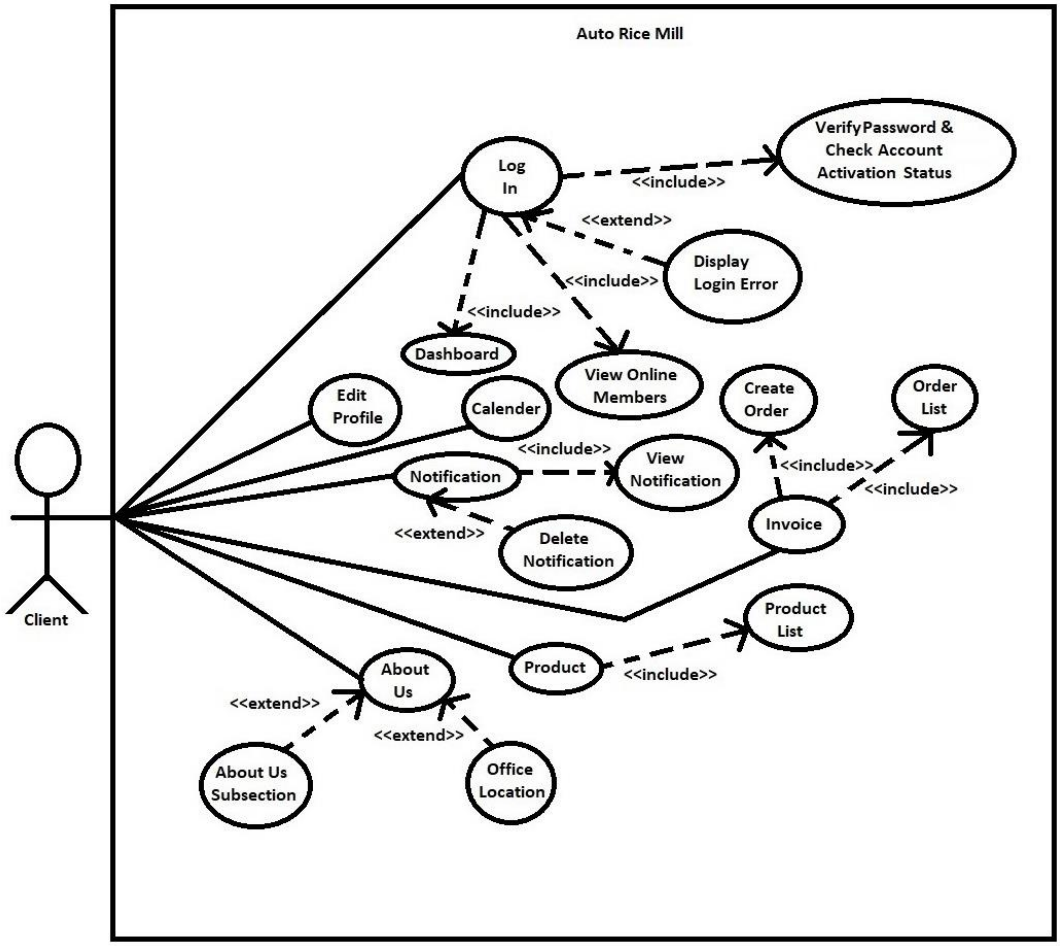


Figure 3.3.5: Use Case Model of Client

Use Case Modeling Combined Description

Every user has some common Use Cases. So we discussed them all together first to reduce the same cases redundancy.

Login (common): Every user has a login page. Where there password is verified after login (include case) and display login error if a user make a fault on password or email (extend case). A dashboard will be showed (include case) where online member are displayed also (include case).

Edit Profile and Calendar (common): All users can edit his profile and also view calendar from side menu. Only Administration and HR Admin can manage events (include case).

About Us (common): Every user can go to 'About Us' section to view a sub-section of 'About Us' and office location (extend case).

Manage Users (Administration and HR Admin): Both admins can manage any users. Only Administrator can restore the deleted users (include case).

Invoice (Both Admins, seller and Client): Both admins, seller and Client can go to invoice. Client can only create order (include) and go to order list (include). Seller can manage Invoice (on approval only by Administration) (include case). HR Admin can also manage Invoice section but can't take supreme decision.

Product (Both Admins, Client and Seller): Client can view product list from Product (include case). Seller can go to product list and stock product (include case) from product. Both admins can Manage product list (include case). Only Administration can change product activity status (include case).

My Salary (Employee): Only employees can view salary structure (include case) and salary history (include case) from my salary but only admins can define the salary.

Transaction (Seller and Both Admins): Both Admins and Seller have control over transaction management. Only Admins can approve these (include case).

Leave (Both Admins, Seller and Employee): Both Admins, Seller and Employee can go to leave from where they can appeal (include case) for leave and go to leave history (include case). Both Admins have the ability approve leave.

Expense (Both Admins): Both Admins have control over expense management (include case). Only Administration has the ability to change the activity status (include case). See figure for details.

Employee (Both Admins): Both Admins have control over employee management (include case). See figure for more details.

Client and Banks (Both Admins): Client and their companies are interrelated. Both admin has the ability to manage and control over client, company and bank related

activities related to the rice mill. All activities are in including case. See figure for more details.

Settings (Both Admins): Both Admins can update company information (include case), change company logo (include case), update about us content (include case), configure print (include case) in settings section.

That's all about Use Case Model in details. In the next section we will discuss about the logical data model which is mainly the ER Diagram in case of development type project. Due to space complexity, we are going to a new page to start the new section 3.4 named Logical Data Model.

3.4 Logical Data Model

The logical data model represents the data processing modules. It is used for data analysis and processing easily. The Entity-Relationship Diagram/Model represents the logical data model. As our system is a big one the logical data model has been divided into many parts which has been showed below sequentially [13].

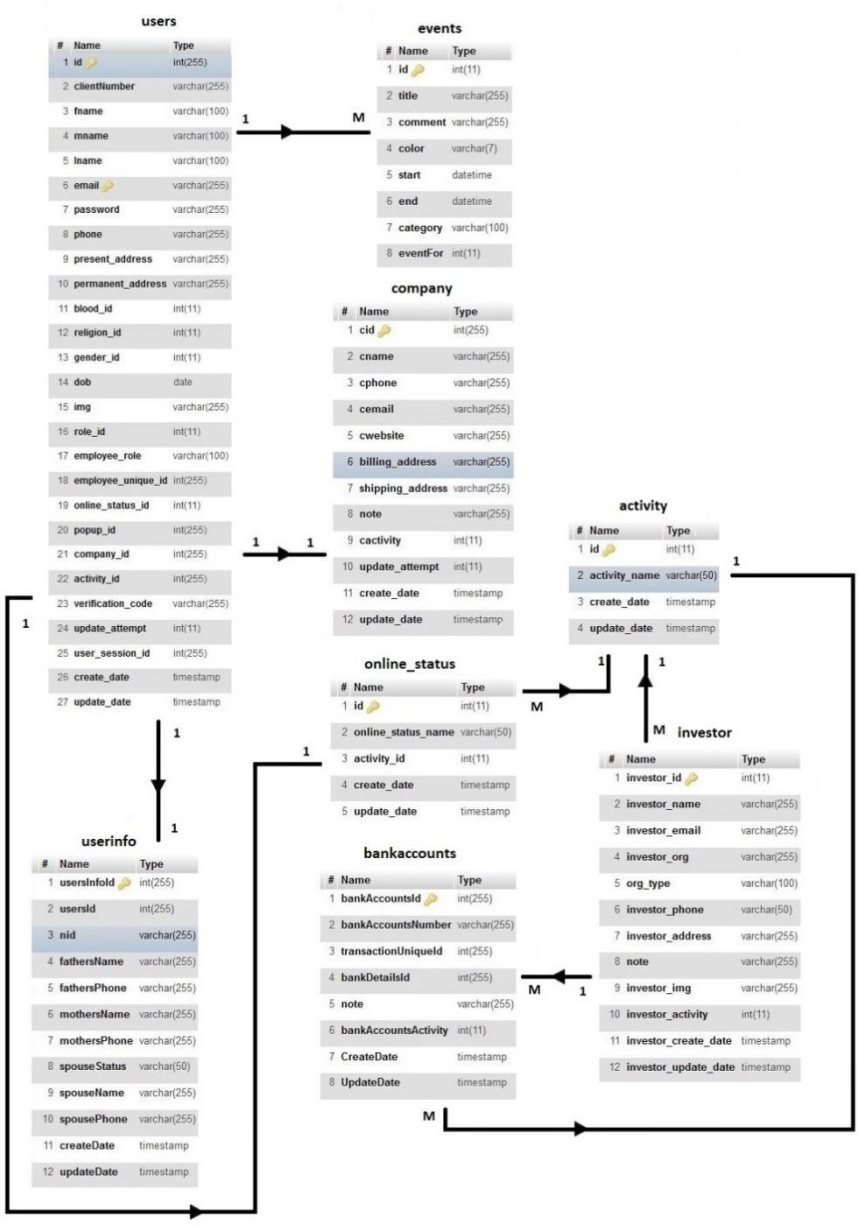


Figure 3.4.1: Logical Data Model (Part 1)

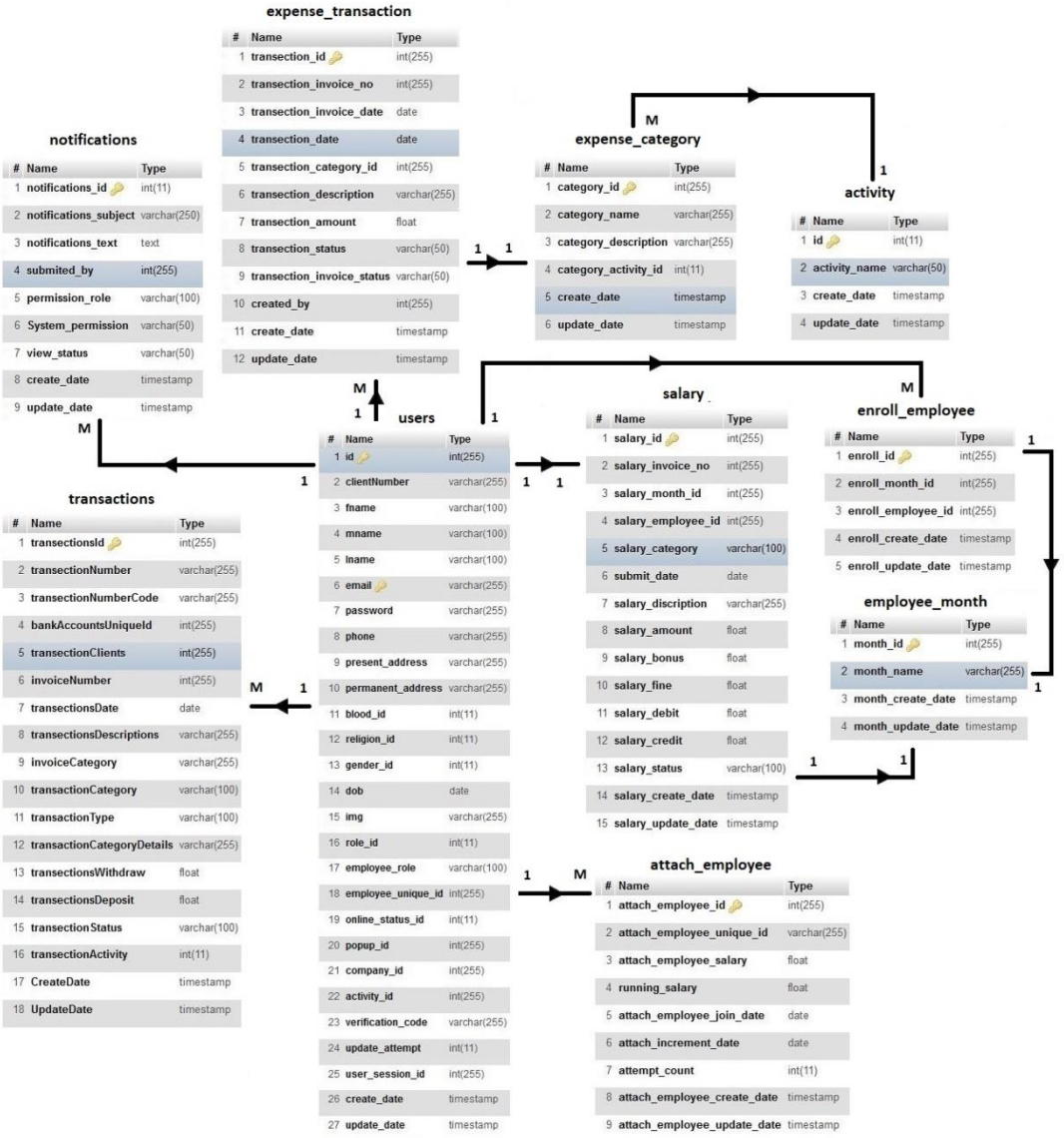


Figure 3.4.2: Logical Data Model (Part 2)

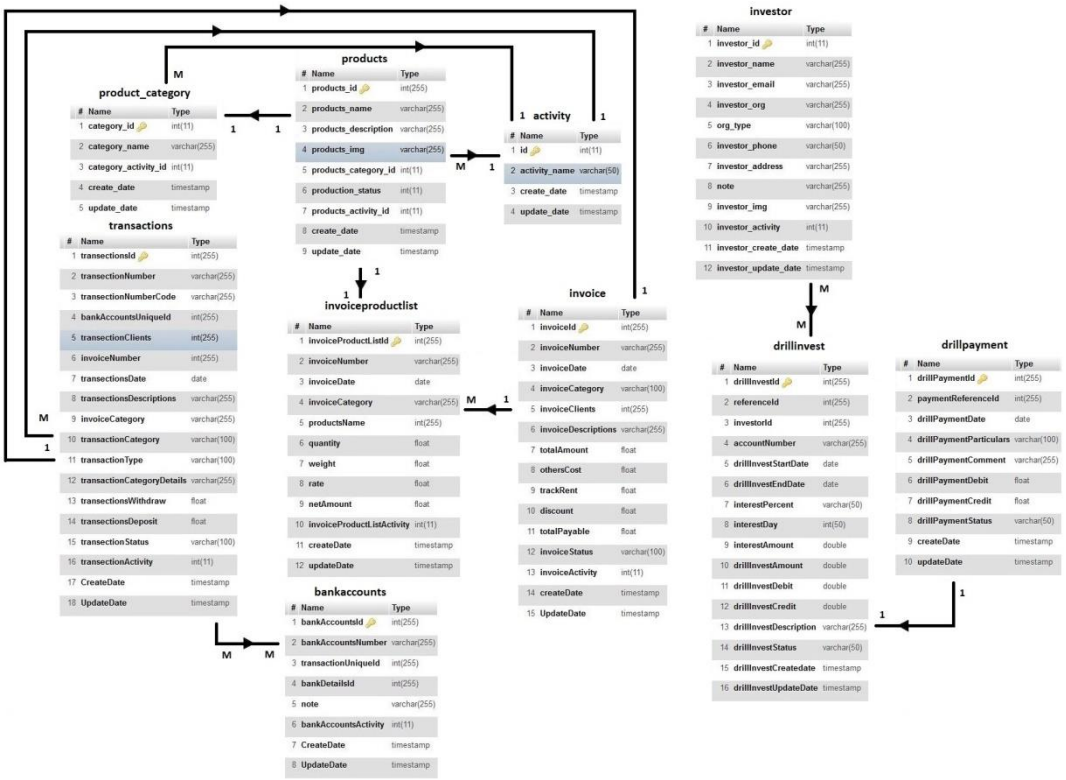


Figure 3.4.3: Logical Data Model (Part 3)

Logical data model mainly deals with the database tables and their relations. More details will be seen in Back-end Design at 4.2 and in Implementation of Database at 5.1.

3.5 Design Requirements

Software Requirements

Operating System: Windows 7, 8.1, 10 64 bit (Safe Case).
System Visualization Diagram Design: Microsoft Paint, Lucidchart.
Language: HTML5, CSS3, Bootstarp, JavaScript, JQuery, AngularJS, PHP.
Database Design and Server: MySQL, XAMPP, WAMP.
Tools: PHPStorm education version, Sublime Text 3, Notepad++.
Internet Browsers: Mozilla Firefox, Google Chrome.

Hardware Requirements

Processor: Intel Core i5 6th generation processor at 2.30 GHz.

RAM: 4 Gigabytes or more.

Space of Server: Minimum 1GB.

Functional and non-functional requirements have been already described in Requirement Collection and Analysis at 3.2. Those types of requirements are mainly considered from the view of users. Besides that, the engineers who are developing the system also require Software and Hardware requirements to accomplish their tasks. The smoothing requirements to develop our project have been mentioned above.

CHAPTER 4

Design Specification

4.1 Front-end Design

Front-end Design is the main attraction of an application. It also should be user-friendly. Our application we designed a beautiful front-end Design. We also try to design user-friendly. As our system is huge, we are representing the major front-end pages name shown in Table 4.1.1.

Table 4.1.1: Activity List of the System

1. Dashboard Section Page	2. Notification Panel Page
3. Invoice Section Pages	4. Transaction Section Pages
5. Managing Products Section Pages	6. Expense Section Pages
7. Enroll Employee Page	8. Salary Withdraw Page
9. Employee Report Page	10. Client Summary Page
11. Client List Page	12. Company List Page
13. Enroll Client Page	14. Bank Accounts Page
15. Investors & Banks Page	16. Edit Profile Section Pages
17. Drill Investment Page	18. New Investment Page
19. Withdraw Investment Page	20. Investment Reports Pages
21. Manage Users Pages	22. View Users Pages
23. Change Photo Section Pages	24. Update User's Information Pages
25. Create Users	26. Calendar Page
27. Event Management Page	28.Company Information Page
29. Company Logo Page	30. About Us Section Page
31. Footer Content Page	32. Location Configurations Page
33. Email Configurations Page	34. Edit Role Name Page
35. Employee Salary Structure Page	36. Salary History
37. Leave Appeal Page	38. Leave Appeal List
39. Leave History	40. Print Configuration

Besides above mentioned pages, our system has many minor pages we haven't mention due to page limitation of report.

4.2 Back-end Design

Besides representing logical activities, Back-end design also deals with database model. In this section, we will see the database tables along with their connection to other tables and their primary keys in Table 4.2.1.

Table 4.2.1: List of Database Tables

Table Name	Primary Key	Other connectivity
users	id, email	userinfo, events, company, online_status
userinfo	useInfoId	users
events	id	users
company	cid	users
online_status	id	users, activity
bankaccounts	banckAccountsId	investor, activity
activity	id	bankaccounts, online_status, investor
investor	investor_id	bankaccounts, activity, drillinvest
notifications	notifications_id	users
expense_transaction	transaction_id	users, expense_category
expense_category	Category_id	expense_transaction, activity
transactions	transactionsId	users, invoice, activity
salary	salary_id	users
attach_employee	attach_empoyee_id	users
enroll_employee	enroll_id	users
employee_month	month_id	salary, enroll_employee
product_category	category_id	products, activity

products	products_id	product_category, invoiceproductlist, activity
invoiceproductlist	invoiceProductListId	products, invoice
invoice	invoiceId	transactions, invoiceproductlist
drillinvest	drillInvestId	Investor, drillpayment
drillpayment	drillPaymentId	drillinvest

So, this is the list of database tables mentioned above.

4.3 Interaction Deign and UX

User Experience (UX) is critical to the success or failure of a product in the market. Interaction Design is most important part of User Experience (UX) design. Application fruition depends on User satisfaction. How an application is more attractive to the user depends on interaction and Design part.

Interaction design represents interaction between the user and the application. Interaction design considers the procedures such that the user issue space, processing the issues and discovering the outcomes. It also performs activities by the regarding outcomes about and take care of the issue in the application.

Actually in any application user experience mainly focuses on the overall experiences between the users and the application. In our application, most of all the features can interact with the user. To be noted that, we were able to implement our project on an auto rice mill then we worked based on clients want and they were satisfied.

In our web application for UX we have tried to give our user some great experiences by adding some new features. For better performance and experience for the user, we tried to keep our web application simple and easier to use.

4.4 Implementation Requirements

This section will discuss about the requirements to implement what we have finished building. The requirement to run and implement our web application we need the following minimum requirements to be fulfilled.

Responsive Device: As our application is for desktop use. It will be more responsive in PC rather than mobile devices or tablets. We do not recommend anyone to and do not assure that it will run on mobile devices or tablets as smooth as PC.

Operating System: For smooth operation, we will get need a PC configured with at least windows 7 or later. Other configuration may vary based on OS.

Dual Core Processors: The question may rise that what is the purpose of Dual Core Processors where we got up to i9 processors. Well, we do not trust that a Core 2 Solo or Pentium processor can hold the pressure that much and Dual Core is the minimum processor to cope with it. Again, we are not that much rich to afford i9 processors again!

2 Gigabytes RAM: According to PC configuration of the present days, it is harder to find a PC with RAM configuration below 2 gigabytes. That does not mean that we cannot run our site with a PC having below 2 gigabytes of RAM. But it will be very irresponsive.

500 Gigabytes Hard disk: Same case here. It is harder to find a PC with Hard Disk configuration below 500 gigabytes. Yes, we can find Solid State Drive of 112 gigabytes!

Browser: As ours is a web application, A browser is needed to surf the website. We implemented in and recommend Google Chrome and Mozilla Firefox to run our web application smoothly.

Internet Connection (minimum 3G): No matter how strong the hardware equipment is. We cannot deny the necessity of internet connection that helps us to surf the websites. At least a 3G connection will be needed to run such a web application. We do not recommend 2G connection for this purpose.

Hosting Server: A server that hosts a web application is known as hosting server. We will use cPanel hosting server I this case to serve our website.

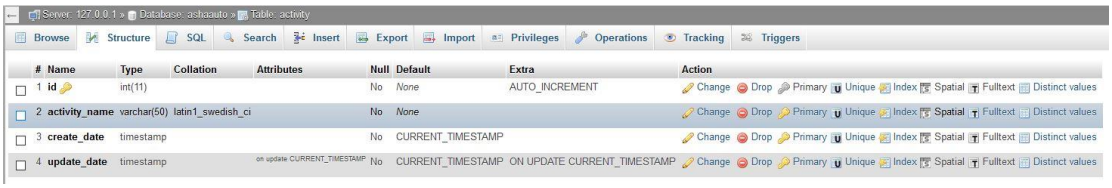
phpMyAdmin: phpMyAdmin is used as an administration tool for MySQL wich is free and open source.

CHAPTER 5

Implementation and Testing

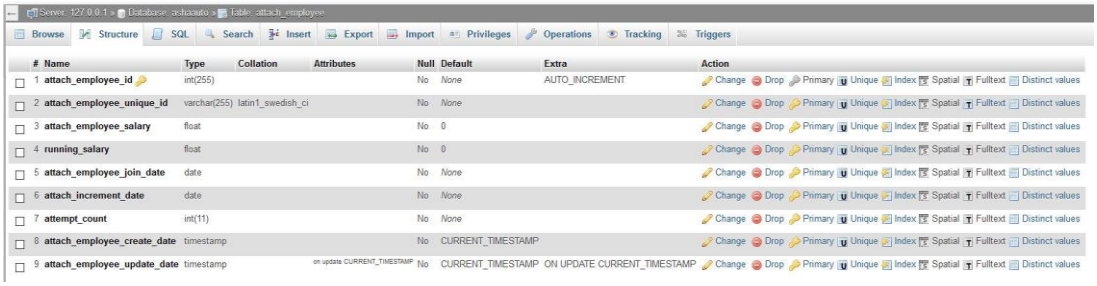
5.1 Implementation of Database

In this section we will see the implementation of database. This kind of implementation may be called as back end implementation. To build this application one DBMS (MySQL) were used. MySQL was used for storing data to the server. Some screenshots of the system database are shown below:



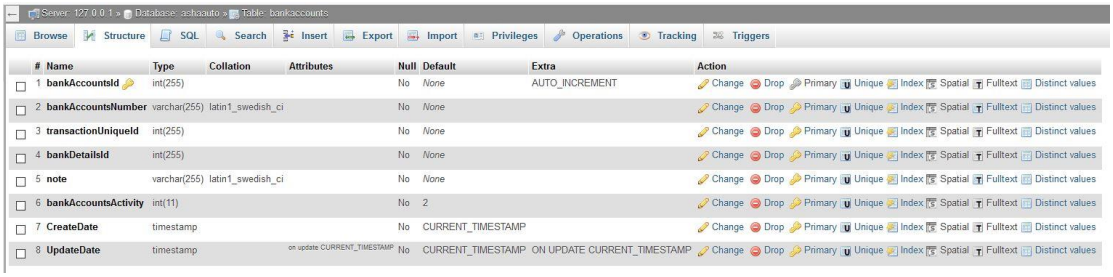
#	Name	Type	Collation	Attributes	Null	Default	Extra	Action
1	id	int(11)			No	None	AUTO_INCREMENT	Change Drop Primary Unique Index Spatial Fulltext Distinct values
2	activity_name	varchar(50)	latin1_swedish_ci		No	None		Change Drop Primary Unique Index Spatial Fulltext Distinct values
3	create_date	timestamp			No	CURRENT_TIMESTAMP		Change Drop Primary Unique Index Spatial Fulltext Distinct values
4	update_date	timestamp		on update CURRENT_TIMESTAMP	No	CURRENT_TIMESTAMP	ON UPDATE CURRENT_TIMESTAMP	Change Drop Primary Unique Index Spatial Fulltext Distinct values

Figure 5.1.1: Database Table “activity”



#	Name	Type	Collation	Attributes	Null	Default	Extra	Action
1	attach_employee_id	int(255)			No	None	AUTO_INCREMENT	Change Drop Primary Unique Index Spatial Fulltext Distinct values
2	attach_employee_unique_id	varchar(255)	latin1_swedish_ci		No	None		Change Drop Primary Unique Index Spatial Fulltext Distinct values
3	attach_employee_salary	float			No	0		Change Drop Primary Unique Index Spatial Fulltext Distinct values
4	running_salary	float			No	0		Change Drop Primary Unique Index Spatial Fulltext Distinct values
5	attach_employee_join_date	date			No	None		Change Drop Primary Unique Index Spatial Fulltext Distinct values
6	attach_increment_date	date			No	None		Change Drop Primary Unique Index Spatial Fulltext Distinct values
7	attempt_count	int(11)			No	None		Change Drop Primary Unique Index Spatial Fulltext Distinct values
8	attach_employee_create_date	timestamp			No	CURRENT_TIMESTAMP		Change Drop Primary Unique Index Spatial Fulltext Distinct values
9	attach_employee_update_date	timestamp		on update CURRENT_TIMESTAMP	No	CURRENT_TIMESTAMP	ON UPDATE CURRENT_TIMESTAMP	Change Drop Primary Unique Index Spatial Fulltext Distinct values

Figure 5.1.2: Database Table “attach_employee”



#	Name	Type	Collation	Attributes	Null	Default	Extra	Action
1	bankAccountsId	int(255)			No	None	AUTO_INCREMENT	Change Drop Primary Unique Index Spatial Fulltext Distinct values
2	bankAccountsNumber	varchar(255)	latin1_swedish_ci		No	None		Change Drop Primary Unique Index Spatial Fulltext Distinct values
3	transactionUniqueId	int(255)			No	None		Change Drop Primary Unique Index Spatial Fulltext Distinct values
4	bankDetailsId	int(255)			No	None		Change Drop Primary Unique Index Spatial Fulltext Distinct values
5	note	varchar(255)	latin1_swedish_ci		No	None		Change Drop Primary Unique Index Spatial Fulltext Distinct values
6	bankAccountsActivity	int(11)			No	2		Change Drop Primary Unique Index Spatial Fulltext Distinct values
7	CreateDate	timestamp			No	CURRENT_TIMESTAMP		Change Drop Primary Unique Index Spatial Fulltext Distinct values
8	UpdateDate	timestamp		on update CURRENT_TIMESTAMP	No	CURRENT_TIMESTAMP	ON UPDATE CURRENT_TIMESTAMP	Change Drop Primary Unique Index Spatial Fulltext Distinct values

Figure 5.1.3: Database Table “bankaccounts”

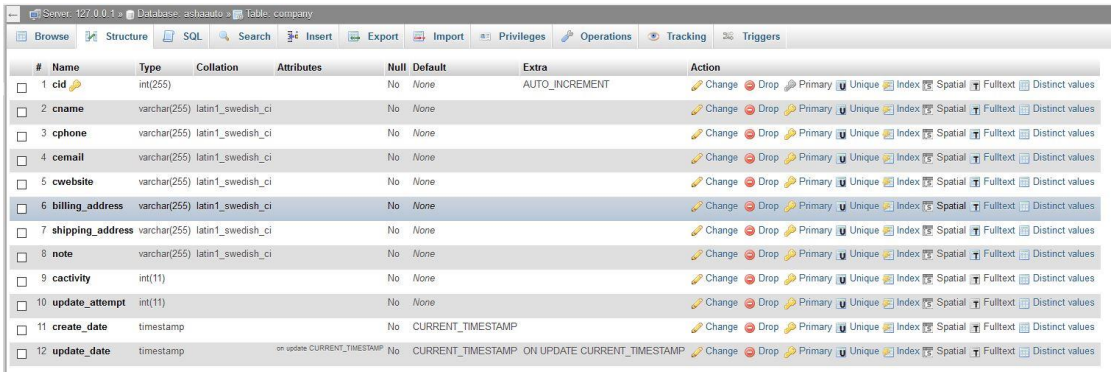


Figure 5.1.4: Database Table “company”

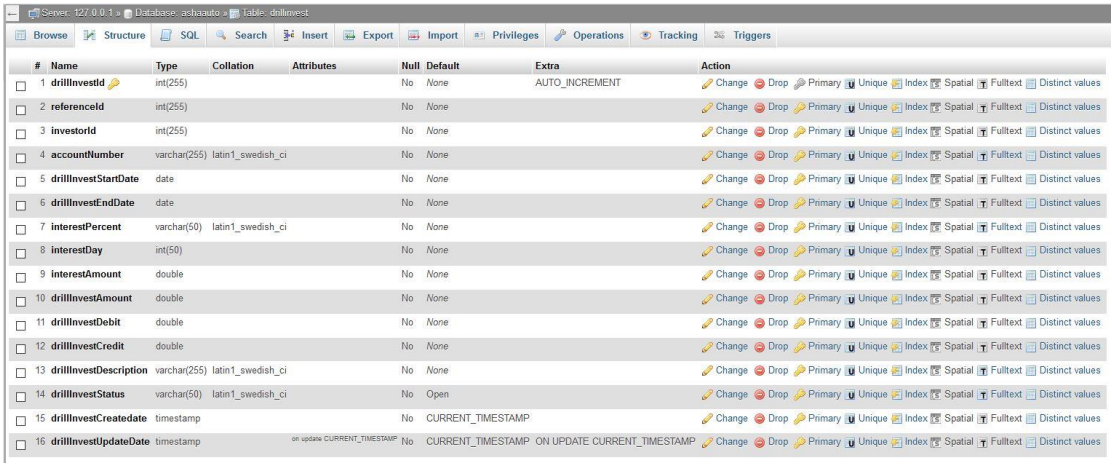


Figure 5.1.5: Database Table “drillinvest”

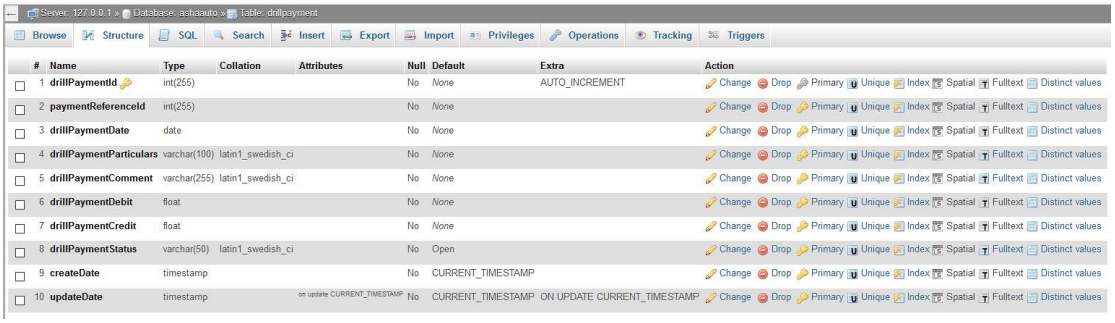


Figure 5.1.6: Database Table “drillpayment”

Figure 5.1.7: Database Table “employee_month”

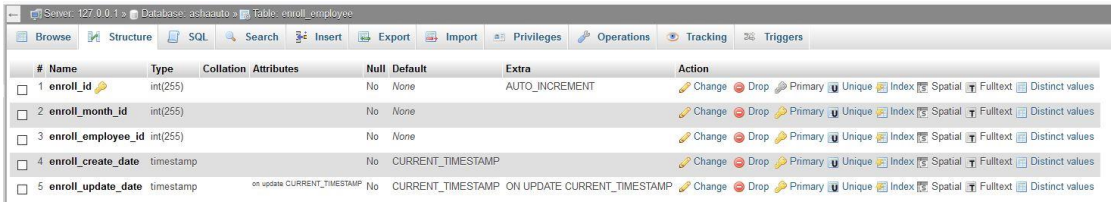


Figure 5.1.8: Database Table “enroll_employee”

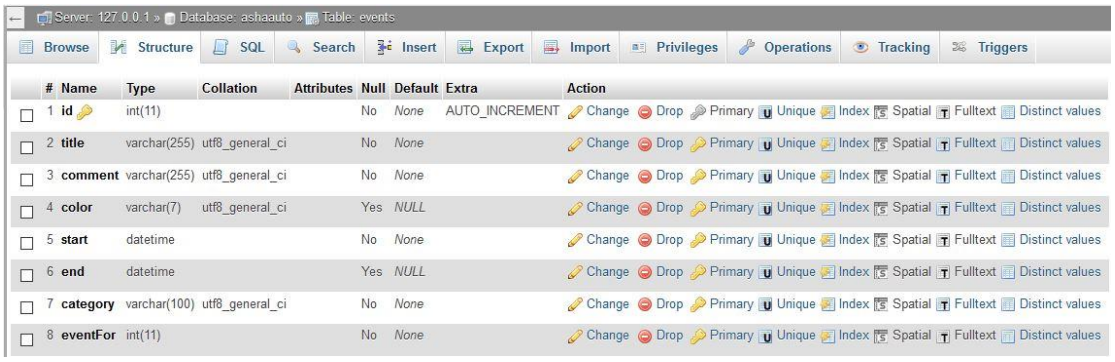


Figure 5.1.9: Database Table “events”

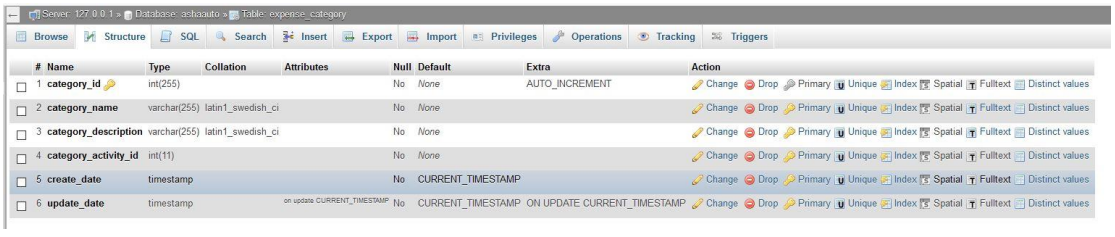


Figure 5.1.10: Database Table “expense_category”

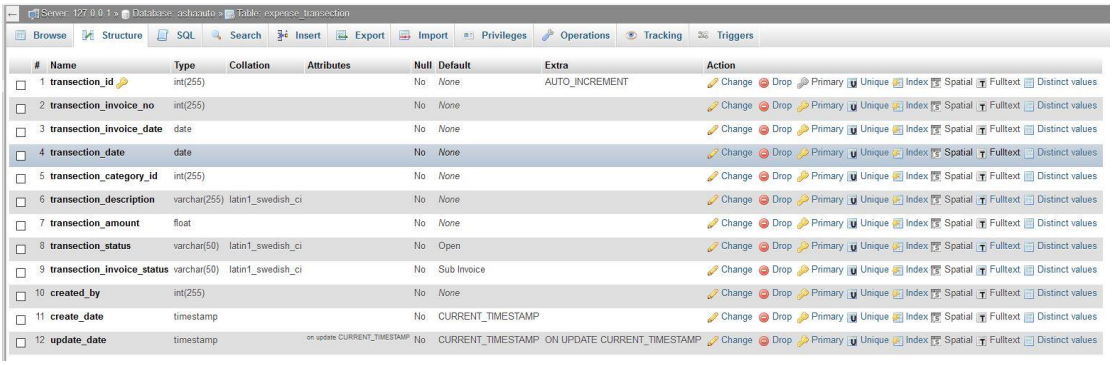


Figure 5.1.11: Database Table “expense_transaction”

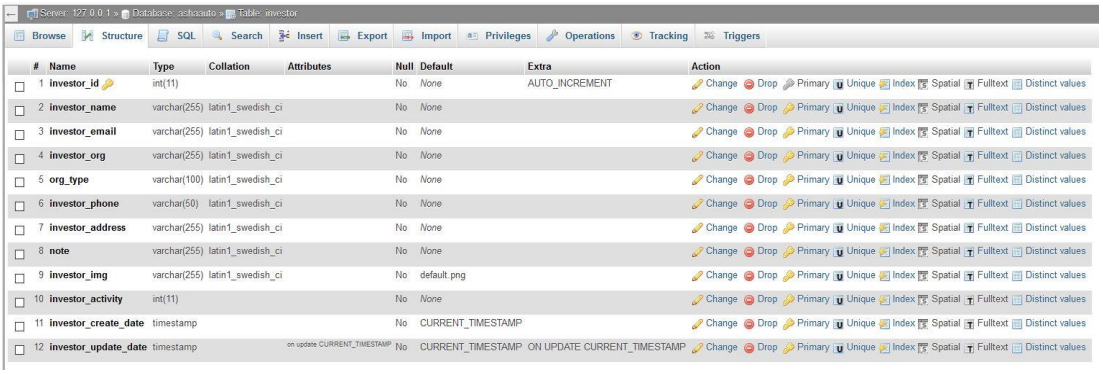


Figure 5.1.12: Database Table “investor”

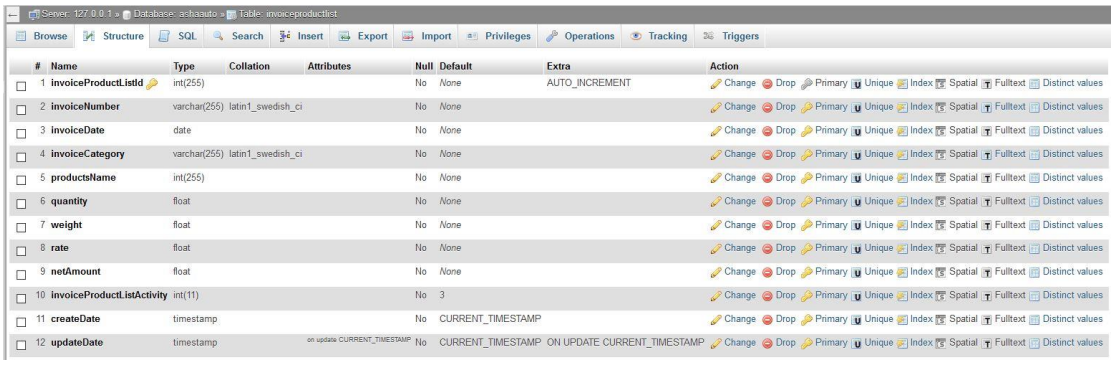


Figure 5.1.13: Database Table “invoice”

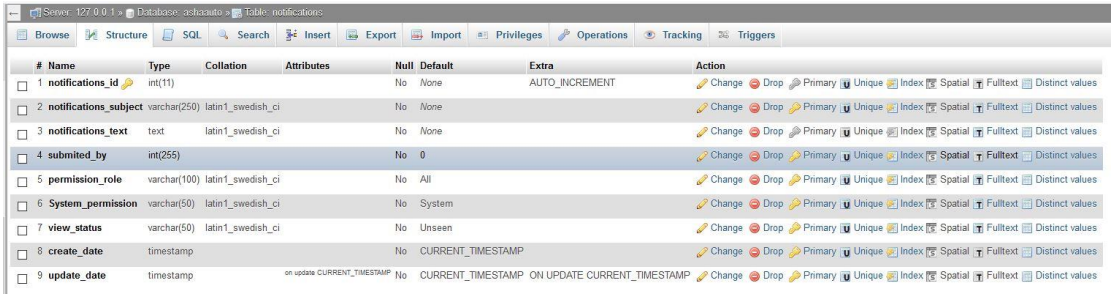


Figure 5.1.14: Database Table “notifications”

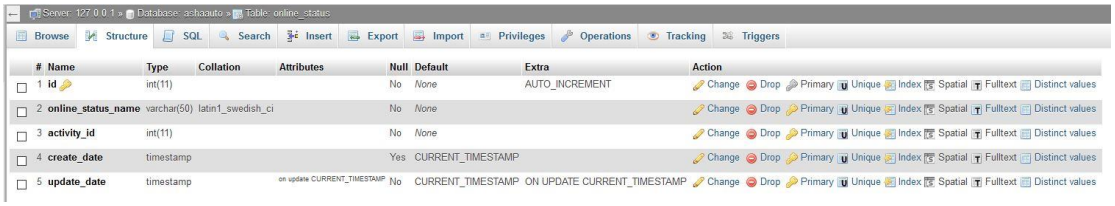


Figure 5.1.15: Database Table “online_status”

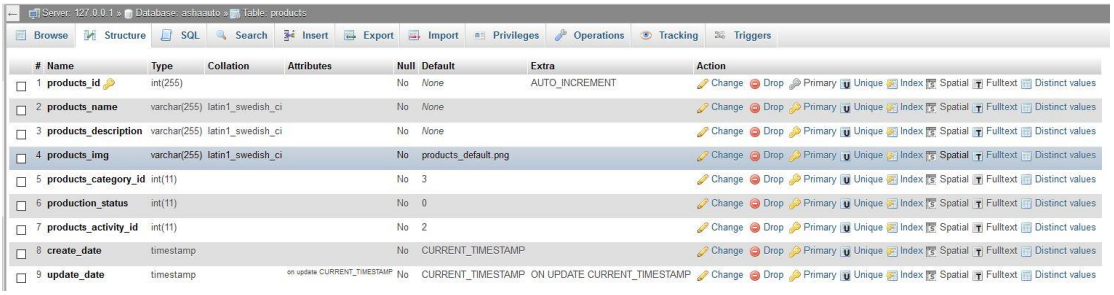


Figure 5.1.16: Database Table “products”

Figure 5.1.17: Database Table “product_category”

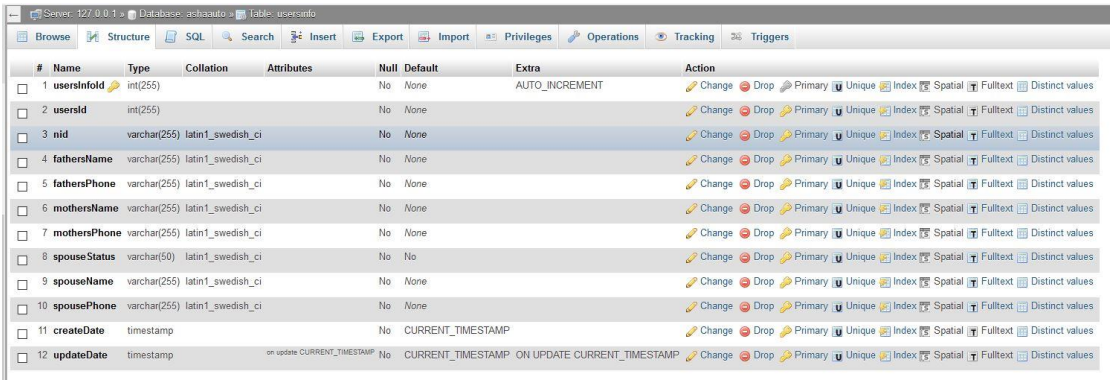


Figure 5.1.18: Database Table “userinfo”

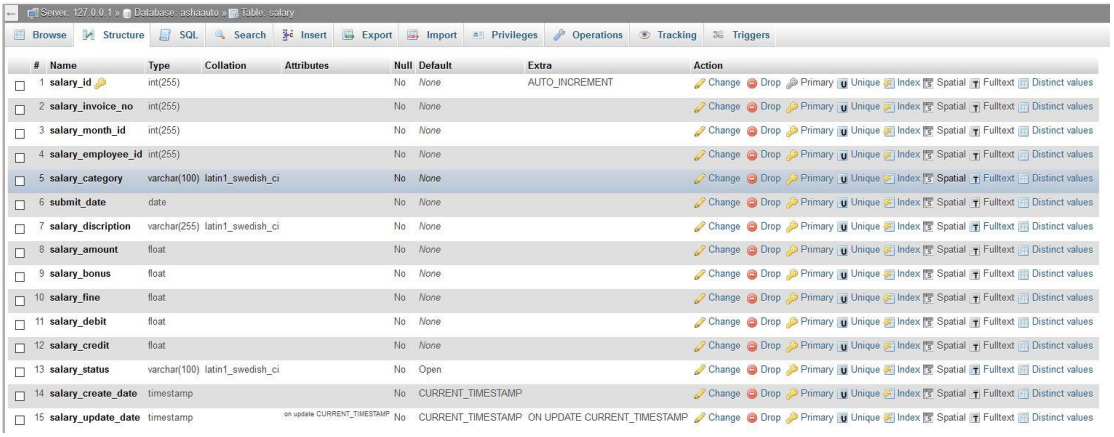


Figure 5.1.19: Database Table “salary”

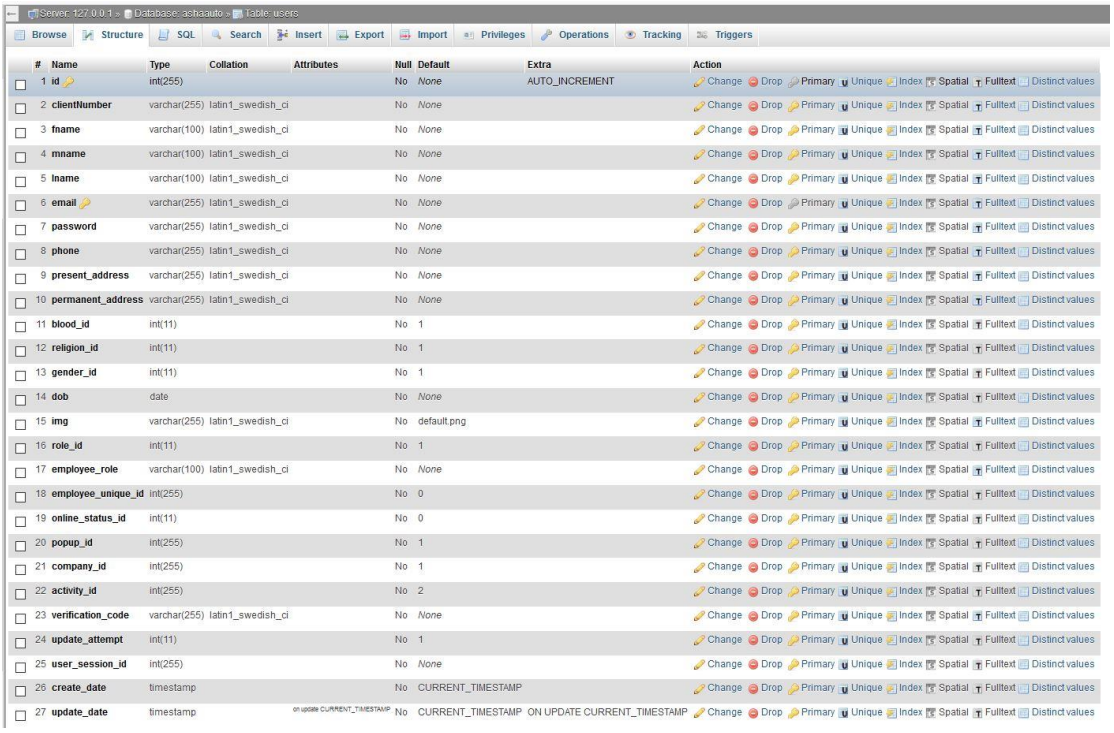


Figure 5.1.20: Database Table “users”

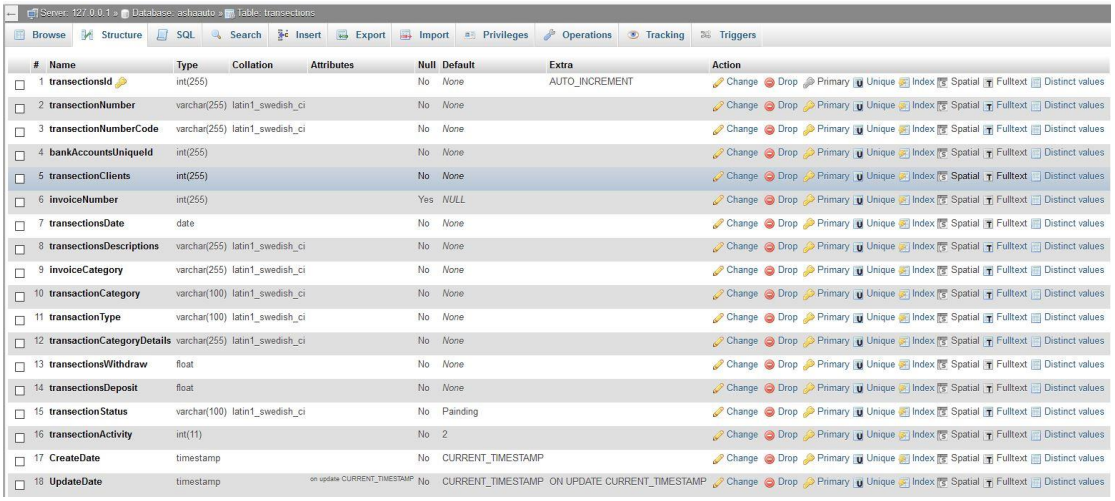


Figure 5.1.21: Database Table “transactions”

5.2 Implementation of Front-end Design

For implementing front-end design of the system the challenge was when we implemented the screen and there the perfection was the matters for us. Some major front-end screens are given below.

Dashboard

Every user will have a dashboard according to their necessary after log in and every user will get side menu to expand and to take further action. Here in the screenshot we are watching the Administrator's dashboard with maximum menu usage.

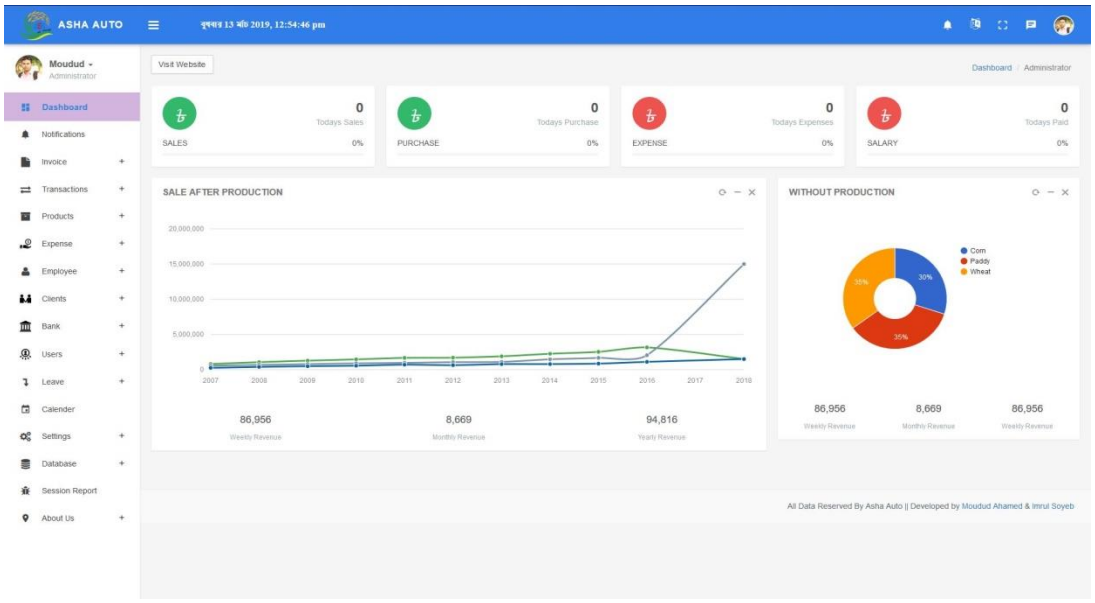


Figure 5.2.1: Front-end Design of a "Dashboard"

Bank Accounts UI

Administrator and HR Admin can manage Bank accounts easily from this GUI. This is only available after login and in the side menu named "Bank". It will be much easier for them to manage the deals with Banks.

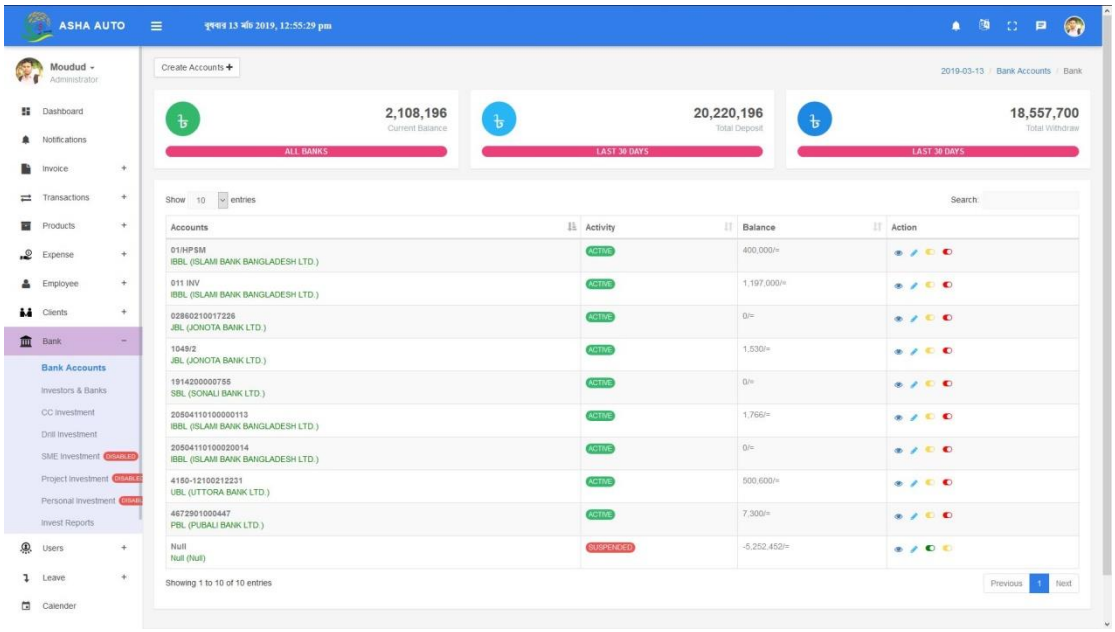


Figure 5.2.2: Front-end Design of "Bank Accounts UI"

Investors and Banks UI

This UI is designed for managing the Investors section. Investor can be either bank or personal invest. GIU describes much about this which needs no additional description. Let us see the GUI.

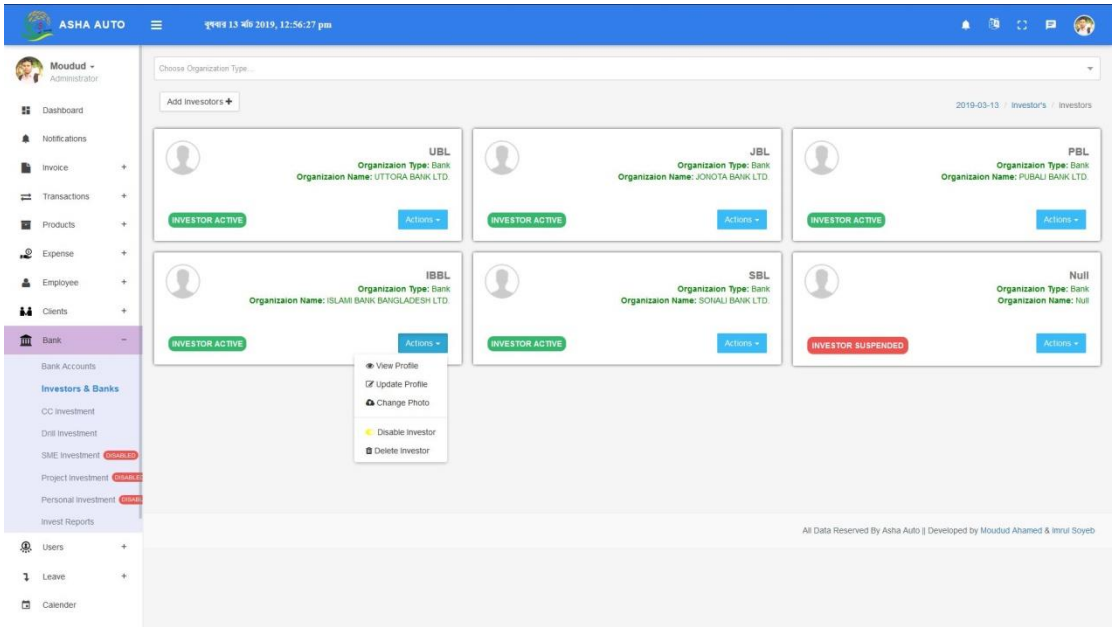


Figure 5.2.3: Front-end Design of "Investors & Banks UI"

Products

In this section the entire available product will be showed where Administrator has the supreme ability to do anything with it. Client can only view products and including that a seller can view the stock product.

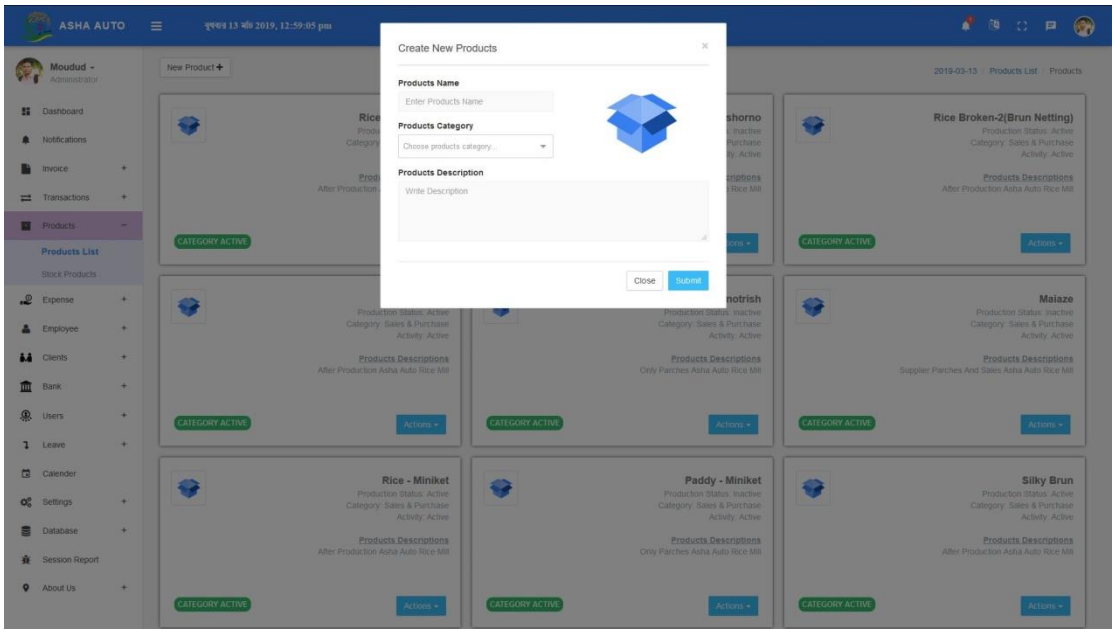


Figure 5.2.4: Front-end Design of "Product List Page"

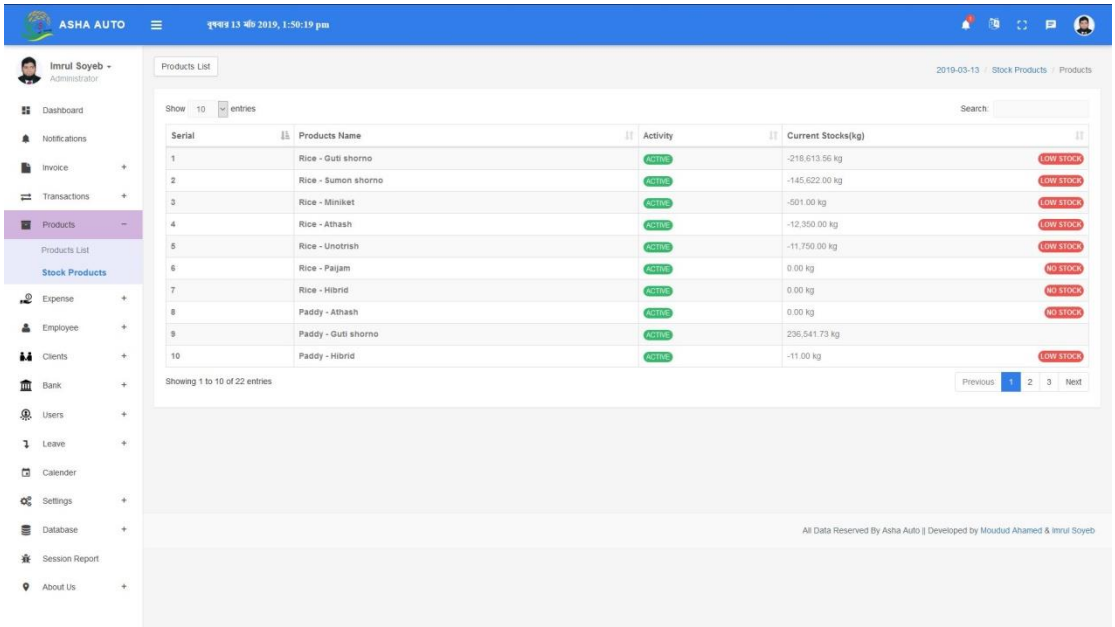


Figure 5.2.5: Front-end Design of "Stock Products Page"

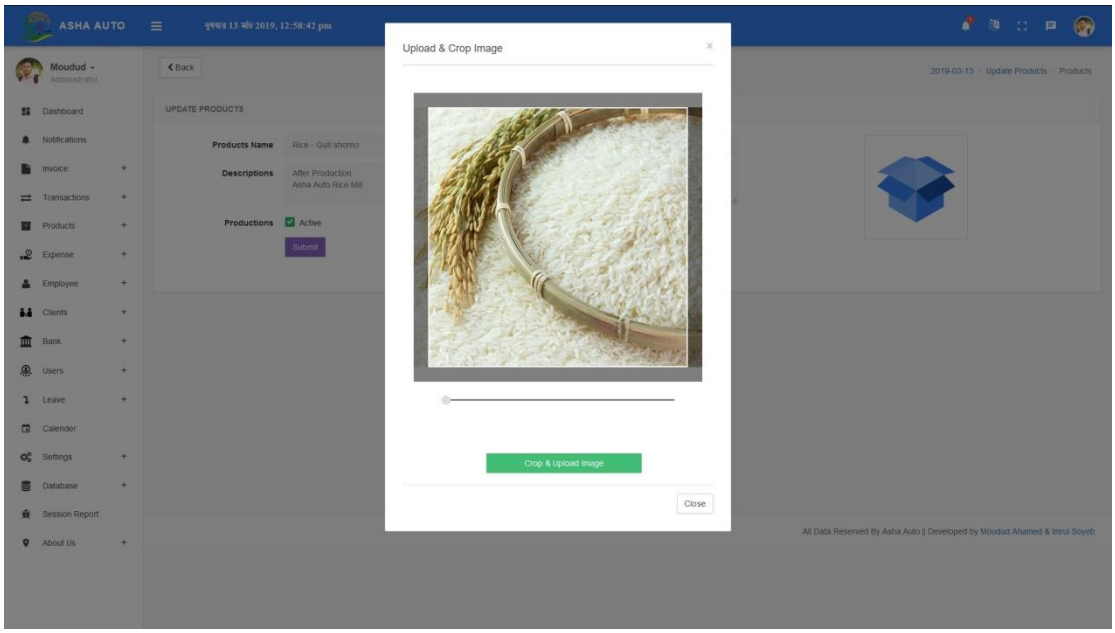


Figure 5.2.6: Front-end Design of "Product Image Management"

Employee Section

From here, an admin can manage the employees working under him. From here he can manage employee, create one, and define salary and many more.

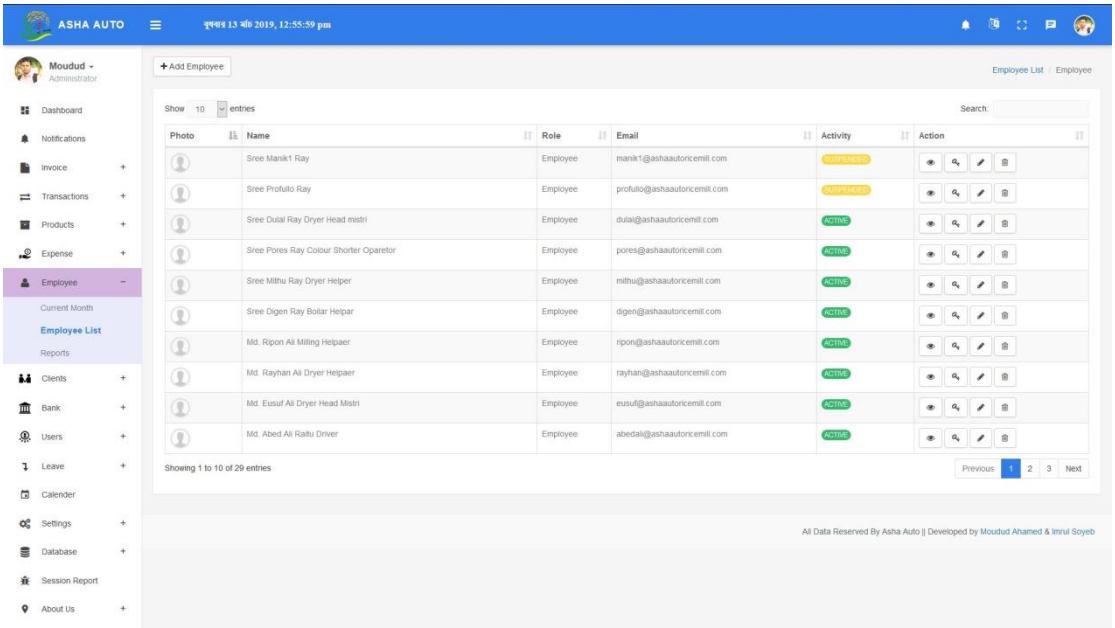


Figure 5.2.7: Front-end Design of "Employee List Page"

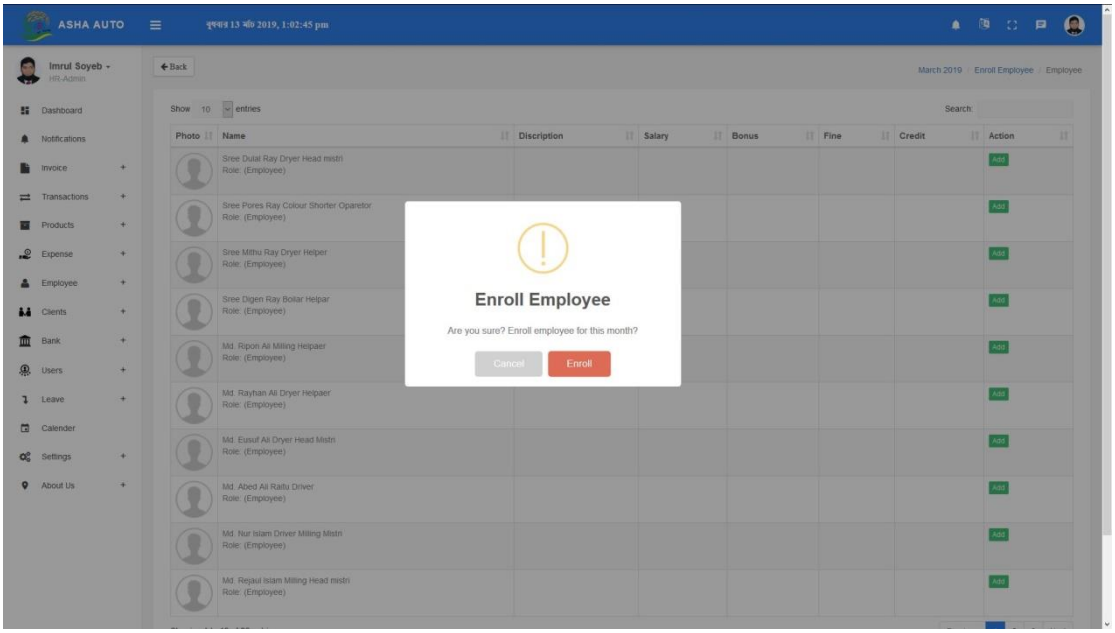


Figure 5.2.8: Front-end Design of Employee Management

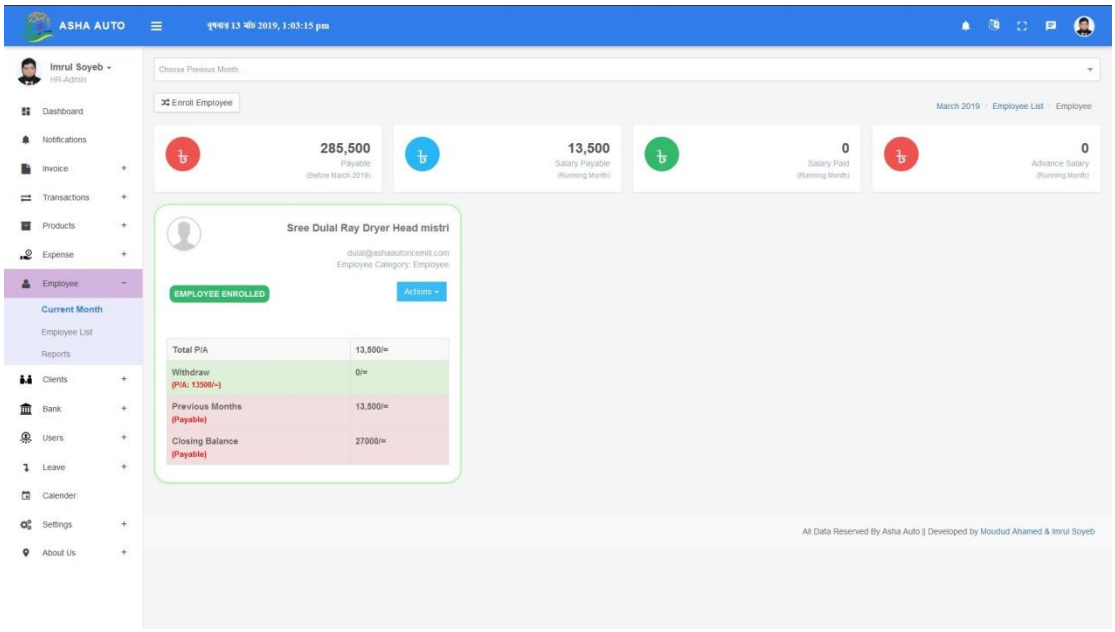


Figure 5.2.9: Front-end Design of Viewing Employee of Current Month

Calendar

All the users of the system will have a calendar at the side expandable menu to view the dates, day, time etc. They can also view reminders and events of their necessity. Only both admins have the ability to crate events or reminder and so it will be visible to the other users.

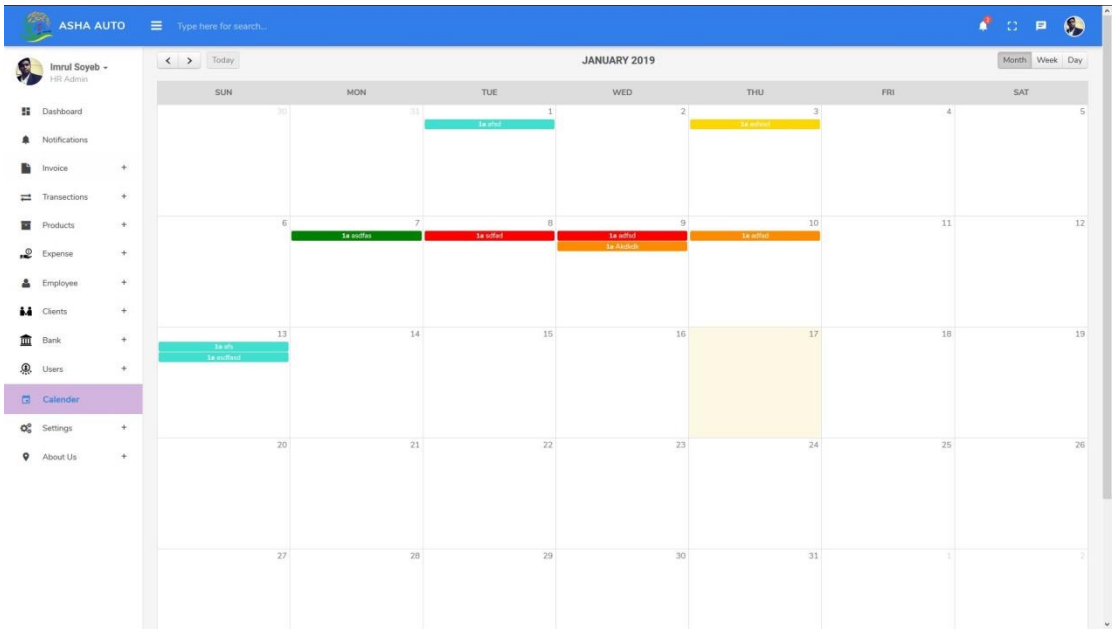


Figure 5.2.10: Front-end Design of "Calendar Page"

Notification UI

Based on role, user will get notifications. All users can delete notifications if he wants but the fact is they are both of the admins who are responsible for making events and reminders as a notification to specific type of user.

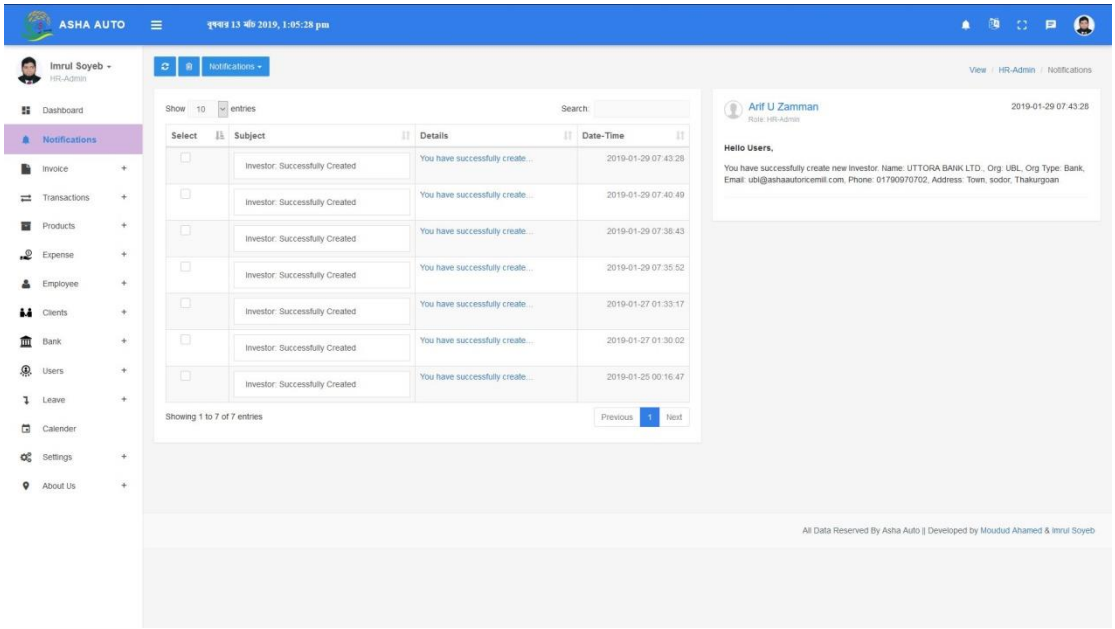


Figure 5.2.11: Front-end Design of "Notification UI"

Expense Section UI

This UI section represents the Expense section only manageable by Administrator and HR Admin.

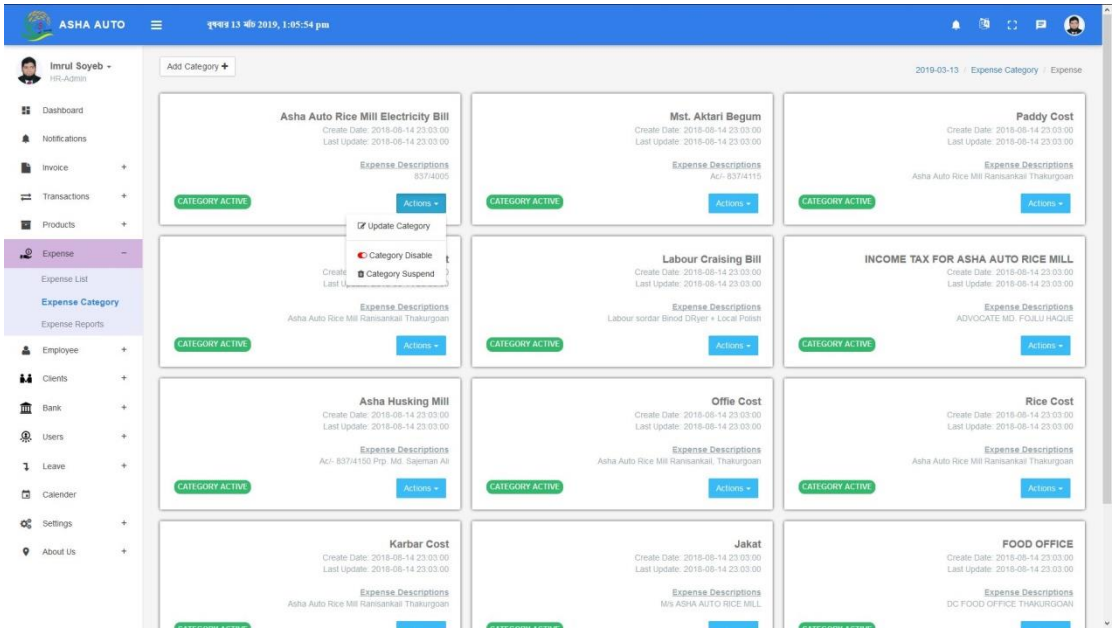


Figure 5.2.12: Front-end Design of "Expense Category Page"

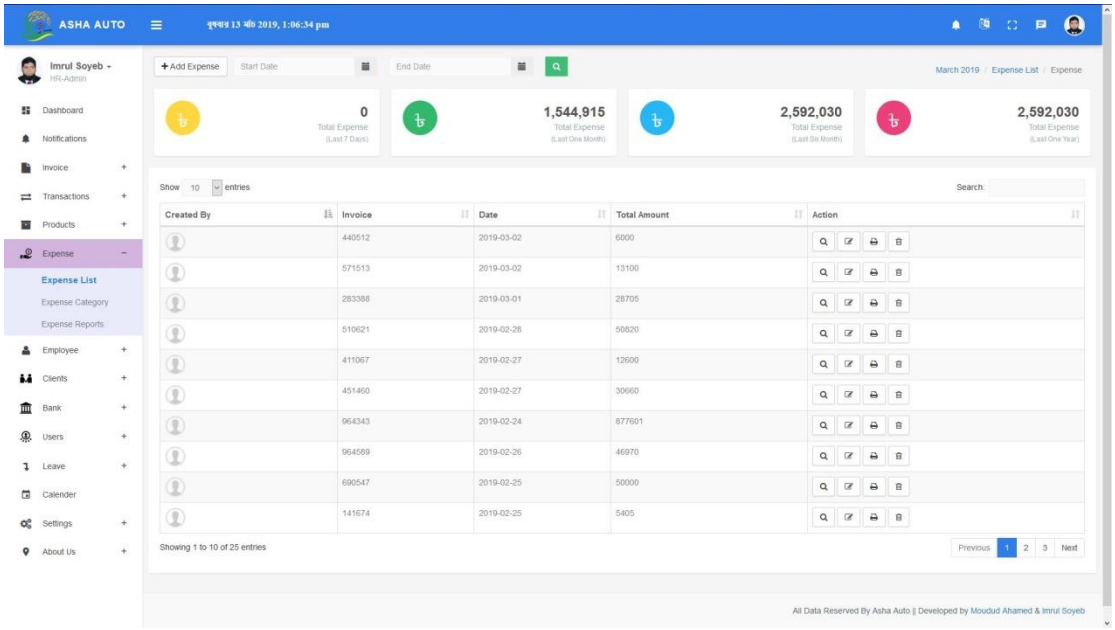


Figure 5.2.13: Front-end Design of "Expense List Page"

Investment

This section contains one of our complex activities performed in this project. While working with Bank managements we had to go through proper study over investments. Drill investment and CC Investment are is two of them.

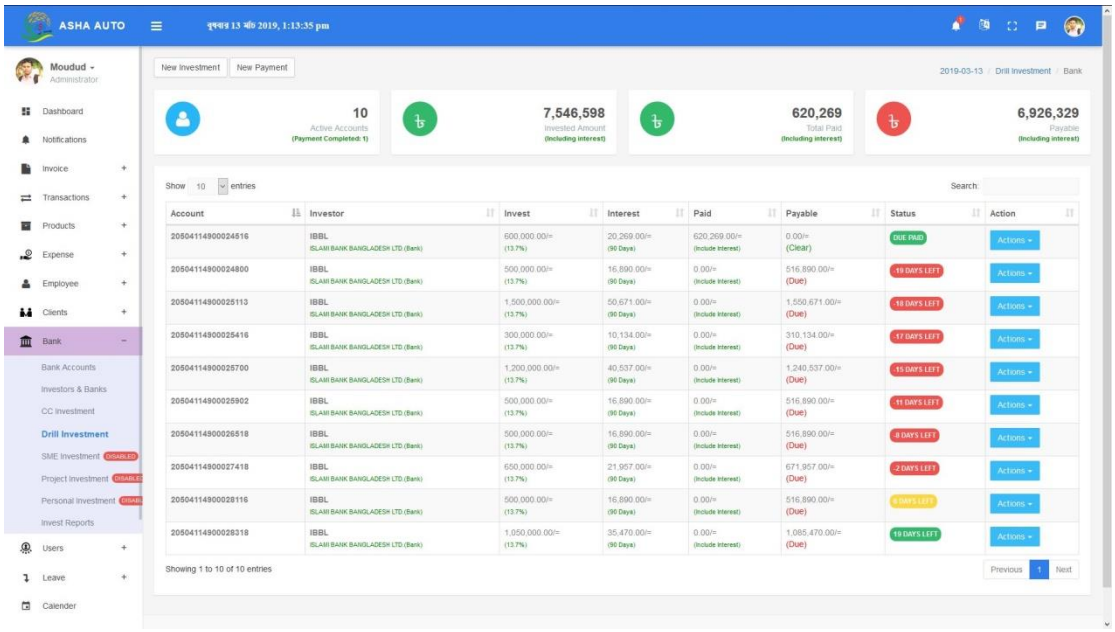


Figure 5.2.14: Front-end Design of "Drill Investment"

5.3 Implementation of Interactions

Implementation of interaction is the most important part of a system. Interaction means when we are in a specific function and go to another function that we want those time. We separate the function for a variant of the user. We design every user part very politely that user what he wants is indeed here. We design very carefully that the design attractive to users. An application Successions where the user is satisfied using the application. The Satisfaction level of our system is high.

5.4 Testing Implementation

When a system is implemented and some specific function is tested, the activity is called test implementation [14]. We have tested our system several times. Our system is so big that it would take about 30 more pages in the report to just write about

testing. For this reason we have tested the following instances considering them as major:

1. All Login Systems tested.
2. Interactive Maiden Page (after login) tested.
3. Management of Personal Information tested.
4. Invoice Section tested.
5. Transaction Section tested.
6. Product Section tested.
7. Expense Section tested.
8. Employee Section tested.
9. Client Section tested.
10. Bank Management tested.
11. User Management tested.
10. Leave activity tested.
11. My Salary activity tested.
12. Session Report tested.
13. Print Configuration tested.
14. Settings tested.

5.5 Test Results and Reports

In this section we are generating reports based on our test. It may be called the final technical issue we are going through. We skipped the white box testing and we did perform white box testing and generated the report.

Some Constant Information

Testing Type: White box testing, Test Performer: Imrul Soyeb and Moudud Ahamed.

Table 5.5.1: Details of Test Result and Report

Testing Section	**Description**	**Bug & Action**	**Status**
All Login Systems	Log in for all types of users have been tested.	No Bug Found	Fair

Interactive Maiden Page	After log in a page occurs with many functions which are tested.	No Bug Found	Fair
Management of Personal Information	Every profile can be edited by own rank ability which has been tested.	No Bug Found	Fair
Invoice Section	Create, approve, delete, view, edit, get report have been tested.	No Bug Found	Fair
Transaction Section	Create, approve, delete, view, get report have been tested.	No Bug Found	Fair
Product Section	Create, View, Update, change category, Change activity, Current stock products have been tested.	No Bug Found	Fair
Expense Section	Expense category, add, update, delete, view, search, delete, summary, reports have been tested.	No Bug Found	Fair
Employee Section	Add, view, update, change password, Salary-enroll employee, add/withdraw salary, view, print, search have been tested.	No Bug Found	Fair
Client Section	Add, view, update, change activity, Summary report, print summary details have been tested.	No Bug Found	Fair
Bank Section	Add bank/investor, all actions, and investments with investment rules have been tested.	No Bug Found	Fair
Users Management	All type of users management, add, update, change permissions have been tested.	No Bug Found	Fair
Leave activity	Leave appeal, list, approve, reject, history have been tested.	No Bug Found	Fair

My Salary activity	Running month salary, salary histories have been tested.	No Bug Found	Fair
Session Report	View/tracking all users login details have been observed and tested.	No Bug Found	Fair
Print Configuration	Print configuration for invoice and transaction and summary has been tested here.	No Bug Found	Fair
Settings	All settings have been tested.	No Bug Found	Fair

CHAPTER 6

Conclusion and Future Scope

6.1 Discussion and Conclusion

By the grace of almighty Allah, we have been able to complete our project and documentation successfully. After a long-term of thinking, planning, discussion, implementation we are in the last session and happy to complete our duty. Our project of "Auto Rice Mill Maintenance System" is capable to manage the HR of an auto rice mill within short time and in an easy and efficient way. Our system reduces the hassle of time.

Until now clients have been left to tedious ways of managing HR and calculating all the counting by hand themselves or by tally software which was manual and of accounting purposes. What normally happened next? Times are killed; brains are stormed for these silly tasks! Well, now these problems have changed. Our "Auto Rice Mill Maintenance System" has changed the process. By using our platform a user or admin can easily maintain HR of an auto rice mill with more efficiency than it was before.

I Imrul Soyeb, the lead document writer of the project am stating that, these 1.5 years were full of experiences and adventures, sweet pains and many more sour-spice-sweet memories. So many nights have been gone without sleep for this task only counted by the almighty, not even by me or us. We are grateful to him.

There is a proverb goes like "If the Boss is Nice, even the toughest task becomes easier." Yes, within these 1.5 years, that person who leaded us in such a nice way was our supervisor, Nusrat Jahan, whose skill of management helped much to complete the task within the exact time.

Every new task inaugurates many horizons of many futures opportunities and hopes. In the next section we will see the scope for further developments.

6.2 Scope for Further Developments

We have a future plan for the application. Some of the plans are:

1. AI Analytics to improve business (To collect Extra revenue by exact time exact products sales)
2. Installation of smart devices and connect to our system (Like Employee attendance with finger print, Auto rice mill machine on/off by office room, IP camera connect with our system to monitor factory activity form anywhere, accurate production counter device etc.)
3. Building an Android apps and connect with same database.
4. Connection to Bank API to detect bank current balance automatically.
5. Enabling smart notification by using SMS broadcast API (Employee salary, withdraw, Client order/delivery/cancel information, low stock products, etc.)
6. All types of bank investment and lone managements. (Like SME Investment, Project investments, Personal Investment)
7. Private Chatting with clients and management teams will be added.

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Appendices

Appendix A: Project Reflection

As what I have learnt during the work on our Web Based Project on Complete Auto Rice Mill Maintenance System, a high performance team would be one with high performance and high relationship.

When we first started off, we did not think that our team was not the high-task one. But I think our group is identical in a sense that another group member has his own identical character and we actually complement each other.

It's just like how important for the composition of a team is. You need to recruit the right members to form a high-performance team. Perhaps, we were quite lucky to be put in the same team.

Although many would think that the task component would be more important than the relationship component, I think both are as equally important and complement each other.

What makes our team eventually develops into a high-task team is actually the good relationship we establish along the way. As we grow closer together, we actually developed a sense of belonging to the team. It's a "we're all in this together" kind of feeling. We want everyone to do well because we are a team.

One thing that I loved about our team is that we work together as one team, and not as an individual. I remembered how we put in a lot of effort to ensure that every member of the team has good content. We gave each other idea to develop content.

All in all, after doing this project together, I have come to realize that high relationship is a very important component in a team. It may be the factor that exuberance the team to achieve a high-task performance.

Lastly, we faced many problems when we developed this project but we solved these problems together. There are some parts of our project were difficult for us to develop but this was possible to complete because of the spirit of our team.

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