

Development of Lead Tracking System for Systech Digital Limited

A Practicum Report Submitted By
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ID # 15103171

In Partial Fulfillment of the Requirements for the Award of
Bachelor of Computer Science and Engineering



Department of Computer Science and Engineering
College of Engineering and Technology
IUBAT– International University of Business Agriculture and Technology

Fall, 2018

Development of Lead Tracking System for Systech Digital Limited

Md. Mohaiminul Islam

A practicum report submitted in partial fulfillment of the requirements for the degree of
Bachelor of Computer Science and Engineering (BCSE)

The practicum has been examined and approved,

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IUBAT – International University of Business Agriculture and Technology

Fall, 2018

Abstract

The aim of this project was to produce an interactive web application that could be used by Systech Digital Limited for the purpose of managing business activities smoothly in between the organization. The project is developed in PHP (Hypertext Preprocessor) language using Laravel 5.7 framework. The project has been given a responsive design so that it can be run on numerous platforms. By the effective use of Lead Tracking System web application, the organization would be able to track employees and business activities in a smart way. Administrator, Marketing Executive, Sales Executive and the Business Development Manager has the key role for conducting the application. The whole activities such as contact with clients, schedule, meeting, sales, email, notification, generate reports would merge into a successful lifecycle of a Lead. The functionality of the developed web application is tested by the end-user for several days in order to evaluate the success of the system.

Letter of Transmittal

December 20, 2018

Chairman, Practicum and Placement Committee

College of Engineering and Technology (CEAT)

IUBAT- International University of Business Agriculture and Technology

4, Embankment Drive Road, Sector 10

Uttara Model Town, Dhaka -1230, Bangladesh.

Subject: Letter of Transmittal.

Dear Sir,

With due respect and humble, I would like to approach you that it is a great opportunity as well as immense pleasure for me to submit this report titled "**Development of Lead Tracking System for Systech Digital Limited**" for the fulfillment of my practicum course.

It was undoubtedly a splendid opportunity for me to work on this project to actualize my theoretical knowledge and has an enormous exposure with the corporate culture of a renowned software firm. Now I am looking forward for your kind appraisal regarding this practicum report.

I hope that you would find the report comprehensive and competent augmented.

Sincerely yours,

Md. Mohaiminul Islam
ID: 15103171

Letter of Authorization

August 25, 2018

IUBAT- International University of Business Agriculture and Technology
4, Embankment Drive Road, Sector 10
Uttara Model Town, Dhaka -1230, Bangladesh.

Subject: Letter of Authorization.

Md. Mohaiminul Islam
ID: 15103171
Program: BCSE

Dear Md. Mohaiminul Islam,

You will be happy to know that the project on “**Development of Lead Tracking System for Systech Digital Limited**” I have received in your proposal under me continue internship. Based on your proposal you will have to submit the project within the given time. I hope you will successfully complete it on time. After successful completion of the project, you are requested to write a report based on the project.

For any kind of assistance don’t hesitate to contact with me.

Co-supervisor

Practicum Supervisor

Professor Dr. Utpal Kanti Das

Professor & Coordinator, Department of
Computer Science and Engineering

Humayun Kabir

Lecturer, Department of Computer
Science and Engineering

Student's Declaration

I, Md. Mohaiminul Islam, a student of BCSE - Bachelor of Computer Science and Engineering program, under the College of Engineering and Technology (CEAT) of IUBAT-International University of Business Agriculture and Technology declaring that, this report on the topic of **“Development of Lead Tracking System for Systech Digital Limited”** has been prepared for the fulfillment of the internship **CSC 490**, Practicum as well as the partial requirement of BCSE-Bachelor of Computer Science and Engineering degree.

It has not been prepared for any other purposes or rewards.

Md. Mohaiminul Islam

ID: 15103171

Program: BCSE

Acknowledgement

In the name of Allah who is the most merciful and the most graceful it's my pleasure to take this occasion to thank a few people, who have, assisted, encouraged, directed and supported me throughout my practicum program.

First of all, I want to thank my parents, who have endowed their immeasurable-innumerable support and encouragement to attain this exquisite event of my life.

I sincerely would like to thank **M Rashidul Hasan** (CEO, Systech Digital Limited.) for giving me the opportunity to complete my internship and project at Systech Digital Limited. I would like to pay my gratitude to **Ahsan Zahid Chowdhury** (Senior Developer) for providing support and encouragement during the internship period.

I would like to pay my gratitude to my faculty advisor **Humayun Kabir**. Lecturer of Computer Science & Engineering Department, who has given me the opportunity to make such a report for not only in this semester but also throughout my education life at IUBAT by giving his valuable suggestions and advices at any time, at any situation. I would able to make this report effectively and properly only for his right direction.

Last but not least my sincere and outmost thank goes to **Prof. Dr. Utpal Kanti Das**, Head of Department of Computer Science and Engineering, International University of Business Agriculture and Technology. For his continuous encouragement and contribution gave me the courage determination needed to able to finish the internship and finish it well.

My success could not turn into reality without these people who help me in different ways. I also like to thank all of my friends for their valuable suggestion and comments.

Supervisor's Declaration

This is to certify that Practicum report on “**Development of Lead Tracking System for Systech Digital Limited**” has been carried out by Md. Mohaiminul Islam, ID# 15103171 of IUBAT – International University of Business Agriculture & Technology as a partial fulfillment of the requirement of practicum defense course. The report has prepared under my guidance and record of work carried out successfully. To the best of my knowledge and as per his declaration, no parts of this report has been submitted anywhere for any degree, diploma or certificate.

Now he is permitted to submit the report. I wish him all success in his future endeavors.

Practicum Supervisor

Humayun Kabir

Lecturer, Department of

Computer Science and Engineering

IUBAT- International University of Business Agriculture and Technology

Department Certification

On behalf of the Department of Computer Science and Engineering of International University of Business Agriculture and Technology (IUBAT University) we, the undersigned, certify that this practicum report 'Development of Lead Tracking System for Systech Digital Limited' for the award of Bachelor of Computer Science and Engineering (BCSE) degree was duly presented by Md. Mohaiminul Islam (ID No.15103171) and accepted by the department.

Humayun Kabir

Supervisor

Lecturer, Department of Computer Science and Engineering

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Prof Dr. Utpal Kanti Das

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IUBAT- International University of Business Agriculture and Technology

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Professor & Chair, Department of Computer Science and Engineering

IUBAT- International University of Business Agriculture and Technology

Organization Certification



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19 December, 2018

TO WHOM IT MAY CONCERN

Re: Internship Completion Certificate

This letter is to certify that **Md. Mohaiminul Islam** from International University of Business Agriculture and Technology (Department of CSE, #ID 15103171), has successfully completed his internship at Systech Digital Ltd. from **16 September 2018 to 15 December 2018**.

During his internship, he was exposed to the various activities in **PHP (Laravel)**.

We found him extremely inquisitive and hard working. He was very much interested to learn the function of our core division and also willing to put his best efforts and he get in to the depth of the subject to understand it better. His association with us was very fruitful and we wish him all the best in his future endeavors.

For Systech Digital Ltd.

Authorized Signatory

Ahsan Zahid Chowdhury

Department Head (Software Development)

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Chapter-1

Introduction

An internship is an official program offered by an employer to potential employees. This is a work experience that is relevant to a student's chosen major. An experience that should enhance a student's academic, career, and personal development. Interns work either part time or full time at a company for a certain period of time. It allows gaining valuable experience to the workplace, provides the opportunity for skill development, and gives a competitive edge in the job search. This chapter attempts to describe the objectives, scope, limitation and all topics of initialization period of this project.

1.1 Project Overview

“Lead Tracking System” is a type of automation system to manage and track the entire process of marketing and sales of an organization. Lead generation and Lead management is a very important process for any business firms to keep their leads, sales tracking quick and accurate. This is a PHP based Lead Tracking web application developed by using Laravel 5.7 framework, that can be accessed via from anywhere and any devices to manage customers, leads, allocate leads to sales managers, lead status, remainder, appointment scheduler and fix sales target etc.

A lead tracking system is a highly effective way to boost customer satisfaction. It also helps companies plan resources by providing a clear view of the future with respect to their sales forecast. It offers a way to quickly, easily, and effectively manage sales pipeline for a business organization. We have done this project using **“Incremental Process Model”**.

This project includes specially four actors Administrator, Marketing Executive, Sales Executive and Business Development Manager.

1.2 Objective

The main objective of Lead Tracking System is to track the sales and marketing activities inside the organization. By this System, the business development manager can easily manage and track their sales and marketing team. An organization can make better profit by using profit analysis and sales history.

1.2.1 Broad objective

My aim is to build an automated system for any company to make their marketing and sales process easier and make the application fully dynamic, error-free and maintainable.

1.2.2 Specific Objective

The specific objectives of this project are given below:

- ✓ The system has a dynamic employee management facility where administrator can set role and resources for every employee.
- ✓ The system can send reminder for meeting to client.
- ✓ This system generates Report including, client wise, employee wise, project wise, profit analysis etc.
- ✓ The system has all the project details with project slab.
- ✓ The project has remarks system, if an employee caught for fault they need to explain in the remarks.

1.3 System Benefits

- ✓ Dynamic employee manages.
- ✓ Easy management of role and resources for any employee.
- ✓ Full control to administrator.
- ✓ Save of both money and time comparing with manual process.
- ✓ Profit analysis.
- ✓ Better customer relationship management.

1.4 Methodology

For this project in data collection phase I collected primary and secondary data that was provided by Systech Digital Limited to develop the system. The procedures and processes that I followed to develop this system are clearly described in the Analysis and Design chapter with illustrations. Those methodologies are derived from the collected data of the early requirement gathering phase.

The sources of data for the purpose of this project are -

- ✓ Primary Data
- ✓ Secondary Data
- **Primary Data:** Primary data I have gathered from the organization. The organizations practical experience, observation, and face-to-face interview with our CEO, Business development manager and Project Leader to helped us generate the primary data. Actually, the primary data are collected through the practical experience, observation, and face-to-face interview.
- **Secondary Data:** Secondary data are generated by real life experience and studying different articles, newspapers, and research papers and of course information collected via Internet. Also, I have searched on Web for better understanding about the system.

1.5 Limitation of the Project

The practicum is the bridge between theoretical and practical life. Practicum program at IUBAT has given me this great opportunity improved my skills. But this is true that 12-14 weeks' practicum program is not enough to learn everything. There were lots of features in this project that I have not understand at the beginning of the practicum. For this reason, this system has some minor limitations. This is an automation system so client cannot access this system. And second one is time limitation to make it better. For this reason, the scope of the internship project has become short. But at the later stage I made myself familiar with the overall scenario.

1.6 Scope of the Project

- ✓ Web based automation system, only employee can be accessing this system from the office and outside the office.
- ✓ Report will be automatically generated.
- ✓ Designation and role resource management.
- ✓ Platform independent; run on Windows, Mac or Linux.

1.7 Software Process Model

There are many situations in which initial software requirements are reasonably well-defined, but the overall scope of the development effort precludes a purely linear process. In addition, there may be a compelling need to provide a limited set of software functionality to users quickly and then refine and expand on that functionality in later software releases. In such cases, the organization chose a process model that is designed to produce the software in incremental process model. Incremental model is an evolution of waterfall model. The product is designed, implemented, integrated and tested as a series of incremental builds.

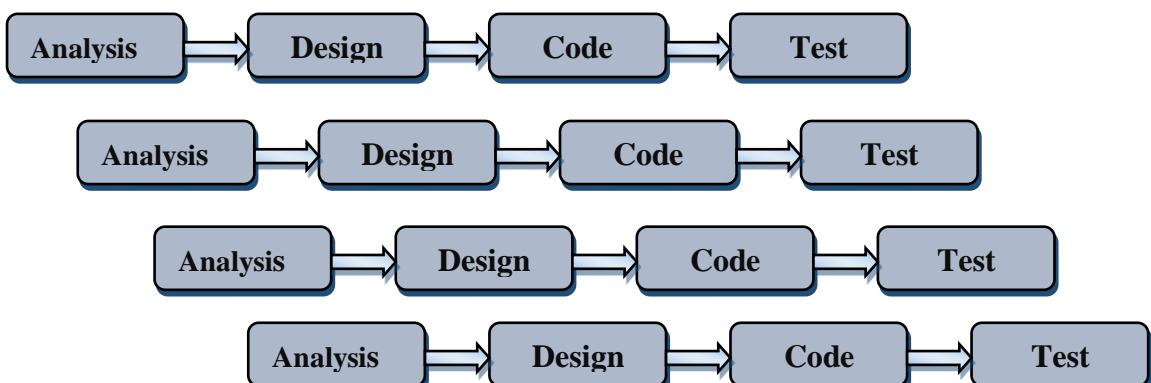


Figure 1.1: Incremental process model

It is a popular model software evolution used many commercial software companies and system vendor. Incremental software development model may be applicable to projects where software requirements are well defined, but realization may be delayed the basic software functionality is required early. Following is a diagrammatic representation of different phases of the incremental process model.

1.7.1 Incremental Model Steps

- ✓ Construct a partial implementation of a total system
- ✓ Then slowly add increased functionality
- ✓ The incremental model prioritizes requirements of the system and then implements them in groups.
- ✓ Each subsequent release of the system adds function to the previous release until all designed functionality has been implemented.

1.7.2 Strengths

- ✓ Generates working software quickly and early during the software life cycle
- ✓ More flexible - less costly to change scope and requirements
- ✓ Easier to test and debug during a smaller iteration
- ✓ Easier to manage risk because risky pieces are identified and handled during its iteration
- ✓ Each iteration is an easily managed milestone
- ✓ Develop high-risk or major functions first
- ✓ Each release delivers an operational product
- ✓ The customer can respond to each build
- ✓ Uses “divide and conquer” breakdown of tasks
- ✓ Lowers initial delivery cost
- ✓ Initial product delivery is faster
- ✓ Customers get important functionality early
- ✓ Risk of changing requirements is reduced

1.7.3 When to use the Incremental model

- ✓ Requirements of the complete system are clearly defined and understood.
- ✓ Risk, funding, schedule, program complexity, or need for early realization of benefits.
- ✓ Most of the requirements are known up-front but are expected to evolve over time
- ✓ A need to get basic functionality to the market early

- ✓ On projects which have lengthy development schedules
- ✓ A new technology is being used
- ✓ Resources with needed skill set are not available
- ✓ There are some high-risk features and goals.

1.7.4 Advantages

The main benefit of using this model is to develop the system in a short time. The client said that recently they need software in a short time. By using the incremental model, we first develop the major functionality and get rid of them to the user for testing. And develop another function. That's why the client can understand that their project is running and we also get benefit by using the incremental model's rule.

1.7.5 Disadvantages

- ✓ Need well defined requirements.
- ✓ Needs good planning and design.
- ✓ Needs a clear and complete definition of the whole system before it can be broken down and built incrementally

1.8 Feasibility Study

Feasibility study determines whether that solution is feasible or achievable for the organization. This means that the tasks that we will perform are worth enough or not. There are three major areas of investigation and generating ideas about a new system. On studying the feasibility of the system, three major considerations are dealt with, to find whether the automation of the system is feasible.

- ✓ Technical feasibility
- ✓ Economic feasibility
- ✓ Operational feasibility

1.8.1 Technical Feasibility

Technical feasibility addresses concerns about hardware capability, reliability and availability and the skills of the development team. This study looks at the hardware and software available to perform the necessary steps for the proposed system.

➤ Communication Interface

- ✓ Client on Internet will be using HTTP/HTTPS protocol.

- ✓ Client on Internet will be using TCP/IP protocol.

1.8.2 Economic Feasibility

Economic feasibility determines to what extent a new system, is cost effective. We consider whether the company will be able to pay cost for designing and whether the project will be cost effective or not

1.8.3 Operational Feasibility

Operational feasibility addresses concerns about user acceptance, management support, and the requirements of entities and factors in the organization's external environment. The proposed system is designed from the organization's point of view. So, all of the features are included only to benefit the employee. The system will remove most of the disadvantage of manual process.

Chapter-2

The Organization

In this chapter 2 the detail organizational overview is discussed along with the organization's mission and vision followed by numerous services.

2.1 Organizational Overview

Systech Digital Limited. has earned vast popularity, having the focus on the Enterprise Application, Digital Content Development, Web Development and Mobile Application Development. SDL, in its 18 Years of Experience, has gathered stability with proven success in delivering cost-effective but quality service to our clients in Bangladesh, UK, Canada, USA, Netherlands, Germany, Denmark, and Japan.

Encompassing the talents of our highly skilled application and web development team, SDL focuses on delivering the highest level of quality to each and every contracted project. SDL has succeeded time and time again in creating compelling applications and web sites that are both functionally and aesthetically pleasing. Experience, ingenuity and an unparalleled strength in client communication and project management have enabled SDL, with the ability and reputation for guaranteed performance.

2.2 Company Services

➤ HR and Payroll

Systech HR & Payroll Software is simple to use, safe, secure and efficient giving you the control and freedom to run a smarter business. All the required information of your people are properly recorded and available on just a click. Employees leave and attendance policy are well managed and monitored through one click reports. Employees are paid correctly and on time.

❖ Modules of Systech HR and Payroll Software

- | | |
|----------------------|---------------------|
| ✓ Security Module | ✓ Software Settings |
| ✓ Personnel Module | ✓ Leave Module |
| ✓ Attendance Module | ✓ Attendance Module |
| ✓ Payroll Module | ✓ Production Module |
| ✓ Employee Dashboard | ✓ Reports |

➤ BGMEA WDB (Biometric Worker Database)

This is a software system designed for the Garment Manufacturing Factories operating under BGMEA and BKMEA, by which you can enroll all workers of a factory with their fingerprints and photos for the identification of worker by all means within the same factory worker and with other factory workers. It also stores information of every worker including all addresses, general, educational and training information, current and previous all work history,

blood group, cell phone & more. This information is entered into a computer in factory location by mature software integrated with AFIS.

These stored data (information, fingerprint and photos) from the factory computer are uploaded/sync automatically to a cloud server database where every worker is checked and registered with a unique identification number called 'Worker Global ID' and stored in central database. This central server is a web-based management information system. Higher authority of a factory can access their factory data from anywhere using their unique user ID and password. By this central server factory owners are having many important reports of their factory by which they are having future plans

➤ **Domain Hosting**

Systech Digital Limited provides domain hosting for website or web application and virus-scanned business-class email hosting service.

➤ **Digital Content**

This concept is totally modern. In this way you can present the least and focus on the main subject of seminar, workshop, meeting and other programs easily by the help of electronic medium. You can display the subject which is presenting by the presenter beside on a big monitor or multimedia projector. This digital presentation contains text, audio, video and animation. Modern world cannot imagine of meetings without any digital presentation. Systech Digital Ltd. is developing this kind of digital presentation.

Digital brochure is a modern media system over printed media which is totally decorated with multimedia presentation. It is developed using various software developing tools. The information in general printed paper is not attractive. But with an electronic brochure an organization can present them to their clients attractively with live elements of information audio, video and animation. So, digital brochures are popular all over the world.

➤ **Corporate Identity Development**

We have a team of professional logo designers and corporate identity design specialists. We provide only custom design services. Every project is created from scratch, by skilled, seasoned logo designers to your exact specifications and needs.

Our Custom Logo Design Team creates as many Logo Designs as necessary until You're 100% Thrilled! You are never limited to the number of revisions we make for you. That's

because we work until you are 100% satisfied with every detail of your logo or corporate identity. And we are not fully paid until you are happy - this is our guarantee to you.

➤ **Mobile Apps**

Our mobile application development team are constantly pushing the boundaries of what's possible on mobile platform. SDL mobile application development team is highly expert, offering end to end service of apps design and development for iPhone, iPad, and Android devices. Our mobile application development services help businesses to mobilize their sales force, increase efficiency of their product team and get new customers.

❖ **Examples of mobile applications that hosted by our own business name.**

- | | |
|------------------------|--------------------|
| ✓ Dashboard | ✓ Digital Tracker |
| ✓ Magic Play and Learn | ✓ Location Tracker |

➤ **e-Learning**

Systech Digital was born to develop country's first digital magazine '**IT-Com**' in 2001. Beside publishing digital magazine SDL is working for digital learning content and platform from the very beginning of its journey started. We earned a vast knowledge in e-Learning content and platform development by lots of R&D and continuous feedback from the users on the Globe.

Digital learning media are a great way of learning these days with Interactivity. Interactivity is the best way for teaching. We use Adobe Suit, Flash, Director, XML, HTML, Sound forge, Camtasia Studio etc. for developing content rich learning solutions. We have been working since mid-2011 for the e-Learning platform and content development for the Government of India, Nepal, Bhutan and Bangladesh under South Asian Sub-regional Economic Cooperation (SASEC) project, financed by Asian Development Bank (ADB).

➤ **e-Commerce**

Web sites with order processing, payment processing or other forms of e-commerce functionality has reached great heights. From florist and greengrocers to multinationals and government departments – it's hard to imagine any business or organization that will not benefit from using e-commerce. Web-based solutions are services offered on various Web sites allowing you to build your e-commerce site using only your Web browser. We have the expertise in developing e-Commerce website which works with many payment gateways like PayPal, Link point as well as credit cards processing.

SDL offers a complete portfolio of professional e-Commerce services encompassing e-Commerce consulting, design, implementation, systems integration, hosting, training, and

support services to aid the delivery of world-class e-Commerce solutions based on its flagship ecommerce platform.

➤ **Web Application Development**

We understand your need to Automate and Uplift your business process. Whether it is custom database software or a CMS based application, Systech will help you automate your business process letting you have the secure 24/7/365 access to your system from anywhere on Earth with an Internet connection and with the highest security guaranteed. With more than 13 years of experience Systech Digital has gathered stability with proven success in delivering more than 1000 projects.

❖ **Development Life Cycle goes through the following steps**

- | | |
|---------------|-------------|
| ✓ Feasibility | ✓ Analysis |
| ✓ Design | ✓ Implement |
| ✓ Test | ✓ Maintain |

➤ **Website Design**

Website identifies a business or organization and forecast activities worldwide. It is not just a domain and some pages with a graphic and some text. In Systech Digital every website is custom developed and personally handled always keeping in mind your business target market that will make your website a success on the Internet.

➤ **CRM (Customer Relationship Management):**

Customer relationship management (CRM) is not just the application of technology, but is a strategy to learn more about customers' needs and behaviors in order to develop stronger relationships with them. As such it is more of a business philosophy than a technical solution to assist in dealing with customers effectively and efficiently.

❖ **Features of CRM (Customer Relationship Management) Software**

- | | |
|---|--------------------------------|
| ✓ Sales Force Automation | ✓ Customer Support & Services |
| ✓ Contact manager | ✓ Marketing Automation |
| ✓ Configurable tasks, reminders, and alerts | ✓ Inventory Management |
| ✓ Customer tracking | ✓ Mail Integration |
| ✓ Customer profiling | ✓ Letter Templates |
| ✓ Customer history | ✓ Customer Self Service Portal |

❖ **Benefits**

- ✓ Develop better communication channels
- ✓ Collect vital data, like customer details and order histories
- ✓ Create detailed profiles such as customer preferences

- ✓ Deliver instant, company-wide access to customer histories

Identify new selling opportunities

➤ **SCM (Supply Chain Management)**

Our inventory can be sizeable if you run all kinds of business or minimal if you operate a consultancy. However more inventory you have, proper controlling of the cost is the important part of running your business. You need to know when to order items, how much to keep on hand, how much you have at any given time, and what the carrying costs are.

❖ **This solution can be used for**

- | | | |
|---------------------------|-------------------------------|-----------------------|
| ✓ One Stop Mall | ✓ Computer Shop | ✓ Lot Distribution |
| ✓ Book Shop | ✓ Crookeries Shop | ✓ Army/Navy/Air Force |
| ✓ Departmental Store | ✓ Electric & Electronics Shop | ✓ Fruit House |
| ✓ Grocery Shop | ✓ Furniture Shop | ✓ Coffee House |
| ✓ Pharmacy | ✓ Medical Equipment | ✓ Fast Food |
| ✓ Procurement & Logistics | ✓ Machineries & Accessories | ✓ Sports Shop |
| ✓ Supply Management | ✓ Automobile Centre | ✓ Lot Distribution |

❖ **Our effective inventory management system can**

- ✓ Integrate POS any time
- ✓ Applicable for any type of Retail and wholesale business
- ✓ Improve the ordering process
- ✓ Maximize order flow
- ✓ Reduce waste
- ✓ Get items on hand when you need them
- ✓ Increase customer satisfaction

➤ **Open source CMS Customization**

Beside custom CMS development, SDL also work for customization of popular open source Content Management System. A Content Management System is a web application that allows publishing, editing and modifying content, organizing, deleting as well as maintenance from a central interface. SDL customizes theme & interface, develop plugins and features that add value to the open source CMS. We also provide update service to our clients so that they can have up of their website without any hassle.

❖ **CMS Applications We Customize**

- | | | |
|-------------|---------------------------------|---------------------|
| ✓ WordPress | ✓ Drupal | ✓ Magento eCommerce |
| ✓ Joomla | ✓ OsCommerce | ✓ Zen Cart |
| ✓ eCommerce | ✓ X-Cart Shopping Cart Software | |

2.3 Company Location

❖ Name and logo of the Organization

SYSTECH DIGITAL LIMITED



ISO 9001:2008 Certified

❖ Head Office:

House 21, Road 31, Sector 7, Uttara, Dhaka-1230

Email: info@systechdigital.com

Web: www.systechdigital.com

❖ City Office:

Level 12, Software Technology Park (Janata Tower), 49 Karwan Bazar Road, Dhaka-1215

Email: daisy@systechdigital.com

Web: www.systechdigital.com

❖ Chittagong Office:

135, Dewan Square (2nd floor), Room No: 302, (Dewanhat More), Double Mooring, Chittagong

Email: arif@systechdigital.com

Web: www.systechdigital.com

❖ Japan Office:

2-73-3 Kameari, Katsushika-ku, Tokyo 125-0061 Tokyo 502

Email: info@systech.co.jp

Web: <http://systechdigital.com.jp>

2.4 Mission

To deliver optimal solutions with quality and services at reasonable prices. For us customer satisfaction is given top place. We are very friendly in our dealings to the customers and it helps us retain existing clients and expand customer circle. We always try to improve the quality of our products by exploring innovative ideas.

2.5 Vision

To develop in a constant manner and grow as a major IT service provider to become a leading performer, in providing quality Web and Software Development solutions in the competitive global marketplace. Our professional, flexible and integrated process reflects in what we do. We always guide our customers to success. We have the ability to accelerate and quickly share the great work or products of your organization or business.

2.6 Organizational Structure:

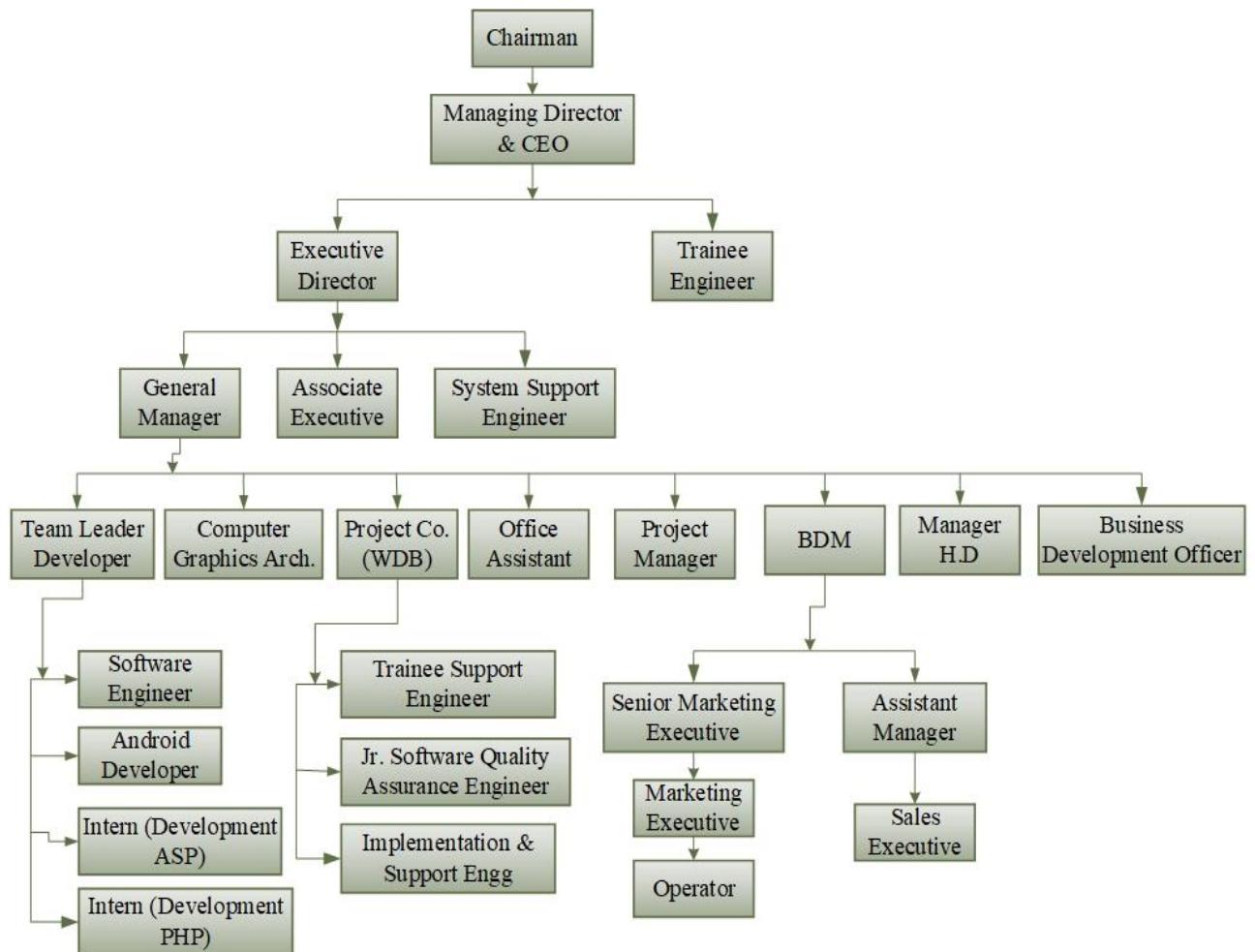


Figure 2.1 Organizational Structure of Systech Digital Limited

Chapter-3

Requirement Engineering

Chapter 3 is representing the requirement engineering, user requirement, system requirement, functional requirement and non-functional requirement. This chapter describes the methodology for the generation of software requirements for **Lead Tracking System**.

3.1 Requirement Engineering

Requirement engineering refers to the process of defining, documenting and maintaining requirements and to the subfields of systems engineering and software engineering concerned with this process. Designing and building an elegant computer program that solves the wrong problem serves no one's need. That's why it is important to understand what the customer wants before we begin to design and build a computer-based system. Requirement engineering encompasses the tasks that lead to an understanding of what the business impact of the software will be, what the customer wants, and how end-users will interact with the software.

- User Requirements
- System Requirements
- Functional Requirements
- Non-Functional Requirements

3.1.1 User Requirements

➤ Administrator

1. Can insert country, city and address.
2. Can insert office details
3. Can insert employee details.
4. Can view employee profile and manage employee details
5. Can set role, resource and permission.
6. Can manage project details.
7. Can view reports.

➤ Sales Executive

8. Can manage follow-up for client
9. Can add schedule information.
10. Can insert meeting history and send email to the Business Development Manager.
11. Can insert TA details and send email to the Business Development Manager.
12. Can insert the sales history.

➤ **Business Development Manager**

13. Can assign sales executive into schedule
14. Can view notifications
15. Can check and approve TA
16. Can view reports.

3.1.2 System Requirements

➤ **Administrator can add country, city and address**

- a. First of all, administrator log in to the system.
- b. System will check he is admin or not.
- c. Administrator add country name.
- d. Add city name.
- e. Add create an address with country, city, area address and postal code.

➤ **Administrator can insert office details**

- a. Administrator will have to log in to the system.
- b. Add company name
- c. Add office name, email, contact no
- d. Select country and city
- e. Insert office address and postal code.

➤ **Administrator can add employee details**

- a. Login to the system for inserting employee information.
- b. Add department, designation and employee type.
- c. Type employee name, email, phone and salary.
- d. Select date of birth, gender, company, office, department, designation and employee type
- e. Save the information into database.

➤ **Administrator can view employee profile and manage employee details**

- a. Login to the system for managing employee
- b. View the employee information
- c. Edit employee information
- d. Delete a specific employee information

➤ **Administrator can set role, resource and permission**

- a. First of all, administrator will log in to the system.
- b. System will check whether he is admin or not.
- c. Add and select role for the system
- d. Insert resource and select the permission
- e. Save the information for the system

➤ **Administrator can manage project details**

- a. First of all, admin will log in to the system.
- b. System will check supplier details.
- c. Insert project information with category and name
- d. Insert project slab info. employee numbers, price and supporting cost
- e. Update project info. from edit button and save into the database
- f. Delete a specific project from deleting option

➤ **Administrator can view reports**

- a. First of all, admin will log in to the system.
- b. System will check whether he is admin or not.
- c. Go to report page and select the report type
- d. View reports such as meeting report, profit analysis report, sales report
- e. Then can save or print reports

➤ **Marketing Executive can manage follow-up for client**

- a. First of all, sales executive will log in to the system.
- b. System will check whether he is employee or not.
- c. Go to client information page
- d. Add a client to follow-up with follow up date
- e. Update or delete follow-up by using buttons when necessary
- f. Then save the information by add button

➤ **Marketing Executive can add schedule information**

- a. First, login to the system
- b. System will check the successful login information
- c. Go to follow-up page for inserting schedule info.

- d. Update or delete a specific schedule if necessary
- e. Then save the info. by add or save button

➤ **Sales Executive can insert meeting history and send email to the Manager**

- a. First, login to the system
- b. System will check the successful login information
- c. Go to meeting history page
- d. Insert meeting status
- e. Attach acknowledgement letter with email address
- f. Send the email by using send button

➤ **Sales Executive can insert TA details and send email to the Manager**

- a. First, login to the system
- b. System will check the successful login information
- c. Go to the TA (Travelling Allowance) page
- d. Insert TA details or attach calculation files
- e. Send the email to the manager by using send button

➤ **Sales Executive can insert sales history**

- a. First, login to the system
- b. System will check the successful login information
- c. Go to the sales history page
- d. Insert sales details
- e. Save the details through save button

➤ **Marketing Executive can manage follow-up for client**

- a. First of all, sales executive will log in to the system.
- b. System will check whether he is employee or not.
- c. Go to client information page
- d. Add a client to follow-up with follow up date
- e. Update or delete follow-up by using buttons when necessary
- f. Then save the information by add button

- **Business Development Manager can assign sales executive into schedule**
 - a. First, login to the system
 - b. System will check the successful login information
 - c. Go to view page for assigning sales executive
 - d. Select available sales executive for a specific schedule
 - e. Update or delete follow-up by using buttons when necessary
 - f. Then save the information by add button
- **Business Development Manager can view notifications**
 - a. First, login to the system
 - b. System will check the successful login information
 - c. View notifications from the notification icon
 - d. Take actions by clicking each notification headings.
- **Business Development Manager can check and approve TA**
 - a. First, login to the system
 - b. System will check the successful login information
 - c. View notifications of TA details
 - d. Approve TA or remark
 - e. Insert into probation if necessary
 - f. Save works and abroad through logout
- **Business Development Manager can view reports**
 - a. First, login to the system
 - b. System will check the successful login information
 - c. Go to report page and select the report type
 - d. View reports such as meeting report, profit analysis report, sales report
 - e. Then can save or print reports

3.1.3 Functional Requirements

- Add, edit and delete country
- Add, edit and delete city
- Add, edit and delete address
- Add, edit, view and delete role, resource or permission

- Add, edit and delete company
- Add, edit and delete department
- Add, edit and delete designation
- Add, edit and delete employee type
- Add, edit and delete employee
- View employee details
- Update employee profiles
- Add, edit and delete project category
- Add, edit and delete project information and project slab
- Add, edit and delete client information
- Add, edit, view and delete call history of client
- Add, edit, view and delete meeting schedule
- View notifications
- Authentication of users
- Validation of form inputs
- Send emails
- Uploading pictures or attach files
- Dynamic user interface
- Using dynamic views for data tables
- Showing paginations and searching in data tables
- View necessary data into data tables
- Store all form inputs
- Necessary validations for each form
- Generate reports
- View reports in pdf forms
- Save or print reports

3.1.4 Non-Functional Requirements

- **Performance Requirement**
 1. Use less data while operating
- **Security and Software Quality**
 2. Portability is required that user can access from anywhere.
 3. Secure data to prevent get lose or damage.

4. Easily adaptable and user-friendly interface is required.
5. Employee can login to the system by using username or email and password.

3.1.5 Specification of Each Requirement

➤ Administrator specification

Function: Log in, set the system and view reports

Description: Access to each and every section of the system.

Input: Administrator input necessary data for setting system.

Output: System starts successfully.

Action: Information accepted or rejected.

Side effects: None

Side effects: None

➤ Sales Executive specification

Function: Log in, add information, manage schedule, meetings and clients.

Description: Easily use the system for his useful purpose.

Input: Sales Executive inputs schedule info, meeting and sales history

Output: Information submits successfully, view permissions.

Action: Request & information accepted or rejected.

Side effects: None

➤ Business Development Manager specification

Function: Log in, add information, manage schedule and probation, view reports

Description: Easily use the system for his useful purpose.

Input: Business Development Manager inputs meeting permissions, remarks, send emails

Output: Information submits successfully, view reports and notifications.

Action: Request & information saved successfully.

Side effects: None

3.2 Use Case Diagram

In order to achieve the highest understanding of the project next there will be illustrations containing various cases of system. First, the following diagram is the use case diagram of the system.

➤ Use case diagram for Administrator

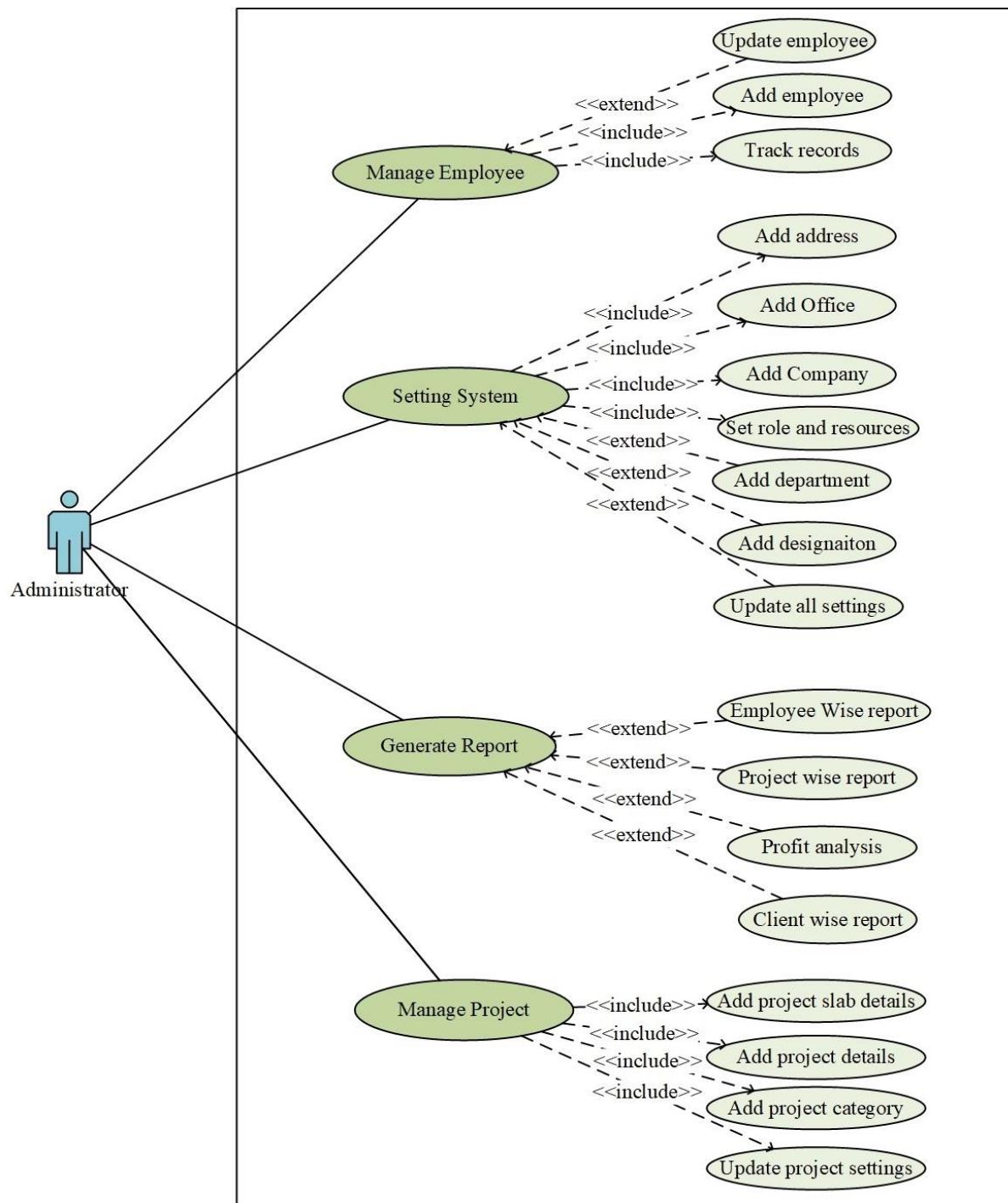


Figure 3.1 Use case diagram for Administrator

➤ Use case diagram for Marketing Executive

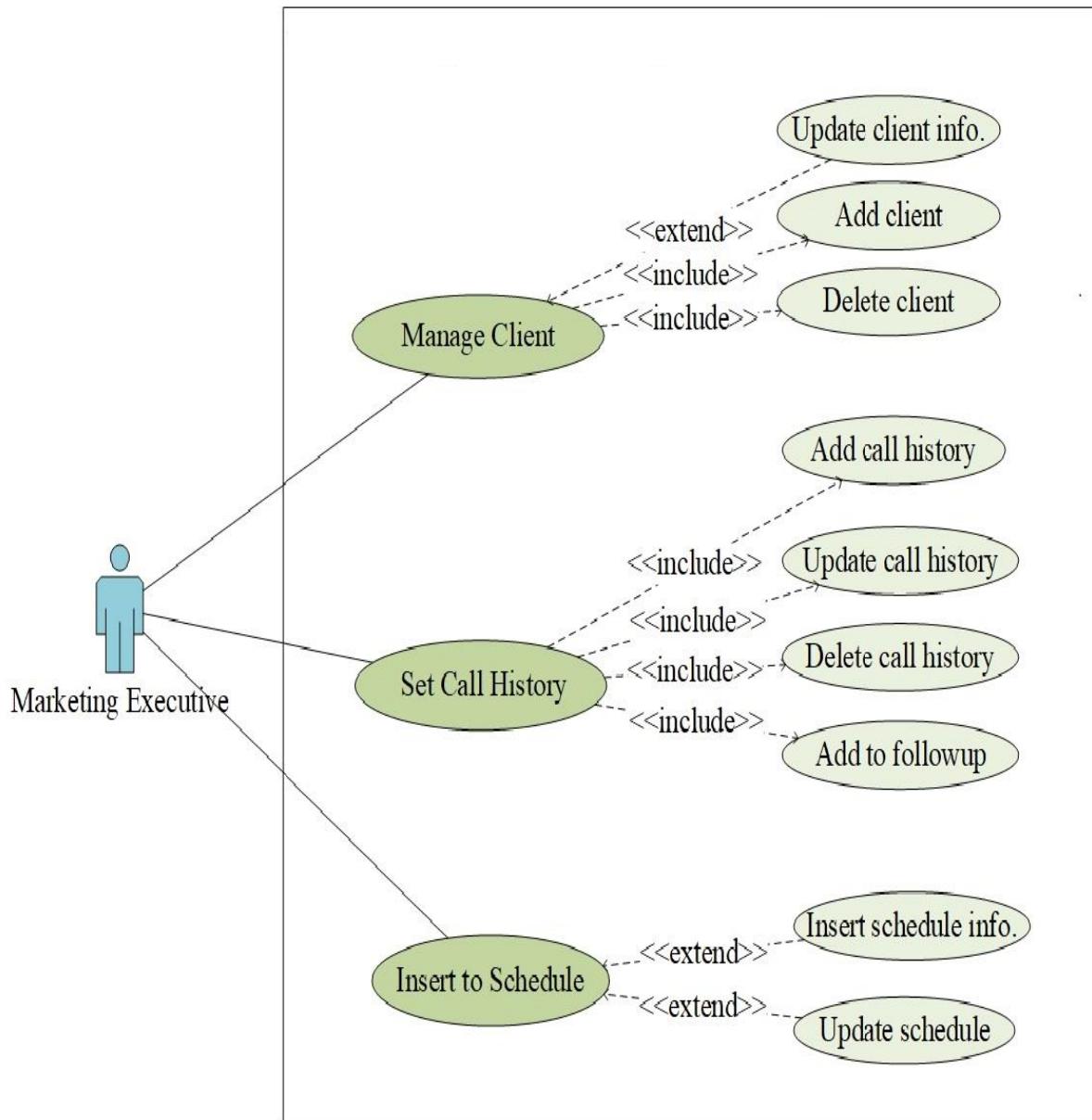


Figure 3.2 Use case diagram for Marketing Executive

➤ Use case diagram for Sales Executive

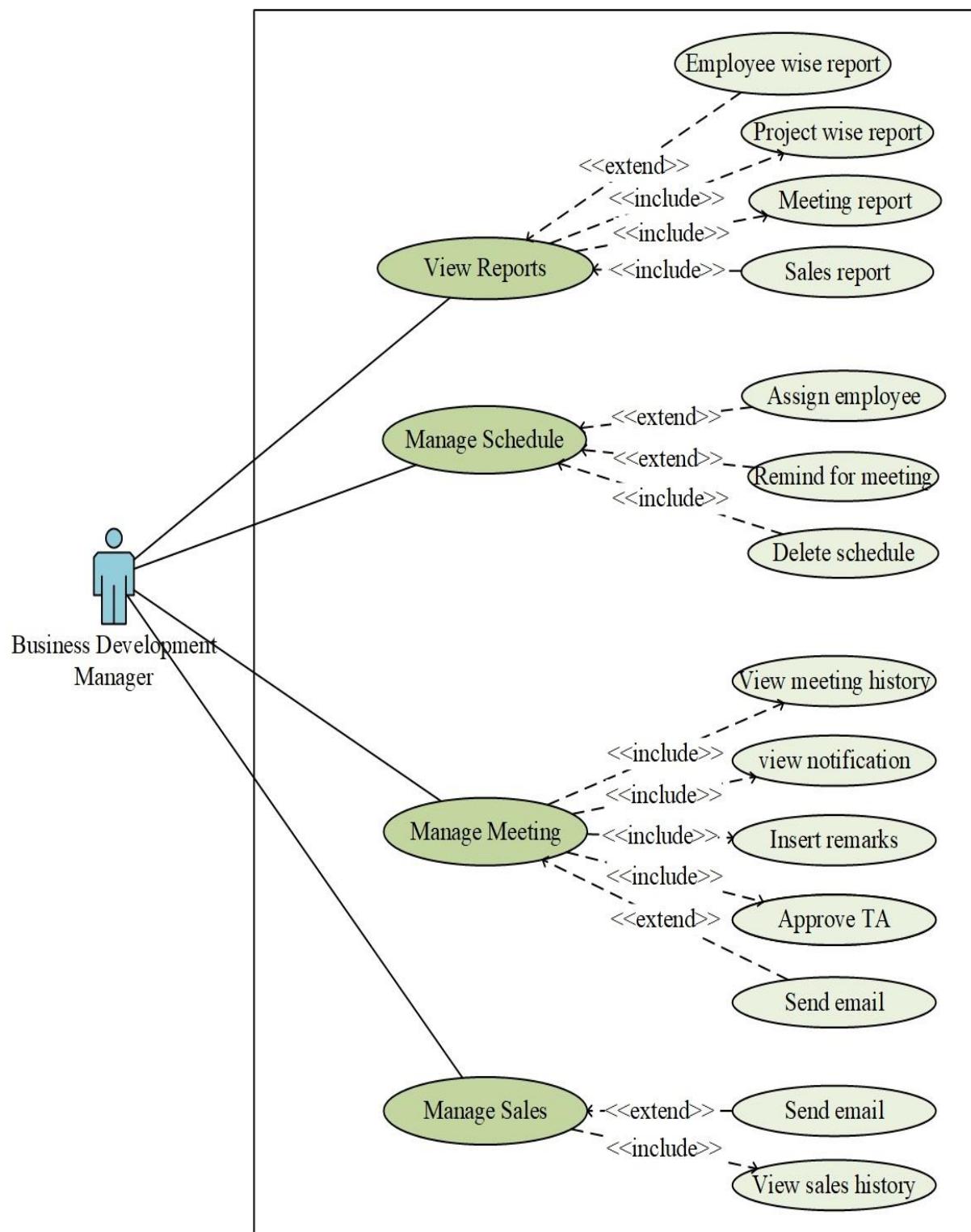


Figure 3.3 Use case diagram for Sales Executive

➤ Use case diagram for Business Development Manager

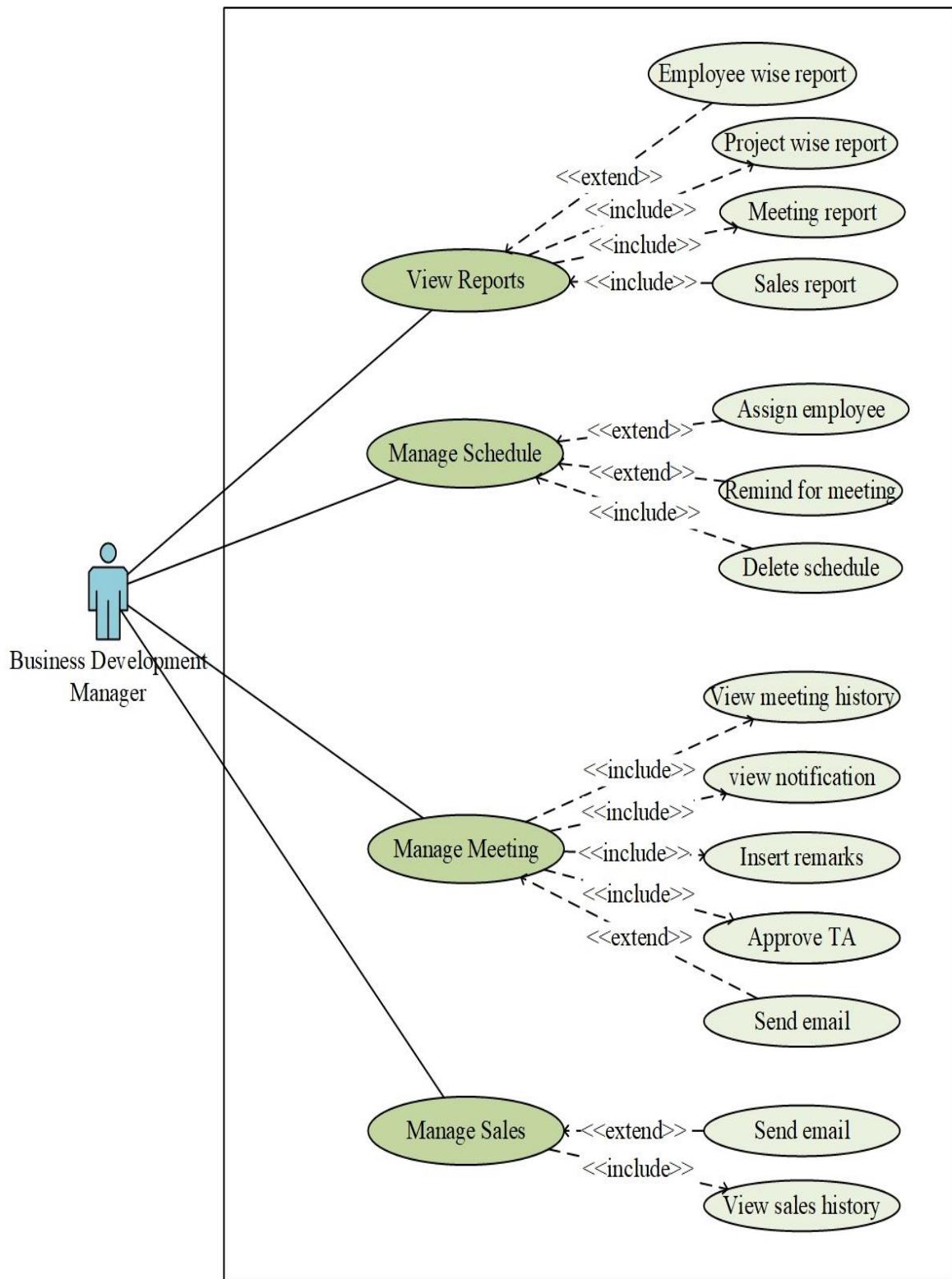


Figure 3.4 Use case diagram for Business Development Manager

➤ Use case diagram for Lead Tracking System

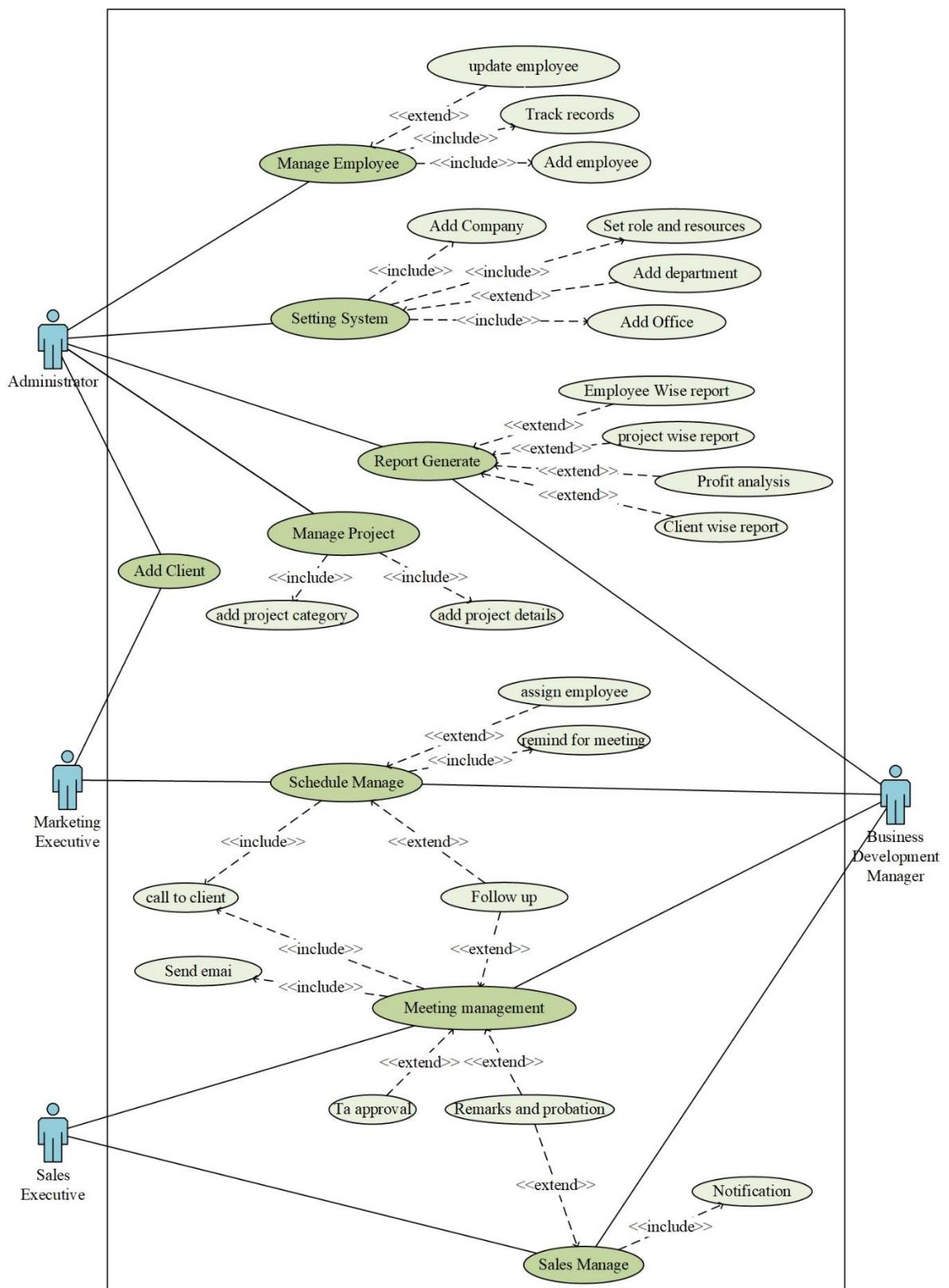


Figure 3.5 Use case diagram for Lead Tracking System

Chapter 4

System Planning

Chapter 4 is representing the system project estimation, function-oriented metrics, function point estimation, and process-based estimation, effort distribution, and task scheduling and cost estimation for the project **“Lead Tracking System”**

4.1 Functions of Proposed System

Table II. Functions of the proposed system

Function Name	Short Name
1. Role and permission Management System	[F1]
2. Employee Management System	[F2]
3. Project Management System	[F3]
4. Client Management System	[F4]
5. Schedule Management System	[F5]
6. Meeting Management System	[F6]
7. Sales Management System	[F7]
8. Notification Management System	[F8]
9. Generate report	[F9]

4.2 Function Point Estimation

In this project, Function point estimation is measured the amount of functionality. It will be also measured the project size. Function point estimation has five standard functions which are:

Data Functions:

- Internal Logical Files [ILF]
- External interface files [EIF]

Transactional Functions:

- External Inputs [EI]
- External Outputs [EO]
- External Queries [EQ]

Also, DET, RET and FTR have been applied for the analysis of data functions and transactional functions

Number of external inputs – Each user input that provides distinct application-oriented data to the software is counted inputs should be distinguished from inquires.

Number of external outputs – Each user output that provides application-oriented information to the user is counted.

Number of external inquiries – An inquiry defined as an on-line input those results in the generation of some immediate software response in the form of an on-line output. Each distinct inquiry counted.

Number of Internal Logical files – Each logical internal file is a logical grouping of data that resides within the application's boundary and is maintained via external inputs.

Numbers of external interfaces – All machine-readable interfaces that used to transmit information to another system counted.

The following table shows the complexity matrix for function components.

Table II: Complexity Matrix for FP Function Components

ILF/EIF	DET			EI	DET			EO/EQ	DET		
	1-19	20-50	51+		FTR	1-4	5-15		FTR	1-5	6-19
RET	1-19	20-50	51+	FTR	1-4	5-15	16+	FTR	1-5	6-19	20+
1	Low	Low	Avg	0-1	Low	Low	Avg	0-1	Low	Low	Avg
2-5	Low	Avg	High	2	Low	Avg	High	2-3	Low	Avg	High
6+	Avg	High	High	3+	Avg	High	High	4+	Avg	High	High

The following table shows the function component complexity weight assignment.

Table III: Function Component Complexity Weight Assignment

Component	Low	Average	High
External Inputs	3	4	6
External Outputs	4	5	7
External Inquiries	3	4	6
Internal Logical Files	7	10	15
External Interface Files	5	7	10

4.2.1 Function Description

1. Employee Management

Input: Add department, designation, employee type in to the system. For adding an employee, type name, email, phone, salary and select date of birth, gender, company name, office name, department name, designation name, employee type. Edit the employee profile from selected fields. Update or add address from the employee profile.

Output: Profile of an employee.

Use table of the database: departments, designations, employee types, companies, offices, addresses, employees

2. Role and permission Management System

Input: Add new role and give permissions to the users for the system. Update information and delete content's record for different pages.

Output: Role will assign to user profile

Use table of the database: Roles, Permissions, Users

3. Project Management

Input: Add project category name, type project name, project details, project slab name, number of employees, project price, supporting cost for identifying a specific project. Update project info. from selected option.

Output: Insert project and view project information in details in data table

Use table of the database: projects, project_categories, project_slabs

4. Client Management

Input: Enter client's name, company name, phone and email address for identifying a specific client or customer. For call history of client, select project and call status. Follow-up information of a client needs the input of date and time for follow-up. Update the necessary information from the selected fields.

Output: System will view the necessary information of clients in the data tables.

Use table of the database: clients, addresses

5. Manage schedule

Input: Select project name, meeting date, name of the employee for meeting, source, destination, cost, status for scheduling the meeting. Update the schedule info for the meeting from the selected inputs.

Output: View project name, meeting date, employee, status in the schedule data table.

Use table of the database: schedules, employees, projects, clients, addresses

6. Meeting Management

Input: Meeting history requires the inputs of client's name, project's name, meeting address, attachment of meeting minutes or descriptions. Update the necessary information from the selected inputs.

Output: Meeting time, status, projects etc. all meeting information will be visible in data tables

Use table of the database: clients, users, meetings, projects, addresses, t_as

7. Manage sales history

Input: Sales history requires the inputs of client's name, sales executive name or employee name, sales status, price, TA de etc. Update the necessary information from the selected inputs.

Output: Sales history data field will be visible in sales data table

Use table of the database: clients, meetings, projects, project_slabs, users, sales, t_as

8. Notifications Management

Input: add schedule and meeting

Output: System will show the notification at the users or employees page

Use table of the database: users, notifications, clients

9. Report generation for sales history

Input: Takes the necessary inputs for generating reports, such as date wise, month wise, employee wise etc.

Output: Detailed sales history will be generated

Use table of the database: clients, meetings, projects, project_slabs, users, sales, t_as

4.2.2 System Project Planning

Software project management commences with a set of activities that collectively called software project planning. Before starting any project, it is compulsory to estimate the work to be done, the resources that will be required, the time will elapse from start to finish and to analyze the project to determine whether it is feasible or not.

The following activities of software project planning that have followed in this project are:

- System Project Estimation
- Function Oriented Metrics
- Process Based Estimation
- Effort Distribution
- Task Scheduling
- Project Schedule Chart
- Cost Estimation

4.2.3 System Project Estimation

The accuracy of a software project estimate predicated based on a number of things:

1. Properly estimated the size of the product to build.
2. The ability to translate the size estimation into human effort, calendar time and money.
3. The degree to which the project plan reflects the abilities of the software team or engineer.
4. The stability of the product requirements and the environment that supports the software engineering effort.

4.2.4 Identifying Complexity for Transaction Function

Table III. Identifying Complexity for Transaction Function

Transaction Function	Fields / File Involvement	FTRs	DETs
Login (EI)	File- users Fields- Email, Password, Submit	1	3
Add & Update Role User (2*EI)	File – roles, users Fields – Role, User, Submit	2	5
Delete Role User (EI)	File – users, roles Fields – Role id, user_id, role user_id, submit	2	4
Add & Update Company (2*EI)	File - companies Fields – Company Name, Submit	1	2

Delete Company (EI)	File – companies Fields – Company Id, Delete, Confirm	1	3
Add & Update Office (2*EI)	File – offices, companies, address Fields – Select Company, Office Name, Email, Phone, Select Country, Select City, Address, Postal Code, Submit	2	9
Delete Office (EI)	File – offices Fields – Office Id, Confirm	1	2
Add & Update Employee (2*EI)	File – employee, users, addresses, designations, company, office, employee_types, departments Fields – Name, Select Date of Birth, Select Gender, Email, Phone, Select Company, Select Office, Select Department, Select Designation, Select Employee Type, Salary, Submit	8	13
Delete Employee (EI)	File – addresses, users, employee_informations Fields – Employee Id, Press Delete, Confirm	3	3
View Employee Profile (EO)	File – employee, users, addresses, designations, company, office, employee_types, departments, country, city Fields – Employee Id, Name, Email, Join Date, Company, Office, Department, Employee Type, Designation, Gender, Phone, Date of Birth, Salary, Country, City, Address, Postal Code, Activity Status.	9	15
Add & Update Project Information (2*EI)	File – projects_category, projects Fields – Select Category Name, Project Name, Project Details, Status, Submit	2	6
Delete Project Information (EI)	File – projects Fields – Project Id, Press Delete, Confirm	1	3
Add & Update Client (2*EI)	File – clients Fields – Name, Company, Phone, Email, Submit	1	6

Delete Client Information (EI)	File – clients Fields – Client Id, Press Delete, Confirm	1	3
Add & Update Call History (2*EI)	File – call_histories, users, clients Fields – Client Name, Phone, Select Project Name, Call status, Submit	3	6
Delete Call History (EI)	File – call_histories Fields – Call History Id, Press Delete, Confirm	1	3
Add & Update Follow Up (2*EI)	File – call_histories, followups, clients Fields – Client Name, Client Phone, Project Name, First Name, Update Time, Date to Follow up, status, Submit	3	6
Delete Follow Up (EI)	File – followups Fields – Follow up Id, Press Delete	1	3
Add & Update Schedule (2*EI)	File – schedules, clients, users, call_histories Fields – Client Name, Project Name, Employee, Meeting Date, Status, Submit	3	7
Delete Schedule (EI)	File – schedules, notifications Fields – Schedule Id, Press Delete, Confirm	2	4
View Schedule (EO)	File – schedules, clients, users, call_histories Fields – Client Name, Project Name, Employee, Meeting Date, Status	3	7
Add & Update Meeting History (2*EI)	File – schedules, clients, users, call_histories, meetings Fields – Client Name, Project Name, Employee, Meeting Date, Status, download, Submit	4	9
Delete Meeting (EI)	File – meetings, notifications Fields – Meeting Id, Press Delete, Confirm	1	4
View Meeting History (EO)	File – schedules, clients, users, call_histories, meetings Fields – Client Name, Project Name, Employee, Meeting Date, Status, download, Submit	3	8

Add & Update Sales History (2*EI)	File – sales, meetings, users, clients, projects, projects_slab Fields – Client Name, Employee Name, Project Name, Select Project Slab, Price, Meeting Date, Remark, Status, Submit	2	4
Delete Sales History (EI)	File – Sales, notifications Fields – Meeting Id, Press Delete, Confirm	2	5
View Sales History (EO)	File – sales, meetings, users, clients, projects, projects_slab Fields – Client Name, Employee Name, Project Name, Select Project Slab, Price, Meeting Date, Remark, Status, Submit	4	13
Generate Report (EQ)	File – users, employee_informations, clients, sales, meetings Fields – Project Slab, Price, Sales History, Meeting, Schedule, submit, clients, users, profits	4	12
Notification (EQ)	File – schedules, notifications Fields – Project Slab, Price, Status, Sales History, Meeting, Schedule, time, addresses, files	2	11

4.2.5 Identifying Complexity for Data Function

Table V. Identifying Complexity for Data Function

Data Function	Fields / File involvement	RETs	DETs
Call_histories (ILF)	Fields – ClientId, ProjectId, Status, time,user_id	3	5
Client (ILF)	Fields – Name, Company, Phone, Email, Status	1	5
Company (ILF)	Fields – Name	1	1
Employee (ILF)	Fields – Name, Company, Address, Department, Office, Designation, Employee Type, Path, Gender, Phone, Date of birth, Salary, Status, country,city	7	15
Follow Up (ILF)	Fields – Employee Name, Call History, Follow-up, time, create time	2	5

Meeting (ILF)	Fields – Schedule, Path, Meeting Time, Tag, Status, userID, projectId, project_slabId, create_time	4	7
Office (ILF)	Fields – Company Name, Address, Name, Email, Phone, Status	2	6
Project	Fields – Name, Category, Details, Status, categoryId, createAt	2	6
Role (ILF)	Fields – Name, Description	1	2
Sale (ILF)	Fields – Client, Project, Slab, Price, Remarks, Status, userId	3	7
Schedule (ILF)	Fields – Address, Employee, users, projectSchedule Time, Status	3	8
TA (ILF)	Fields – Schedule, Meeting, Source, Destination, Cost, Remarks, Status	2	7
Notifications (ILF)	Fields – id, type, notifyable_type, data,	3	7

4.2.6 Unadjusted Function Point Contribution for Transaction Function

Table VI. Unadjusted Function Point Contribution for Transaction Function

Transaction Function	FTRs	DETs	Complexity	UFP
Login (EI)	1	3	Low	3
Add & Update Role User (2*EI)	2	5	2 * Avg	8
Delete Role User (EI)	2	4	Low	3
Add & Update Company (2*EI)	1	2	2 * Low	6
Delete Company (EI)	1	3	Low	3
Add & Update Office (2*EI)	2	9	2 * Avg	8
Delete Office (EI)	1	2	Low	3
Add & Update Employee (2*EI)	8	13	2 * High	12
Delete Employee (EI)	3	3	Avg	4
View Employee Profile (EO)	9	15	High	7
Add & Update Project Information (2*EI)	2	6	2 * Avg	8
Delete Project Information (EI)	1	3	Low	3
Add & Update Client (2*EI)	1	6	2 * Low	6

Delete Client Information (EI)	1	3	Low	3
Add & Update Call History (2*EI)	3	6	2 * High	12
Delete Call History (EI)	1	3	Low	3
Add & Update Follow Up (2*EI)	3	6	2 * High	12
Add & Update Schedule (2*EI)	3	7	2*Avg	8
Delete Schedule (EI)	2	4	Low	3
View Schedule (EO)	3	7	Avg	4
Add & Update Meeting History (2*EI)	4	9	2 * High	12
Delete Meeting (EI)	1	4	Low	3
View Meeting History (EO)	3	8	High	7
Add & Update Sales History (2*EI)	2	5	2 * Avg	8
Delete Sales History (EI)	2	5	Avg	4
View Sales History (EO)	4	13	High	7
Generate Report (EQ)	4	12	High	6
Notification (EQ)	2	11	Avg	4
Total				157

4.2.7 Unadjusted Function Point Contribution for Data Function

Table VII. Unadjusted Function Point Contribution for Data Function

Data Function	RETs	DETs	Complexity	UFP
Call History (ILF)	3	5	Avg	10
Client (ILF)	1	5	Low	7
Company (ILF)	1	1	Low	7
Employee (ILF)	7	15	Average	10
Follow Up (ILF)	2	5	Low	7
Meeting (ILF)	4	7	Low	7
Office (ILF)	2	6	Low	7
Project (ILF)	2	6	Low	7
Role (ILF)	1	2	Low	7
Sale (ILF)	3	7	Low	7

Schedule (ILF)	3	8	Low	7
TA (ILF)	2	7	Low	7
Notifications (ILF)	3	7	Low	7
Total				97

4.2.4 Performance and Environmental Impact

Table VIII. Performance and Environmental Impact

Number	Factor	Value
1	Data communications	2
2	Distributed data processing	0
3	Performance	3
4	Heavily used configuration	3
5	Transaction rate	2
6	Online data entry	4
7	End user efficiency	4
8	Online update	0
9	Complex processing	3
10	Reusability	3
11	Installation ease	3
12	Operation ease	3
13	Multiple sites	0
14	Facilitate change	3
Total Degree of Influence (TDI)		33

$$\text{Value Adjustment Factor (VAF)} = (0.65 + (.01 \times \text{TDI}))$$

$$= (0.65 + (.01 \times 33))$$

$$= 0.98$$

$$\text{UFP} = \text{UFP} (\text{Transaction Function}) + \text{UFP} (\text{Data Function})$$

$$= 157 + 97$$

$$= 254$$

$$\text{Adjustment Function Point Count (AFP)} = \text{UFP} * \text{VAF}$$

$$= 264 * 0.98$$

$$= 248.72$$

$$\text{Effort for PHP} = \text{AFP} * \text{Productivity}$$

$$= 248.92 * 15.5$$

= 3868.26-person hours/ 9 hours
 = 429.8-person days/ 26 days
 = 16.53 person / 4 persons
 = 4.13 months
 ≈ Approx. 4 months

4.3 Process Based Estimation

In process-based estimation, process is decomposed into a relatively small set of tasks and the effort required to accomplish each task is estimated. Process based estimation begins with a delineation of software functions obtained from the project scope. A series of software process activities must be performed for each function.

Table IX. Process Based Estimation

Activity	CC	Planning	Risk Analysis	Engineering		Construction		CE	Total
Function				Analysis	Design	Code	Test		
F1	0.25	2	0.21	0.55	1.5	0.55	0.25	N/A	1.70
F2	0	0.5	0.25	0.25	0.15	0.15	0.25	N/A	0.70
F3	0.72	1	0.25	0.25	0.25	0.35	0.45	N/A	2.30
F4	0.14	0.75	0.03	0.25	0.25	0.75	0.45	N/A	1.20
F5	0.13	0.24	.75	0.28	0.20	0.30	0.30	N/A	1.40
F6	0.32	0.75	0.5	0.35	0.25	0.25	0.25	N/A	1.00
F7	0.15	0.25	0	0.20	0.20	0.30	0.10	N/A	1.30
F8	0	1.5	0	0.65	0.75	0.25	0.45	N/A	1.20
F9	0.15	0.5	0.5	0.20	0.30	0.30	0.10	N/A	1.40
Total	1.71	4.99	2.49	3.2	2.4	3.2	2.5		20.49
%Effort	8.32%	22.35%	15.13%	15.67%	11.71%	14.61%	12.2%		100%

4.2.4 Time Line Calculation

Process Based Estimation = 20.49 /man months

Estimated time for the project = Estimated Man Month / 4

= (16.49/ 4) months

= 4.11

≈ 4 months need for 4 people to complete this system.

4.2.5 Effort Based Estimation

The following chart shows the effort distribution for the project Lead Tracking System.

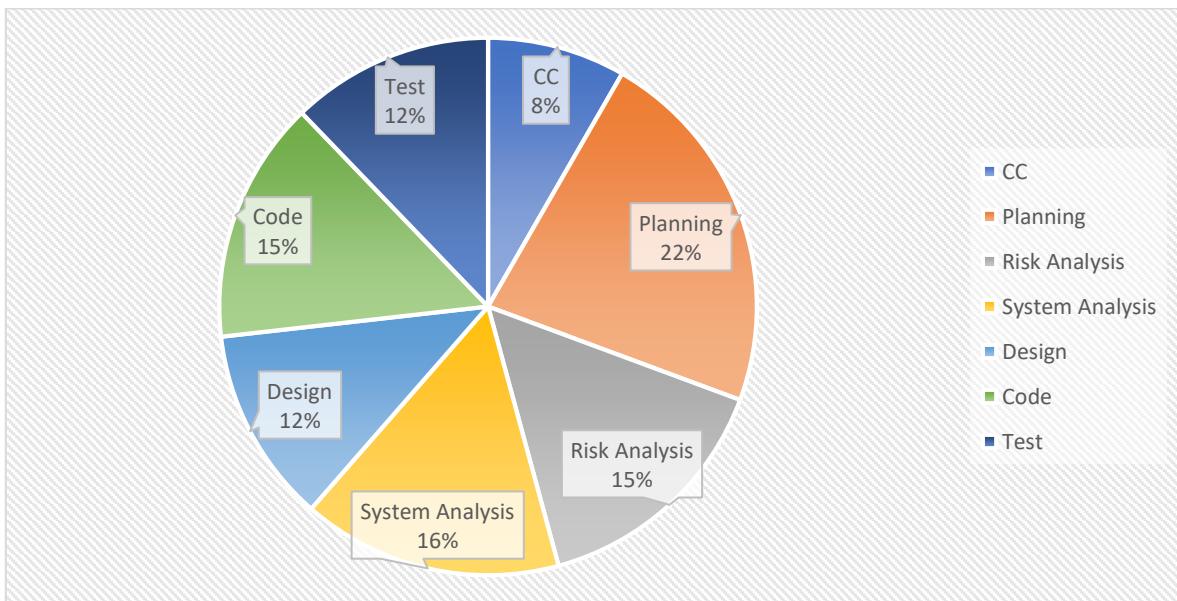


Figure 4.1 Effort Based Estimation

4.3 Task Scheduling

Project scheduling is an activity of distributing the estimated efforts within the planned project duration. There are some basic rules for project scheduling. They are as follows

Compartmentalization – The project must compartmentalize into a number of manageable activities and tasks.

Interdependency – The interdependency of each compartmentalized activity or task must be determined. Some tasks must occur in sequence while others can occur in parallel.

Time allocation – Each task to be scheduled must allocated some number of work units.

Effort validation – Every project has a defined number of staff members. It should ensure that no more than the allocated number of people has scheduled at any given time.

Defined responsibilities – Every task that is scheduled should assign to a specific team member.

Defined outcomes – Every task that is scheduled should have a defined outcome. The outcome is normally a work product or a part of a work product.

4.4.1 Project Schedule Chart

Total system development is a combination of set of tasks. These set of tasks should do sequentially and timely. Project schedule works as the guideline of the system developer. The following is the schedule chart of this project:

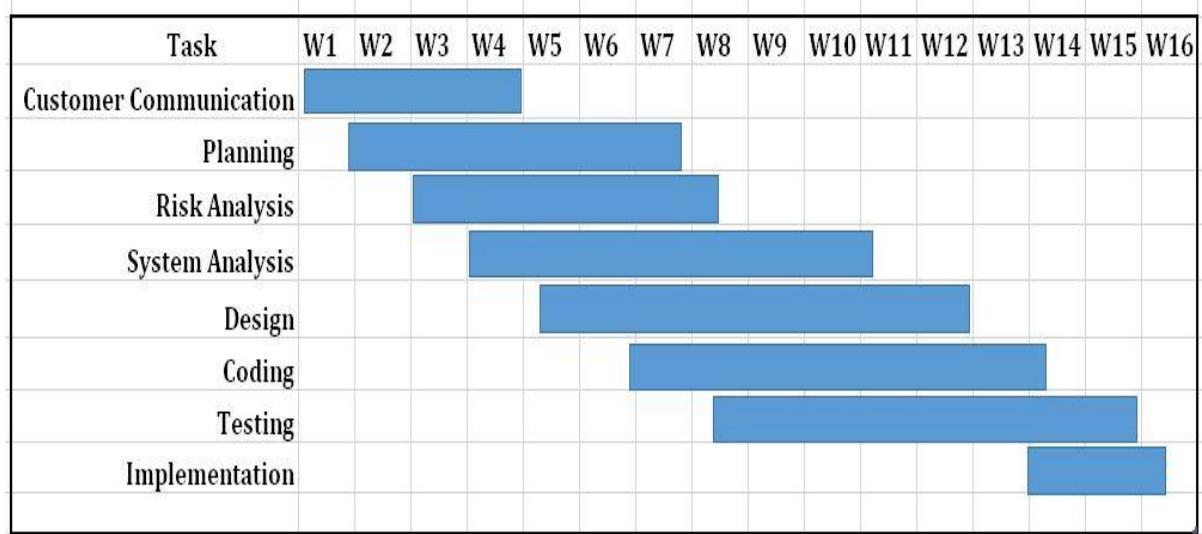


Figure 4.2 Project Schedule Chart

4.4.2 Cost Estimation

1. Personnel Cost
2. Software Cost
3. Hardware Cost

✓ Personal Cost

Table X. Personnel cost

Type	No. of Members	Months	Salary
System Analyst	1	1	20,000
Developer	1	1	15,000
Tester	1	1	15,000
Total			88,000 TK

✓ **Hardware cost**

Cost of a Laptop = 65000

Computer life = 1.5 years

Computer usage = 16 weeks = 4 months

Computer cost = $(35000/18) \times 4 \times 2 = 28,888.88$ BDT

✓ **Software cost**

Table XI. Software cost

Name	Price
JetBrain PHP Storm	10000
Windows 10	11500
Total	21500 BDT

✓ **Total Cost:**

Table XII. Total cost

Purpose	Amount
Salary	88,000
Hardware	28,888.88
Software	21,500
Total	138,388.88 BDT

In word: One Lac Thirty-Eight Thousand Three Hundred Eighty-Eight TK Only

Chapter 5

Risk Engineering

Chapter 5 is representing the risk management, risk identification, risk classification, risk assessment, risk analysis, technical risks, business risks, risk mitigation, risk monitoring, risk management and project risk. In section 5.1 and 5.2, the detail risk management is discussed along with the LTS plan.

5.1 Risk Management

A risk is a potential problem that might or might not happen. It is necessary to analyze the potential risks in a project. If the risks of a software project are not properly analyzed and estimated, many problems can plague the software project. Risk analysis and management are a series of steps that help a software team to understand and manage uncertainty.

To establish a risk management model the following phases are followed:

- Risk identification is the process of detecting potential risks or hazards through data collection. A range of data collection and manipulation tools and techniques exists. The team is using both automated and manual techniques to collect data and begin to characterize potential risks to Web resources. Web crawling is one effective way to collect information about the state of Web pages and sites.
- Risk classification is the process of developing a structured model to categorize risk and fitting observable risk attributes and events into the model. The team combines quantitative and qualitative methods to characterize and classify the risks to Web pages, Web sites, and the hosting servers.
- Risk assessment is the process of defining relevant risk scenarios or sequences of events that could result in damage or loss and the probability of these events. Many sources focus on risk assessment. Rosenthal describes the characteristics of a generic standard for risk assessment as "transparent, coherent, consistent, complete, comprehensive, impartial, uniform, balanced, defensible, sustainable, flexible, and accompanied by suitable and sufficient guidance.
- Risk analysis determines the potential impact of risk patterns or scenarios, the possible extent of loss, and the direct and indirect costs of recovery. This step identifies vulnerabilities, considers the willingness of the organization to accept risk given potential consequences, and develops mitigation responses.
- Risk management implementation defines policies, procedures, and mechanisms to manage. The implemented program should balance the value of assets and the direct and indirect costs of preventing or recovering from damage or loss. To take comprehensive care of a web-based system we must consider the following points.

- Hardware and software environment, including any upgrades to the operating system and Web server, the installation of security patches, the removal of insecure services, use of firewalls, etc.
- Administrative procedures, such as contracting with reputable service providers, renewing domain name registration, etc.
- Network configuration and maintenance, including load balancing, traffic management, and usage monitoring.
- Backup and archiving policies and procedures, including the choice of backup media, media replacement interval, number of backups made and storage location.
- Physical location of the server and its vulnerability to fire, flood, earthquake, electric power anomalies, power interruption, temperature fluctuations, theft, and vandalism.

There are different categories of risks that should be considered in any software project. The following categories of risks have been considered in this software project:

Project risks: These risks threaten the project plan. If these risks become real, it is likely that the project schedule will slip and that costs will increase. Project risks identify potential budgetary, schedule, personnel, resource, customer and requirement problems and their impact on the software project.

Technical risks: These risks threaten the quality and timeliness of the software to be produced. If a technical risk becomes a reality, implementation may become difficult or impossible. Technical risks identify potential design, implementation, interface, verification and maintenance problems. Moreover, specification ambiguity, technical uncertainty, technical obsolescence is also risk factors.

Business risks: These risks threaten the viability of the software to be built. The business risks can be –

- a. Building a system that no one really wants – market risks.
- b. Building a system that no longer fits into the overall business strategy for the company – strategic risks.
- c. Building a system whose business needs have been changed.
- d. Losing the support of senior management due to a change in focus or a change in people – management risks.
- e. Losing budgetary or personnel commitment – budget risks.

5.2 The RMMM Plan

5.2.1 Risk Identification

Table XIII. Risk Identification

Risk type	Possible risks
Technology	1. Security of the system 2. Reusable software components may contain defects and cannot be reused as planned.
People	3. Key staff is ill and unavailable at critical times. 4. Required training for staff is not available.
Organizational	5. Organizational financial problems force reductions in the project budget.
Requirement	6. Changes to requirements that require major design rework are proposed.

5.2.2 Risk Analysis

Table XIV. Risk Analysis

Risk	Probability	Effects
Organizational financial problems force reductions in the project budget.	Low	Catastrophic
Security of the system.	High	Serious
Reusable software components contain defects that mean they cannot be reused as planned.	Moderate	Serious
Changes to requirements that require major design rework are proposed.	Moderate	Serious
Required training for staff is not available.	Moderate	Tolerable
Customers fail to understand the impact of requirements changes.	Moderate	Tolerable

5.2.3 Risk Planning

Table XV. Risk Planning

Risk	Strategy
Security	Investigate the possible security leaks and measurements
Organizational financial problems	Prepare briefing documents for senior management showing how the project is making a very important contribution to the goals of business and presenting reasons why cuts to the project budget would not be cost-effective.
Requirements problem	Alerts customer to potential difficulties and possibility of delays; investigate buying in component.
Staff illness	Reorganize them so that there is more overlap work and people therefore understand each other jobs.
Defective component	Replace defective potential component with bought in component of known reliability.
Requirements changes	Replace defective potential component with bought in component of known reliability.
Requirements changes	Derive traceability information to assess requirements change impact; maximizing information hiding in the design.

5.2.4 Risk Monitoring

- A re-planning of the project occurs. New task schedule and milestones are defined. Staffs work on their assigned jobs within the new timeframe.
- In order to prevent this from happening, the software will develop with the end user in mind.
- The user-interface will be designed in a way to make use of the program convenient and pleasurable.
- Meetings (formal and informal) will be held with the stakeholders regularly. This insures that the product we are producing solves a problem.
- The development cost of the software may increase by 20%. Consult with the System Analyst during the system analysis, design and testing phase of the software project.
- Proper coding grammar is followed to make sure that the codes are easily understandable and reusable.

Table XVI. Project Risk (P01)

Name	Changes the requirements
Probability	Low (18%)
Impact	Marginal (2)
Description	Company may change their requirements
Mitigation & Monitoring	Requirements are redefined by the company due to time or business needs. Meeting will be held with the company regularly. This insures that the product we are producing solves a problem.
Management	Emergency meeting between both parties to identify new project requirements and goals.
Status	Not occur

Table XVII. Business Risk (B01)

Name	Insufficient Budget
Probability	Moderate (35%)
Impact	Marginal (2)
Description	If the budget is low project may not complete.
Mitigation & Monitoring	The project needs server that is costly to set-up. We find several alternative streaming services to reduce the budget risk.
Management	Refinement in project goal. A new plan for regulate the budget.
Status	Problem resolved.

Table XVIII. Business Risk (B02)

Name	End Users Accept System
Probability	Low (15%)
Impact	Critical (4)
Description	The system fails to gain user's faith
Mitigation & Monitoring	In order to prevent this from happening, the software will develop with the end user in mind. The user-interface will design in a way to make use of the program convenient and pleasurable.
Management	Training the users to familiarize them with the new system. Releasing patches/bug fixes for greater user satisfaction.
Status	The risk has not been arisen yet.

Table XIX. Technical Risk (T01)

Name	Lack of Experience
Probability	Low (20%)
Impact	Tolerable (3)
Description	Lack of members experience
Mitigation & Monitoring	The development cost of the software may increase by 20%. Consult with the System Analyst during the system analysis, design and testing phase of the software project.
Management	Though the development cost is increased by 20%, the project is still feasible. Set appointment for formal meeting with the System Analyst to solve different problems of each of the phases.
Status	The risk has not been arisen yet.

Table XX. Technical Risk (T02)

Name	Computer Crash
Probability	High (60%)
Impact	Tolerable (3)
Description	Computer can be crash.
Mitigation & Monitoring	We should take proper follow up of computers. We also take regular data backup every day, we can use IPS to stop unexpected shutdown.
Management	If our computer has been crashed then we will restore backup.
Status	The risk has not been faced yet.

Chapter-6

Analysis & Design

This chapter is representing the diagrams and interface design of the project. In system analysis a study of the system as detailed as possible will occur with the help of some diagrams i.e. Activity Diagram, Swim Lane Diagram, ER Diagram, DFD etc.

6.1 Activity Diagram

Activity diagram is another important diagram in UML to describe the dynamic aspects of the system. Activity diagram is basically a flowchart to represent the flow from one activity to another activity. The activity can be described as an operation of the system.

6.1.1 Activity Diagram for Login

Figure 6.1 describe the activity login

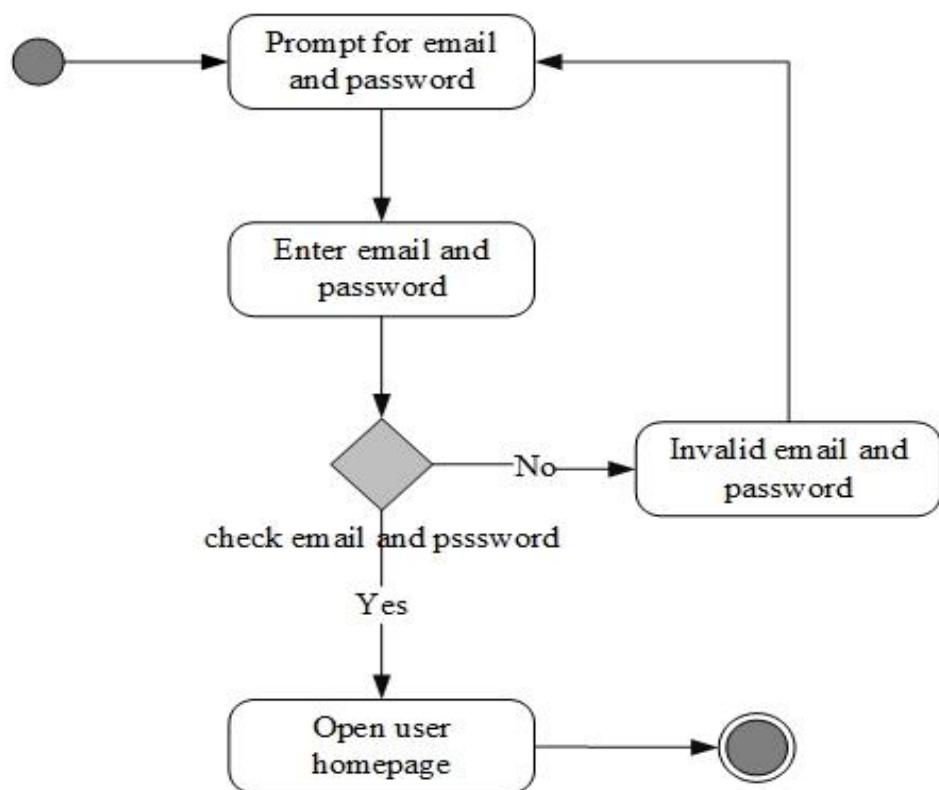


Figure 6.1 Activity diagram of login

6.1.2 Activity Diagram for insert employee

Figure 6.2 describe the activity of new employee insert.

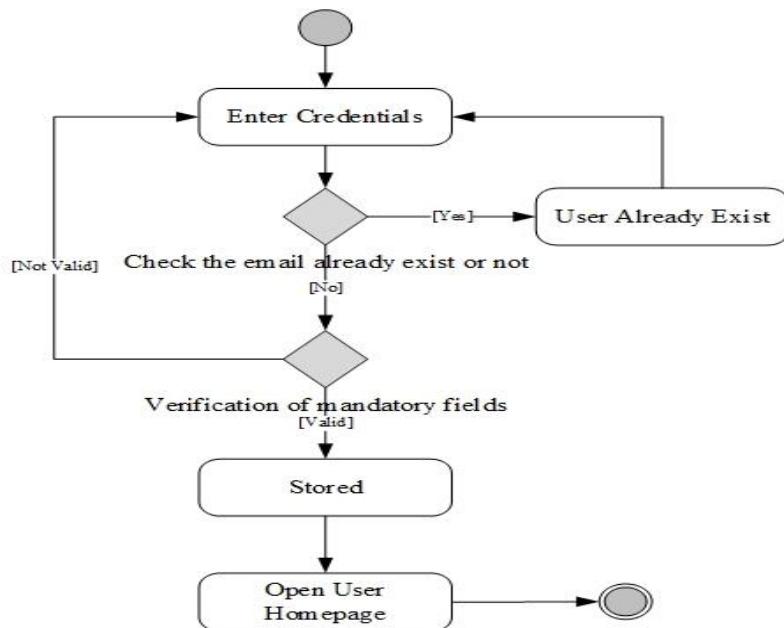


Figure 6.2 Activity diagram for inserting employee

6.1.3 Activity Diagram for Notification

Figure 6.3 describe the activity of sending notification of “Lead Tracking System”.

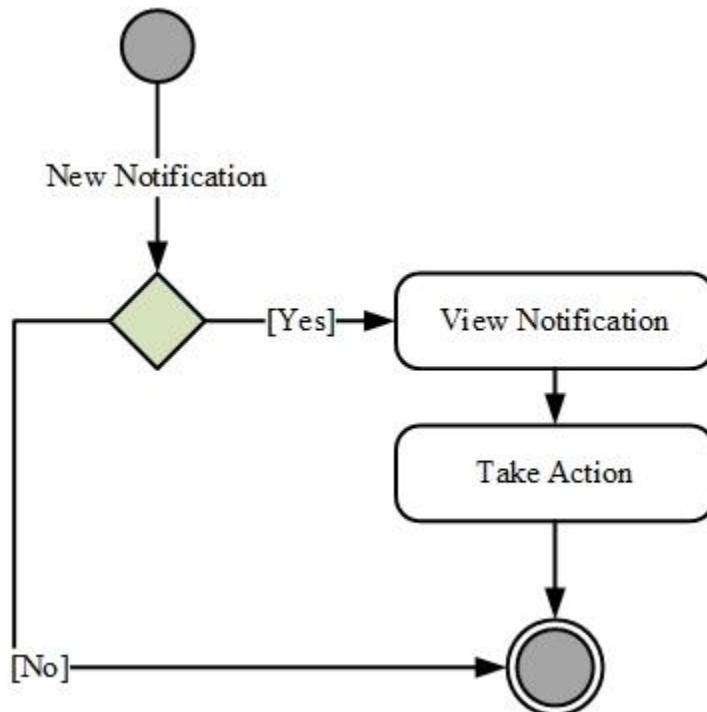


Figure 6.3 Activity diagram for notifications

6.1.4 Activity Diagram for Managing Employee

Figure 6.4 describe the activity of managing employee of “Lead Tracking System”.

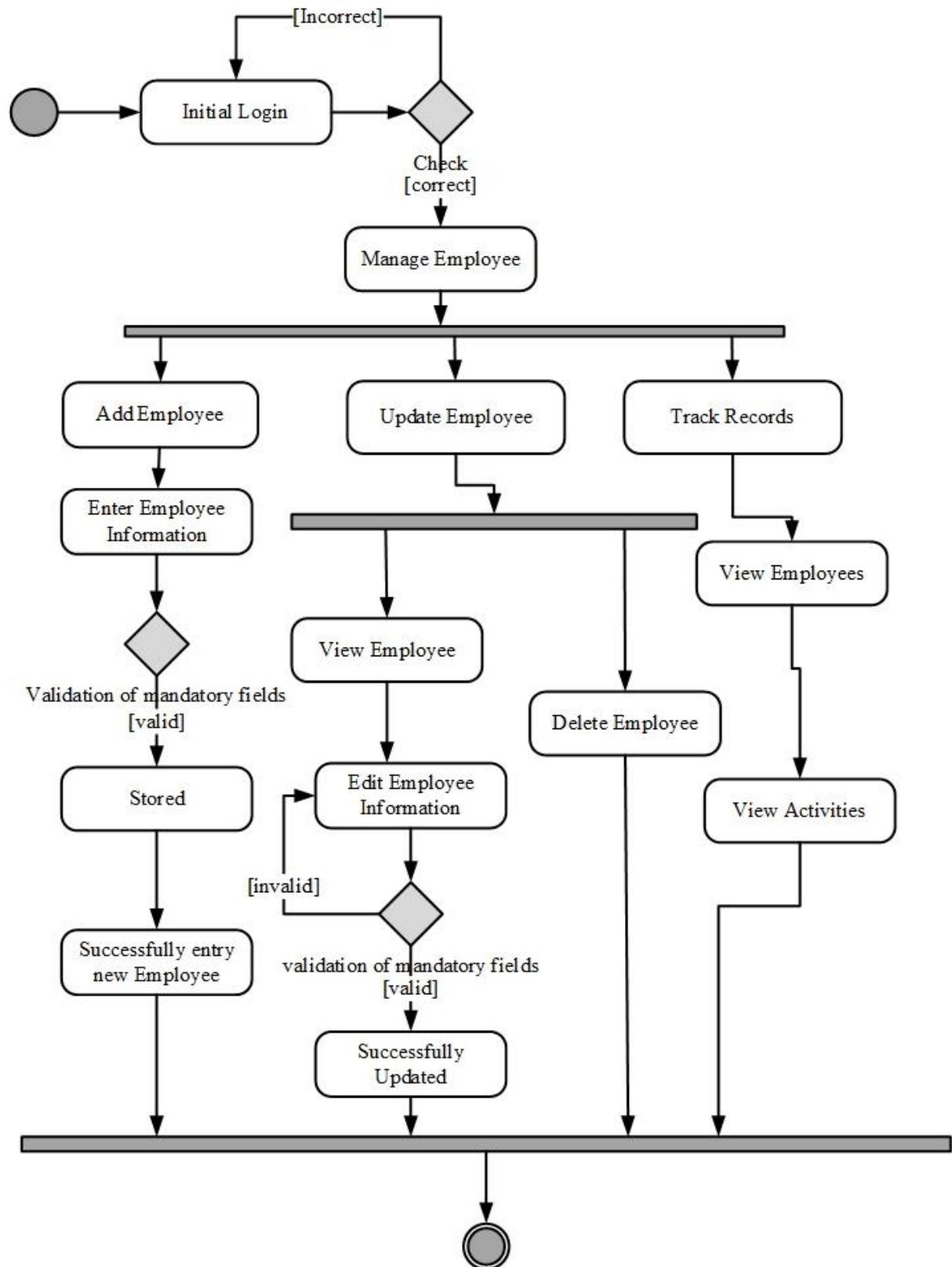


Figure 6.4 Activity diagram of managing employee

6.1.5 Activity Diagram for Administrator for Setting System

Figure 6.5 describe the activity of the administrator setting of “Lead Tracking System”.

This setting will include role, permissions and all the initial setup.

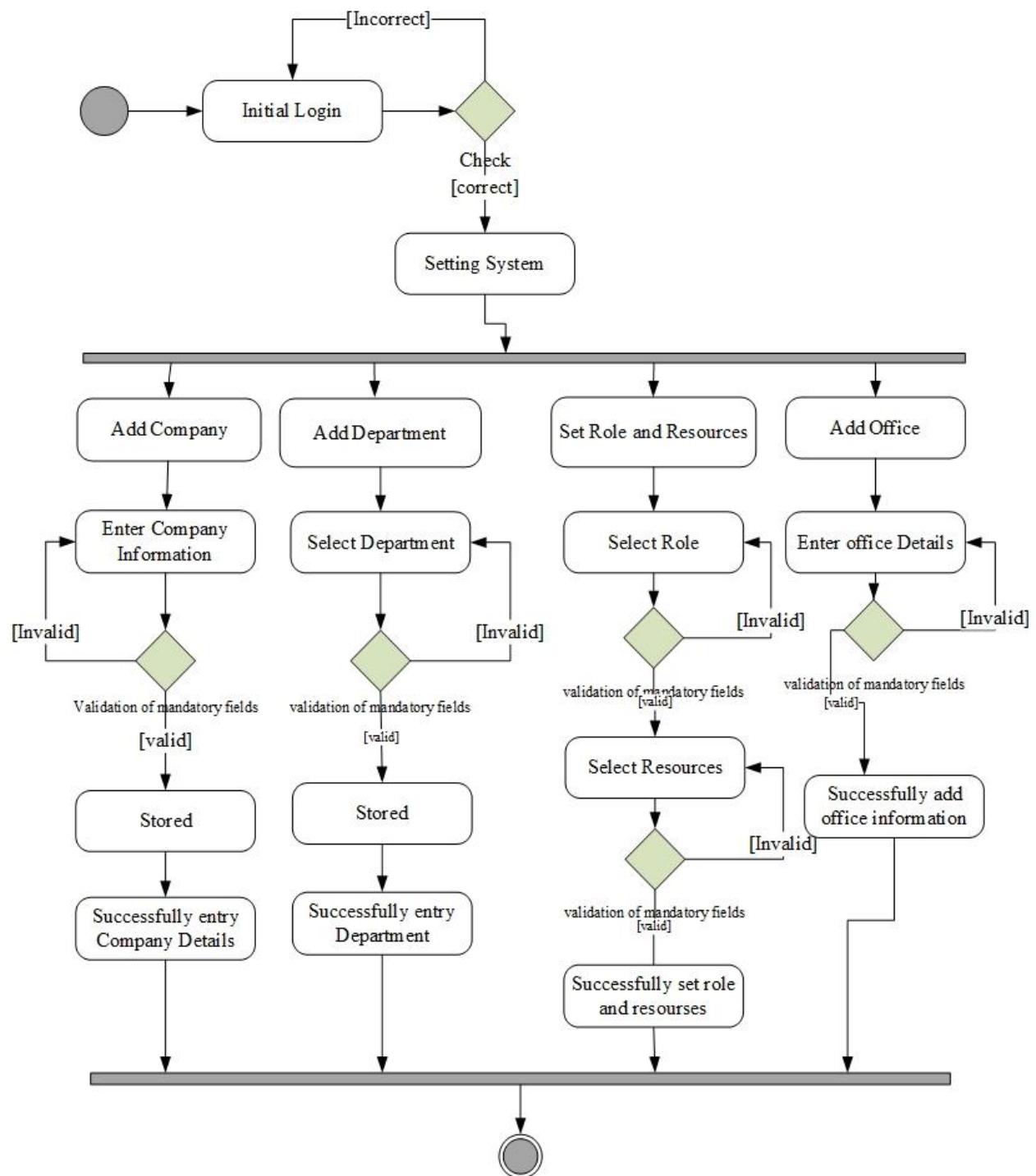


Figure 6.5 Activity diagram for administrator setting

6.1.7 Activity Diagram for Sales Executive:

Figure 6.7 describe the activity of sales executive of “Lead Tracking System”.

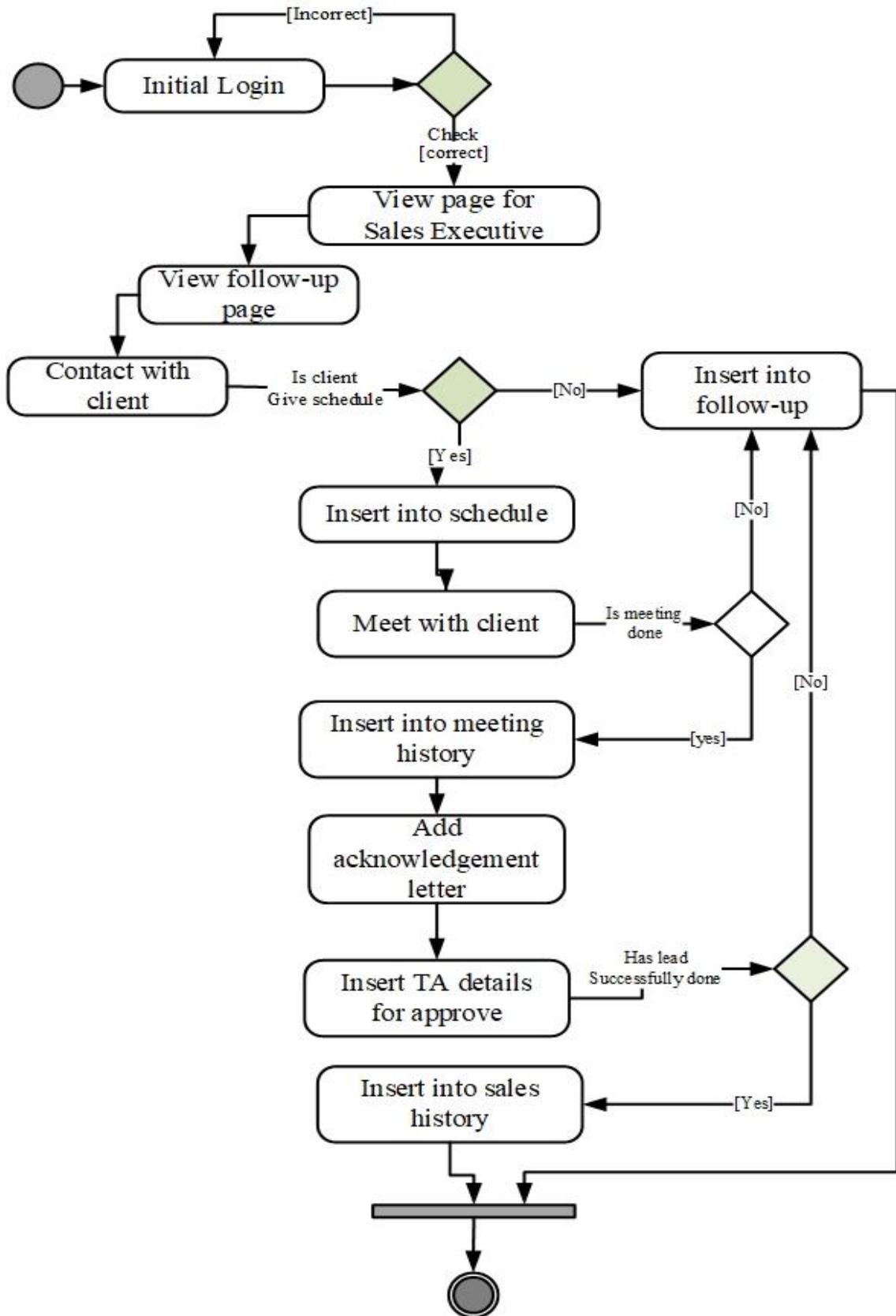


Figure 6.7 Activity diagram for sales executive

6.1.8 Activity Diagram for Business Development Manager

Figure 6.8 describe the activity of business development manager of “Lead Tracking System”.

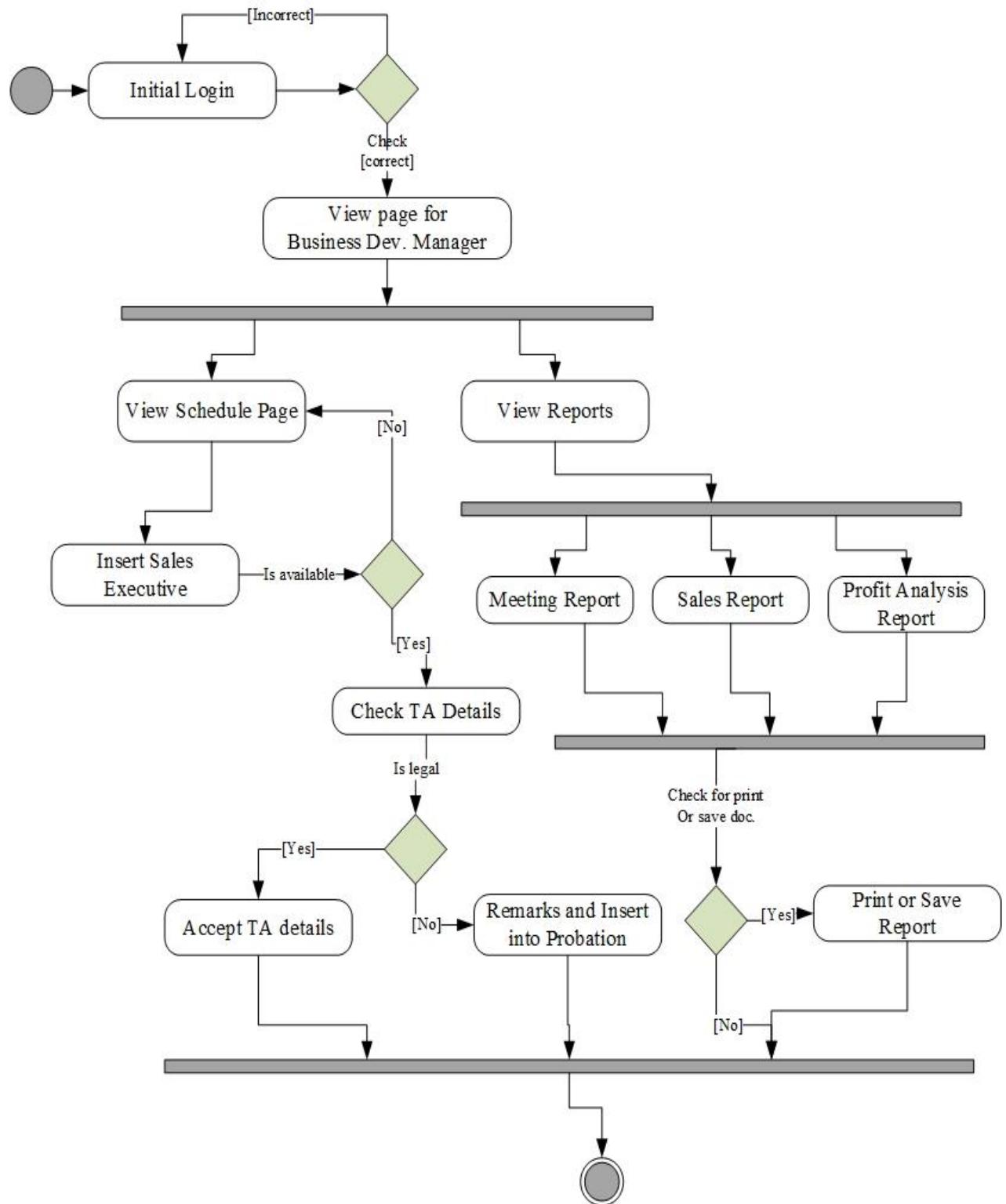


Figure 6.8 Activity Diagram for Business Development Manager

6.2 Swimlane Diagram

Swim lane is a visual element used in process flow diagrams, or flowcharts that visually distinguishes job sharing and responsibilities for sub-processes of a business process. Swim lanes may be arranged either horizontally or vertically. In the accompanying example, the swim lanes are named Admin, Faculty, and System timetable and are arranged vertically

6.2.1 Swimlane diagram for marketing executive

Figure 6.9 describes the swim lane of marketing executive, how marketing executive interact with the system.

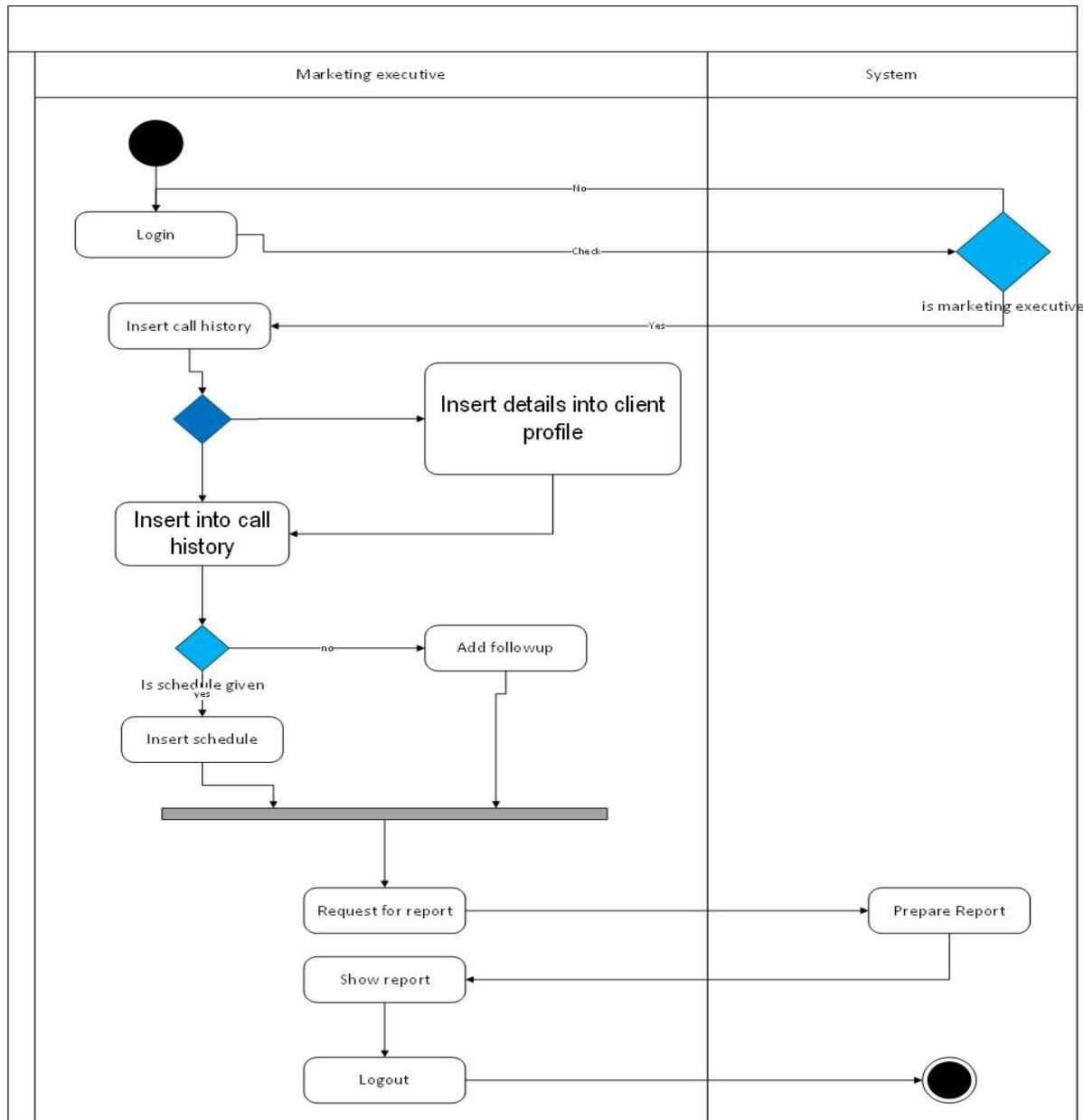


Figure 6.9 Swimlane diagram for marketing executive

6.2.2 Swimlane diagram for administrator

Figure 6.10 describes the swim lane Administrator, how admin will interact with the system.

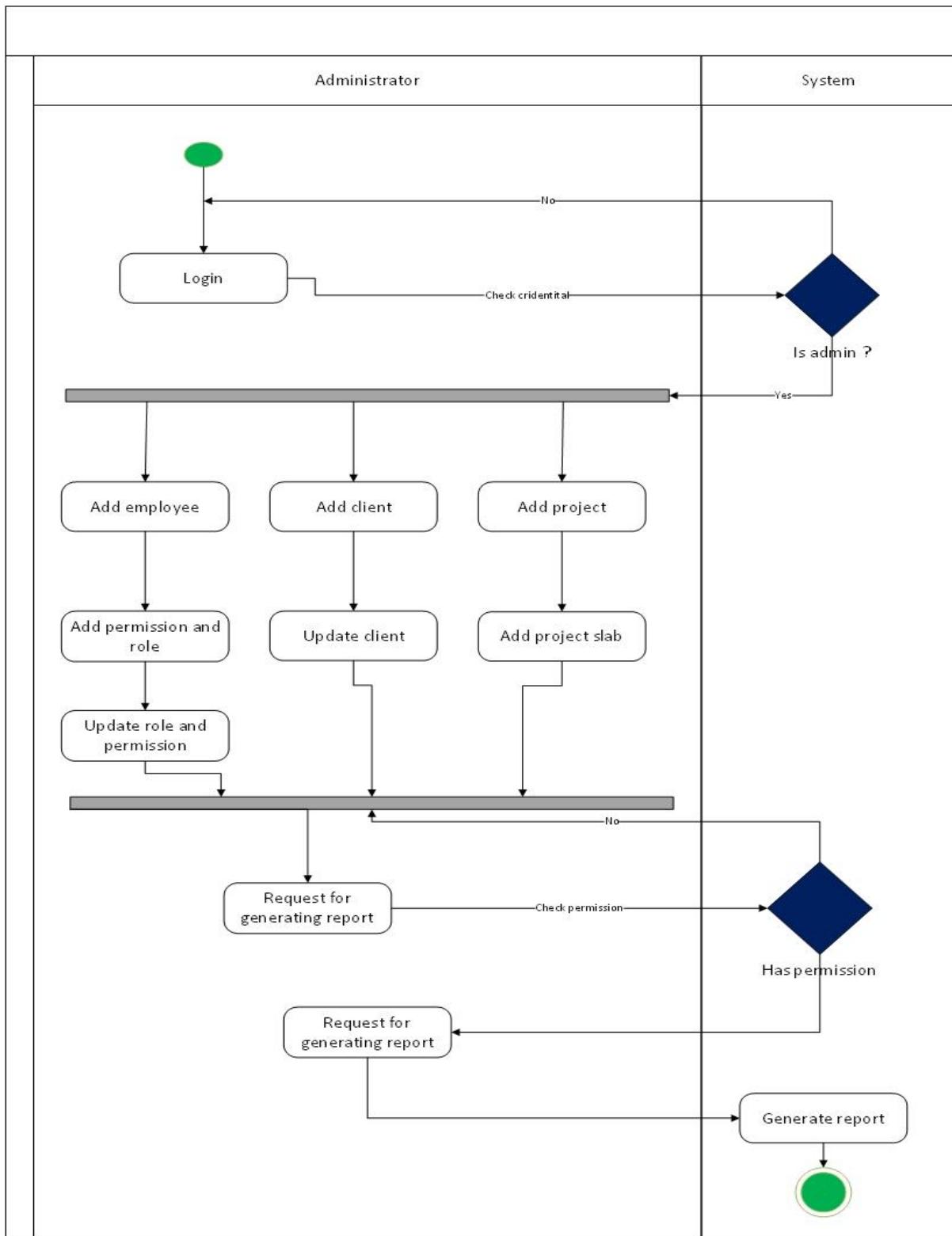


Figure 6.10 Swimlane diagram for administrator

6.2.3 Swimlane diagram for sales executive

Figure 6.11 describes the swim lane of sales executive, how sales executive interacts with system.

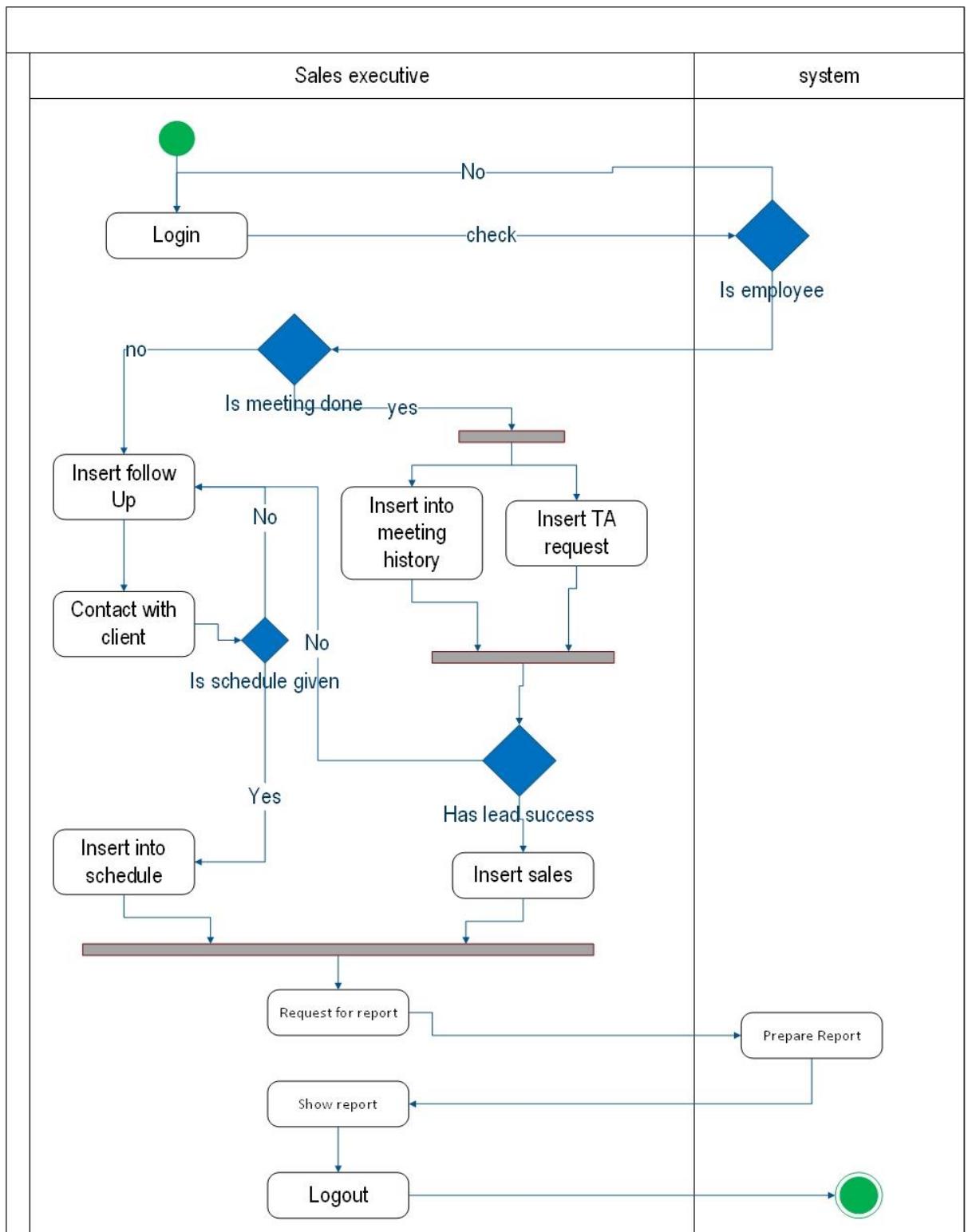


Figure 6.11 Swimlane diagram for sales executive

6.2.4 Swimlane diagram for business development manager

Figure 6.12 describes the swim lane of Business Development Manager, How Manager will interact with the system.

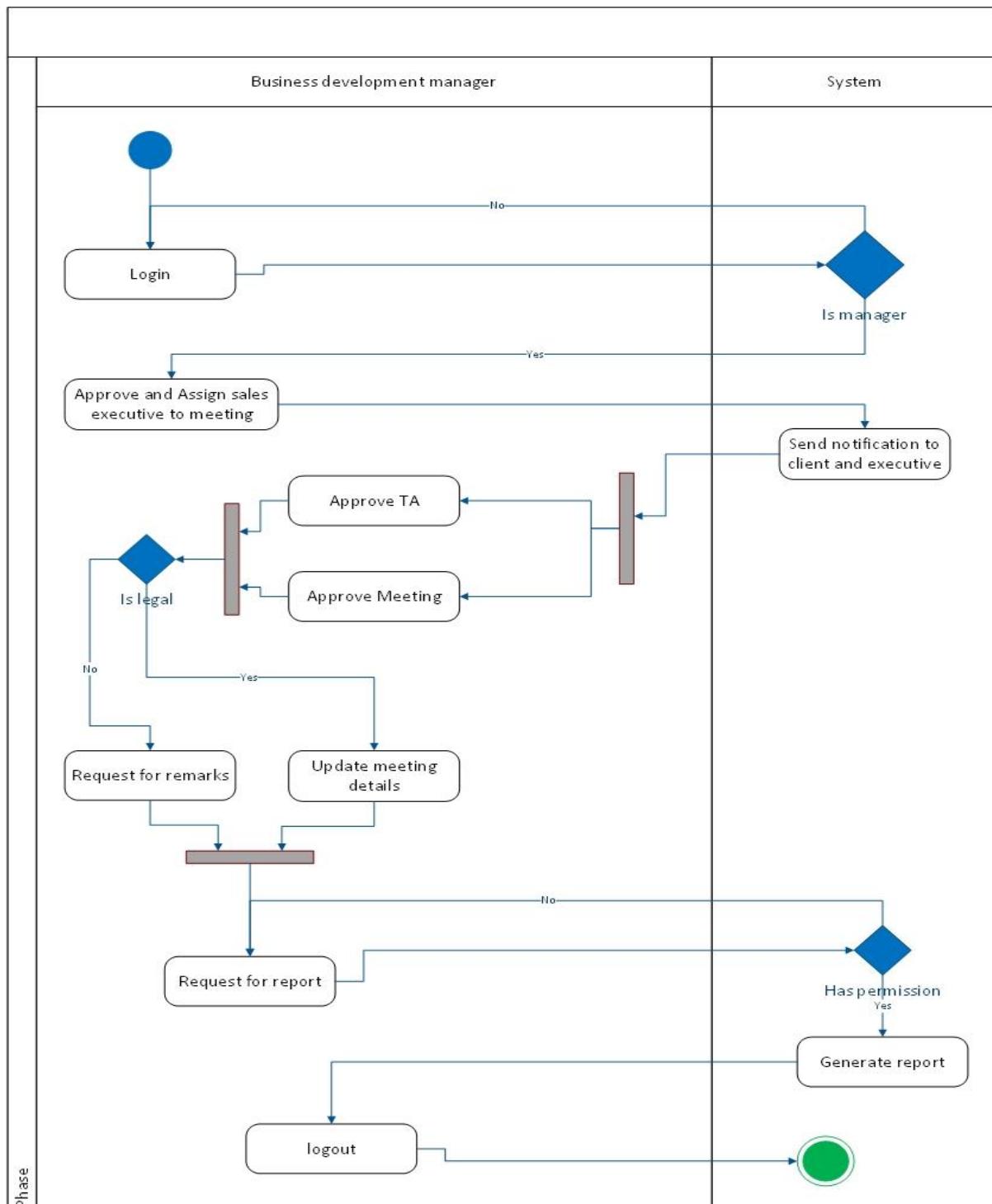


Figure 6.12 Swimlane diagram for business development manager

6.2.5 Swimlane Diagram for Lead Tracking System

Figure 6.13 describes the swim lane of the whole system named Lead Tracking System, How the four actors interact with the full system.

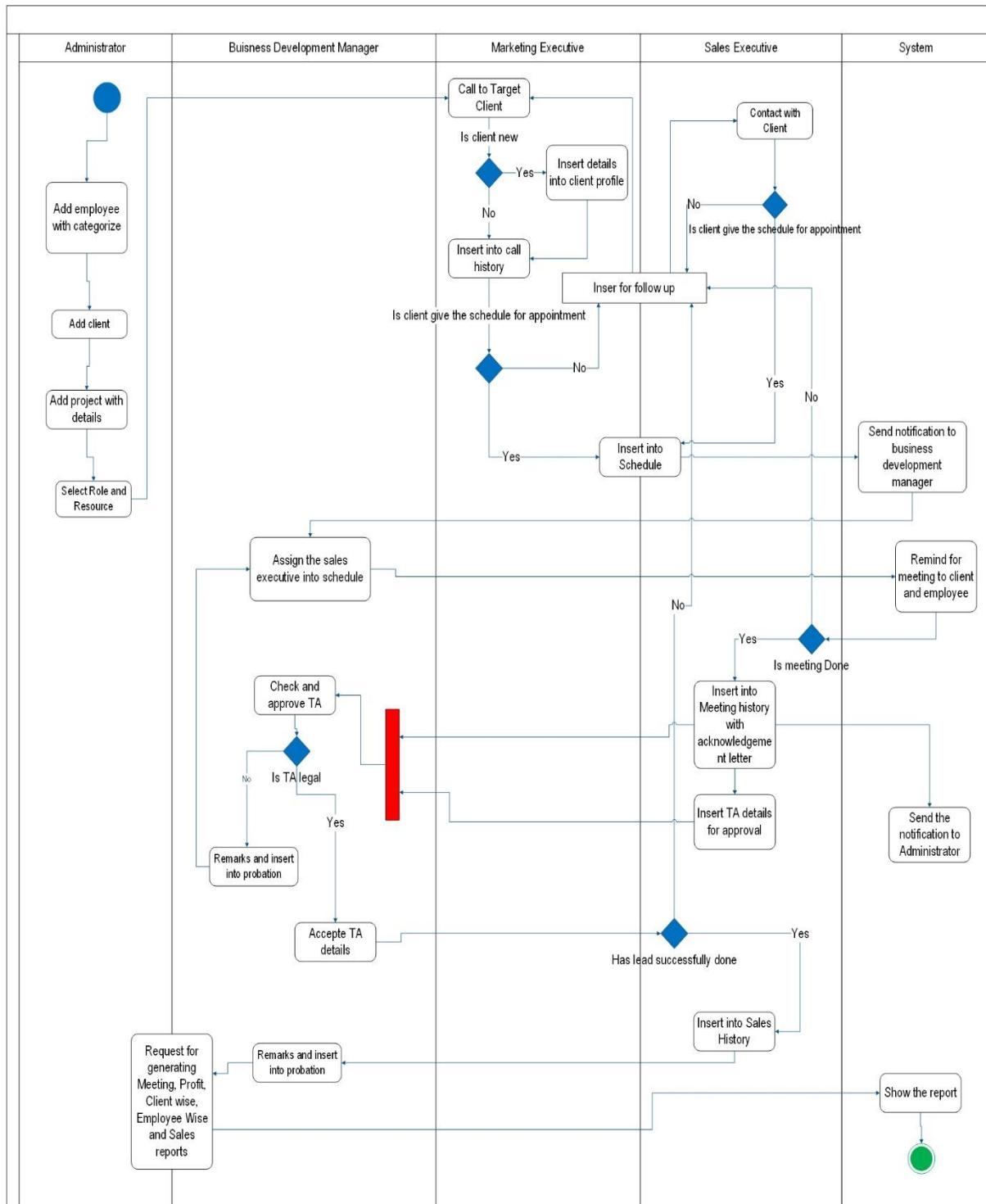


Figure 6.13 Swimlane diagram for Lead Tracking System

6.3 Entity Relationship Diagram

In this project, Entity Relationship Diagram (ERD) has been used to visualize the conceptual data model of Lead Tracking system. Figure 6.14 describes the Entity Relationship Diagram of “Lead Tracking System”

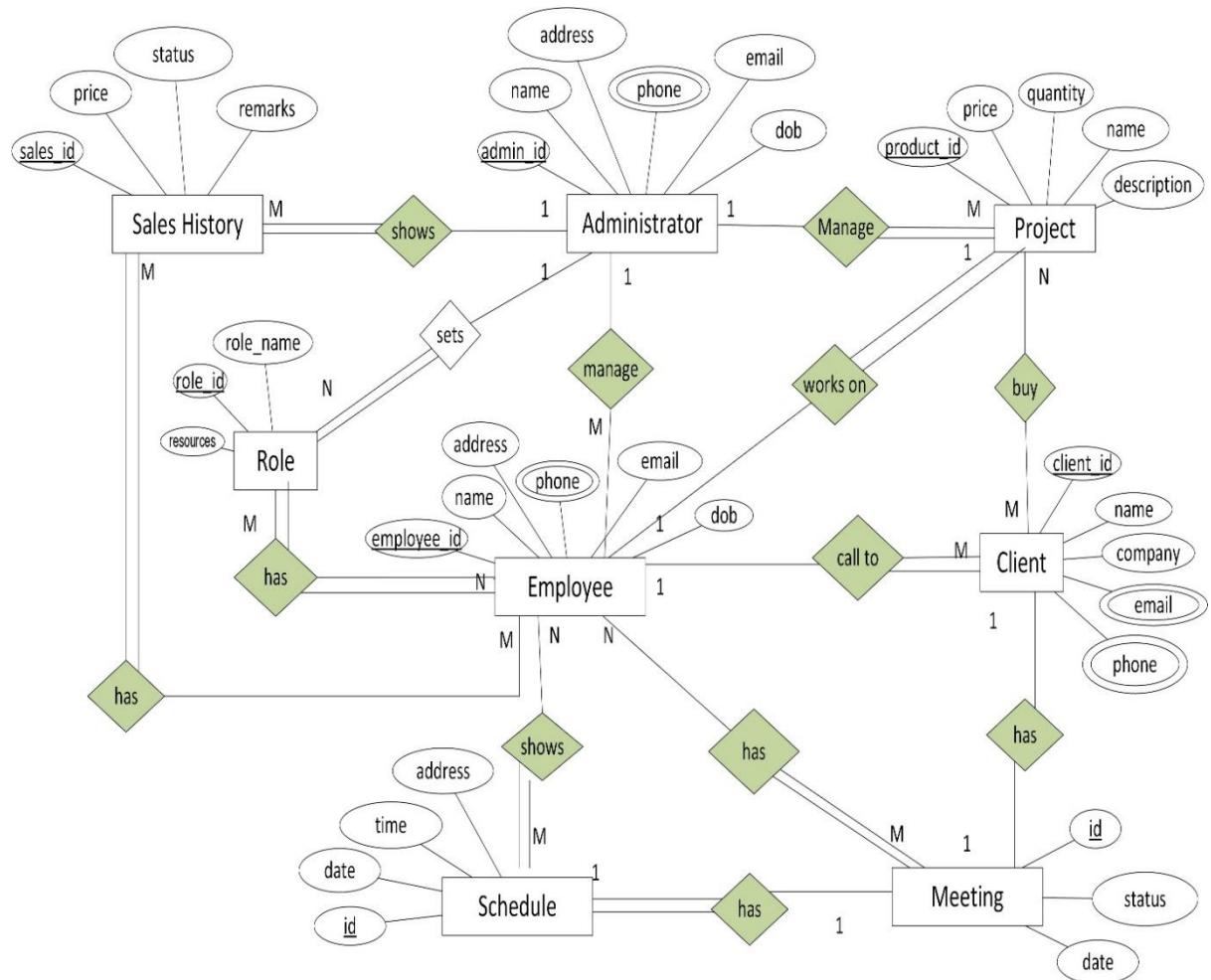


Figure 6.14 Entity Relationship Diagram of Lead Tracking System

6.4 Data Flow Diagram

A data flow diagram (DFD) is a graphical representation of the "flow" of data through an information system, modeling its process aspects. A DFD is often used as a preliminary step to create an overview of the system, which can later be elaborated.

6.4.1 Context Level Data Flow Diagram

A System Context Diagram (SCD) in software engineering and systems engineering is a diagram that defines the boundary between the system, or part of a system, and its environment, showing the entities that interact with it. Context level diagram of "Lead Tracking System" is given below-

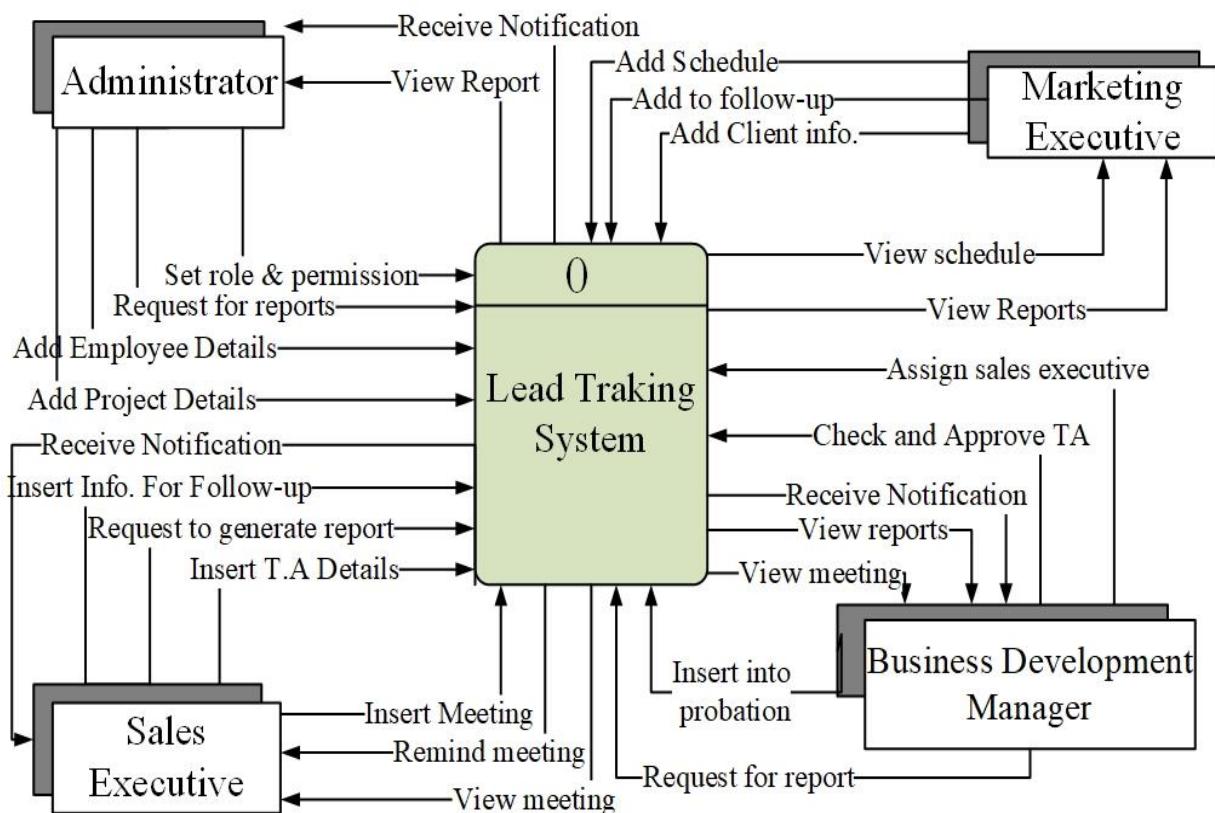


Figure 6.15 Context level data flow diagram

6.4.2 Level -1 Data Flow Diagram

The Level 1 DFD shows how the system is divided into sub-systems (processes), each of which deals with one or more of the data flows to or from an external agent, and which together provide all of the functionality of the system as a whole. Figure 6.16 describe the Data Flow Diagram Level 1 of “Lead Tracking System”

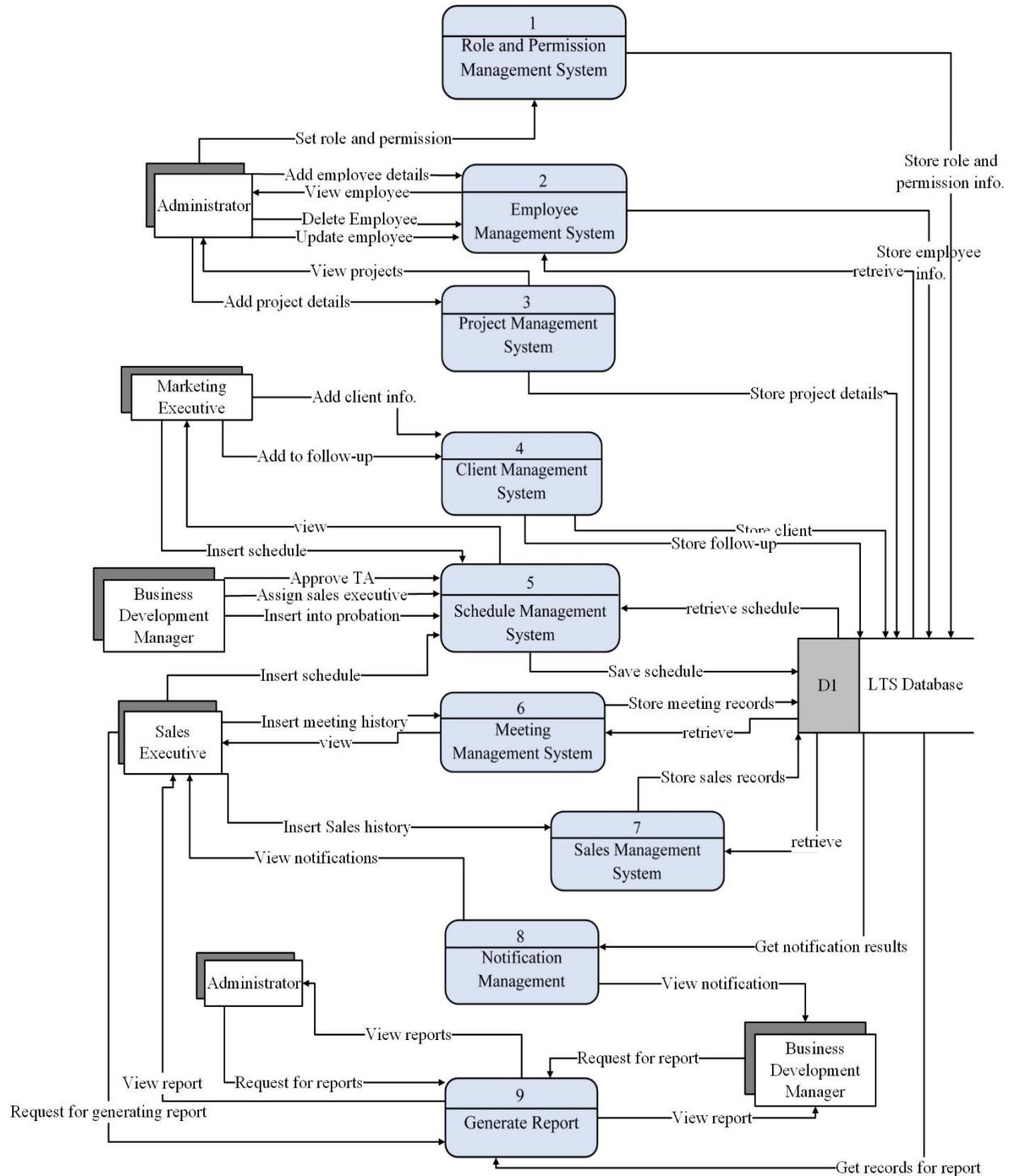


Figure 6.16 Level-1 Data Flow Diagram

6.4.3 Level 2 Process-1 Data Flow Diagram

Figure 6.17 shows the diagram of Level 2 process 1 DFD of Lead Tracking System. It describes the sub process of Role and Permission Management System.

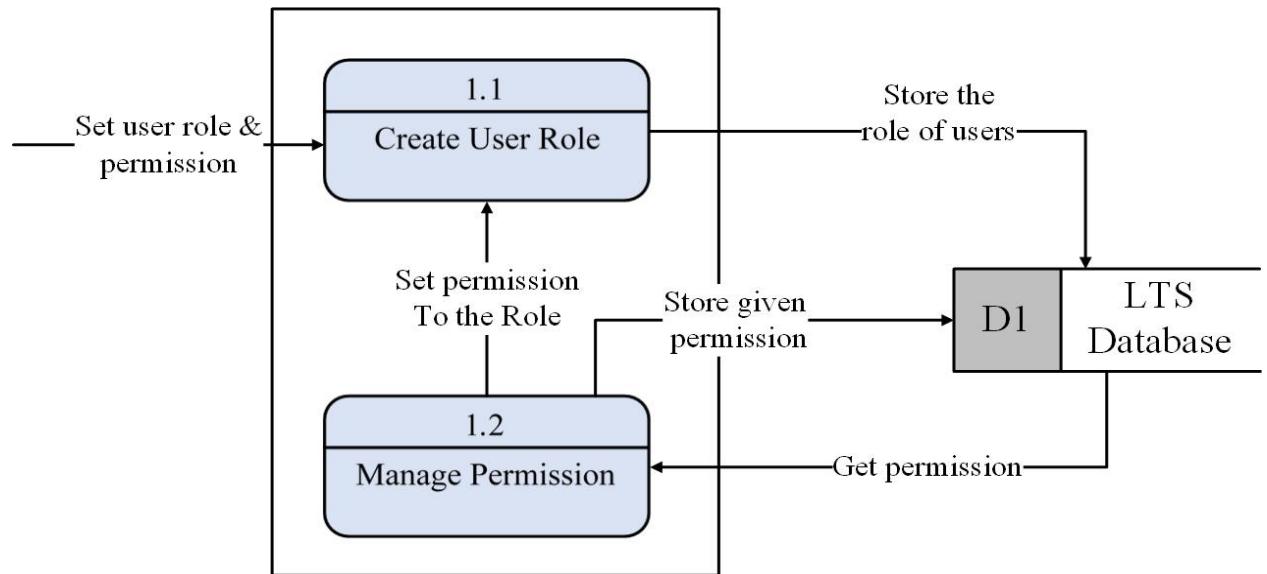


Figure 6.17 Level-2 Process-1 Data Flow Diagram

6.4.4 Level -2 Process 2 Data Flow Diagram

Figure 6.18 shows the diagram of Level 2 process 2 DFD of Lead Tracking System. It describes the sub process of Employee Management System.

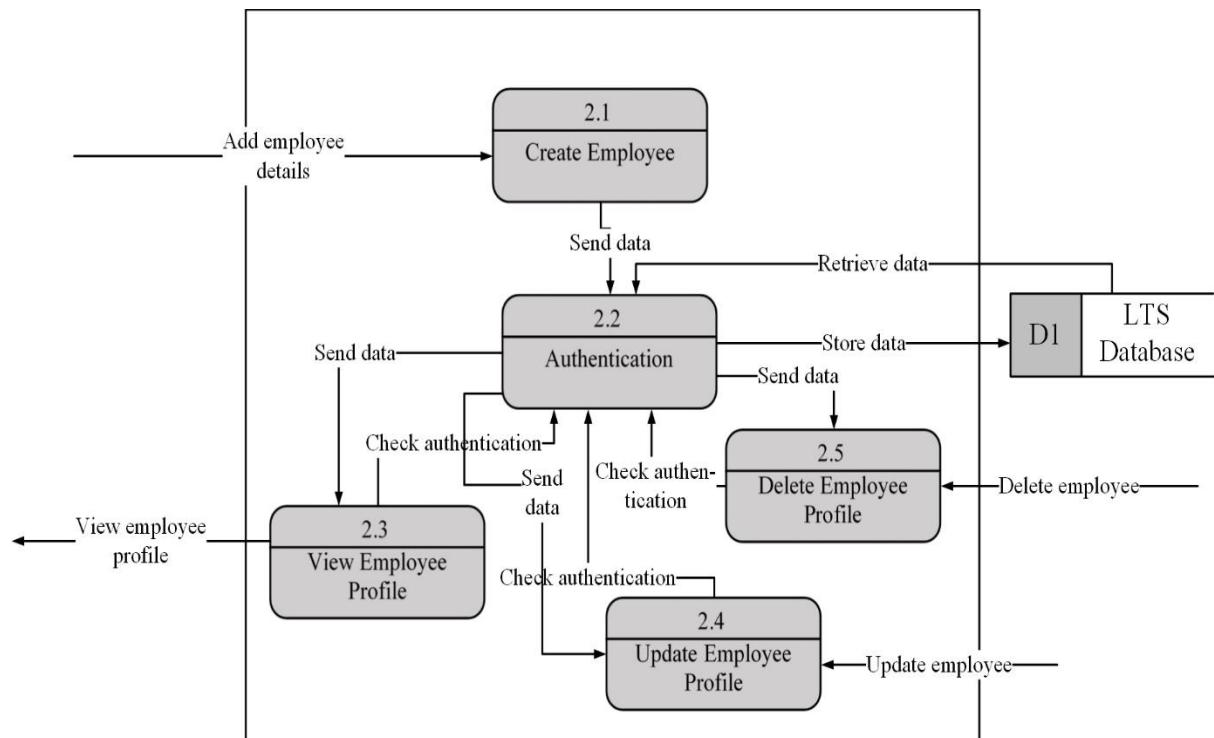


Figure 6.18 Level-2 Process-2 Data Flow Diagram

6.4.5 Level -2 Process 3 Data Flow Diagram

Figure 6.19 shows the diagram of Level 2 process 3 DFD of Lead Tracking System. It describes the sub process of Project Management System.

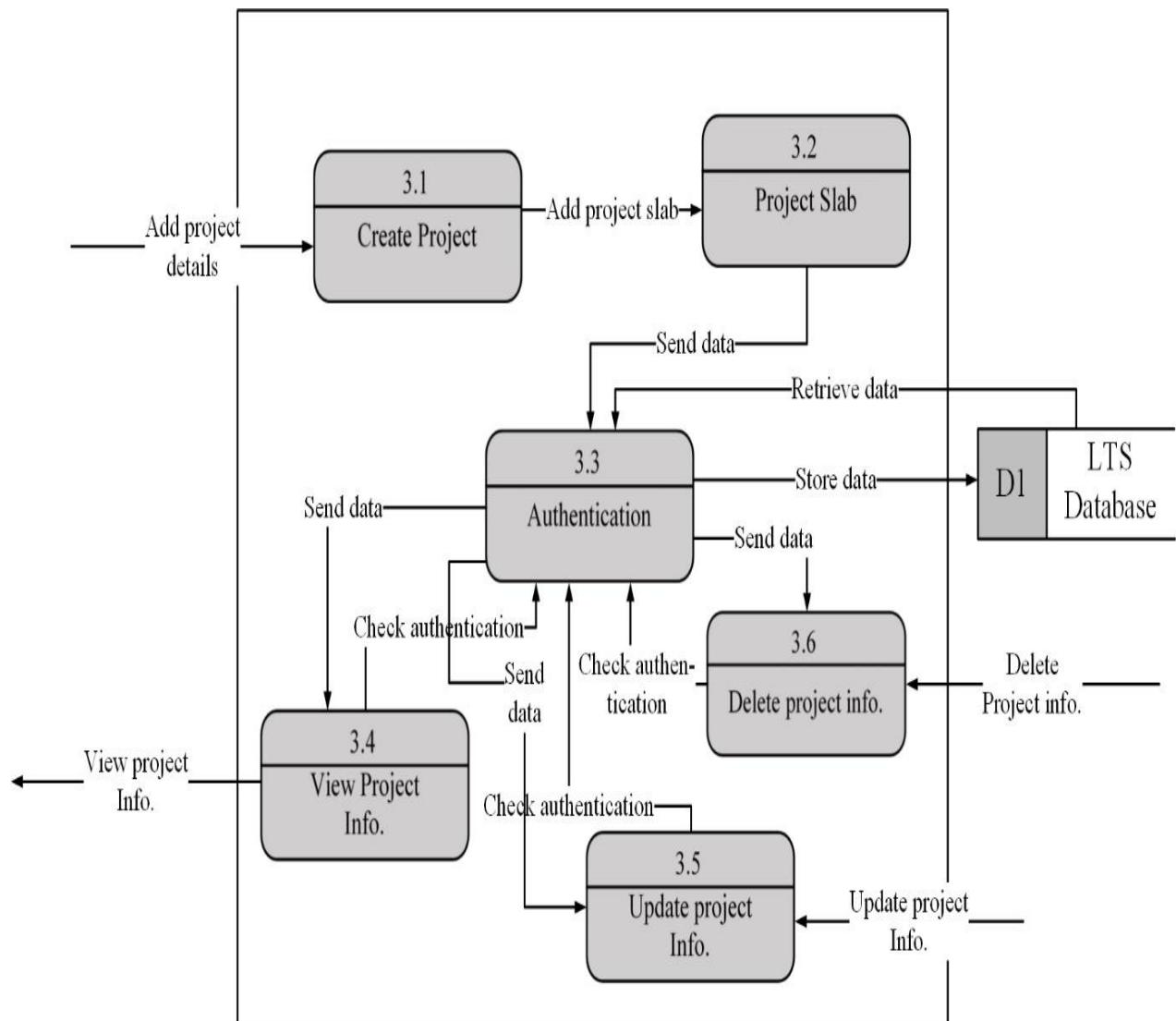


Figure 6.19 Level-2 Process-3 Data Flow Diagram

6.4.6 Level 2 Process 4 Data Flow Diagram

Figure 6.20 shows the diagram of Level 2 process 4 DFD of Lead Tracking System. It describes the sub process of Client Management System.

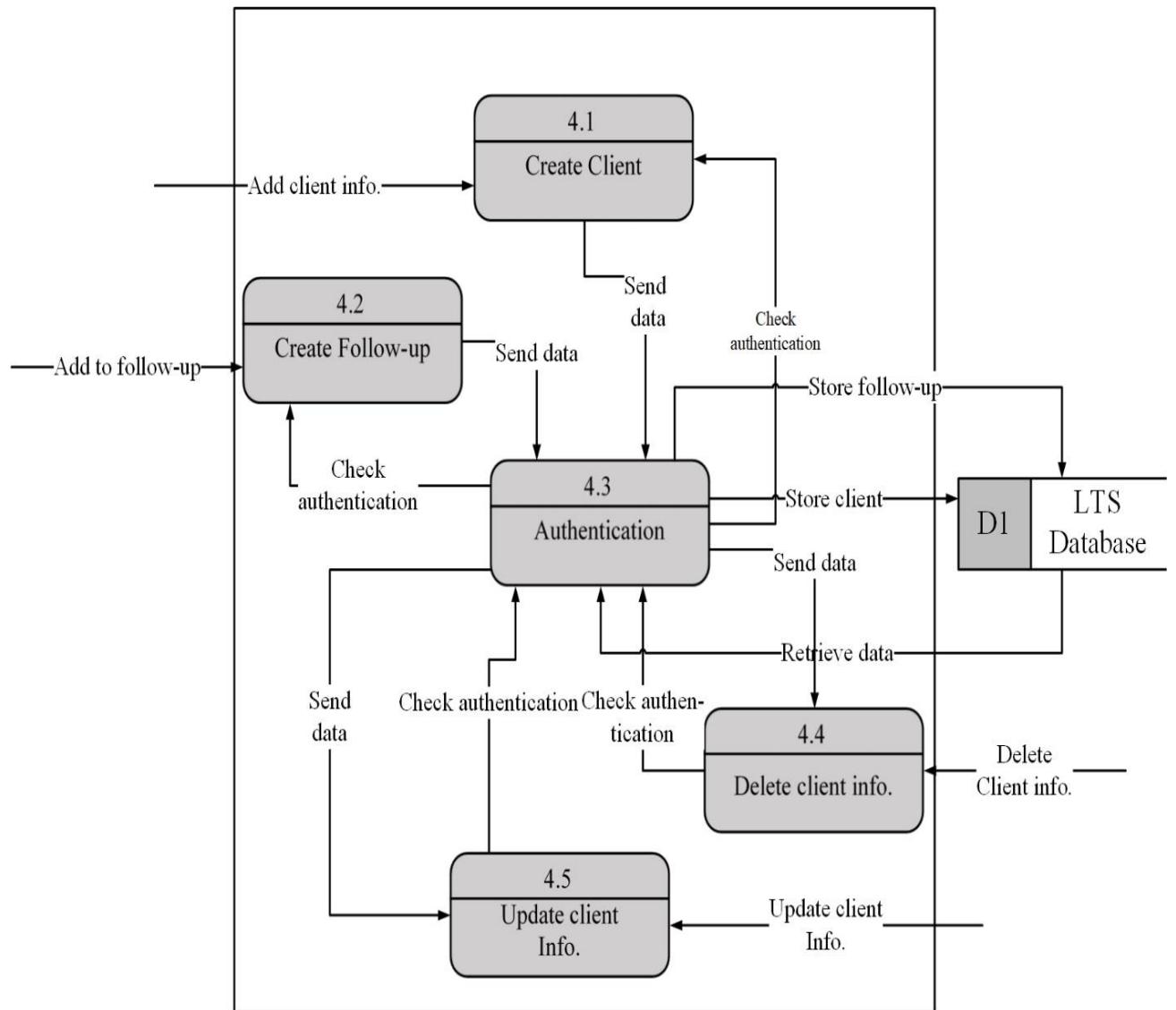


Figure 6.20 Level-2 Process-4 Data Flow Diagram

6.4.7 Level 2 Process 5 Data Flow Diagram

Figure 6.21 shows the diagram of Level 2 process 5 DFD of Lead Tracking System. It describes the sub process of Schedule Management System.

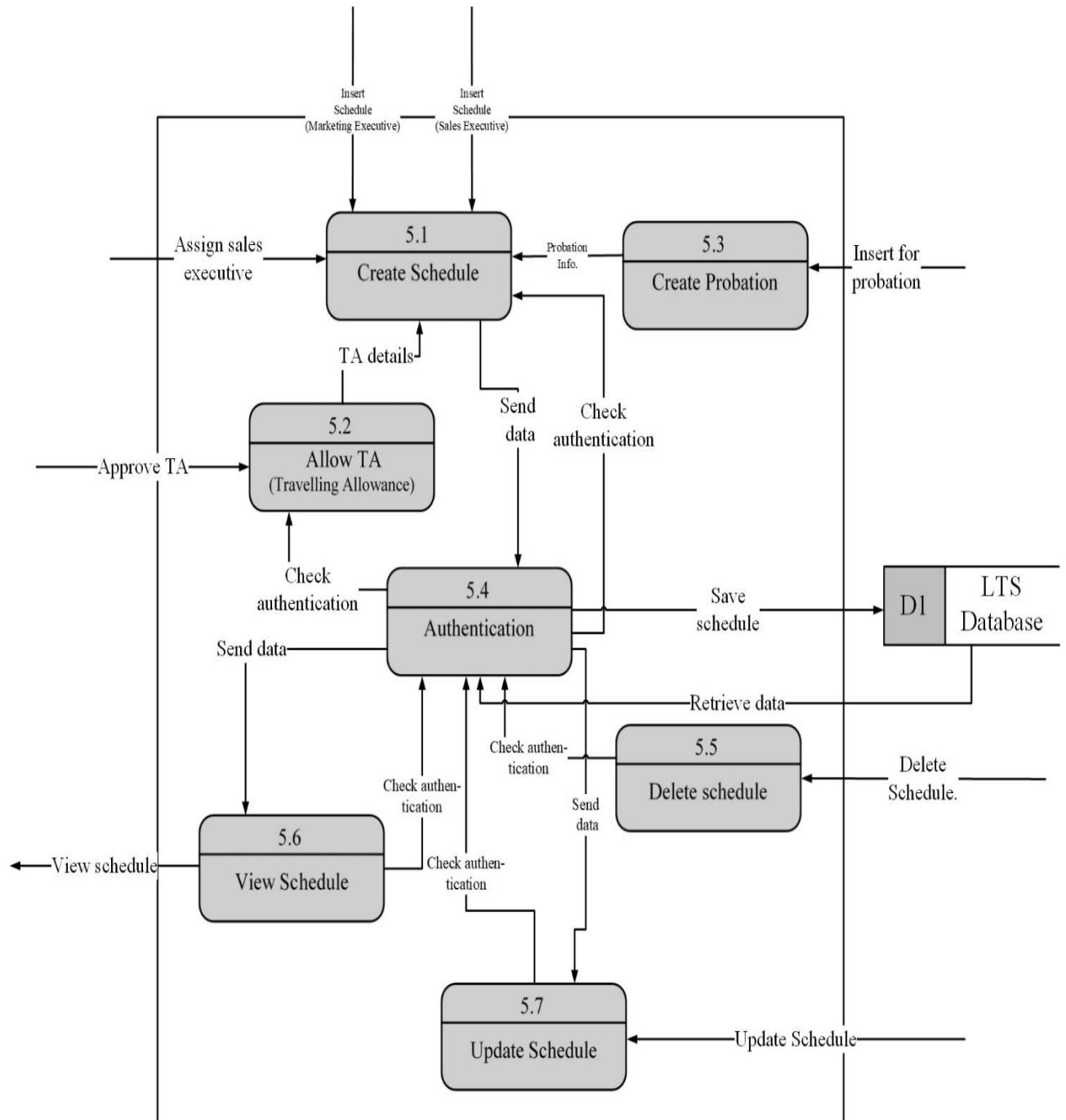


Figure 6.21 Level-2 Process-5 Data Flow Diagram

6.4.8 Level 2 Process 6 Data Flow Diagram

Figure 6.22 shows the diagram of Level 2 process 6 DFD of Lead Tracking System. It describes the sub process of Meeting Management System.

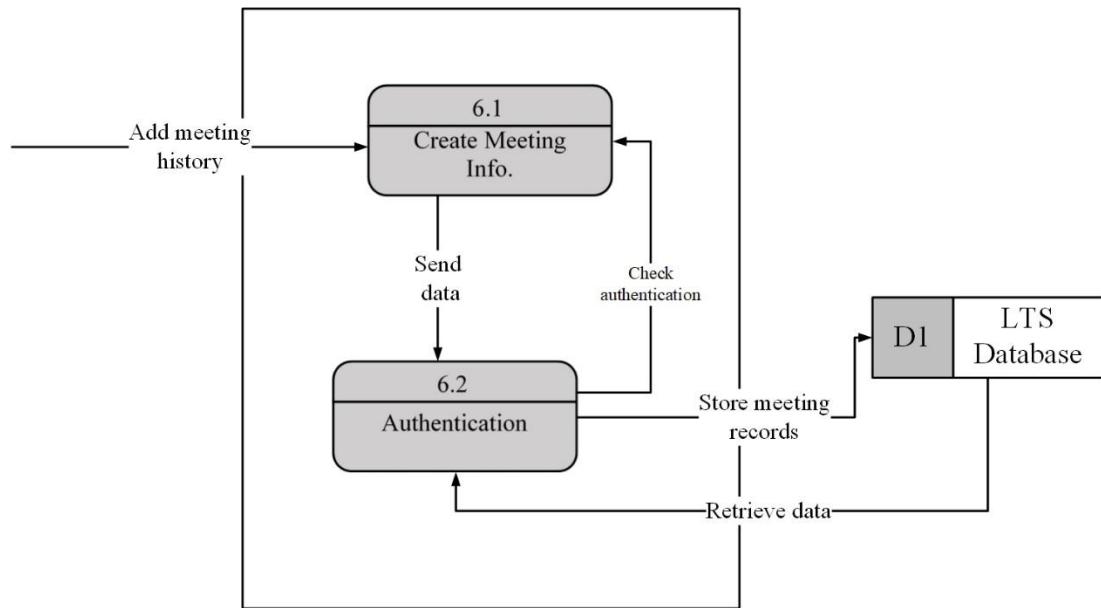


Figure 6.22 Level-2 Process-6 Data Flow Diagram

6.4.9 Level 2 Process 7 Data Flow Diagram

Figure 6.23 shows the diagram of Level 2 process 7 DFD of Lead Tracking System. It describes the sub process of Sales Management System

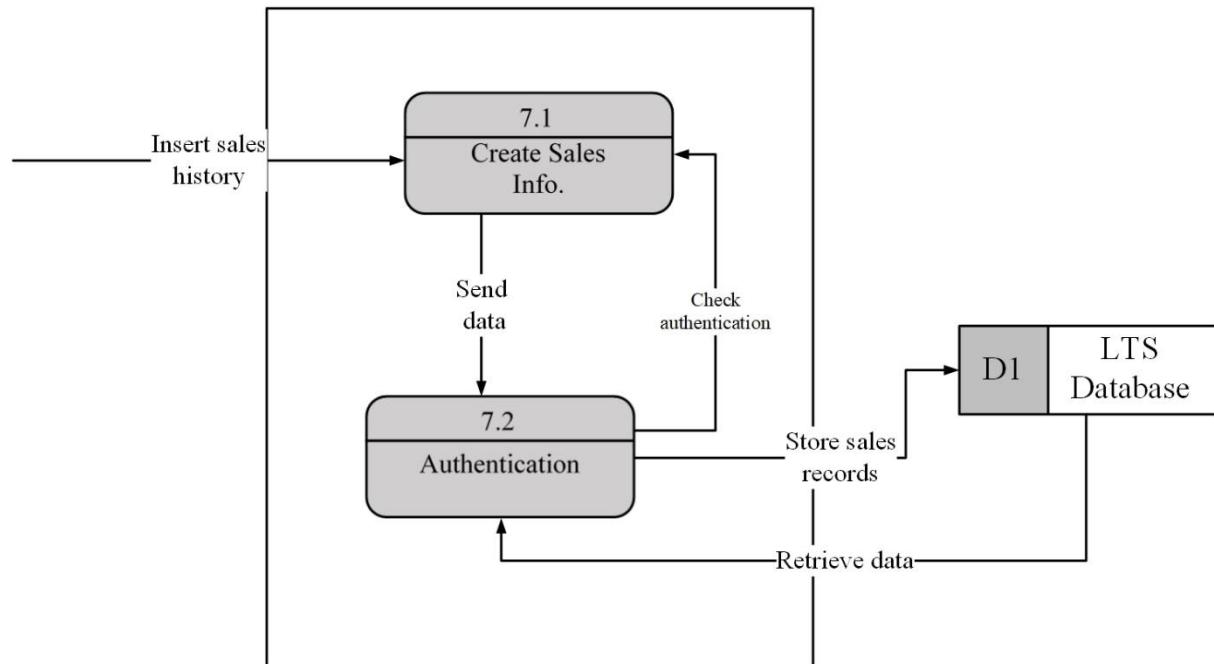


Figure 6.23 Level-2 Process-7 Data Flow Diagram

6.4.10 Level 2 Process 8 Data Flow Diagram

Figure 6.24 shows the diagram of Level 2 process 8 DFD of Lead Tracking System. It describes the sub process of Notification Management.

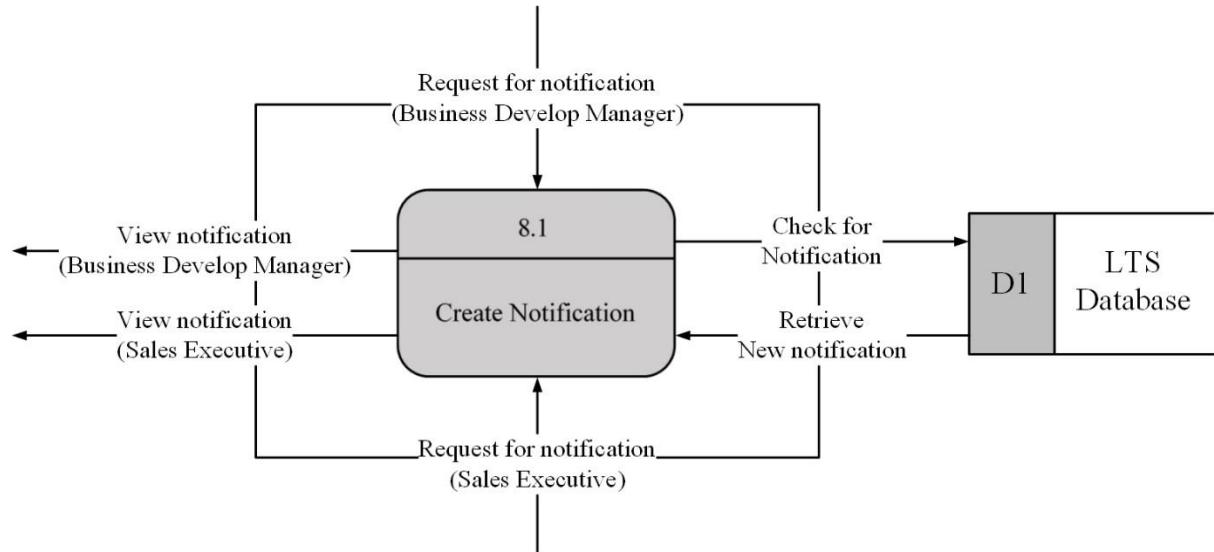


Figure 6.24 Level-2 Process-8 Data Flow Diagram

6.4.11 Level 2 Process 9 Data Flow Diagram

Figure 6.25 shows the diagram of Level 2 process 9 DFD of Lead Tracking System. It describes the sub process of Generate Reports.

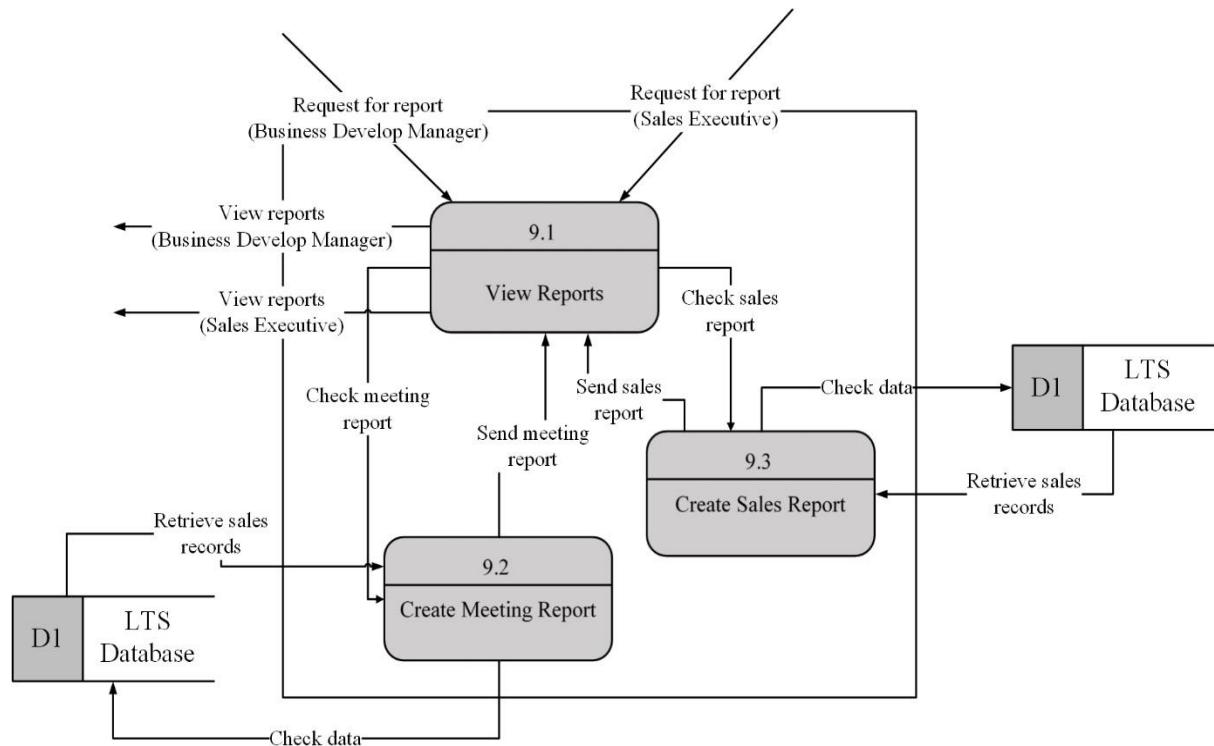


Figure 6.25 Level-2 Process-1 Data Flow Diagram

6.5 Class Diagram

Figure 6.26 describes the class diagram of Lead Tracking System

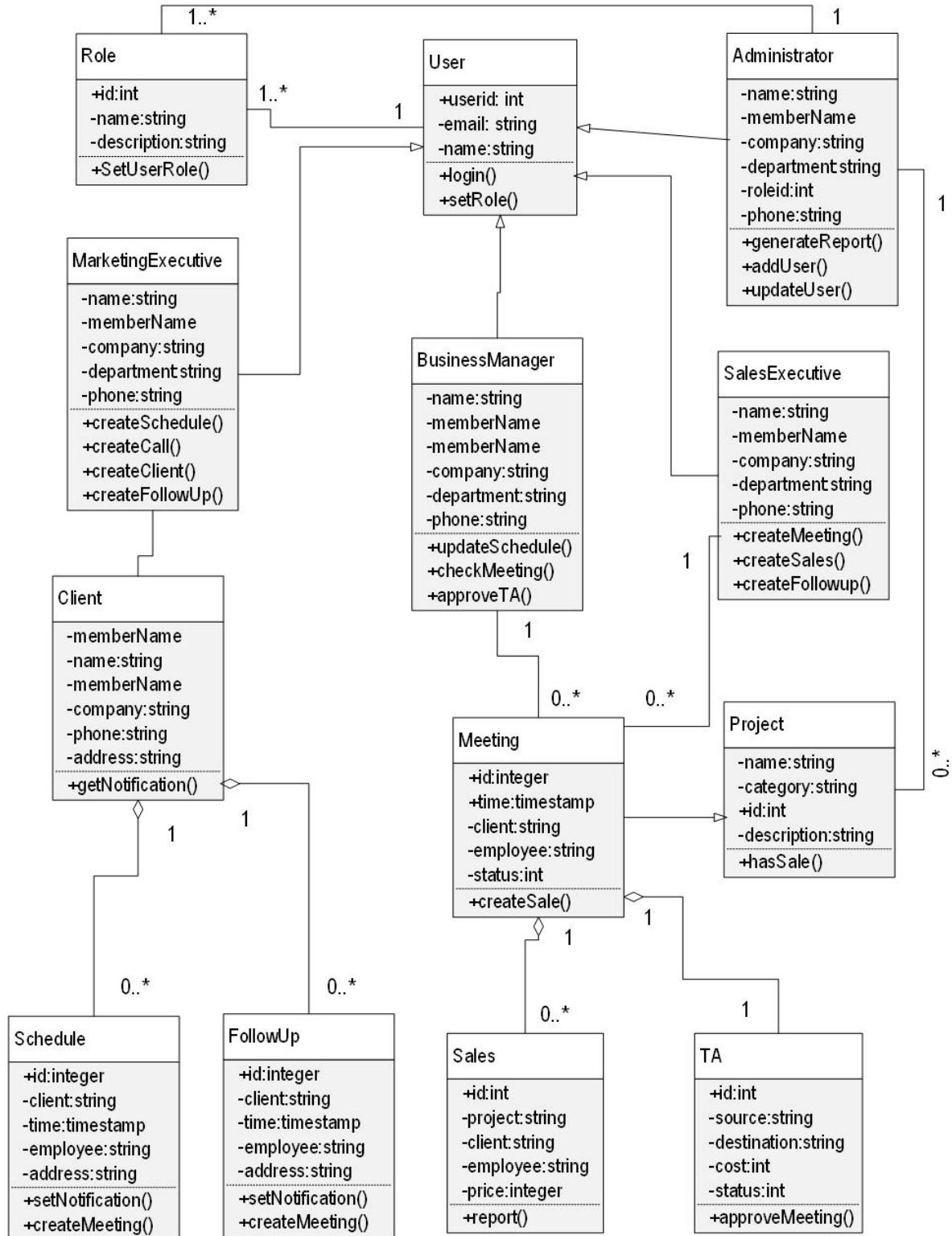


Figure 6.26 Class Diagram for Lead Tracking System

6.6 Database Field Design

Figure 6.27 describe the whole database name and structure of LTS database of “Lead Tracking System”

Table	Action	Rows	Type	Collation	Size	Overhead
addresses	Browse Structure Search Insert Empty Drop	30	InnoDB	utf8mb4_unicode_ci	16 KiB	-
call_histories	Browse Structure Search Insert Empty Drop	8	InnoDB	utf8mb4_unicode_ci	16 KiB	-
cities	Browse Structure Search Insert Empty Drop	27	InnoDB	utf8mb4_unicode_ci	16 KiB	-
clients	Browse Structure Search Insert Empty Drop	21	InnoDB	utf8mb4_unicode_ci	16 KiB	-
companies	Browse Structure Search Insert Empty Drop	12	InnoDB	utf8mb4_unicode_ci	16 KiB	-
countries	Browse Structure Search Insert Empty Drop	23	InnoDB	utf8mb4_unicode_ci	16 KiB	-
departments	Browse Structure Search Insert Empty Drop	9	InnoDB	utf8mb4_unicode_ci	16 KiB	-
designations	Browse Structure Search Insert Empty Drop	10	InnoDB	utf8mb4_unicode_ci	16 KiB	-
employee_informations	Browse Structure Search Insert Empty Drop	11	InnoDB	utf8mb4_unicode_ci	16 KiB	-
employee_types	Browse Structure Search Insert Empty Drop	13	InnoDB	utf8mb4_unicode_ci	16 KiB	-
followups	Browse Structure Search Insert Empty Drop	8	InnoDB	utf8mb4_unicode_ci	16 KiB	-
meetings	Browse Structure Search Insert Empty Drop	3	InnoDB	utf8mb4_unicode_ci	16 KiB	-
migrations	Browse Structure Search Insert Empty Drop	27	InnoDB	utf8mb4_unicode_ci	16 KiB	-
notifications	Browse Structure Search Insert Empty Drop	1	InnoDB	utf8mb4_unicode_ci	32 KiB	-
offices	Browse Structure Search Insert Empty Drop	5	InnoDB	utf8mb4_unicode_ci	16 KiB	-
password_resets	Browse Structure Search Insert Empty Drop	0	InnoDB	utf8mb4_unicode_ci	16 KiB	-
permissions	Browse Structure Search Insert Empty Drop	42	InnoDB	utf8mb4_unicode_ci	48 KiB	-
probations	Browse Structure Search Insert Empty Drop	0	InnoDB	utf8mb4_unicode_ci	16 KiB	-
projects	Browse Structure Search Insert Empty Drop	7	InnoDB	utf8mb4_unicode_ci	16 KiB	-
project_categories	Browse Structure Search Insert Empty Drop	6	InnoDB	utf8mb4_unicode_ci	16 KiB	-
project_slabs	Browse Structure Search Insert Empty Drop	7	InnoDB	utf8mb4_unicode_ci	16 KiB	-
roles	Browse Structure Search Insert Empty Drop	7	InnoDB	utf8mb4_unicode_ci	32 KiB	-
role_user	Browse Structure Search Insert Empty Drop	8	InnoDB	utf8mb4_unicode_ci	48 KiB	-
sales	Browse Structure Search Insert Empty Drop	5	InnoDB	utf8mb4_unicode_ci	16 KiB	-
schedules	Browse Structure Search Insert Empty Drop	9	InnoDB	utf8mb4_unicode_ci	16 KiB	-
t_a_s	Browse Structure Search Insert Empty Drop	3	InnoDB	utf8mb4_unicode_ci	16 KiB	-
users	Browse Structure Search Insert Empty Drop	11	InnoDB	utf8mb4_unicode_ci	32 KiB	-
28 tables	Sum	355	InnoDB	utf8mb4_unicode_ci	576 KiB	0 B

Figure 6.27 LTS Database Structure

Figure 6.28 describe the users table structure of “Lead Tracking System”.

	<input type="checkbox"/>	<input type="checkbox"/> Edit	<input type="checkbox"/> Copy	<input type="checkbox"/> Delete	id	name	email	email_verified_at	password	remember_token
	<input type="checkbox"/>	<input type="checkbox"/> Edit	<input type="checkbox"/> Copy	<input type="checkbox"/> Delete	1	Md Abdullah	abdullah001rt@gmail.com	2018-12-12 07:35:14	\$2y\$10\$cMQXXg9m44Ysx.6YDWNDuazEPyIp.PVhKDngy/m0m0...	0RVgyRIZT3TTDPzsQecpw7YrK0wG15PUNtRKvrujU
	<input type="checkbox"/>	<input type="checkbox"/> Edit	<input type="checkbox"/> Copy	<input type="checkbox"/> Delete	6	Dr Skylar Shields IV	ambrose34@example.net	2018-12-14 14:28:03	\$2y\$10\$TrKWGwH2TULiErFWRCzxeel0BiphETuYsDaPosENzz...	oDual2steY
	<input type="checkbox"/>	<input type="checkbox"/> Edit	<input type="checkbox"/> Copy	<input type="checkbox"/> Delete	4	Mamun	mamun@systech.com	NULL	\$2y\$10\$FXl0bxfKCy0EekRMPAWAfbmZIAf3ueFineePVBWe...	uR8Bao4IJ9p8CJX5xTi8pmoiFmVJ7wp3c7ZYoFDr
	<input type="checkbox"/>	<input type="checkbox"/> Edit	<input type="checkbox"/> Copy	<input type="checkbox"/> Delete	5	Prof Cassie Conn	johnston.mary@example.net	2018-12-14 14:28:03	\$2y\$10\$YmI38N9Rdmxf5q035j.96Uj3PZe5MNRNh1iuuLL...	VXyND18H8
	<input type="checkbox"/>	<input type="checkbox"/> Edit	<input type="checkbox"/> Copy	<input type="checkbox"/> Delete	7	Nelle Langworth	ruthie.collier@example.net	2018-12-14 14:28:03	\$2y\$10\$9UbNPloirHtl9spgLzy6cOyW6yHkwwlRvOR9sGu3mb...	IABDwIEPH
	<input type="checkbox"/>	<input type="checkbox"/> Edit	<input type="checkbox"/> Copy	<input type="checkbox"/> Delete	8	Adonis Corwin	afarrell@example.net	2018-12-14 14:28:02	\$2y\$10\$e8LV8dgnT2aB4eQtg0pveIWpYp2EBIgr1VhCzODIn...	DQP6adOU0k
	<input type="checkbox"/>	<input type="checkbox"/> Edit	<input type="checkbox"/> Copy	<input type="checkbox"/> Delete	9	Mr Herman Kshlerin	demarco38@example.org	2018-12-14 14:28:02	\$2y\$10\$nQR55VEKs51.2.Gh2BVjwOk(29QpckX8)8ggggNsuXw2...	9PmedXADMX
	<input type="checkbox"/>	<input type="checkbox"/> Edit	<input type="checkbox"/> Copy	<input type="checkbox"/> Delete	10	Luis Bahninger	ritchie.jaylin@example.com	2018-12-14 14:28:03	\$2y\$10\$U2jRxeCFU10lgH7gykBduQ9.eNTNyPPGjnxFWLiTpG...	Uf71H766MI

Figure 6.28 Users table Structure

Figure 6.29 describe the Employee Information table structure of LTS database of “Lead Tracking System”

	<input type="checkbox"/>	<input type="checkbox"/> Edit	<input type="checkbox"/> Copy	<input type="checkbox"/> Delete	id	user_id	company_id	address_id	department_id	office_id	designation_id	employee_type_id	path	gender	phone	dob	salary	s
	<input type="checkbox"/>	<input type="checkbox"/> Edit	<input type="checkbox"/> Copy	<input type="checkbox"/> Delete	1	1	11	2	1	13	1	1	1 images/no_image.png	Female	01849107294	1988-03-03	172266	
	<input type="checkbox"/>	<input type="checkbox"/> Edit	<input type="checkbox"/> Copy	<input type="checkbox"/> Delete	2	2	2	4	2	2	2	2	2 images/no_image.png	female	1-949-952-3728	1999-06-17	183229	
	<input type="checkbox"/>	<input type="checkbox"/> Edit	<input type="checkbox"/> Copy	<input type="checkbox"/> Delete	3	3	3	6	3	3	3	3	3 images/no_image.png	female	273-253-1680 x33050	1981-02-07	499930	
	<input type="checkbox"/>	<input type="checkbox"/> Edit	<input type="checkbox"/> Copy	<input type="checkbox"/> Delete	4	4	4	8	4	4	4	4	4 images/no_image.png	female	991.319.0811 x067	1978-10-07	27512	
	<input type="checkbox"/>	<input type="checkbox"/> Edit	<input type="checkbox"/> Copy	<input type="checkbox"/> Delete	5	5	5	10	5	5	5	5	5 images/no_image.png	male	620.764.0312 x50891	1979-05-28	427287	
	<input type="checkbox"/>	<input type="checkbox"/> Edit	<input type="checkbox"/> Copy	<input type="checkbox"/> Delete	6	6	6	12	6	6	6	6	6 images/no_image.png	female	(358) 314-2307	2014-03-18	298062	
	<input type="checkbox"/>	<input type="checkbox"/> Edit	<input type="checkbox"/> Copy	<input type="checkbox"/> Delete	7	7	7	14	7	7	7	7	7 images/no_image.png	female	(821) 922-6487	1985-09-17	61409	
	<input type="checkbox"/>	<input type="checkbox"/> Edit	<input type="checkbox"/> Copy	<input type="checkbox"/> Delete	8	8	11	16	8	12	7	11	11 images/no_image.png	Male	0162828255	2017-05-20	10000	
	<input type="checkbox"/>	<input type="checkbox"/> Edit	<input type="checkbox"/> Copy	<input type="checkbox"/> Delete	9	9	13	18	4	15	5	10	10 images/no_image.png	Male	0173356699	2012-01-24	50000	
	<input type="checkbox"/>	<input type="checkbox"/> Edit	<input type="checkbox"/> Copy	<input type="checkbox"/> Delete	10	10	12	20	4	14	7	11	11 images/no_image.png	Female	01669000222	1980-06-29	20000	
	<input type="checkbox"/>	<input type="checkbox"/> Edit	<input type="checkbox"/> Copy	<input type="checkbox"/> Delete	11	11	11	40	9	12	7	5	5 images/no_image.png	Male	01921486249	1995-12-15	15000	

Figure 6.29 Employee Information Table Structure

6.6 Interface Design

Figure 6.30 describes the dashboard of “Lead Tracking System”

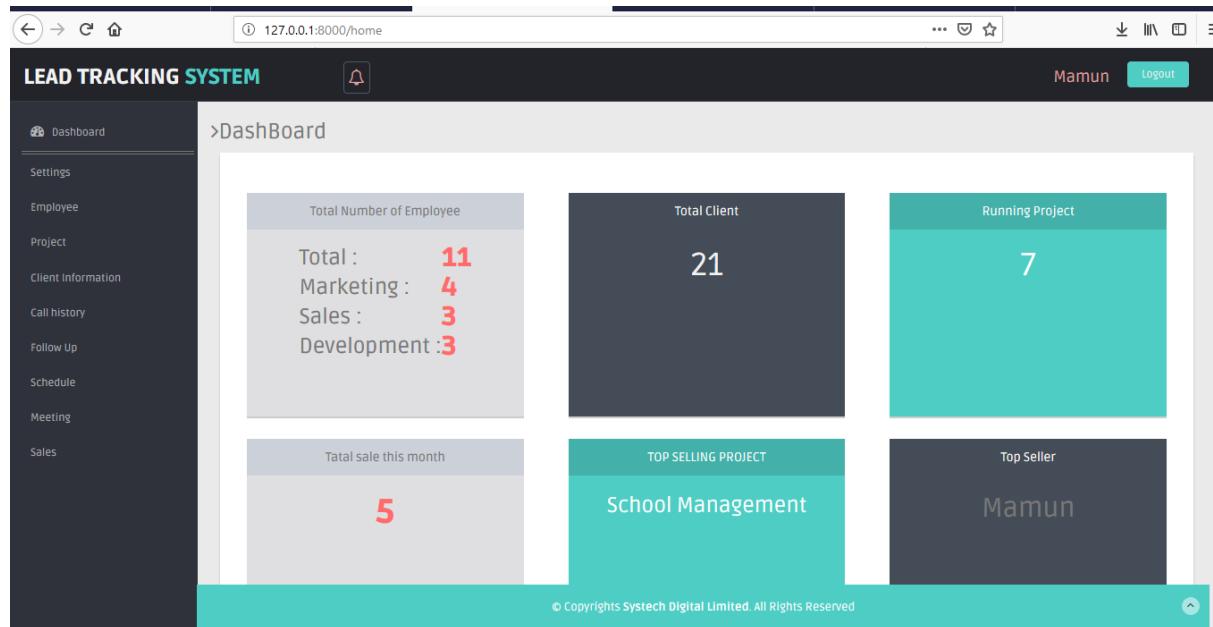


Figure 6.30 Home page of the system

Figure 6.31 describes the login page of “Lead Tracking System”

The screenshot shows the 'SIGN IN' page of the 'Lead Tracking System'. It features a teal header with the text 'SIGN IN'. Below it are two input fields for 'User Email' and 'Password'. A 'Forgot Your Password?' link is located above a teal 'SIGN IN' button with a lock icon. The background is light gray.

Figure 6.31 Login page of the system

Figure 6.32 describes the employee list of “Lead Tracking System”

#SL	Name	Company	Office	Email	Phone	Option	Set Role
1	Mohaiminul	Systech Digital Limited	Karwan bazar Office	mohaiminul23r@gmail.com	01921486249	View Edit Delete	Add Role
2	Abdullah	Systech Digital Limited	Karwan bazar Office	abdullah001rti@gmail.com	0162828255	View Edit Delete	Add Role
3	Ahsan Zahid	Dream IT	dream IT	ahsan@gmail.com	01733556699	View Edit Delete	Add Role
4	Akib Hossain	Tiger IT Bangladesh	Main office	akbil222@gmail.com	01669000222	View Edit Delete	Add Role
5	Mamun	Systech Digital Limited	Uttara Office	mamun23r@gmail.com	01849107294	View Edit Delete	Add Role

Figure 6.32 Employee list of the system

Figure 6.33 describes the employee profile of “Lead Tracking System”

Employee ID :	11	Gender:	Male
Name :	Mohaiminul	Phone:	01921486249
Email:	mohaiminul23r@gmail.com	Date of Birth:	1995-12-15
Join Date:	18 December 2018	Country:	Bangladesh
Company:	Systech Digital Limited	City:	Bogra
Office:	Karwan bazar Office	Address:	Sultanganj Para, Bogra Sadar
Department:	Marketing	Postal Code:	5800
Employee Type:	Casual	Salary:	15000
Designation:	Intern	Activity Status:	Active

Figure 6.33 Employee profile page of the system

Figure 6.34 describes the add permissions to role of “Lead Tracking System”

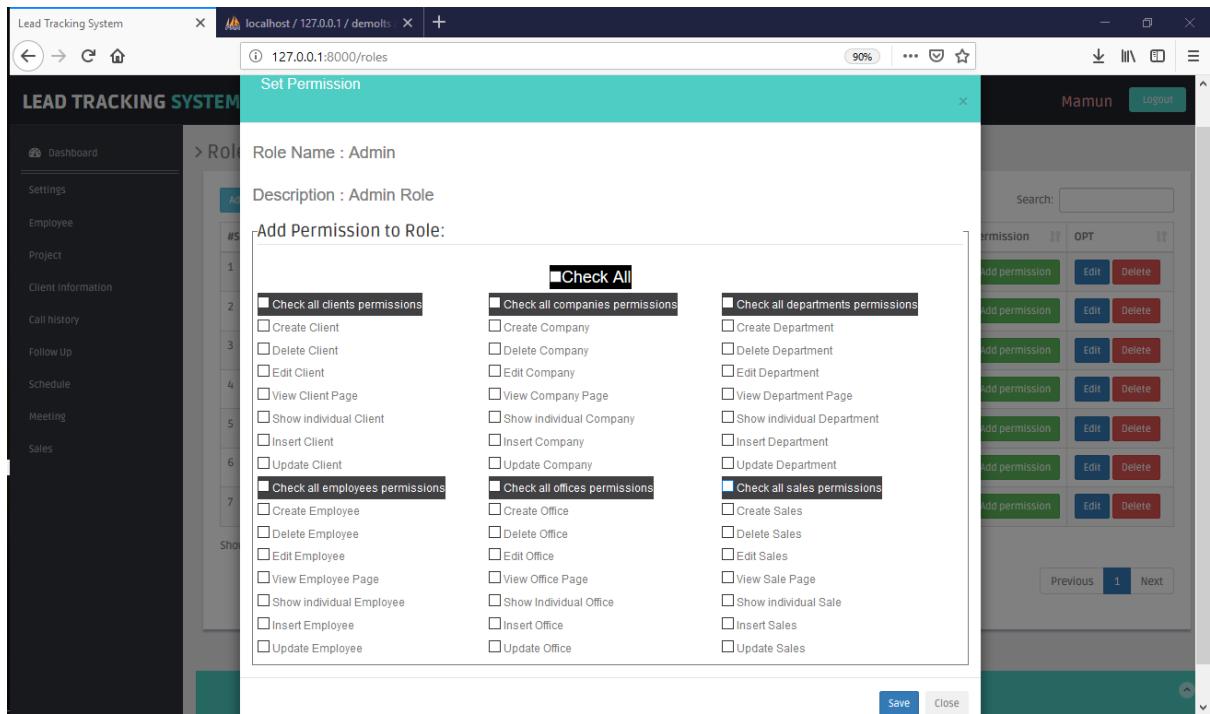


Figure 6.34 Add permission page of the system

6.35 describes the Add to sale history page of “Lead Tracking System”

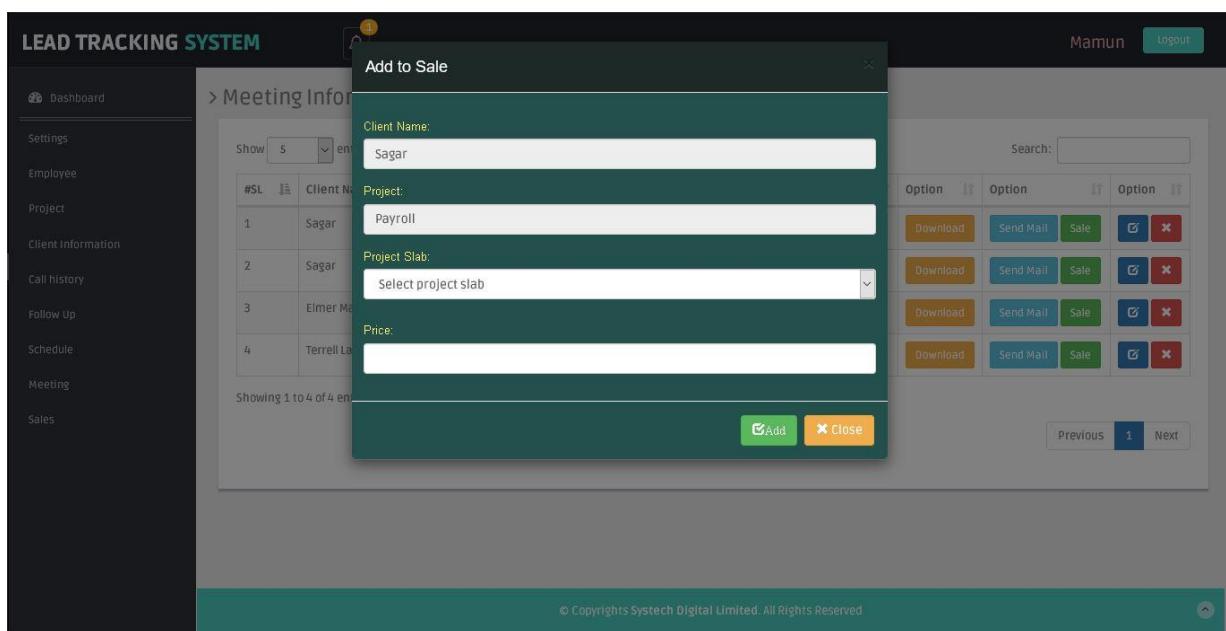


Figure 6.35 Add to sale page of the system

6.36 describes the Schedule Information page of “Lead Tracking System”

Schedule Information

Show	5	entries	Search:						
#SL	Client Name	Project Name	Meeting Date	Employee	Status	Option	Option		
1	Imran	Lead Tracking System	20 Sep 18 10:50 AM		Pending	View	Edit	Delete	Completed
2	Sagar	Smart Office Handling	20 Sep 18 10:50 AM		Pending	View	Edit	Delete	Completed
3	Imran	Lead Tracking System	20 Sep 18 10:50 AM		Pending	View	Edit	Delete	Completed
4	Abdullah	Pay Role	20 Sep 18 10:50 AM		Pending	View	Edit	Delete	Completed
5	Abdullah	Pay Role	21 Sep 18 10:30 AM		Pending	View	Edit	Delete	Completed

Showing 1 to 5 of 9 entries

Previous **1** 2 Next

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Figure 6.36 Schedule Information page of the system

6.37 describes the update Schedule Information page of “Lead Tracking System”

Update Schedule Information

Show	5	entries	Search:				
#SL	Client Name	Project Name	Status	Option	Option		
1	Imran	Lead Tracking System	Pending	View	Edit	Delete	Completed
2	Sagar	Smart Office Handling	Pending	View	Edit	Delete	Completed
3	Imran	Lead Tracking System	Pending	View	Edit	Delete	Completed
4	Abdullah	Pay Role	Pending	View	Edit	Delete	Completed
5	Abdullah	Pay Role	Pending	View	Edit	Delete	Completed

Showing 1 to 5 of 9 entries

Previous **1** 2 Next

Client Name: Imran
Project Name: Lead Tracking System
Assign Employee: Select sales executive
Date & Time: 20 September 2018
Status: Pending
Address:
Country: Bangladesh City: Dhaka
Address: uttara
postal Code: 1230

[Update](#) [Close](#)

Figure 6.37 Update Schedule Information page of the system

6.38 describes the Add to Meeting page of “Lead Tracking System”

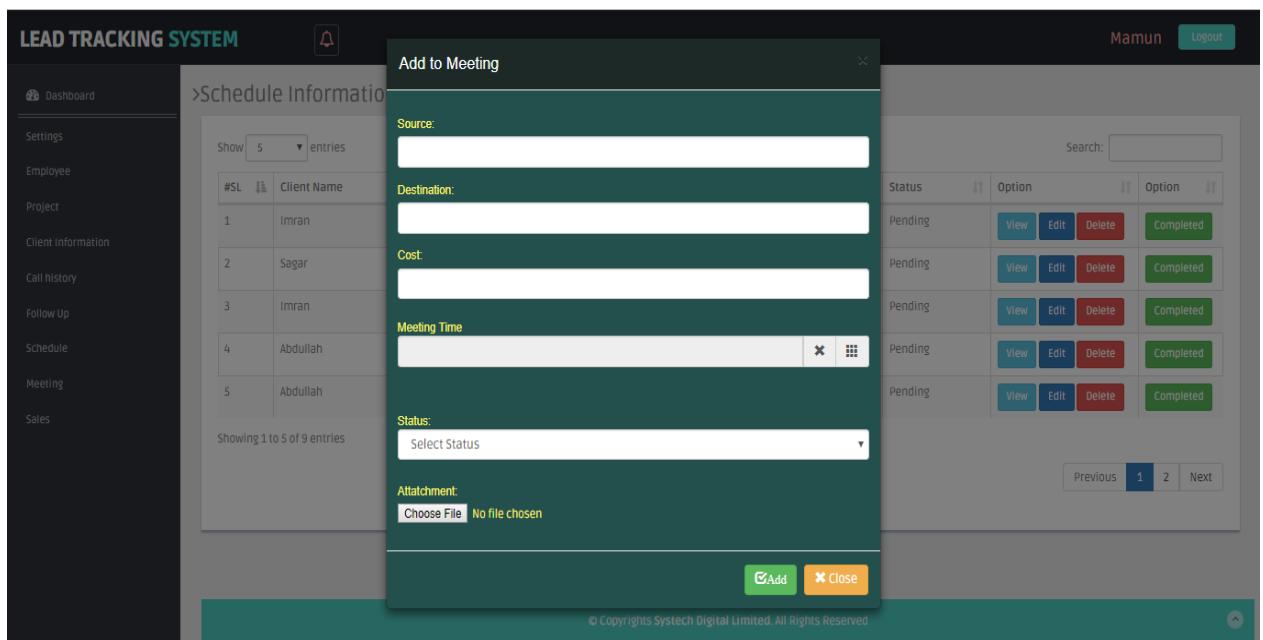


Figure 6.38 Update Add to Meeting page of the system

6.39 describes the uploading file for meeting page of “Lead Tracking System”

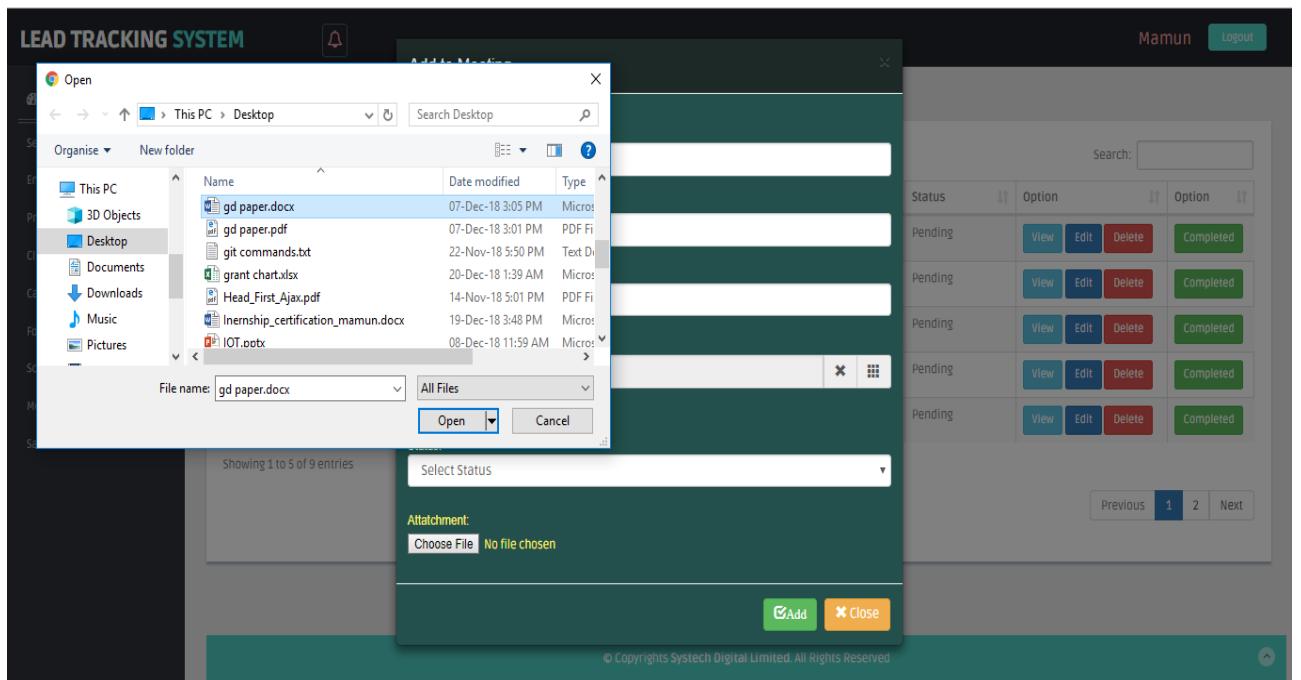


Figure 6.39 Uploading file for meeting page of the system

Chapter-7

System Quality & Testing

Chapter 7 is representing the system testing, software testing strategy, system testing methodology and testing design. In this chapter the detail system testing is discussed along with the black box testing and white box testing.

7.1 System Testing

According to the Common Process Framework (CPF), the software testing is the final activity that has to initiate after testing. Software testing is a critical element of software quality assurance and represents the ultimate review of specification, design and code generation.

- ✓ The objectives of software testing are:
- ✓ Testing is a process of executing a program with the intent of finding an error.
- ✓ A good test case is one that has a high probability of finding an as-yet-undiscovered error.
- ✓ A successful test is one that uncovers an as-yet-undiscovered error.

The design of tests for software can be challenging as the initial design of the product itself. Software can be tested in one of two ways:

- ✓ Knowing the specified function that the software has been designed to perform, tests can be conducted that demonstrate each function fully while at the same time searching for errors in each function. This approach is known as black-box testing.
- ✓ Knowing the internal workings of software, tests can be conducted to ensure that internal operations are performed according to specifications and all internal components have been adequately exercised. This approach is known as white-box testing

A strategy for software testing integrates software test case design methods into a well-planned series of steps that result in the successful construction of a software. The strategy provides a road map that describes the steps to be conducted as part of testing.

Testing strategy that will be followed in this software project –

- ✓ Unit testing
- ✓ Integration testing
- ✓ Validation testing

The first step in software testing is unit testing. Unit testing concentrates on each unit of the software as implemented in source code. Unit testing focuses on each component individually. The unit test is white-box oriented. Thus, unit testing of this library software will be done after completion of every module or component.

The next step is integration testing. Integration testing is a systematic technique for constructing the program structure while at the same time conducting tests to uncover errors

associated with interfacing. The objective of integration testing is to take unit tested components and build a program structure that has been dictated by design.

7.2 System Testing Methodology

➤ Black - Box Testing:

Black-box testing which is also known as behavioral testing focuses on the functional requirements of the software. It enables the software engineer to derive sets of input conditions that will fully exercise all functional requirements for a program. Black-box testing method will be applied to test the modules of LMS.

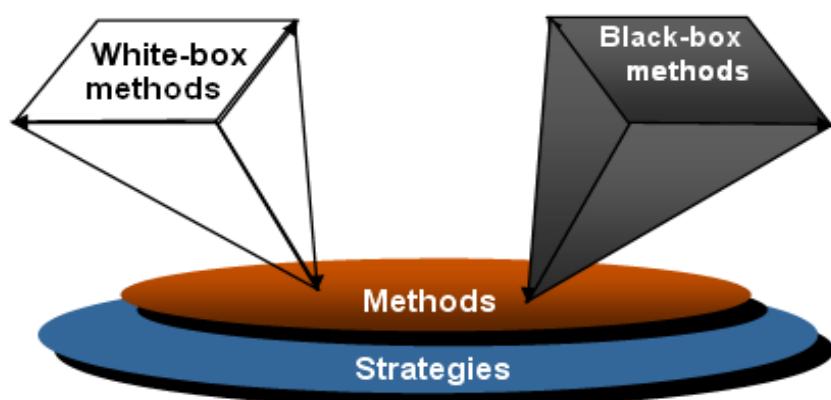


Figure 7.1 System Testing

➤ White Box Testing:

White-box testing, which also known as glass-box testing, is a test case design method that uses the control structure of the procedural design to derived test cases. Using white-box testing methods, software engineer can derive test cases that,

1. Guarantee that all independent paths within a module have been exercised at least once.
2. exercise all logical decisions on their true and false sides
3. execute all loops at their boundaries and within their operational bounds
4. Exercise internal data structures to ensure their validity.

The modules that contain some complex calculations or decision-making code such as check the availability of the library item will be tested using white-box method.

7.3 Testing Scenario

Here I have given some of my successful testing scenario which I have applied on my system.

Table XXI: Testing Scenario-1

Testing scenario No:1	
Scenario	Login testing scenario of the system
Input(s)	Correct UserId, Password
Desired Output(s)	When enter a valid UserId, password then get access to level defined.
Actual Output(s)	For login system worked correctly
Verdict	Getting result from Desired Output's and Actual Output's decided this system is successful for log

Table XXII: Testing Scenario-2

Testing scenario No:2	
Scenario	Add to schedule from follow-up
Input(s)	Add follow-up information date and time, address
Desired Output(s)	When logged in, the system is showing only those things which can access by sales executive
Actual Output(s)	For adding a schedule working successfully
Verdict	Getting result by giving Input and showing Actual Output decided this system is successful for adding schedule testing

Table XXIII: Testing Scenario-3

Testing scenario No:3	
Scenario	Successful meeting testing
Input(s)	Give time, date and select user from meeting history
Desired Output(s)	When the submit button will create the meeting records save
Actual Output(s)	Adding meeting info
Verdict	The process worked correctly and successfully.

Table XXIV: Testing Scenario-4

Testing scenario No:4	
Scenario	Uploading files from add to meeting page
Input(s)	Upload a file for sending it to the manager
Desired Output(s)	It will send the file to the manager
Actual Output(s)	Email sending to the manager
Verdict	The process worked correctly and successfully

Chapter-8 *Termination*

Chapter 8 is representing the work experience of practicum and conclusion of project.

8.1 Preface

Today is the age of modern science and information and online communication, which is critical to development of more effective operational and management process. To provide better and uninterrupted services to the employee of Systech Digital Limited a group of Software specialist working together to keep the service all time. I was fortunate and blessed to get this lucky break to work some of these efficient hard-working friendly engineers. My earnest thanks, gratitude and salutations to these wonderful people from the deep down inside my heart.

In our career development – as with most life issues – there is direct relationship between effort and reward. To me, practicum can be as a transition from engineering college study life to a real-world workplace through hands on experience of engineering practices.

There are several major advantages for students completing a guided Practicum:

1. Demonstration of practical application of studies
2. Development of deeper skills in the selected research area
3. Increases employability

Practicum does not offer hands-on experience only, but also the trait of “coping up” in the society. Meeting with different types of people and encountering situations gives practical orientation to life. There are many more upright issues of practicum, which only the person experiencing it can sense and believe.

It is the gateway to the professional life, bridge between theoretical and practical knowledge. Now these days, engineering job recruiters no longer consider high grand's; rather they value the particle working experience, for which practicum proves to be vantage for the fresh entry level engineers in the job market.

Student of College of Engineering and Technology (CEAT) at IUBAT go for this practicum program carrying 9 credit hours weight, which goes for a semester long and usually after the completion of the course work. A report submitted after the completion of the practicum followed by a presentation and a comprehensive examination on the overall four years education.

8.2 Future Work

My software is web-based application, that application can able to track business activities through the completion of a successful lead generation to sales confirmations. Now I am doing very initial version of the big software. As mine limited time of internship I develop the core features of my system but in future it can be possible to add more features e.g.:

- Google calendar reminder
- Create an API to integrate with homebased meeting management software

8.3 Limitations

As it has been mentioned early in this report that practicum is the bridge between theoretical and practical life, practicum program at IUBAT has given the students this great opportunity to see how theories are put into action. From this point of view, a 4 months practicum program is not good enough for a fresh graduate to work in an organizational and at the same time develop software. After applying the software engineering procedures, it is very difficult to develop complete software within short time and it might be required to include more modules for the project. But at the later stage, one should be familiar with the overall scenario.

Conclusion:

The biggest experience working at Systech Digital Limited IT institution, is indeed being a part of designing and implementing software. My most experience was round the designing issue. I have learnt a lot of new things which was so much unknown to me. I have also learnt some technical issues which help to do better in future life. For developing live project, using git was a new advantage for me. The following indicator will indicate some of our technical issue which we have learnt and implemented from this project. This report will help a person to understand this whole application. How the software works and what is the use of this application. Where reader can get help from this application. We tried to make this application easy and faster for the user.

Glossary

LTS- Lead Tracking System
DFD- Data Flow Diagram
DET-Data Element
EI-External Input
EO-External Output
EIF-External Interface File
ILF-Internal Logical File
RET-Record Element
TF-Transactional Function
VAF-Value Adjustment Factor
RIMMM- Risk Mitigation Monitoring Management

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