Web Based CRM

Final Year Project

Session 2017-2021

A project submitted in partial fulfillment of the degree of

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*The candidates confirm that the work submitted is their own and appropriate credit has been given where reference has been made to work of others

Plagiarism Free Certificate

This is to certify that, I Imran Niaz S/D of Niaz Ahmad, group leader of FYP under registration no BCSM-F17-100 a Computer Science Department, The Superior College, Lahore. I declare that my FYP report is checked by my supervisor.

Date: Name of Group Leader: Imran Niaz Signature: ______________

Name of Supervisor: Sir Ahmad Bilal Co-Supervisor:Sir Jawad

Designation: Lecturer Designation: Associate Professor

Signature: _________________ Signature: __________________

HoD: Dr. Irfan uddin

Signature: ________________

Web Based CRM

Change Record

Author(s)	Version	Date	Notes	Supervisor's Signature
Imran niaz	1.0	13-03-2021	Started working on the project	
Imran niaz	1.0	14-03-2021	Added 3D modelling, chat bot, recommendation system	
Imran niaz	1.0	16-03-2021	Was advised to add animation>	
Umair Younus	1.0		<Added>	
Umair Younus	1.0		Supervisor has approved the project and advised to initiate the project through research work.	
Sharafat Ali	1.0	01-08-2021	Database Design	
Umair Younus	1.0	08-08-2021	Database Design	
Imran Niaz	1.0	20-08-2021	Database Design & Tests	
Umair Younus	1.0	08-09-2021	Server Setup	
Umair Younus	1.0	12-09-2021	Framework Installations	
Imran Niaz	1.0	20-09-2021	Testing & Cross Checking	
Sharafat Ali	1.0	25-09-2021	Database Implementation	
Umair Younus	1.0	01-10-2021	Backend Coding	
Umair Younus	1.0	08-10-2021	CRUD Opertaions	
Sharafat	1.0	15-10-2021	Data Entry	

APPROVAL

PROJECT SUPERVISOR

Comments: Project approved by our supervisor after consultation.

____

Name: Sir Ahmad Bilal

Date: Signature:__________________________

PROJECT MANAGER

Comments: Our project manager sir Jawad verified our project title by contacting supervisor and the information was verified, and our project got approved.

Date: Signature:__________________________

HEAD OF THE DEPARTMENT

Comments: APPROVED

Date: Signature:__________________________

Dedication

This work is dedicated to our supervisor, department, and fyp project head, because this is the best way of responding to all the hard work, our teachers had done on us. We feel, it's a time, that beside lifting up our career portfolio through fyp project, it is also important for us to acknowledge all the hard work done by our teacher' guidance, which is why we are here today. We are really thankful for all the precious guidance, and facility, being provided.

Acknowledgements

I am really thankful to my supervisor who has guided us really well since the start of our fyp. We faced alot of difficulties and challenges initially while choosing title and while filling the proposals, but our supervisor provided us with timely solutions to help deal with all challenges and problems. Today we are firmly going through all the barriers coming in our fyp, just because our supervisor is behind our back.

Executive Summary

Customer relationship management (CRM) is a business strategy that focuses every business activity a company does on its customer. CRM entails getting upper management support for implementing new strategies and technologies that allows the organization to get a single view of each customer and to better service the customer both now and in the future. Companies are interested in retaining current customers because of higher costs associated with seeking new customers—at times, these costs can be as much as five to one.

The size of the CRM market is debatable, but it is a billion dollar market with estimates for 2004 ranging from $2.14 billion to $26.5 billion. The big vendors that provide CRM are Siebel Systems, PeopleSoft, and Oracle. A big focus of CRM is to integrate all of a company's departments and customer touch points so that customer information can be turned into knowledge to lead future decisions. CRM consists of different modules, the four most prominent being sales force automation, marketing automation, call centers, and analytics/data mining. .

Table of Contents

List of Figures

Chapter 1
Introduction

Chapter 1: Introduction

Customer relationship management (CRM) is the combination of practices, strategies and technologies that companies use to manage and analyze customer interactions and data throughout the Customer lifecycle. The goal is to improve customer service relationships and assist in customer retention and drive sales growth. CRM systems compile customer data across different channels, or points of contact, between the customer and the company, which could include the company's website, telephone, live chat, direct mail, marketing materials and Social Network CRM systems can also give Customer Facing staff members detailed information on customers' personal information, purchase history, buying preferences and concerns.

Thus, CRM is a strategy companies can use to effectively use technology to provide a unified view of each customer which allows them to create loyalty and reduce organizational costs. To better understand what something truly is, it is often useful to know what it is not; in the case of CRM, it is not to be mistaken for a database marketing system. Such systems can be extremely useful to companies to better know their customers, yet CRM goes beyond the scope of this system—it touches on every department of a company to provide a single view of the customer.

1.1. Background

Basically, this is a market project, for an actual business in a market. As we know that Covid has struck physical businesses badly these days, so this business was also struggling to get sales for revenue. The business owner was upset due to financial issues.

1.2. Motivations and Challenges

We took their problem and challenges, as a motivation to get them a reliable solution for their problem, by developing a website for them free of cost, as our fyp project.

Thus, they wanted to mark their business presence on online platform through a website, for which our group has taken initiative as our fyp project. The online website would them to provide their services all over Pakistan, which ultimately boost income revenue.

1.3. Goals and Objectives

Our goal is to mark their business presence on online platform through a website, for which our group has taken initiative as our fyp project. The online website would let them provide their services all over Canada, which ultimately boost income revenue.

1.4. Literature Review/Existing Solutions

Existing Solutions using your **Customer Relationship Management** (**CRM**) system can give you a significant **competitive** edge and it can be crucial to success. ... **CRM** it can be used as a central point to store information about your contacts and **competitors**, so that all employees access key data when they need it.

1.5. Gap Analysis

The actual sales performance of this business is not upto the mark, or it isn't enough to support financial expenses. They are far away from their desired results of having maxmium sales for maximum revenue.

1.6. Proposed Solution

To overcome their problem, we decided to develop an online website for their business. This online platform will help them to reach out to maximum customers, all over Canada. The more customers, mean the more revenue coming in.

1.7. Project Plan

Since our fyp is of one year, so we have divided the work on monthly basis, and is how our project plan works. Initially, we are working on proposals, reports and documentation for our project, until fyp 1. Two members of of our group are working on these proposals and documentation, while the last one is working on prototype of the website. After completion of prototype and documentation for this project, our main focus would be on the development of the project, because it would get easy for us while coding, when we have complete layout and required details of website.

1.7.1. Work Breakdown Structure

Work breakdown structure means, how we have divided work into smaller parts for the successful completion of our project. In this case, our project is divided into 3 parts, which include: Project management, documentation, system.

The project management includes the roles and responsibility, the documentation includes proposals and reports, and the system part includes the development stages.

1.7.2. Roles & Responsibility Matrix

(1) WBS deliverable: project management; **Activity to Complete the Deliverable:** Managing the project by making WBS, and defining roles to each member; **Duration:** 30 days; **Responsible**

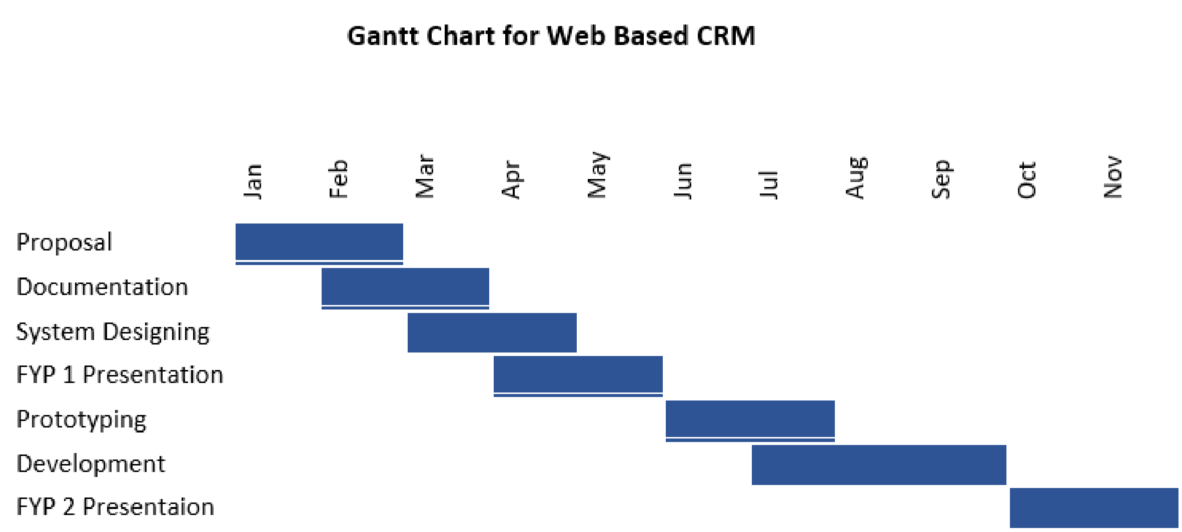
Team Member(s) & Role(s): Imran niaz (Managing Project by arranging meetings with supervisor and remaining in contact with sofware house.

Umair Ahmad (defining and dividing roles to each member).

(2) WBS deliverable: Reports and Documentation; **Activity to Complete the Deliverable:** Making prototype, documentation, proposals, market survey, analysis and system design; **Duration:** 90 days; **Responsible Team Member(s) & Role(s): Imran niaz** (documentation, proposal),Umair Ahmad (prototyping, system layout and design), Sharafat Ali(market survey and analysis)

(3) **WBS deliverable:** System; **Activity to Complete the Deliverable:** Designing a UI design for the website, based on different layers of working. Then code the UI design through coding; **Duration:** 120 days**; Responsible Team Member(s) & Role(s): Umair Ahmad**(React Js, HTML 5, CSS 3, Bootstrap, Firebase, Firestore, Express JS, Word Documentation/proposal, 3D modelling, chatbot), Sharafat Ali(React Js, HTML 5, CSS 3, Bootstrap, Firebase, Firestore, Express JS, graphic design and UI design, 3D modelling, chatbot), Imran NIAZ(React Js, HTML 5, CSS 3, Bootstrap)

1.7.3. Gantt Chart



1.8. Report Outline

Executive summary, introduction, competitive analysis, problem statement, proposed solution, scope of the project, system architectural design, implementation tools and techniques, roles and responsibility, conclusion.

1.9. Empathy Map

Chapter 2

Software Requirement Specifications

Chapter 2: Software Requirement Specifications

2.1. Introduction

2.1.1. Purpose

The purpose of the document is to collect and analyze all assorted ideas that have come up to define the system, its requirements with respect to consumers. Also, we shall predict and sort out how we hope this product will be used in order to gain a better understanding of the project, outline concepts that may be developed later, and document ideas that are being considered, but may be discarded as the product develops.

2.1.2. Operating Environment

Any Operating System with Internet.

2.1.3. Design and Implementation Constraints

Web Based Product, the computers must be equipped with web browsers such as Firefox, Chrome. The product must be stored in such a way that allows the client easy access to it. Response time for loading the product should take no longer than five minutes.

2.2. External Interface Requirements

2.2.1. User Interfaces

The user interface for the software shall be compatible to any browser such as Mozilla Firefox or Google Chrome by which user can access to the system.

2.2.2. Hardware Interfaces

Since the application must run over the internet, all the hardware shall require to connect internet will be hardware interface for the system. As for e.g. Modem, WAN – LAN, Ethernet Cross-Cable.

2.2.3. Communications Interfaces

The system shall use the HTTP protocol for communication over the internet and for the intranet communication will be through TCP/IP protocol suite.

2.3. Functional Requirements

The functional requirements can be grouped into tree main parts.

2.3.1. Front-End

2.3.1.1. Dashboard

Dashboard is a pictorial representation of your custom reports, which gives a real-time snapshot of your organization's key metrics. Using dashboards, you can easily visualize the patterns and trends in sales, marketing, support, and inventory related data. For example, you can glance at the products that are selling fast over a period of time, compare the current quarter sales with previous quarter sales, or compare the actual sales to the projected sales.

2.3.1.2. Leads

Managing & categorizing contacts (as per location, industry or source) and sending out regular product information to existing and prospective customers.

2.3.1.3. Customers

Managing & categorizing customers (as per location, industry or source) and sending out regular product information & other marketing offers.

2.3.1.4. Contact

Access critical customer data including key contacts, communication history, and get a complete picture of every customer, from social insights to campaign history, to deals they're involved in.

2.3.1.5. Campaign

Campaign management allows you to plan, and keep track of the marketing campaigns.

2.3.1.6. Task

A task is a specific piece of work required to be done by other user (team member) within a given time frame.

2.3.1.7. Email

This module provides email history and functionally to compose, send & view emails.

2.3.2. Module Tools

2.3.2.1. Manage Dashboard

After creating a dashboard you must add components (representing the exact data in pictorial form), which includes Bar, Pie, Line, Funnel, or Table charts. You can select the charts to display the data in pictorial form and also a table to display the data in tabular format.

2.3.2.2. Import Data

Importing records help you to create new leads by gathering data through various sources, such as purchasing a record database, records from different business units, etc.

2.3.2.3. Export Data

The Export Data feature allows you to export data (in CSV format) from individual CRM modules.

2.3.2.4. Manage Email

You can send Emails to your Leads, Contacts and Potentials modules. You need not go to your favorite Email service to communicate with your contacts.

2.3.2.5. Manage Notes

You can use the notes to write questions, reminders, and anything you would write on notepaper. These are useful for storing bits of information related to customers, which you may need later.

2.3.2.6. Customize Reports

You can create new module-specific reports linking some of the other cross-functional modules. You can generate Tabular Report, Summary Report, and Matrix Report.

2.3.2.7. Scheduled Emails

You can automatically send email according to scheduled time.

2.3.2.8. Scheduled Reports

You can automatically send reports to your colleagues, executive management and customers by scheduling the desired reports daily, weekly, monthly or yearly.

2.3.2.9. Print Records

You can print record, invoice and all module view.

2.3.3. Setup

2.3.3.1. Company Details

Before you get started, it is necessary that you add organizational details & personalize your company CRM account by setting your company details and company logo. Also, set your currency and define the fiscal year for your organization.

2.3.3.2. Account Information

Personalize your CRM account by setting your country locale, time zone, language and personal details.

2.3.3.3. Users & Permissions

User is one who manages records, their own or those shared by other users, within the organization. In addition to accessing the CRM data, some of the users can perform administrative functions for smooth running of the CRM account.

2.4. Nonfunctional Requirements

2.4.1. Performance

The consumer should be able to download a page in 5 seconds with a 1024 Kbps modem. The form submission should not take a long time to be processed, especially in the CRM module case, in which form applications play a major role.

2.4.2. Security

The system shall automatically log out all customers after a period of inactivity. The system shall confirm all transactions with the customer's web browser. The system shall not leave any cookies on the customer's computer containing the user's password. The system shall not leave any cookies on the customer's computer containing any of the user's confidential information.

2.4.3. Supportability

Any Operating System with a web browser & active internet.

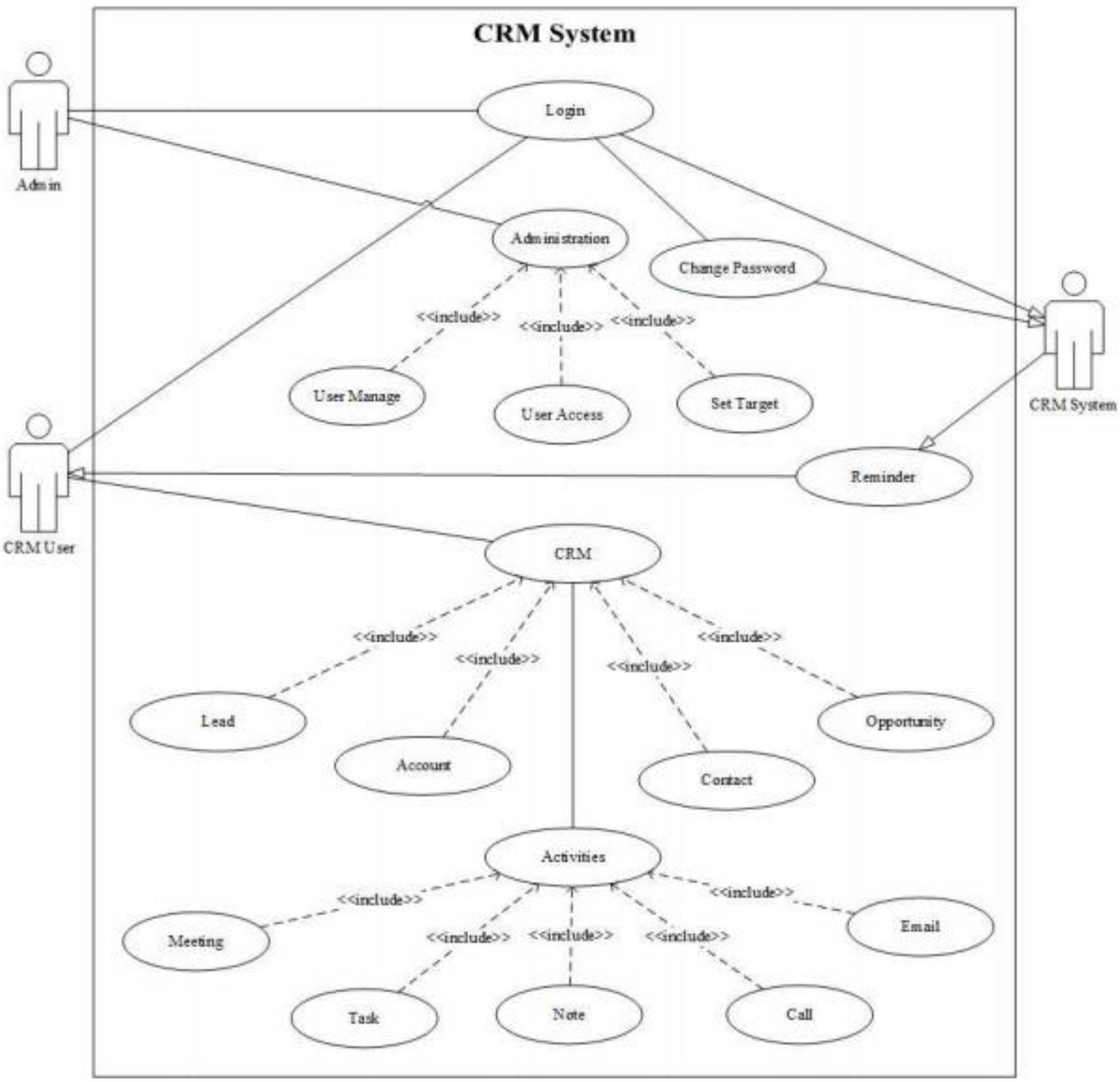
Chapter 3

Use Case Analysis

Chapter 3: Use Case Analysis

The following diagram indicates the use case model for CRM. Here three kinds of user are present. A Supervisor (Admin) user can perform all the processes after login into system. On the other hand a normal user can handle note, client, actual sale, reminders, change password etc. He also needs to be logged in the system. Another CRM System user can also handle emainders.

3.1. Use Case Model



3.2. Use Cases Description

It has all the information of the Use case Model display in the previous picture. We have narrated use case with a table in the following section. Each table shows five types of detail information about a use case. They are Use case name, Actor, Pre-Condition, Primary Path and Exceptional Path. Use case name refers the name of the process. Actor identifies who will be the user. Pre-condition means whether or not another process is required to enter or use this process. Primary Path indicates step by step works of the process. Exceptional Path shows us what the process will do if any exception occurs in a primary path. We provide fourteen tables with detail information of the processes of CRM project.

Use case description of Login

Use case name: Login

Actor: Admin, CRM User

Pre-condition: None

Primary Path: 1. Enter user Email

2. Enter Password

3. Click “Login” Button

Exceptional Path: 3.1 Please Enter Registered Email

3.2 Email or Password is not valid

Use case description of Change Password

Use case name: Change Password

Actor: Admin, CRM User

Pre-condition: Login

Primary Path: 1. Enter Old Password

2. Enter New Password

3. Confirm New Password

4. Click “Change Password” Button

Exceptional Path: 3.1 Please enter the same value

4.1 Your old password is incorrect

Use case description of User Manage

Use case name: User Manage

Actor: Admin

Pre-condition: Login

Primary Path:
1. Enter Employee Information
2. Select Employee Category
3. Click “Go” Button to search
4. Select Number of List
5. Click “Edit” Button to Update Employee Information
6. Click “Delete” Button to Delete Employee Information
7. Click “Access” Button to Access Employee Information
8. Click “Add New” Button to Create Employee

Exceptional Path:
1.1 Employee Information is not correct
3.1 List of Employee is empty

Use case description of User Access

Use case name: User Access

Actor: Admin

Pre-condition: Login

Primary Path:
1. Enter Employee Information
2. Click “Go” Button to search
3. Select Number of List

Exceptional Path:
1.1 Employee Information is not correct
2.1 No search result found

Use case description of Set Target

Use case name: Set Target

Actor: Admin

Pre-condition: Login

Primary Path: 1. Enter Employee Name

2. Or click “Search” Button to add Employee
3. Select Target Year
4. Enter Value (Amount in Taka)
5. Click “Create Sales Target” Button

Exceptional Path: 1.1 No matches found

3.1 No matches found

Use case description of Lead

Use case name: Lead

Actor: CRM User

Pre-condition: Login

Primary Path: 1. Enter Leads Information

2. Select Leads Category
3. Click “Go” Button to search
4. Select Number of List
5. Click “Edit” Icon to Update Lead
6. Click “Delete” Icon to Delete Lead
7. Click “Add New” Button to Create Lead

Exceptional Path: 1.1 Lead Information is not correct

3.1 List of Leads is empty

Use case description of Account

Use case name: Account

Actor: CRM User

Pre-condition: Login

Primary Path: 1. Enter Accounts Information

2. Select Accounts Category
3. Click “Go” Button to search

4. Select Number of List
5. Click “Edit” Icon to Update Accounts
6. Click “Delete” Icon to Delete Account
7. Click “Add New” Button to Create Account

Exceptional Path: 1.1 Account Information is not correct

3.1 List of Accounts is empty

<u>Use case description of Contact</u>

Use case name: Contact

Actor: CRM User

Pre-condition: Login

Primary Path:

1. Enter Contacts Information
2. Select Contacts Category
3. Select Industry Category
4. Click “Go” Button to search
5. Select Number of List
6. Click “Edit” Icon to Update Contacts
7. Click “Delete” Icon to Delete Contact
8. Click “Add New” Button to Create Contacts

Exceptional Path: 1.1 Contact Information is not correct

4.1 List of Contacts is empty

<u>Use case description of Opportunity</u>

Use case name: Opportunity

Actor: CRM User

Pre-condition: Login

Primary Path:

1. Enter Opportunities Information
2. Click “Go” Button to search
3. Select Number of List

4. Click “Edit” Icon to Update Opportunities
5. Click “Delete” Icon to Delete Opportunity
6. Click “Add New” Button to Create Opportunities

Exceptional Path: 1.1 Opportunity Information is not correct

2.1 List of Opportunities is empty

Use case description of Meeting

Use case name: Meeting

Actor: CRM User

Pre-condition: Login

Primary Path:

1. Enter Meeting Information
2. Select Meeting Category
3. Click “Go” Button to search
4. Select Number of List
5. Click “Edit” Icon to Update Meeting
6. Click “Delete” Icon to Delete Meeting
7. Click “Add New” Button to Create Meeting

Exceptional Path: 1.1 Meeting Information is not correct

3.1 List of Meetings is empty

Use case description of Task

Use case name: Task

Actor: CRM User

Pre-condition: Login

Primary Path:

1. Enter Task Information
2. Select Task Category
3. Click “Go” Button to search
4. Select Number of List
5. Click “Edit” Icon to Update Tasks

6. Click “Delete” Icon to Delete Task
7. Click “Add New” Button to Create Task

Exceptional Path: 1.1 Task Information is not correct

3.1 List of Task is empty

Use case description of Note

Use case name: Note

Actor: CRM User

Pre-condition: Login

Primary Path:

1. Enter Note Information
2. Click “Go” Button to search
3. Select Number of List
4. Click “Edit” Icon to Update Notes
5. Click “Delete” Icon to Delete Note
6. Click “Add New” Button to Create Note

Exceptional Path: 1.1 Note Information is not correct

2.1 List of Note is empty

Use case description of Call

Use case name: Call

Actor: CRM User

Pre-condition: Login

Primary Path:

1. Enter Call Information
2. Select Call Category
3. Click “Go” Button to search
4. Select Number of List
5. Click “Edit” Icon to Update Calls
6. Click “Delete” Icon to Delete Call
7. Click “Add New” Button to Create Call

Exceptional Path: 1.1 Call Information is not correct

3.1 List of Call is empty

Use case description of Email

Use case name: Email

Actor: CRM User

Pre-condition: Login

Primary Path:

1. Enter Email Information
2. Click “Go” Button to search
3. Select Number of List
4. Click “Subject Title” to see Email details
5. Click “Compose” Button to Create Email

Exceptional Path: 1.1 Email Information is not correct

2.1 List of Email is empty

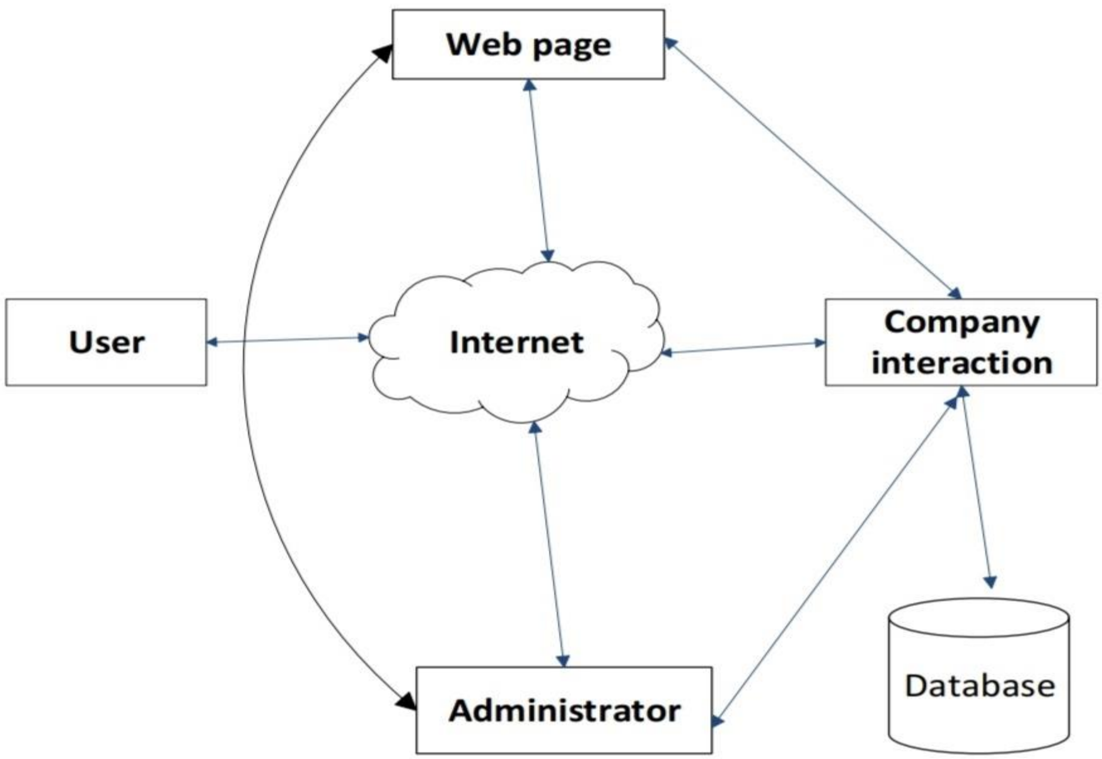
Chapter 4

System Design

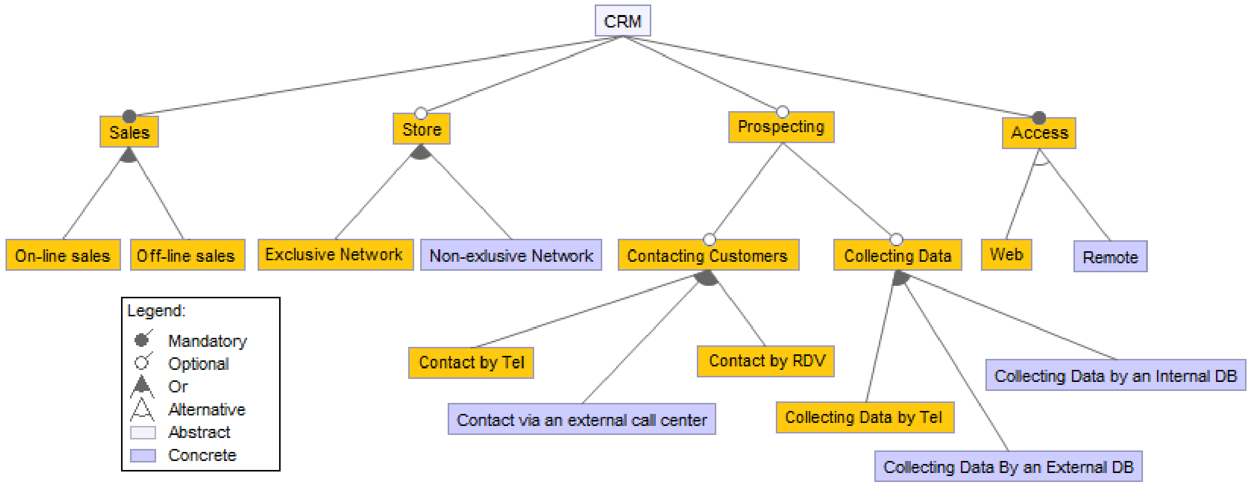
Chapter 4: System Design

A System Design is known to be a process that defines elements of a system involving architecture, modules, components, interfaces, and data for a system based specified requirements. It basically designs, develops and define system to satisfy the requirements and needs of business organization.

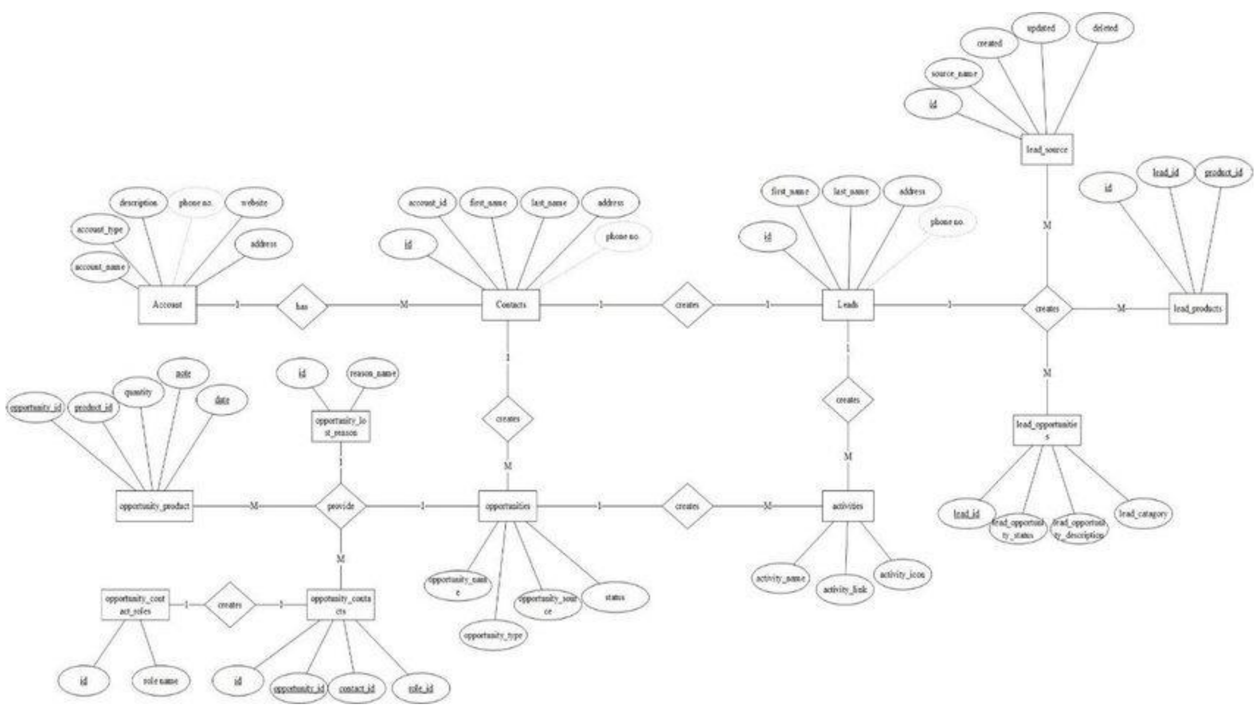
4.1. Architecture Diagram



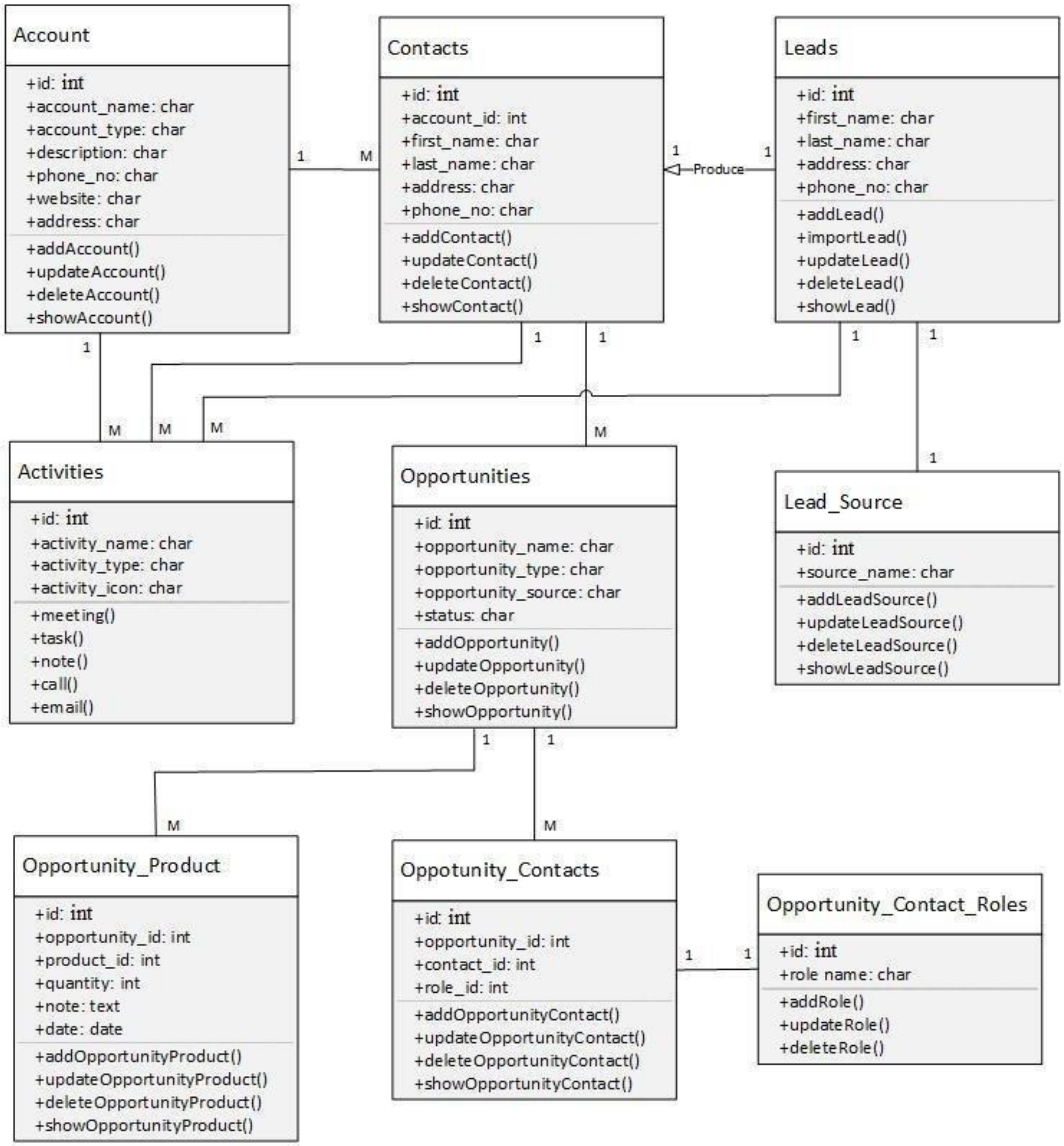
4.2. Domain Model



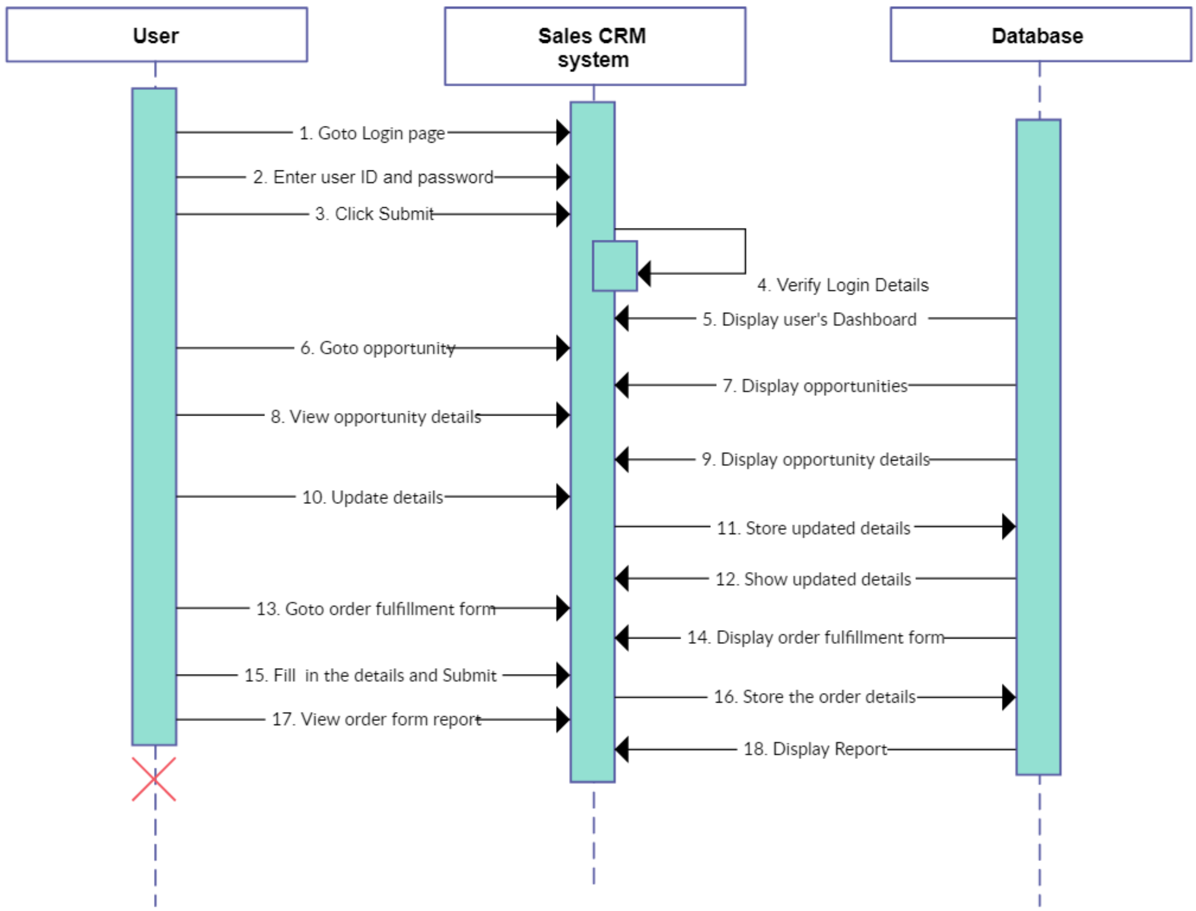
4.3. Entity Relationship Diagram with data dictionary



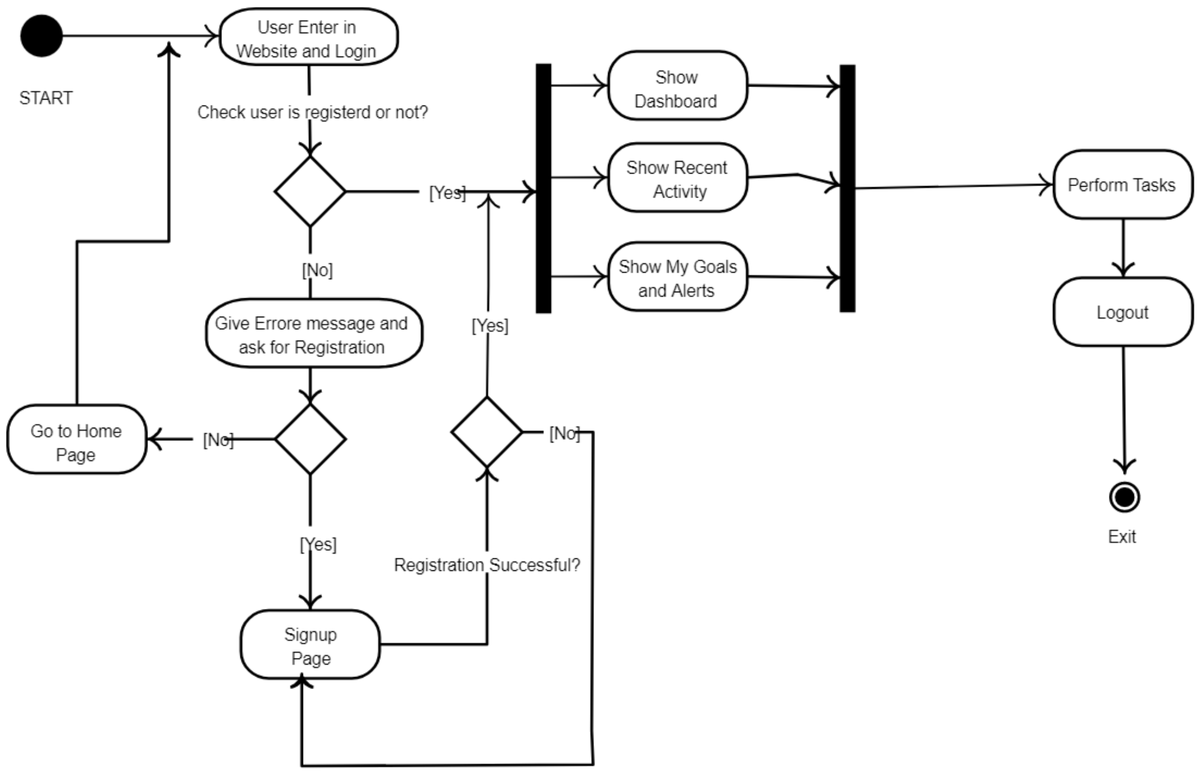
4.4. Class Diagram



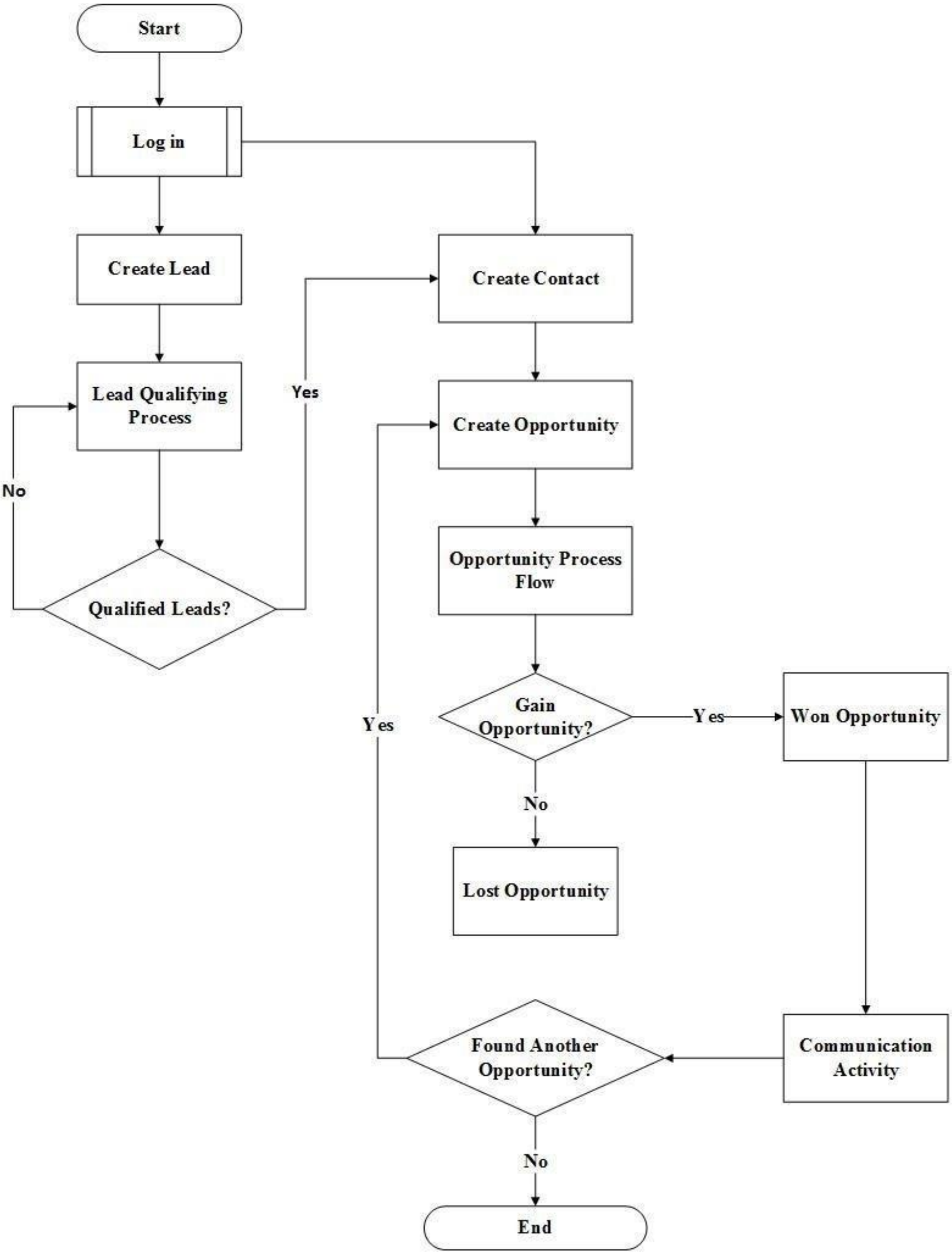
4.5. Sequence / Collaboration Diagram



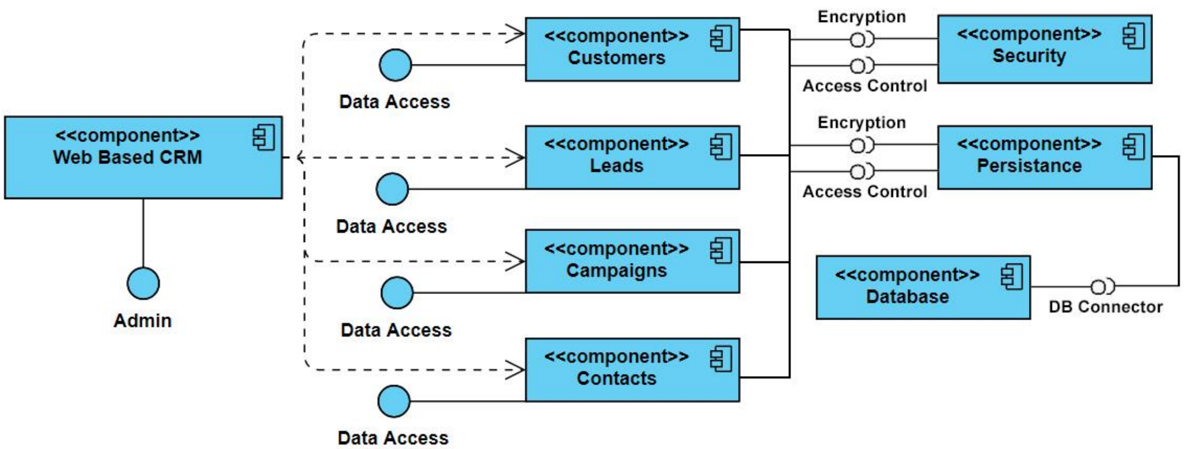
4.6. Activity Diagram



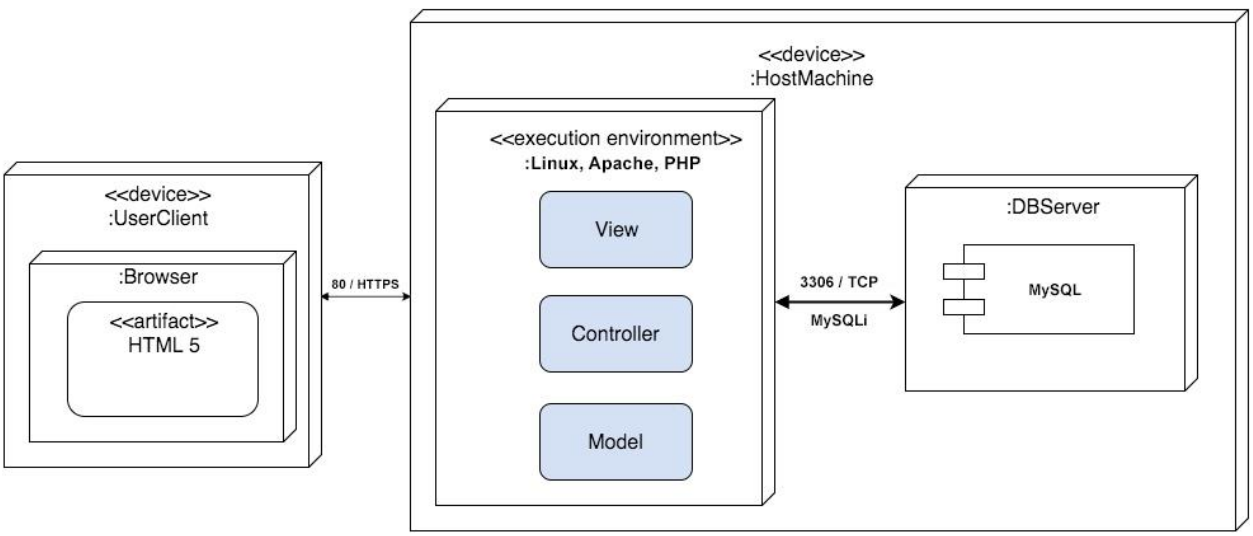
4.7. State Transition Diagram



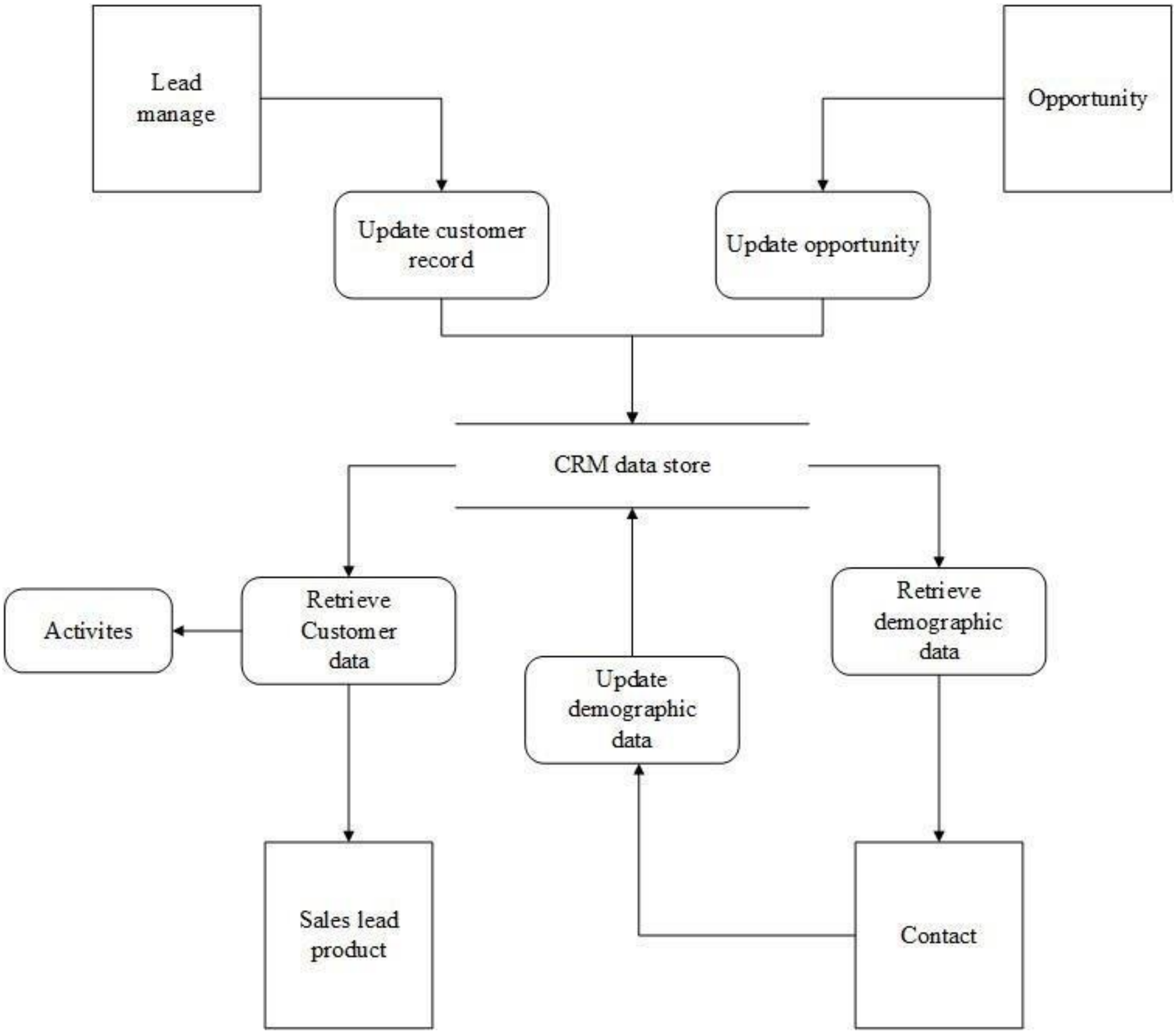
4.8. Component Diagram



4.9. Deployment Diagram



4.10. Data Flow diagram



Chapter 5

Implementation

Chapter 5: Implementation

In this you can find how we implemented the Web Based CRM.

5.1. Components, Libraries, Web Services and stubs

MailChimp (Email Service)

Clickatell (SMS Service)

Moneris (Payment Gateway)

5.2. Deployment Environment

Our deplyment enviroment is Linux, Apache, MySQL, PHP Server (LAMP Stack)

5.3. Tools and Techniques

Backend:

Codeigniter 4

MySQL 8

Frontend:

AdminLTE Theme (Bootstrap 4)

jQuery 3.5

5.4. Best Practices / Coding Standards

We used Codeigniter 4 which is pure MVC (Model, View, Controller) based framework, using such framework is a best practice to develop a large & scalable web application.