Batch No. :FDJ B129

Akash Kalanke (TL)
Akshay Kohale
Mahendra Mahajan
Bhawna Giri

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Chapter 1. Introduction

1.1 What is Micro Finance?

Microfinance is a banking service provided to unemployed or low-income individuals or groups who otherwise would have no other access to **financial** services. **Microfinance** allows people to take on reasonable small business loans safely, and in a manner that is consistent with ethical **lending** practices.

- **Concept And Features of Micro-finance:**
  - i) It is a tool for empowerment of the poorest.
  - ii) Delivery is normally through self Help Group (SHG_s).
  - iii) It is essential for promoting self-employment, generally used for:
    a. Direct income generation
    b. Rearrangement of assets and liabilities for the household to participate in future opportunities and
    c. Consumption smoothing.
  - iv) It is not just a financing system, but a tool for social change, especially for women.
  - v) Because micro credit is aimed at the poorest. micro-finance lending technology needs to mimic the informal lenders rather than the formal sector lending. It has to:
    a. Provide for seasonality
    b. Allow repayment flexibility
    c. Fix a ceiling in loan sizes.

1.2 Methodology Used For Web Site Development: Agile Methodology

1.3 Modules:

- Relationship Executive
- Operational Executive
- Account Head
- Credit Manager
- Loan Disbursement
- Master Module
- Ledger Generate

- **Relationship Executive:**

Relationship executives identify and pursue business relationships with corporate and business unit executives. They create new business opportunities through customer relationships, while also providing value to customers through professional services agreements and solution sales. Relationship executives also establish strategic relationships with internal departments, including sales, marketing and business development teams. They use their internal and external relationships to develop sales strategies and service offerings that enable new opportunities for business and revenue growth.

- **Operational Executive:**

The Operations Executive is responsible for the part of the workplace team that directly manages the operations and maintenance of facilities. The Operations Executive can report to various parts of the company such as the Facilities Executive, Chief Financial Officer or Chief Operations Officer, but usually has direct access to senior management.

ABSTRACT

The project entitled "**Lakshmi Finance** " is to be developed for maintaining the bank activities like, customer preferences, customer enquiry, interest rates, customer EMI, personal loan, mortgage loan, Customer follow ups details, customer feedback form entry and employee details. The system is efficient in generating reports which will help in the maintaining records of the customer.

Microfinance is a project which has become a mainstream instrument for providing access to formal financial services for helpless people. This project is developed to maintain all the details of the users and to develop online portal.

1.2 OPERATING ENVIRONMENT – HARDWARE AND SOFTWARE

- **Hardware Requirements for Server :**

Processor	:	Pentium IV 1.8 GHz
Memory size	:	2 GB RAM
Storage	:	40 GB Hard Disk
Display	:	EGA/VGA Color Monitor, 600 x 800 Pixels Resolution, High Color
Internet Connection	:	Required
Key Board	:	Any with minimum required keys
Mouse	:	Any

- **Software Requirements :**

Operating System : Windows 7 and above

Front-End Tool : ANGULAR 10.0, HTML

J2EE (Java, Spring 5.3.2, Hibernate 5.2)

Web Server : Apache Tomcat 8.0.

Back-End Tool : MySQL 5.0

- **Hardware Requirements for Client :**

Processor : Pentium III 800 MHz

Memory size : 2 MB RAM

Storage : 40 GB Hard Disk

Display : EGA/VGA Color Monitor, 600 x 800 Pixels Resolution, High Color

Key Board : Any with minimum required keys

Internet Connection : Required

Mouse : Any

1.3 DETAIL DESCRIPTION OF TECHNOLOGY USED

- **JAVA:**

JAVA 8 is a major feature release of JAVA programming language development. Its initial version was released on 18 March 2014. With the Java 8 release, Java provided supports for functional programming, new JavaScript engine, new APIs for date time manipulation, new streaming API, etc.

- **FEATUES OF JAVA:**

- **Lambda expression** − Adds functional processing capability to Java.
- **Method references** − Referencing functions by their names instead of invoking them directly. Using functions as parameter.
- **Default method** − Interface to have default method implementation.
- **New tools** − New compiler tools and utilities are added like 'jdeps' to figure out dependencies.
- **Stream API** − New stream API to facilitate pipeline processing.
- **Date Time API** − Improved date time API.
- **Optional** − Emphasis on best practices to handle null values properly.

- **APACHE TOMCAT SERVER:**

Apache Tomcat is an open-source implementation of the Java Servlet, Java Server Pages, Java Expression Language and Web Socket technologies. Tomcat provides a "pure Java" HTTP web server environment in which Java code can run.

Apache Tomcat is **used** to deploy your Java Servlets and JSPs. So in your Java project you can build your WAR (short for Web Archive) file, and just drop it in the deploy directory in **Tomcat**. So basically **Apache** is an HTTP **Server**, serving HTTP. **Tomcat** is a Servlet and JSP **Server** serving Java technologies.

- **HIBERNATE:**

Hibernate is a Java framework that simplifies the development of Java application to interact with the database. It is an open source, lightweight, ORM (Object Relational Mapping) tool. Hibernate implements the specifications of JPA (Java Persistence API) for data persistence.

Following are the advantages of hibernate framework:

1) Open Source and Lightweight

Hibernate framework is open source under the LGPL license and lightweight.

2) Fast Performance

The performance of hibernate framework is fast because cache is internally used in hibernate framework. There are two types of cache in hibernate framework first level cache and second level cache. First level cache is enabled by default.

3) Database Independent Query

HQL (Hibernate Query Language) is the object-oriented version of SQL. It generates the database independent queries. So you don't need to write database specific queries. Before Hibernate, if database is changed for the project, we need to change the SQL query as well that leads to the maintenance problem.

4) Automatic Table Creation

Hibernate framework provides the facility to create the tables of the database automatically. So there is no need to create tables in the database manually.

5) Simplifies Complex Join

Fetching data from multiple tables is easy in hibernate framework.

6) Provides Query Statistics and Database Status

Hibernate supports Query cache and provide statistics about query and database status.

- **MySQL:**

MySQL is a relational database management system based on SQL – Structured Query Language. The application is **used** for a wide range of purposes, including data warehousing, e-commerce, and logging applications. The most common use for **MySQL** however, is for the purpose of a web database.

MySQL is not a **programming language**. Instead, it is a relational database management system (RDBMS). It is used to store data, not to write programs. The SQL **programming language** can be used to program a **MySQL** database.

- **MAVEN:**

Maven is an automation and management tool developed by Apache Software Foundation. ... In Yiddish language the meaning of **Maven** is "accumulator of knowledge". It is written in Java Language and used to build and manage projects written in C#, Ruby, Scala, and other languages.

Maven is a powerful project management tool that is based on POM (project object model). It is used for projects build, dependency and documentation. It simplifies the build process like ANT. ... In short terms we can tell maven is a tool that can be used for building and managing any Java-based project

- **SPRING BOOT:**

Spring Boot is an open source Java-based framework used to create a micro Service. It is developed by Pivotal Team and is used to build stand-alone and production ready spring applications.

Spring Boot is basically an extension of the spring framework which eliminated the boilerplate configurations required for setting up a spring application.

Spring Boot is a lightweight framework that takes most of the work out of configuring Spring-based applications. In this tutorial, you'll learn how to use Spring Boot's starters, opinions, and executable JAR file structure to quickly create Spring-based applications that “just run”.

Spring Boot Rest API Example. ... Writing **Restful** services in **Spring Boot** is no-different than Spring MVC. If you are a **REST** Client [**Rest** Consumer], **Spring Boot** provides RestTemplateBuilder that can be used to customize the Rest Template before calling the **REST** endpoints.

- **ANGULAR:**

Angular is an application design framework and development platform for creating efficient and sophisticated single-page apps.These Angular docs help you learn and use the Angular framework and development platform, from your first application to optimizing complex single-page apps for enterprises.

FEATURESANDBENEFITS:

CROSS PLATFORM

1. Progressive Web Apps

Use modern web platform capabilities to deliver app-like experiences. High performance, offline, and zero-step installation.

2. Native

Build native mobile apps with strategies from Cordova, Ionic, or Native Script.

3. Desktop

Create desktop-installed apps across Mac, Windows, and Linux using the same Angular methods you've learned for the web plus the ability to access native OS APIs.

- **PRODUCTIVITY**

1. Templates

Quickly create UI views with simple and powerful template syntax.

2. Angular CLI

Command line tools: start building fast, add components and tests, then instantly deploy.

3. IDE's

Get intelligent code completion, instant errors, and other feedback in popular editors and IDEs.

- **SPEED AND PERFORMANCE**

1. Code Generation

Angular turns your templates into code that's highly optimized for today's JavaScript virtual machines, giving you all the benefits of hand-written code with the productivity of a framework.

2. Code Splitting

Angular apps load quickly with the new Component Router, which delivers automatic code-splitting so users only load code required to render the view they request.

Chapter 2. Proposed System

2.1 Proposed System

The proposed software will solve all the problems they are facing now. Loan is still perceived as a huge burden for many countries. While loans are known to take off that burden off, it still gives nightmare to people and they avoid availing a personal loan. However, a loan can be a solution to many of your financial problems.

A Microfinance helps you purchase a Vehicle ,Personal loan or Goods of your choice and pay for it in equated monthly installments (EMIs). Personal loans are available for both salaried and self-employed individuals. Bank provides Home loans on easy terms. You will come to us where our representative will help you complete the formalities and inform you if you are eligible for a loan on the spot. Once your loan application has been approved you can get your loan amount in short period of time

2.1.1 Purpose of proposed system

- Interest rates and the loan details are also available at the click of a mouse.
- Customer can apply for a loan and after approved it they can track their details from online.
- This system provides detail about the customers, their loan details, EMI details and its rate details.
- System provides download option to download different type of loan form in MS word document.
- Using with this system admin can find customer easily and it's a paperless system so workload is reduced.
- The decision process becomes faster and more consistent.
- After registration and login customer can use the system easily and also customer can view any query about loan details as well as EMI details in their profile. So this system saves time.
- Provides good communication for the customer.
- In this system there are used EMI (Equated Monthly instalment) calculators.
- Provides a facility to generate the reports very.

2.1.2 Advantages of the proposed System

- Entire activities of the show room are recorded through the system.
- Customer Data is maintained.
- Reports generated will be more useful for management to take the quick business decisions.
- Customer database is maintained which will be helpful for intimating the service completion details and new offers
- Customer follow-ups are maintained which will be an added advantage of this system.
- It helps with your CIBIL Score as CIBIL or Credit Scores are a summary of customer history in loan credits and repayments over a period of time.

2.2 Objectives of System

During the past several decades personnel function has been transformed from a relatively obscure record keeping staff to central and top level management function. There are many factors that have influenced this transformation like technological advances, professionalism, and general recognition of human beings as most important resources.

A computer based management system is designed to handle all the primary information required to calculate monthly statements of Customer Record which include monthly statement of any month. Separate database is maintained to handle all the details required for the correct statement calculation and generation.

This project intends to introduce more user friendliness in the various activities such as record updating, maintenance, and searching. The searching of record has been made quite simple as all the details of the Customer can be obtained by simply keying in the identification of that Customer. Similarly, record maintenance and updating can also be accomplished by using the identification of Employee with all the details being automatically generated. These details are also being promptly automatically updated in the master file thus keeping the record absolutely up-to-date.

The entire information has maintained in the database or Files and whoever wants to retrieve can't retrieve, only authorization user can retrieve the necessary information which can be easily be accessible from the file. The main objective of the entire activity is to automate the process of day to day activities of pay.

- **Major Functionalities:**

The system is very simple in design and to implement. The system requires very less system resources and the system will work in almost all configurations. It has got

- **Following features :-**

1) Ensure data accuracy's.

2) Proper control of the higher officials.

3) Minimize manual data entry.

5) Minimum time needed for the various processing.

6) Greater efficiency.

7) Better service.

8) User friendliness and interactive.

9) Minimum time required.

2.3 User Requirements

The system after careful analysis has been identified to be presented with the following modules:

- Relationship Executive
- Operational Executive
- Account Head
- Credit Manager
- Loan Disbursement
- Master Module
- Ledger Generate

- **Relationship Executive:**

Relationship executives identify and pursue business relationships with corporate and business unit executives. They create new business opportunities through customer relationships, while also providing value to customers through professional services agreements and solution sales. Relationship executives also establish strategic relationships with internal departments, including sales, marketing and business development teams. They use their internal and external relationships to develop sales strategies and service offerings that enable new opportunities for business and revenue growth.

- Admin manage loan application which is sent by customer using the system.

Operational Executive:

The Operations Executive is responsible for the part of the workplace team that directly manages the operations and maintenance of facilities. The Operations Executive can report to various parts of the company such as the Facilities Executive, Chief Financial Officer or Chief Operations Officer, but usually has direct access to senior management.

On the basis of the submission of the required details & documents, the financial institution will analyze the application. From existing residential address to CIBIL score, complete information is thoroughly checked. Once the bank has validated all the details, loan amount is sanctioned.

Loan Disburesment andLadger creation Module :

A Loan disburesment is the central repository of the accounting records and data.The Loan disburesment is the central point for accounting information, receiving entries from other modules, such as Operational Executive, accounts receivable and Loan processing modules.

The Loan disburesment is the basis for creating key financial documents, including trial balance, balance sheet, and profit and loss statement.

The Loan disburesment is used to record financial transactions not recorded in other modules.

The Loan disburesment creates a trail of information used for audit purposes.

A Loan disburesment provides you a record /track of all financial transactions.

To integrate your payable data with your purchasing system use Operational Executive. Using this feature, you can easily track and control your cash flow.

Account receivable is a feature to track customer payments and it allows you to automate tasks like sending payment reminders.

To view the overall financial performance Profit tracking is the best feature. It helps to see how your business is using its financial resources. And also it is used to calculate how much your organization is profiting from your efforts.

To track your company assets like equipment, computers, company cars, etc, you can take the help of Fixed asset management.

Reports show you where revenue is generated and where it is not generated. It helps you to understand the financial condition of your company.

Operational Executive for purchase invoices, credit notes.

Accounts receivable for sales invoice, credit notes and adjustment.

Cash management wherefrom payment details are transferred to AH.

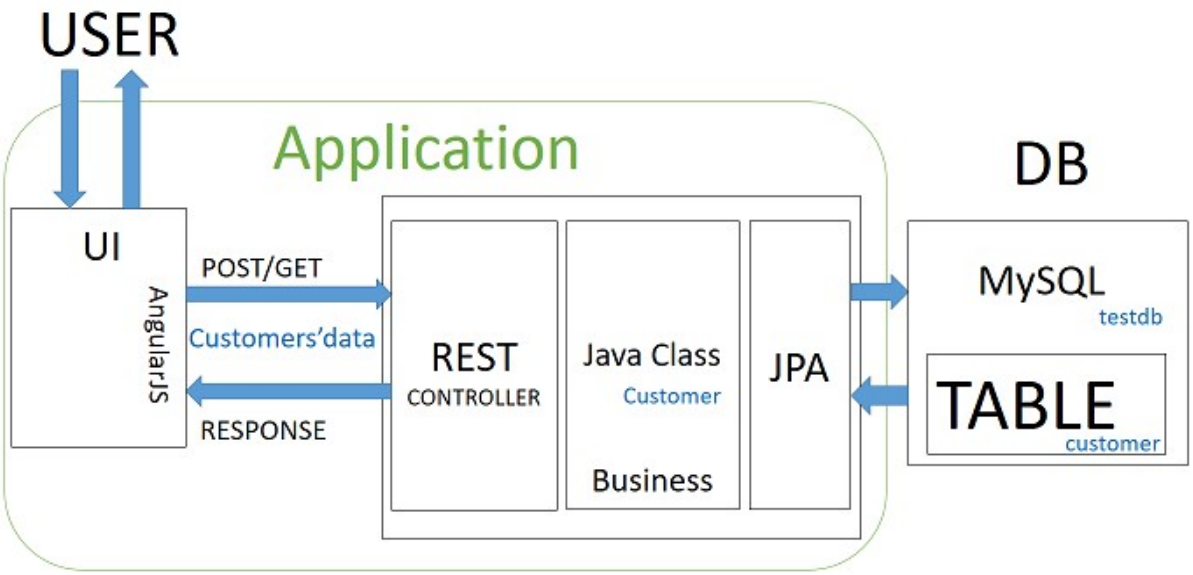
Loan disbursement Module - This module provides the functionality to enter, monitor, maintain and process for payment of invoices and credit notes, that the organization received from its vendors.

- **Methodology Used For Web Application Development:**

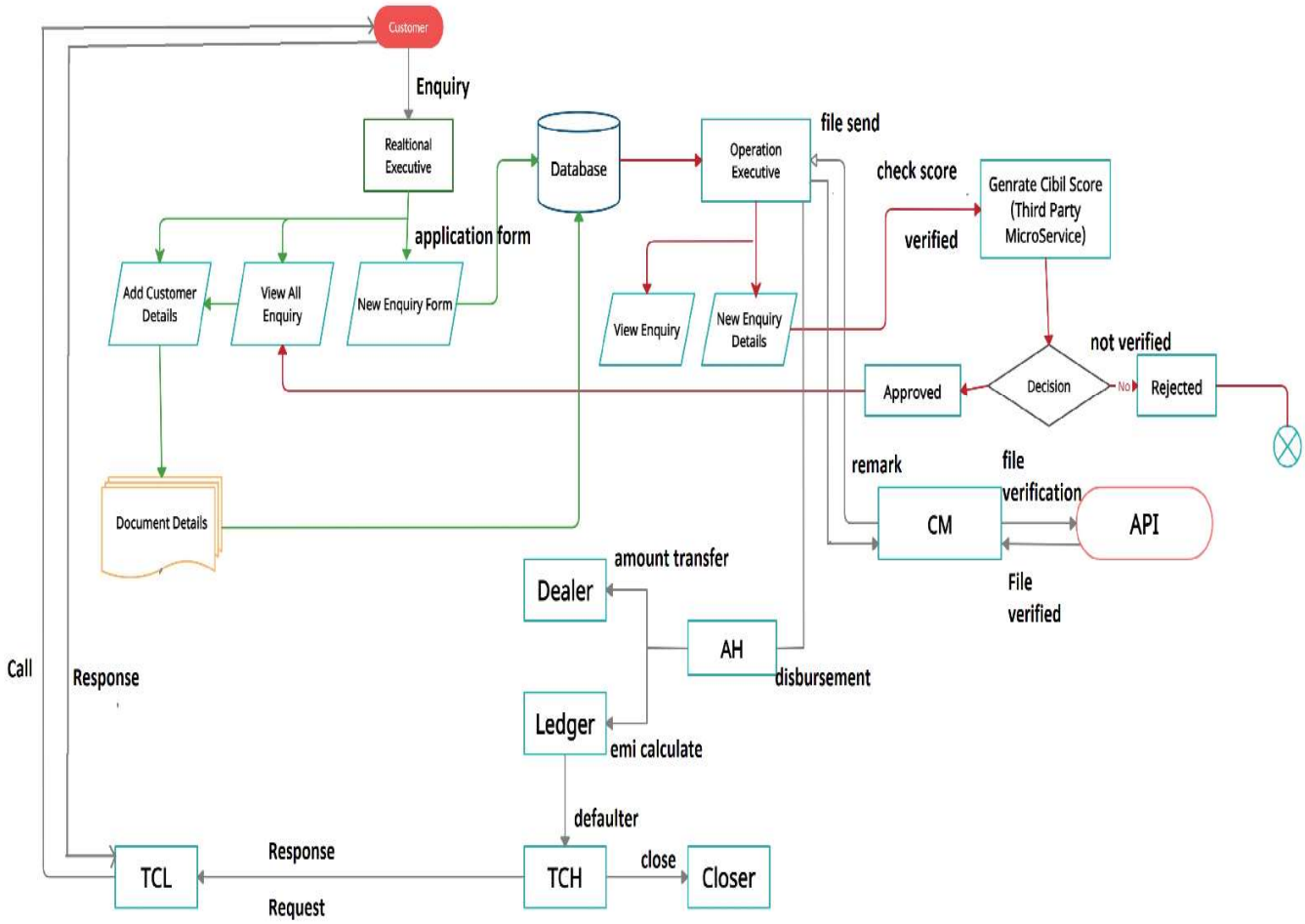
  Agile Methodology

Chapter 3.AnalysisAnd Design

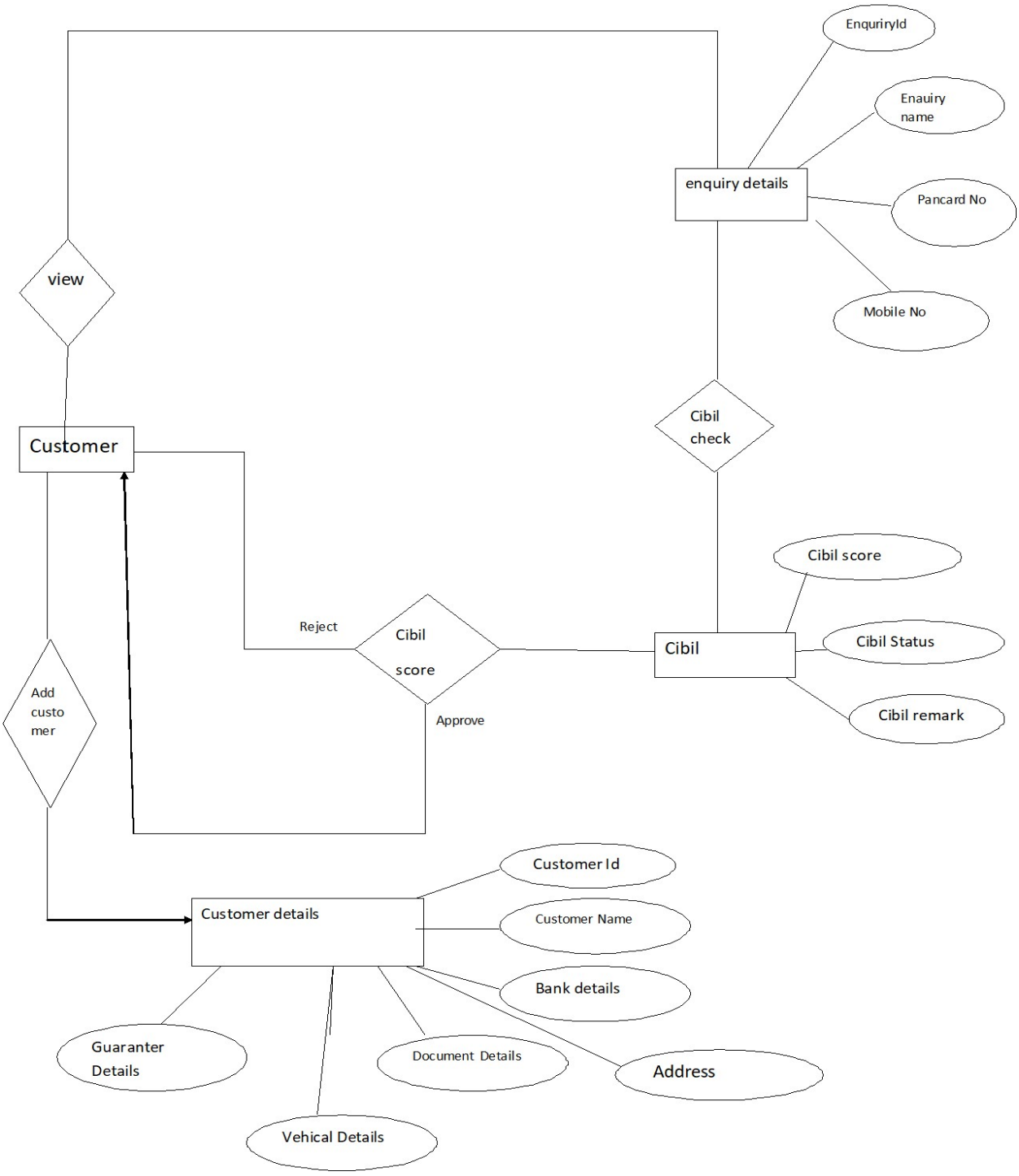
3.1 Project Architecture :



3.2 Data Flow Diagram :

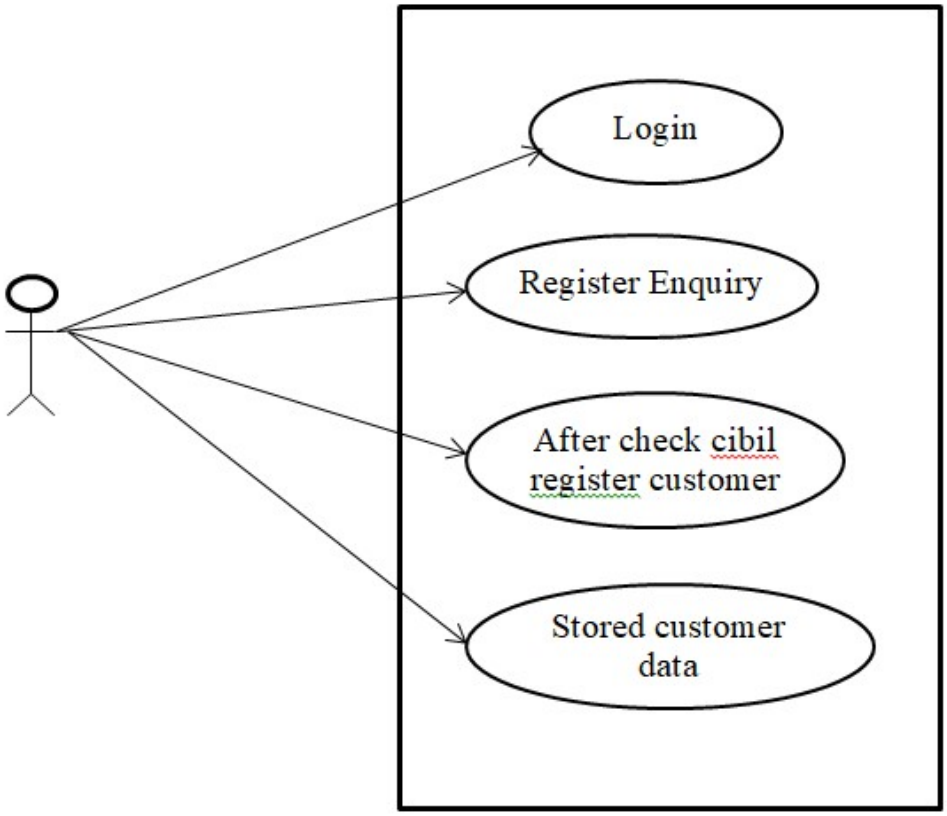


3.3Entity Relationship Diagram :



3.4 USE CASE DIAGRAM

RE :



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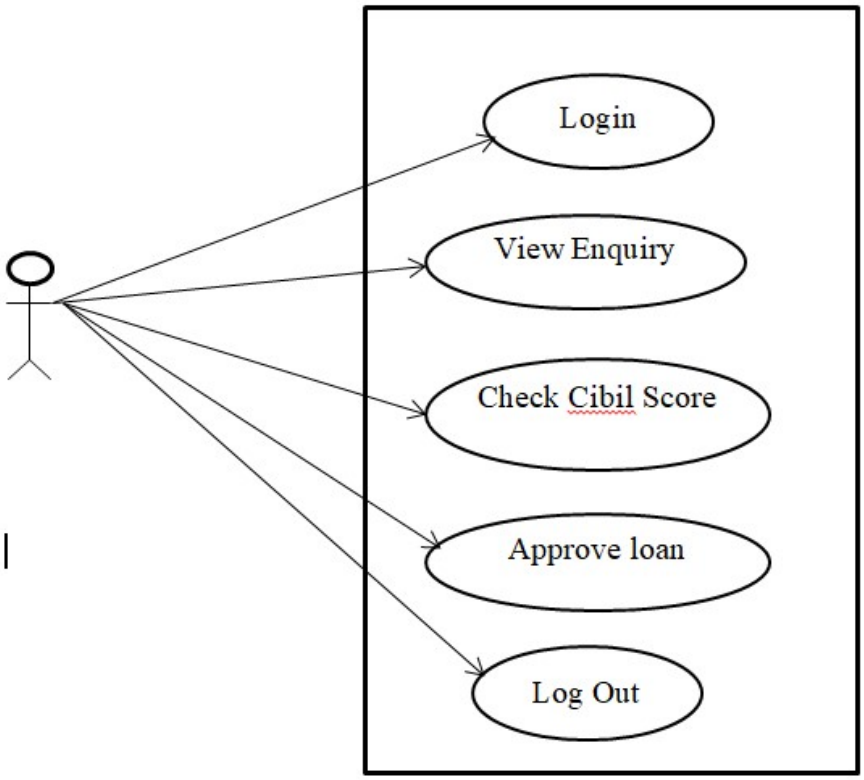
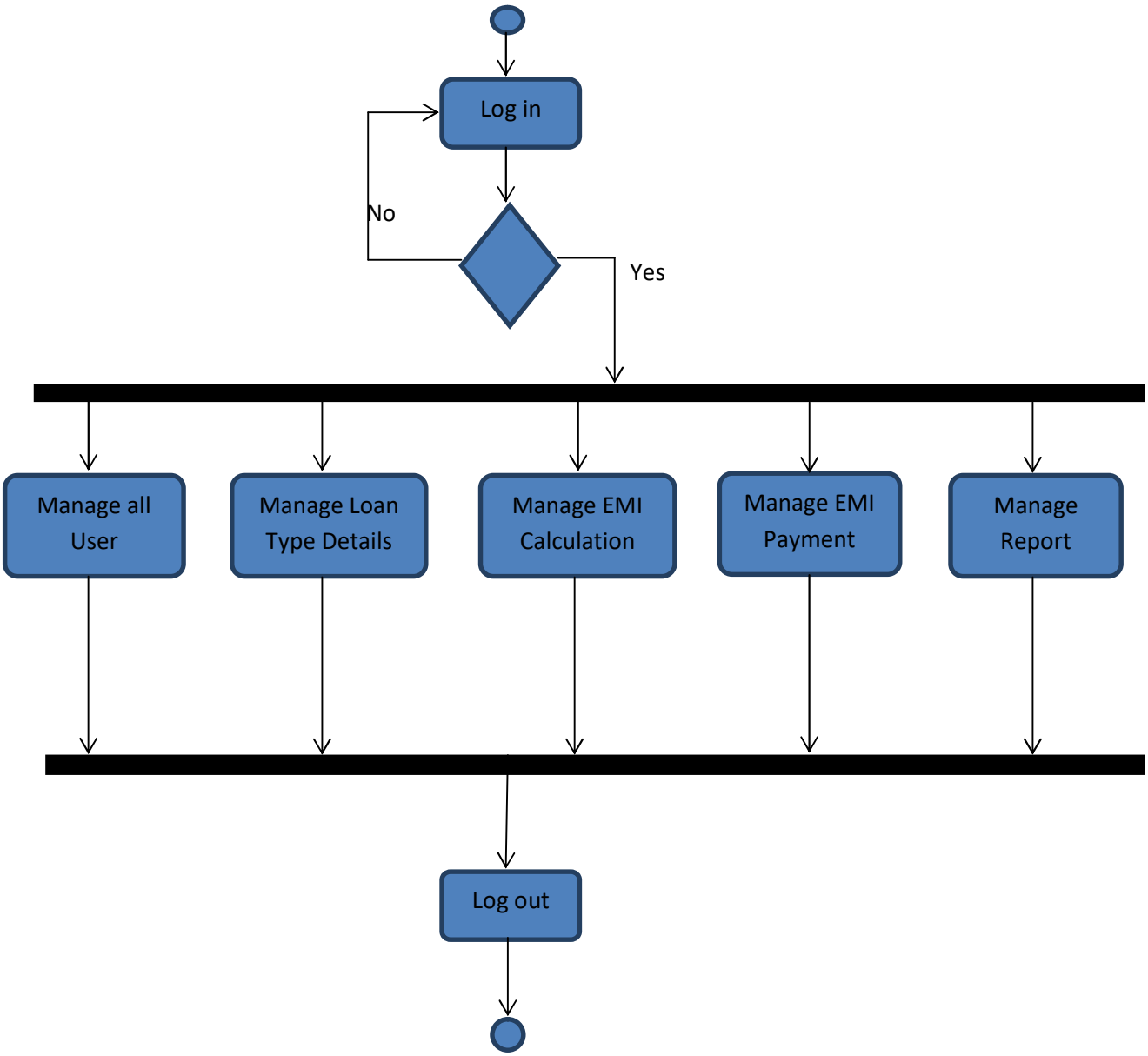


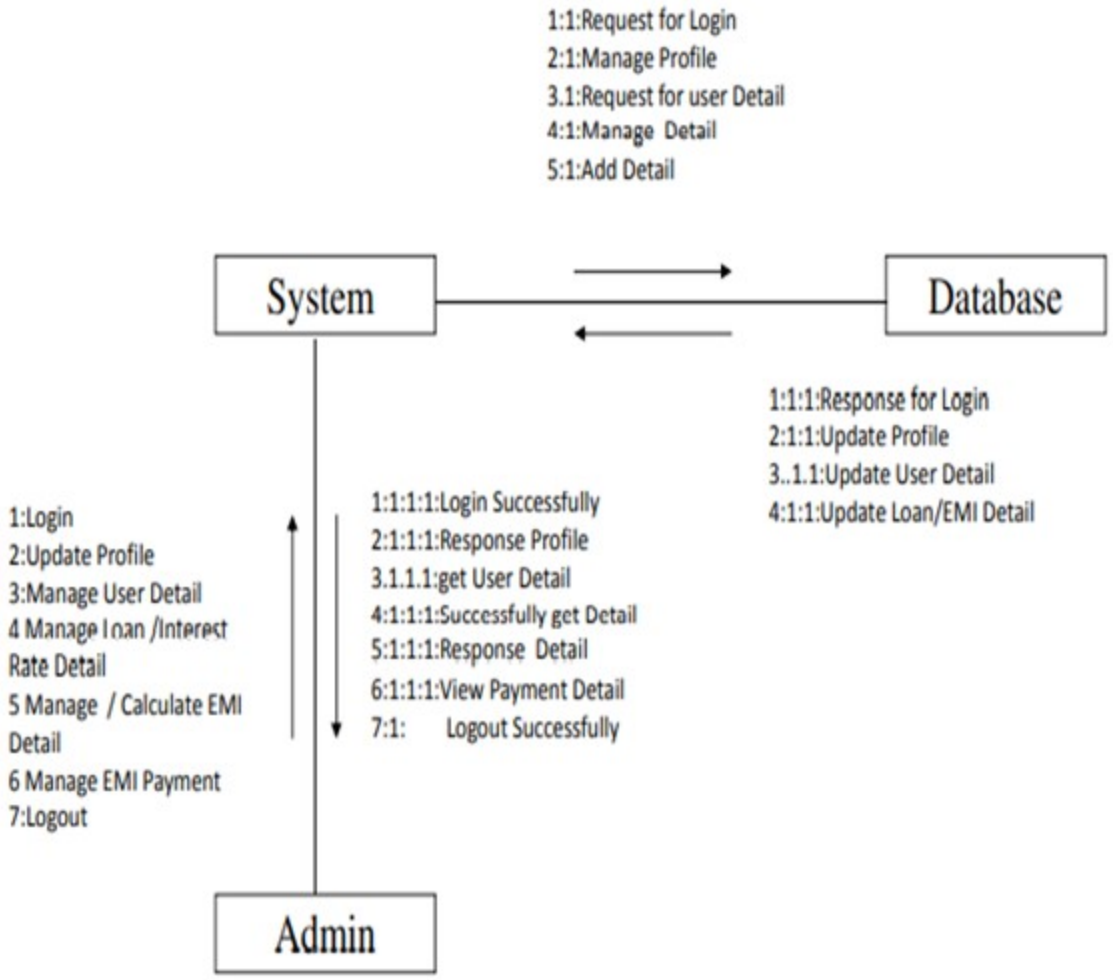
3.5Activity Diagram :

Admin side :



3.6 Collaboration Diagram :

Admin Side :



3.7 Table Specification :

Table Name : Enquiry_Details
Primary Key : enq_id
Description : These table manage the Enquiry(Customer's) Details Information

Field Name	Data Type	Constraint	Description
enq_id	Integer	Primary Key	Stores enquiry ID
enq_name	String	Not Null	Stores name.
enqpancardno	String	Not Null	Stores Pancard Number.
enq_mobileno	String	Not Null	Stores Mobile number.
enq_age	Integer	Not Null	Stores age of customer.
enq_status	String	Not Null	Stores status.
enq_email	String	Not Null	Stores email address.
enq_vehicle_name	String	Not Null	Stores name of vehicle.

Table Name : Cibil Score
Primary Key : CibilId
Description : These table manage the Cibil's(Customer's) Details Information.

Field Name	Data Type	Constraint	Description
cibilId	Integer	Primary Key	Stores Cibil ID
customerPanNo	String	Not Null	Stores Pancard no.
Score	Integer	Not Null	Stores cibil score.
Cibil_status	String	Not Null	Stores cibil status.
Remark	String	Not Null	Stores remark.

Table Name : Customer Details
Primary Key : CustomerId
Description : These table manage the Customer's Details Information.

Field Name	Data Type	Constraint	Description
customerId	Integer	Primary Key	Stores Customer id.
customerName	String	Not Null	Stores customer name.
customerMobileno	Integer	Not Null	Stores mobile no.
customerLoanAmount	Integer	Not Null	Stores loan amount.
customerAge	Integer	Not Null	Stores customer age.
customerDateofBirth	String	Not Null	Stores Dob of customer.
customerEmail	String	Not Null	Stores email address.
customerPancardno	String	Not Null	Stores pancard number
Address	Address	Foreign Key	It gives reference to the addressID.
Vehical	VehicalDetails	Foreign Key	It gives reference to the vehicleID.
Bank	Bank	Foreign Key	It gives reference to the bankId.
Guaranter	GuaranterDetails	Foreign Key	It gives reference to the guaranterId.
loandetails	Previousloandetails	Foreign Key	It gives reference to the preloanId.

Table Name : Address Details
Primary Key : addressId
Description : These table manage the Address Details Information.

Field Name	Data Type	Constraint	Description
addressId	Integer	Primary Key	Stores address id.
localHouseNo	String	Not Null	Stores local house no.
localArea	String	Not Null	Stores local area.
localLandmark	String	Not Null	Stores local landmark.
Localcity	City	Foreign Key	It gives reference to the cityId.
permanantHouseNo	String	Not Null	Stores permanent houseno
permanantArea	String	Not Null	Stores permanent area.
permanantLandmark	String	Not Null	Stores permanent landmark.
permananatCity	City	Foreign Key	It gives reference to the cityId.
Country	Country	Foreign Key	It gives reference to the countryId.

Table Name : Guaranter Details
Primary Key : guaranterId
Description : These table manage the Guaranter's Details Information.

Field Name	Data Type	Constraint	Description
guaranterId	Integer	Primary Key	Stores guaranterId.
guranterName	String	Not Null	Stores guaranter name.
guaranterAddress	String	Not Null	Stores guaranter address
guaranterRealtionshipwithcustomer	String	Not Null	Stores relationship with customer.
guaranterMobileNo	Long	Not Null	Stores mobile no.
aadharCardNo	Long	Not Null	Stores aadhar card number.
jobDetails	String	Not Null	Stores job description.

Table Name : Previous Loan Details
Primary Key : previousloanId
Description : These table manage the Previous loan Details Information.

Field Name	Data Type	Constraint	Description
previousloanId	Integer	Primary Key	Stores loan id.
previousLoanamount	Integer	Not Null	Stores previous loan amount.
previousLoanStatus	String	Not Null	Stores loan status.
Tenure	Integer	Not Null	Stores tenaure.
paidAmount	Integer	Not Null	Stores paid amount.
remainingAmount	Integer	Not Null	Stores remaining amount.
bank	Bank	Foreign Key	It reference to the bankId.

Table Name : Bank Details
Primary Key : bankId
Description : These table manage the Bank's Details Information.

Field Name	Data Type	Constraint	Description
bankId	Integer	Primary Key	Stores bank id.
bankName	String	Not Null	Stores bank name.
accountNumber	Long	Not Null	Stores account number.
bankIfsc	String	Not Null	Stores bank ifsc code.
bankMicr	String	Not Null	Stores bank micr code.
bankAddress	String	Not Null	Stores bank address.

Table Name : Document Details
Primary Key : documented.
Description : These table manage the Document's Details Information.

Field Name	Data Type	Constraint	Description
documentId	Integer	Primary Key	Stores document id.
customerId	Integer	Not Null	Stores customer id.
Pancard	Byte[]	Not Null	Stores pancard image.
Aadharcard	Byte[]	Not Null	Stores aadharcard image.
Phote	Byte[]	Not Null	Stores photo.
Signature	Byte[]	Not Null	Stores signature.
Postdatedcheque	Byte[]	Not Null	Stores postdated cheque.
Thumb	Byte[]	Not Null	Stores thumb image.
Bankstatement	Byte[]	Not Null	Stores bank statement image.
itrfile	Byte[]	Not Null	Stores itr file image.
Salaryslip	Byte[]	Not Null	Stores salary slip image.

Table Name : Vehicle Details
Primary Key : vehicalId
Description : These table manage the Vehicle's Details Information.

Field Name	Data Type	Constraint	Description
vehicalId	Integer	Primary Key	Stores vehicle Id.
modelNo	String	Not Null	Stores model name.
Dealer	String	Not Null	Stores dealer name.
Price	String	Not Null	Stores price of vehical.
onRoadPrice	String	Not Null	Stores on road price of vehical.

Table Name : City
Primary Key :cityId
Description : This table manage the City's Information

Field Name	Data Type(Size)	Constraint	Description
cityId	Integer	Primary Key	Store City ID
cityName	String	Not Null	Stores City Name
cityPincode	Int	Not Null	Stores City pincode.
stateId	State	Foreign Key	It gives references to the stateId

Table Name : State
Primary Key :stateId
Description : This table manage the All State Related Information

Field Name	Data Type	Constraint	Description
stateId	Integer	Primary Key	Stores State ID
stateName	String	Not Null	Stores State Name
countryId	Country	Foreign Key	It gives reference to country _id

Table Name : Country
Primary Key :countryId
Description : This table manage the Countries' Information

Field Name	Data Type	Constraint	Description
countryId	Integer	Primary Key	Stores Country ID(Auto increment)
countryName	Varchar(40)	Not Null	Stores Country Name

Table Name : LoanFile
Primary Key :loanFileId
Description : This table manage the LoanFile Information

Field Name	Data Type(Size)	Constraint	Description
loanFileId	Integer	Primary Key	Store Loan File ID
customerLoanAmount	Double	Not Null	Stores Customer Loan Amount
loanTenure	Int	Not Null	Stores Loan Tenure
loansactiondate	String	Not Null	Stores Loan Saction Date
loanStatus	String	Not Null	Stores Loan Status
disburseStatus	String	Not Null	Stores Disburse Status
customers	Customer	Foreign Key	It gives reference to customer _id.

Table Name : DisbursementDetails
Primary Key : Id
Description : These table manage the Disbursement Details Information.

Field Name	Data Type	Constraint	Description
Id	Integer	Primary Key	Stores Id.
date	String	Not Null	Stores date.
emidate	String	Not Null	Stores emi date.
emiAmount	String	Not Null	Stores emi amount.
loanFile	LoanFile	Foreign Key	It gives reference to loanFile _id.

New Technology :

- **Js Pdf Library**

We use Js Pdf library for generation of pdf in our project, and

PDF is ideal for document exchange between users. Not only is it a compact format, but it can also store metrics and information about its own appearance within the document itself.

Reason PDFs are very popular is because you can access them from your mobile device. Many other file formats will not allow you to open them on your phone or on your pad, whereas PDFs allow you to do it with Adobe Reader.

- **Java Mail API**

For Generation of Mail we use JavaMail API in our project. The JavaMail is an API that is used to compose, write and read electronic messages (emails).

The JavaMail API provides protocol-independent and plateform-independent framework for sending and receiving mails.

The JavaMail facility can be applied to many events. It can be used at the time of registering the user (sending notification such as thanks for your interest to my site), forgot password (sending password to the users email id), sending notifications for important updates etc.