Darshan University

A Project Report on

"Bank management system"

Under the subject

Software Engineering (2301CS405)

B. Tech, Semester – IV

Computer Science & Engineering Department

Submitted By

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Academic Year

(2024-2025)

Internal Guide	Dean-DIET
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Darshan University

DECLARATION

We hereby declare that the SRS, submitted along with the **Software Engineering (2301CS405)** for entitled "**Bank management system**" submitted in partial fulfilment for the Semester-5 of **Bachelor Technology (B. Tech)** in **Computer Science and Engineering (CSE)** Department to Darshan University, Rajkot, is a record of the work carried out at **Darshan University, Rajkot** under the supervision of R. B. Gondaliya and that no part of any of report has been directly copied from any students' reports, without providing due reference.

Padsumbiya Darshan

Student's Signature

Date: _____

Computer Science & Engineering Department
Darshan University

CERTIFICATE

This is to certify that the SRS on "Bank Management System" has been satisfactorily prepared by Padsumbiya Darshan (23010101181) under my guidance in the fulfillment of the course Software Engineering (2301CS405) work during the academic year 2024-2025.

Internal Guide

Dean-DIET

Prof. R. B. Gondaliya

Dr. Gopi Sanghani

Darshan University

Darshan University

ACKNOWLEDGEMENT

I wish to express my sincere gratitude to my project guide Prof. R. B. Gondaliya and all the faculty members for helping me through my project by giving me the necessary suggestions and advices along with their valuable co-ordination in completing this work.

I also thank my parents, friends and all the members of the family for their precious support and encouragement which they had provided in completion of my work. In addition to that, I would also like to mention the Darshan University personals who gave me the permission to use and experience the valuable resources required for the project from the University premises.

Thus, in conclusion to the above said, I once again thank the faculties and members of **Darshan University** for their valuable support in completion of the project.

Thanking You
Padsumbiya Darshan

ABSTRACT

This project is about the Banking System. The project has the complete information regarding the account details (including create, withdrawal, deposit, summary etc). It also contains the information about the different customers opening their account in the bank. This project also helps to keep the information about all the details of the various customers who have opened their account. This project is stand alone and the various center's of banking can implement connected through the network (only WAN) and only authenticated Person of the Bank can check the details of the account holder, he can also create saving, fix, current account of the customer. Due to centralized database only authenticated Person of The Bank can handle the application.

Main purpose of this system is to reduce human efforts as much as possible.

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1 Introduction

1.1 Product perspective

This project is basically updating the manual library system into an internet-based application so that the users can know the details of their account, availability of books etc. It is a multi-user version and can take care of all the fundamental functions of a Library like Cataloguing, Circulation, Accessioning and Housekeeping. It can satisfactorily cater to all the basic functions of a small library.

1.2 Product features

1.2.1 There are three different users who will be using this product:
- Customer who will see their account details.
- Member who will be accessing the account.
- Guest who will request for membership.

1.2.2 The features that are required for the manager are:
- Control the movement of books and other material and avoid losing the same.
- Search if you have a specific book in your collection based on the title, author etc.
- Print the spine labels for the book.
- Find what a specific person has borrowed from you. It offers the following modules Cataloguing, Circulation, and Queries.
- Can issue a book to the student.
- Can view the list of books available in each category.
- Can take the book returned from students.
- Add books and their information of the books to the database.
- Edit the information of the existing books.
- Can check the report of the issued Books.
- Can access all the accounts of the students.

1.2.3 The features that are required for the Member are:
- Can view the different categories of books available in the library.
- Can view the List of books available in each category.
- Can own an account in the library.
- Can view the books issued to him.
- Can put a request for a new book.

1.3 Functional Requirement

1.3.1 Customer
- See account details:Customers should see their account details.
- Apply for documents: Customer can apply for documents like statement, chequebook etc.
- Login: Customer should login by their A/C No, Mobile No or Email.
- Online payment:Customer should do online payments from system.
- Apply for card renew: Customer should apply for card renew.
- View statement: Customer should view statements of their account.
- Change personal details: Customer should change their personal details like phone No, email, address, etc.
- Apply for loans: Customer should view and apply for loans.
- Pay credit card bills: Customer should view credit card purchases and Pay bill in the system.
- Change passwords and pin: Customer should change net banking password and ATM pin online.

- Track cheque status: Customer should track cheque status by cheque No.
- Stop payment of cheque: Customer should request for stop payment of any given cheque.
- Invest money in FDs: Customer should view and invest in different FDs.
- Apply for lockers: Customer should apply for bank locker service
- Disable payment on card: Customer should disable payment service on card.
- Open new account: Customer should open new account.

1.3.2 Bank staff

- Login: Staff members should login in system by their id's.
- Access of account:Casher should deposit and credit amount of account.
- Apply for leave: Staff should apply for leave in system.
- View daily cash collection: Casher should view daily cash collection of particular branch.
- View loan application: loan department should view loan application and documents.
- Search customers: Staff should search customers by their name, AC No and mobile No
- View document applications: Staff members should view that Customers would apply for which documents
- Approve document application: Staff members should approve document application of customer.
- Approve loan application: Loan department should approve loan application.
- View locker application: Locker department should view locker applications of customers.
- View list of securities: Loan department should view list of securities was given by loan takers.
- Open new account: Staff member should open a new account of person.
- Close account: Staff member should remove existing account.

1.3.3 Manager

- Login: Manager should login in system by their id's.
- View leave applications: Managers should view leave application of their respective department.
- Grant leave: Manager should grant a leave of staff member.
- View daily collection: Manager should view daily cash collection of branches.
- View loan details: Managers should view given loan details and their document.
- View Details of ATMs: Managers should view details of ATMs of their respective branch area.
- View details of loan EMIs: Managers should view EMI details of loan taker. Weather they are paying EMIs on time or not.
- View details of credit card bills: Managers should view pending and paid bill details of credit cards.
- View details of FDs: Managers should view that how many customers are Inves
- ting in FDs.
- View performance of employee: Managers should view overall performance of their staff.

1.3.4 Admin

- View performance branch: Admin should view details of branches in their region.
- Chek the cashflow: Admin should view overall cashflow of bank.
- View total assets: Admin should view total assets of the bank.
- View investment details: Admin should view investment details of the bank that bank are investing money in which bonds, schemes, stocks, etc.
- View performance of managers: Admin should view performance of branch manager.
- Promote manager: Admin should give promotion of the managers.

1.4 Non-Functional Requirement

1.4.1 Usability:

- The UI should be simple enough for everyone to understand and get the relevant information without any special training. Different languages can be provided based on the requirements.

1.4.2 Accuracy:
- The data stored about the books and the fines calculated should be correct, consistent, and reliable.

1.4.3 Availability:
- The System should be available for the duration when the library operates and must be recovered within an hour or less if it fails. The system should respond to the requests within two seconds or less.

1.4.4 Maintainability:
- The software should be easily maintainable and adding new features and making changes to the software must be as simple as possible. In addition to this, the software must also be portable.

2 Design and Implementation Constraints

2.1 Use case diagram
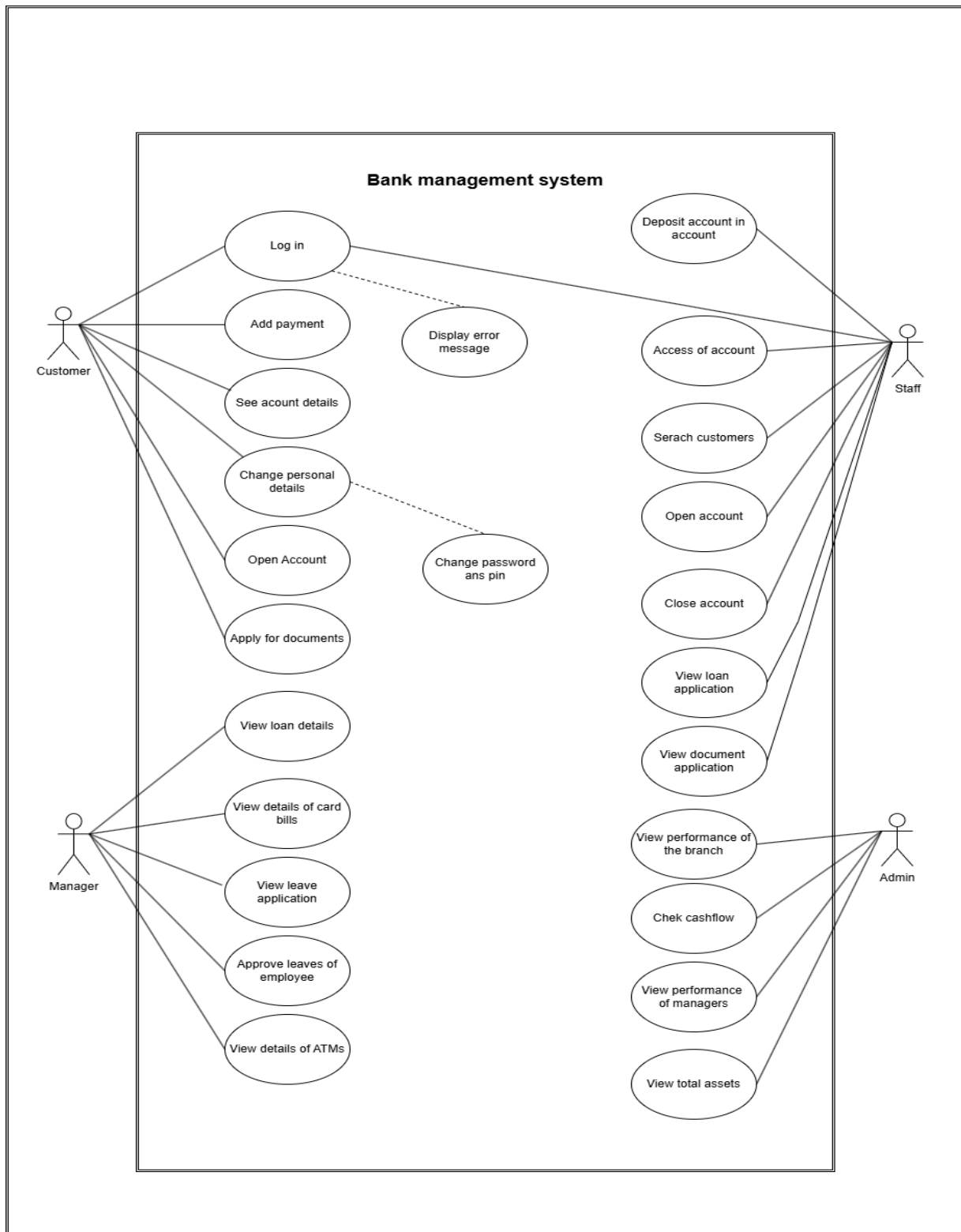
+Figure 2.1-1 Use case diagram for Bank management system

2.2   Activity diagram and Swimlane diagram
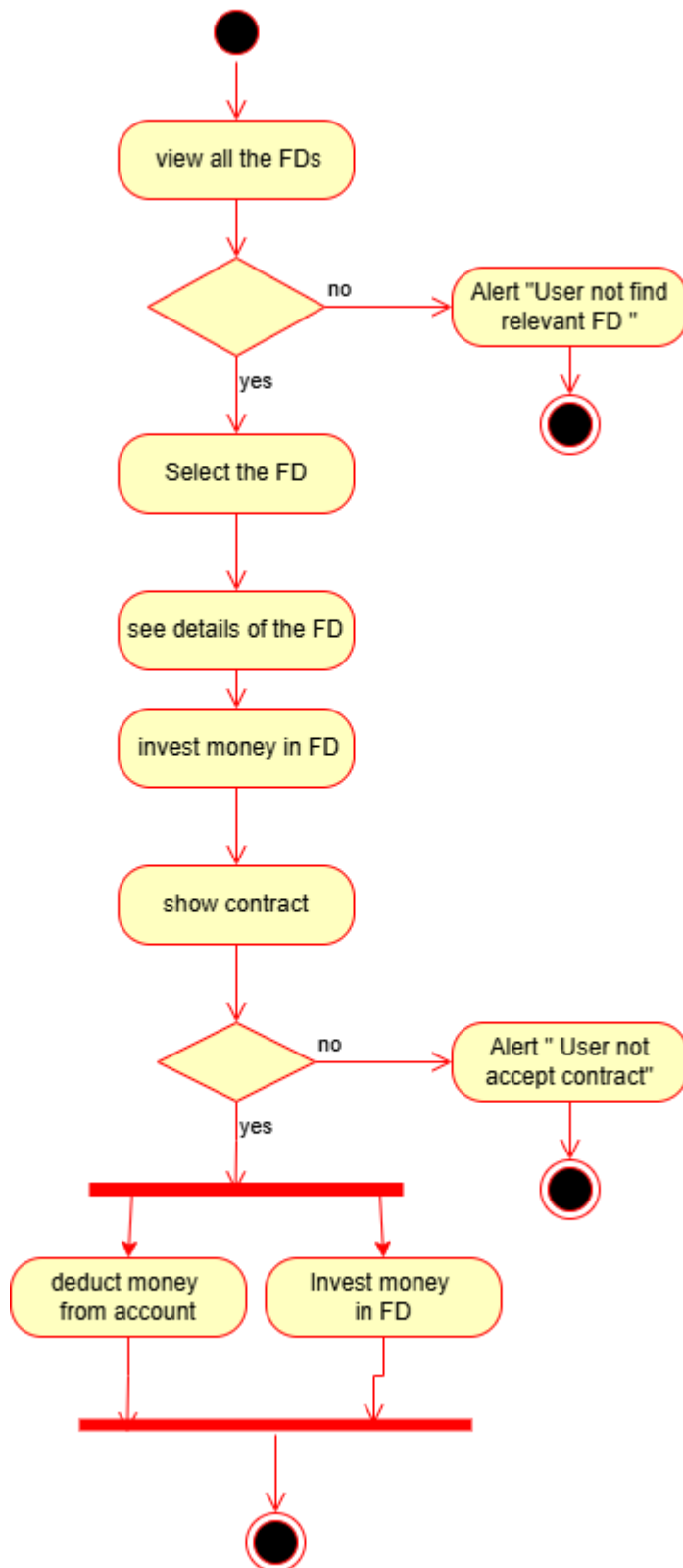
Figure 2.2-1 Activity diagram for Invest in FDs
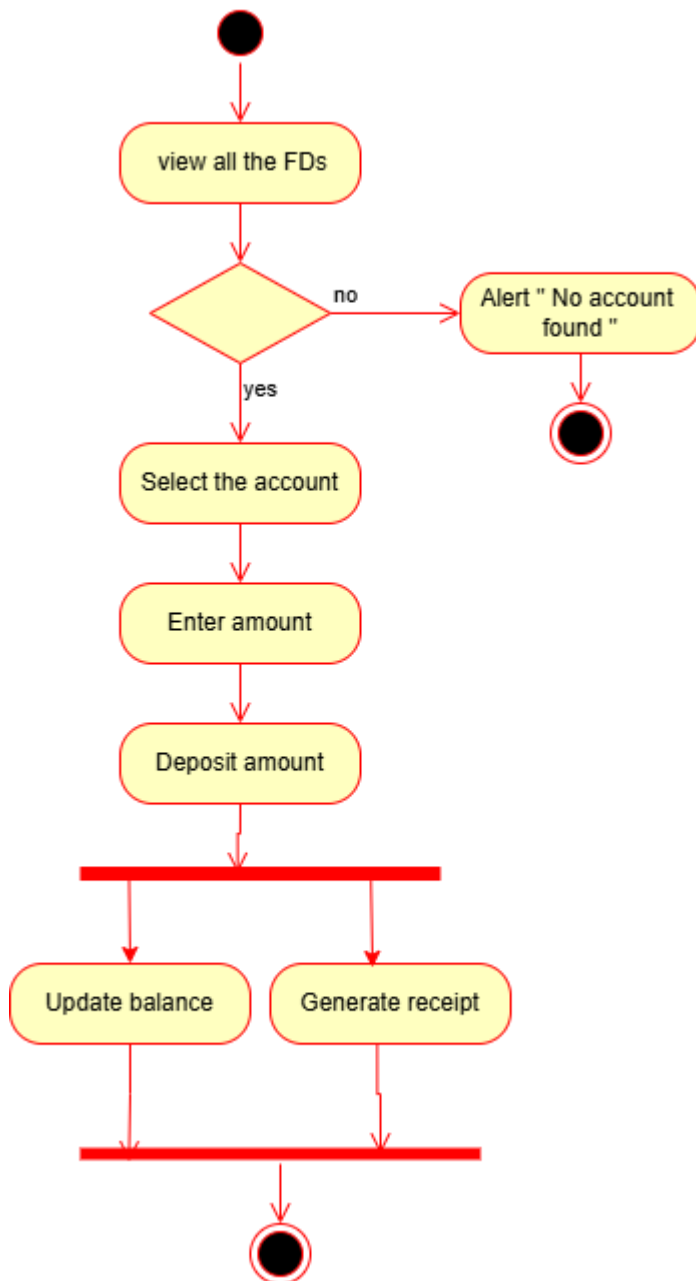
Figure 2.2-2 Activity diagram for deposit money
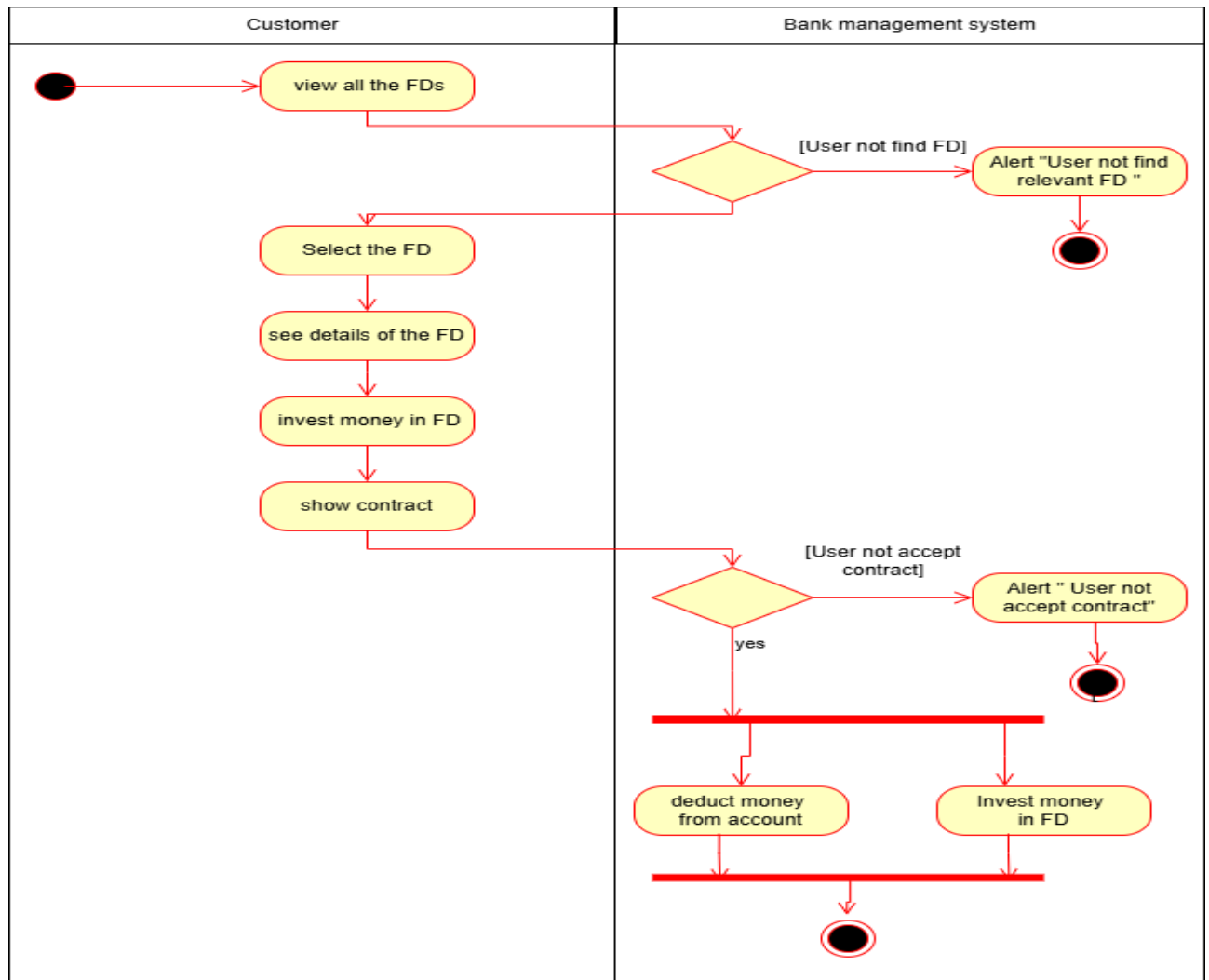
Figure 2.2-3 Swimlane diagram for Invest money in FDs
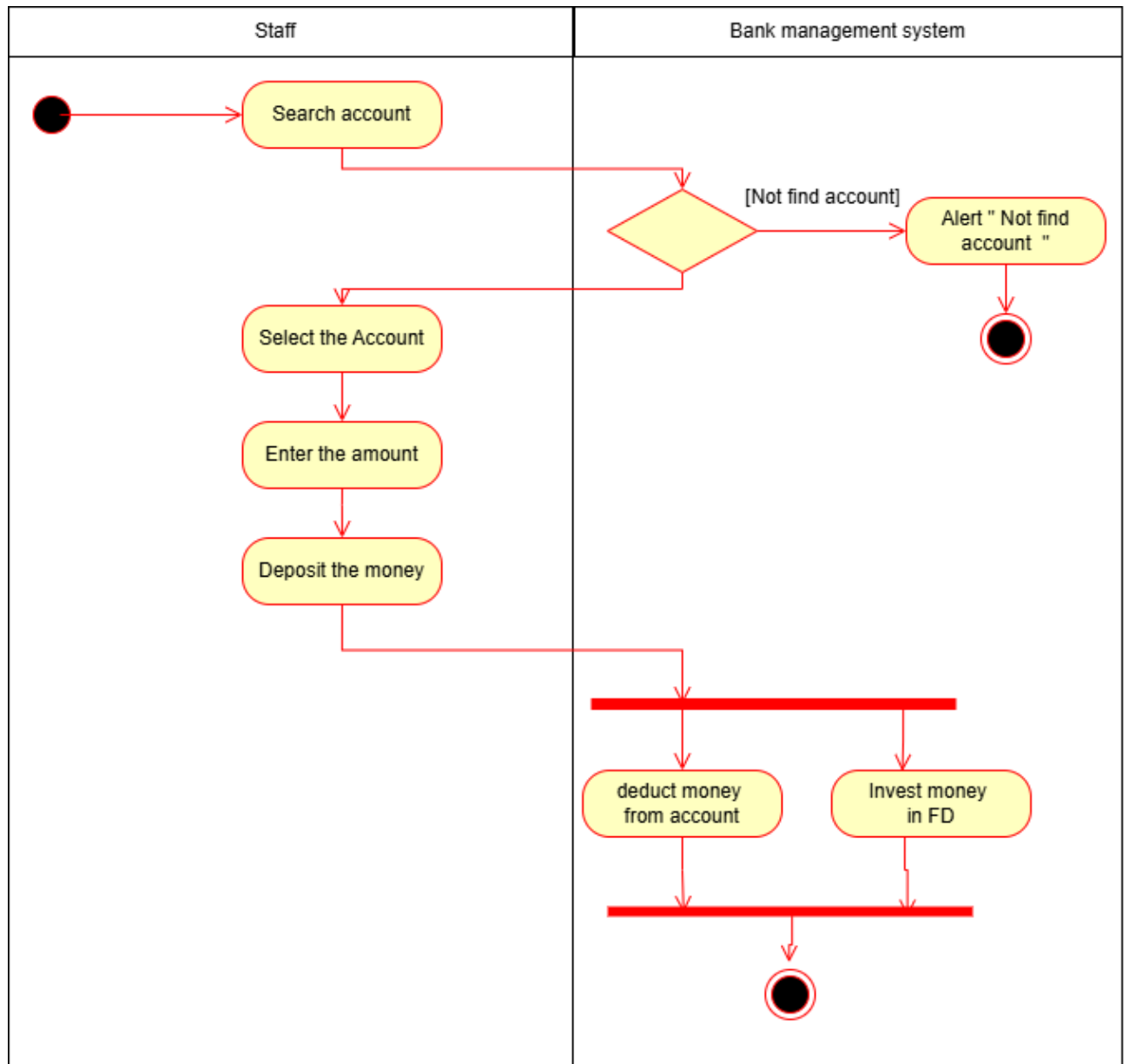
Figure 2.2-4 Swimlane diagram for deposit money

2.3   Sequence diagram
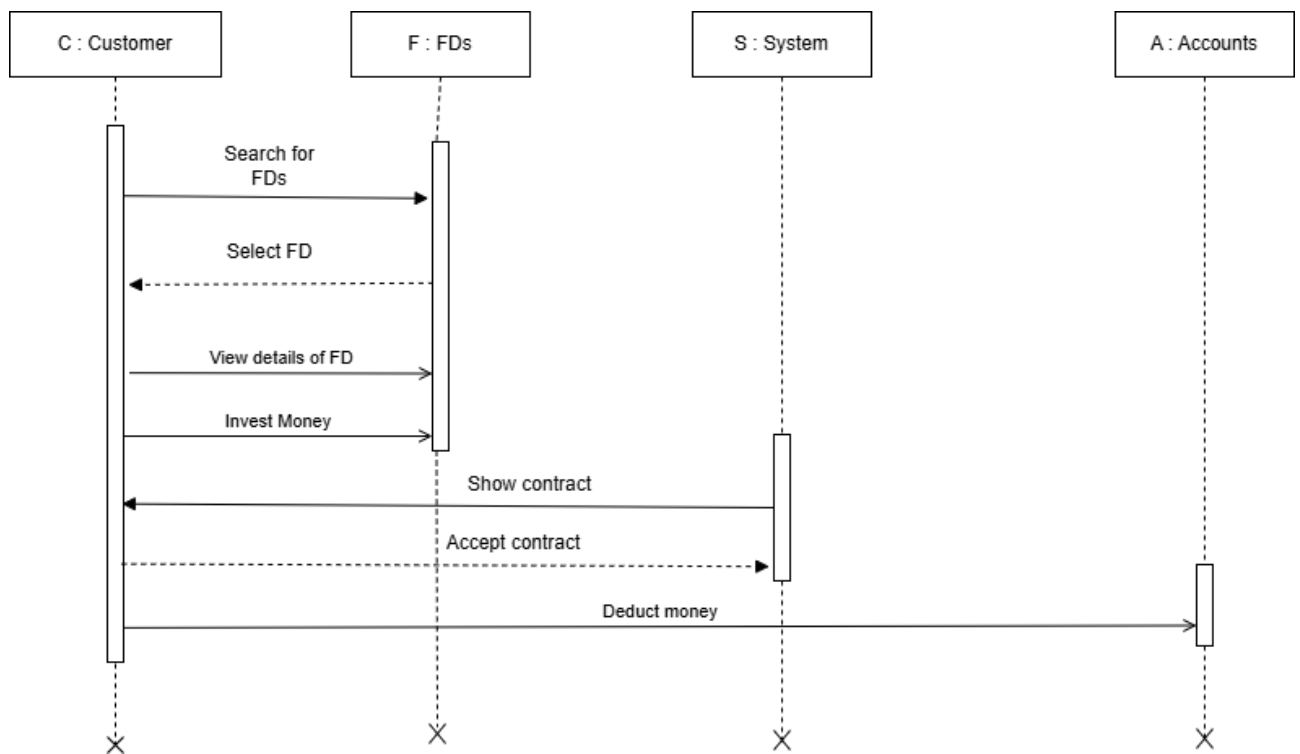
Figure 2.3-1 Sequence diagram Invest in FDs
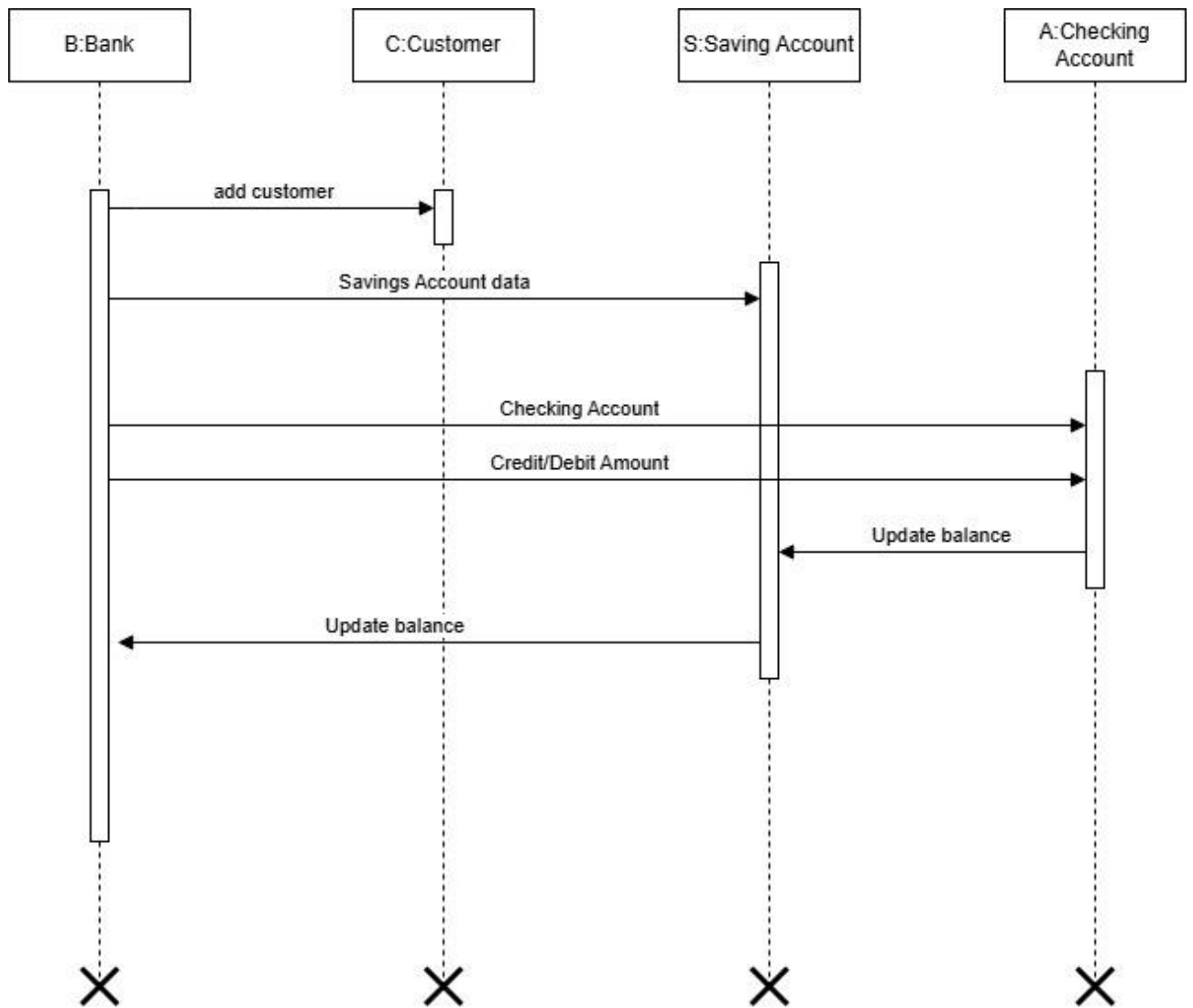
Figure 2.3-2 Sequence diagram Account Details

2.4 State diagram
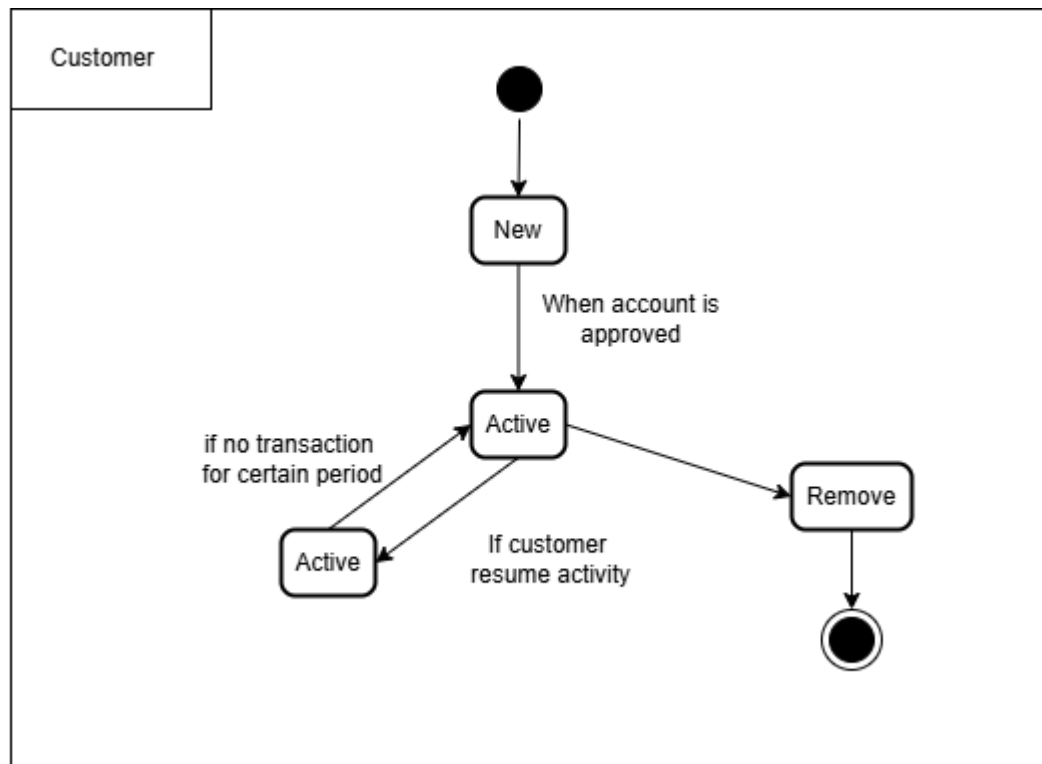
Figure 2.4-1 State diagram of Customer

2.5 Class diagram
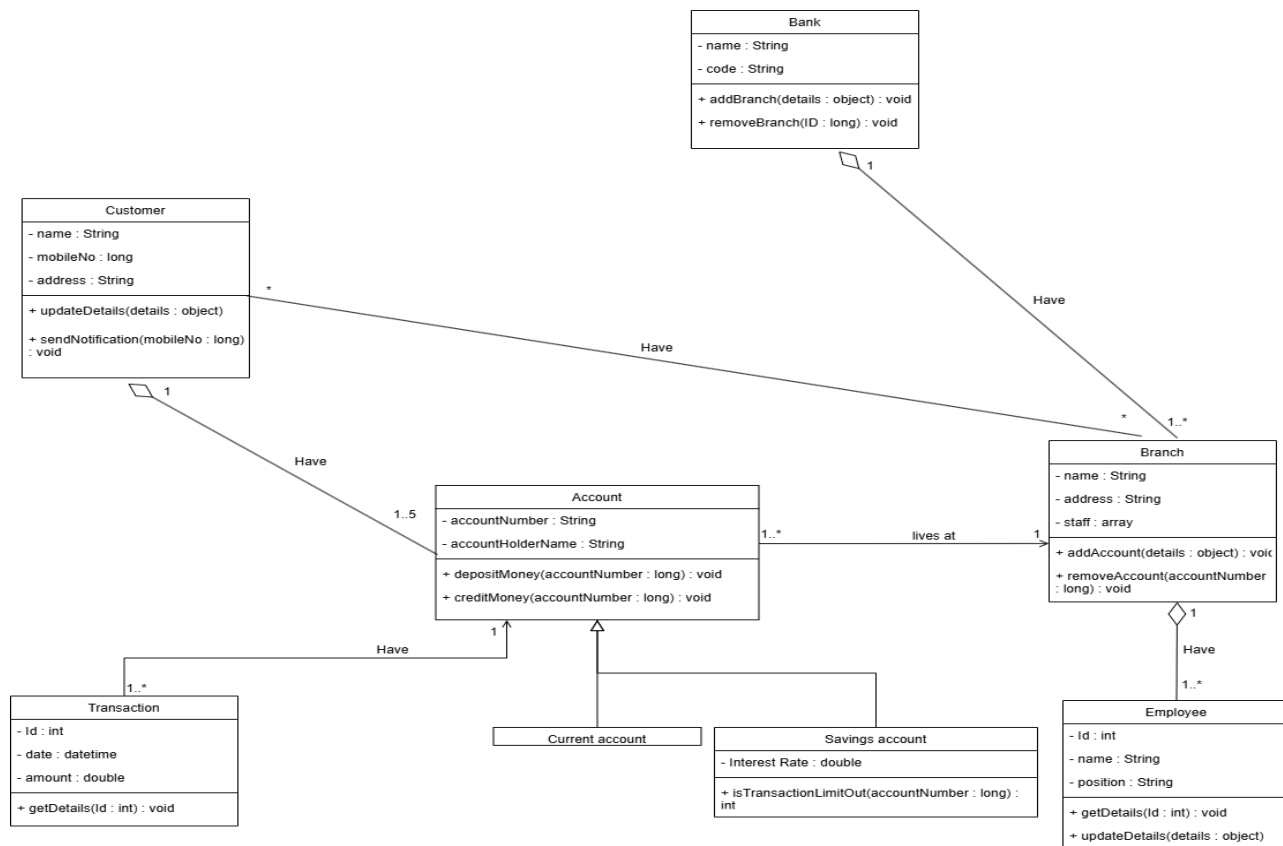
Figure 2.5-1 Class diagram for Bank management system

2.6 Data flow diagram

2.6.1 Context diagram (level-0)
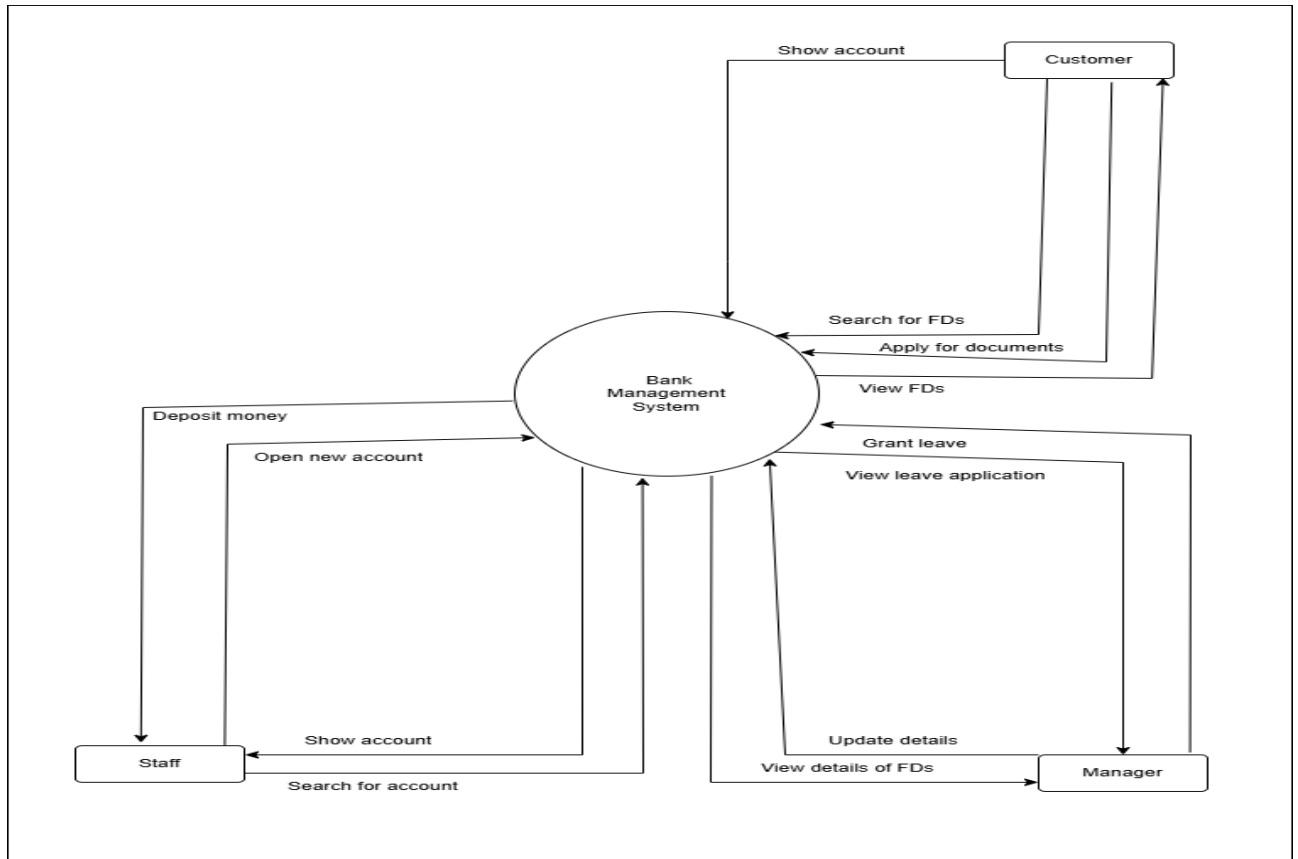
Figure 2.6-1 Context diagram for Bank management system

2.6.2   DFD Level-1
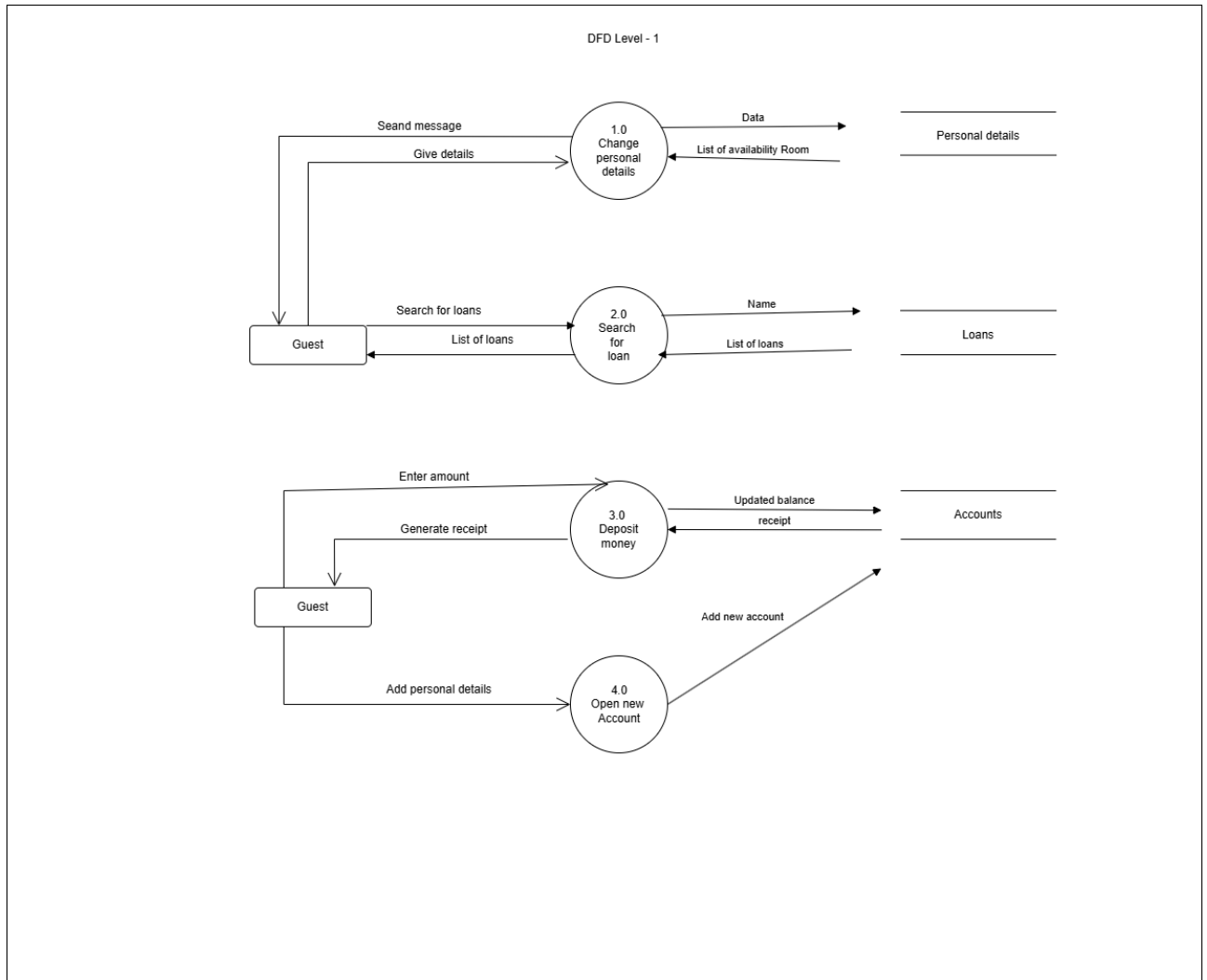
DFD Level - 1

gure 2.6-2 DFD level-1 for Library management sys

3   External interface requirement (Screens)

3.1   Screen-1: Login Form

Figure 3.1-1 Screen-1: Registration Form

Purpose: This form will allow the target end-users to login in the system.

Table 3.1-1 Screen element of Registration form

Sr.	Screen Element	Input Type	O/M	1/N	Description
1	Username	Textbox	M	1	Username field should be editable and accept the Username.
2	Password	Password	M	1	Password field should be editable and accept the password and display as star or dot.
3	Terms of use	Link	------	------	Link to Terms of use page to read terms
4	Privacy policy	Link	M	1	Link to Privacy policy page to read Privacy policy
5	Change	Link	------	------	Link for forget password page to changepassword
6	Login	Button	------	------	Login is a button for store and check the entered data into database.

3.2 Screen-2: Data change request

* Data Change Request Type	Select Data Change Request Type ▾
* Request Date	19-07-2024 📅
* Request Description	Enter Request Description
* Attachment	📄 Select file
	NOTE! **Allowed File Types** (any document file) **Max file size : 1 MB**

Save Cancel

Figure 3.2-1 Screen-2: Data change request form

Purpose: This form will be used by the students to make request to change the data. Add request type, date, description and attachments.

Table 3.2-1 Screen element of Login form

Sr.	Screen Element	Input Type	O/M	1/N	Description
1	Data change request type	Selection List	M	1	Username field should be editable and accept the Username.
2	Request Date	Date	M	1	Password field should be editable and accept the password and display as star or dot.
3	Request Description	Text Area	M	1	Saving login credentials through remember me checkbox
4	Attachment	File	M	1	Link for navigate to Forgot password page for allows users to recover password.
5	Save	Button	------	------	Save button will save form data in database and navigate to Home page
6	Cancel	Button	------	------	Cancel button will cancel the request and navigate to home page

3.3   Screen-3: Email verification

Table 3.3-1 Screen element of Add borrower book

Purpose: This module will allow Customer to verify Email by OTP.

Sr.	Screen Element	Input Type	O/M	1/N	Description
1	Email	Textbox	M	1	Email field should be editable and accept the Username.
2	OTP	Number	M	1	OTP field should be editable and accept the OTP and display as star or dot.
3	Send OTP	Button	------	------	Send OTP button will send the OTP in Email
4	Confirm	Button	------	------	Confirm Button will check the OTP and navigate to forget password page
5	Back to Login Page	Link	------	------	Link back toLogin page

3.4   Screen-4: Search lesson

Table 3.4-1 Screen element of Add borrower book

Purpose: This module will help faculties to search their lessons for particular division.

Sr.	Screen Element	Input Type	O/M	1/N	Description
1	Name	Textbox	M	1	Name field will auto fill from login token
2	Academic year	Selection	M	1	OTP field should be editable and accept the OTP and display as star or dot.
3	Subject	Selection	M	1	Select the subject from the list
4	Semester	Selection	M	1	Select the semester from 1 to 8
5	Division	Selection	M	1	Select the Division from the list
6	Slot	Selection	M	1	Select the slot from 1 to 4
7	Search	Button	------	------	Search the lesson from database by following field and return.
8	Clear	Button	------	------	Clear button clear the selected items from all the fields

3.5 Screen-4: Add employee

Table 3.5-1 Screen element of Add borrower book

Purpose: This module will Add new User with photo and necessary fields.

Sr.	Screen Element	Input Type	O/M	1/N	Description
1	First Name	Textbox	M	1	First Name field should be editable and accept the First Name.
2	Middle Name	Textbox	O	1	Middle Name field should be editable and accept the Middle Name.
3	Last Name	Textbox	M	1	Last Name field should be editable and accept the Last Name.
4	Employee ID	Textbox	M	1	Employee ID field should be editable and accept the Employee ID.
4	Email	Textbox	M	1	Email field should be editable and accept the Email.
5	Employee Type	Selection	M	1	Select the type from the list
6	Upload photo	Button	------	------	Open folder to select the photo.
7	Create Employee	Button	------	------	Create Employee button will add employee details to databse

4 Database design

4.1 List of Tables

- Admin
- Staff
- Customer
- Manager

Table 4.1-1 Table: Admin

Column Name	Data Type	Null	Constraints	Description
Admin_ID	INT	NOT NULL	PRIMARY KEY	Unique Identifier for each admin.
Name	VARCHAR(255)	NOT NULL		Name of the admin.
Email	VARCHAR(255)	NOT NULL	UNIQUE	Email address of the admin.
Password	VARCHAR(255)	NOT NULL		Password for the admin account.
Additional_Info	TEXT	NULL		Any additional information about the admin.
Contact_Number	VARCHAR(20)	NULL		Contact number of the admin.

Table 4.1-2 Table: Staff

Column Name	Data Type	Null	Constraints	Description
Staff_ID	INT	NOT NULL	PRIMARY KEY	Unique Identifier for each staff member.
Name	VARCHAR(255)	NOT NULL		Name of the staff member.
Email	VARCHAR(255)	NOT NULL	UNIQUE	Email address of the staff member.
Password	VARCHAR(255)	NOT NULL		Password for the staff account.
Position	VARCHAR(100)	NOT NULL		Job position of the staff member.
Contact_Number	VARCHAR(20)	NULL		Contact number of the staff member.

Table 4.1-3 Table: Customer

Column Name	Data Type	Null	Constraints	Description
Customer_ID	INT	NOT NULL	PRIMARY KEY	Unique Identifier for each customer.
Name	VARCHAR(255)	NOT NULL		Name of the customer.
Email	VARCHAR(255)	NOT NULL	UNIQUE	Email address of the customer.
Password	VARCHAR(255)	NOT NULL		Password for the customer account.
Address	TEXT	NULL		Address of the customer.
Contact_Number	VARCHAR(20)	NULL		Contact number of the customer.
Account_Number	VARCHAR(20)	NOT NULL	UNIQUE	Bank account number of the customer.
Balance	DECIMAL(10,2)	NOT NULL		Current balance of the customer's account.

Table 4.1-4 Table: Student

Column Name	Data Type	Null	Constraints	Description
Manager_ID	INT	NOT NULL	PRIMARY KEY	Unique Identifier for each manager.
Name	VARCHAR(255)	NOT NULL		Name of the manager.
Email	VARCHAR(255)	NOT NULL	UNIQUE	Email address of the manager.
Password	VARCHAR(255)	NOT NULL		Password for the manager account.
Department	VARCHAR(100)	NOT NULL		Department the manager oversees.
Contact_Number	VARCHAR(20)	NULL		Contact number of the manager.

5 Stories and Scenario

5.1 Story-1: Add New Book in Library Catalogue

Story # S1	:	**As a**Customer, **I want to**view my account details **So that**I can track my balance and recent transactions easily..
Priority	:	High
Estimate	:	S
Reason	:	This is a core functionality that allows customers to track their account status, including their balance and transactions. It needs to be quick, accessible, and reliable, as customers frequently need to view their account details for various banking activities.

5.1.1 Scenario# S1.1

Scenario# S1.1	:	Viewing Account Details with Valid Credentials
Prerequisite	:	The customer is registered and logged into the Bank Management System
Acceptance Criteria	:	**Given:** The customer is logged in to the system and navigates to the "Account Details" section. **When:** The customer selects the "View Account Details" option. **Then** The system should display the customer's account number, balance,

		recent transactions, and other relevant details

5.1.2   Scenario# S1.2

Scenario# S1.2	:	Attempting to View Account Details with Invalid Credentials
Prerequisite	:	The customer is not logged into the system or has entered invalid login credentials.
Acceptance Criteria	:	**Given:**The customer tries to access their account details without logging in or by using invalid credentials. **When:** The customer enters incorrect login credentials or attempts to bypass login. **Then t**he system should display an error message such as "Invalid username or password" and prevent access to account details.

5.1.3   Scenario# S1.3

Scenario# S1.3	:	Viewing Account Details During System Maintenance
Prerequisite	:	The Bank Management System is undergoing scheduled maintenance
Acceptance Criteria	:	**Given**: The customer tries to access their account details during a period when the system is unavailable due to maintenance. **When**: The customer logs in and attempts to view their account details. **Then**: The system should display a maintenance notification or a message like "Service is temporarily unavailable" and prevent access to account details. **Then**: Generate unique book id, barcode and spine label for various book of same title.

5.2   Story-2: Search Book

Story # S2	:	**As a** Customer, **I want to** apply for a loan online, **So that**I can submit my application without visiting the branch.
Priority	:	Medium
Estimate	:	M
Reason	:	Applying for loans online is an essential feature for customers, especially for convenience and accessibility. However, since this feature involves form filling and approval processes, it requires more development and testing efforts compared to simply viewing account details

5.3   Story-3: Manage due date for borrowed book

Story # S3	:	**As** Customer, **I want**pay my credit card bill online **So that**I can clear my outstanding balance quickly and conveniently.
Priority	:	High
Estimate	:	L
Reason	:	Paying credit card bills is a critical feature that customers expect to work seamlessly. Any issues here could lead to customer dissatisfaction, financial

	penalties, or compliance risks. Due to the complex integrations with payment gateways and security considerations, this feature requires more time and effort to develop and test..

Pre-condition: **Web application should be accessible**

Test Case ID	Test Title	Test Type	Description	Test Case ID
TC_001	Login to Bank Management System with valid credentials	Functional	Login to Bank management system web application through valid credential	TC_001
TC_002	Login to Bank Management System	Functional	Login to Bank management system web application through invalid	TC_002

6 Test cases

Project Name:	Bank Management system	Test Designed by:	P. U. Jadeja
Module Name:	**Apply for loan**	**Test Designed date:**	01-10-2023
Release Version:	**1.0**	**Test Executed by:**	**R. B. Gondaliya**
		Test Execution date:	15-01-2023

	with invalid credentials		credential	
TC_003	Apply for a loan with valid data	Functional	Apply for loan in bank management system	TC_003

Test Case Title	Login to Bank Management System with valid credentials
Test Type	Functional
Test Priority	High
Pre-condition	Web application should be accessible

Test Step	Test Case Description	Expected Result	Actual Result	Status	Comment	Data	BUG ID
1	Access Web application URL	The site launched properly	Site launched successfully	Pass		https://bankmanagementsystem.com/login	
2	Enter valid Username in username field	Username field should be editable and accept the Username	Username input accepted	Pass		Username: johndoe@example.com	
3	Enter valid Password in Password field	Password field should be editable and accept the password and display as star or dot	Password input displayed in dot and accepted	pass		Password: John@123	
4	Enter valid captcha code in captch field	Captch field should editable and accept captcha and captcha is case sensitive	Captcha input accepted	Pass	Step required when human action validation perform	Captcha from the image	
5	Click on login button	User should login into site and navigated to dashboard	User navigated to dashboard and username should br display in top of the right side.	pass			

Test Case Title	Login to Bank Management System with invalid credential
Test Type	Functional

Test Priority	Medium
Pre-condition	Web application should be accessible

Test Step	Test Case Description	Expected Result	Actual Result	Status	Comment	Data	Bug ID
1	Verify that User is not able to Login with invalid Username and invalid Password	Should be display an error message enter wrong username or password	Display an error of wrong username and password	Pass			
2	Verify that User is not able to Login with Valid Username and invalid Password	Should be display an error message enter wrong password	Display an error of wrong password	Pass			
3	Verify that User is not able to Login with invalid Username and Valid Password	Should be display an error message User not found	Display an error Username not found	Pass			
4	Verify that User is not able to Login with blank Username or Password	Set required field validation message for Username and Password	Display an error of wrong username and password	Fail	Error: "Invalid username or password"		

Test Case Title	Apply for a loan with valid data
Test Type	Functional
Test Priority	High
Pre-condition	The user must be logged into the Bank Management System

Test Step	Test Case Description	Expected Result	Actual Result	Status	Comment	Data	Bug ID
1	Navigate to the "Apply for Loan" section	The loan application form should be displayed	Form displayed	Pass			
2	Enter valid loan amount, duration, and purpose	Fields should accept valid inputs and display them correctly	Inputs accepted	Pass		Loan amount: 100000 Duration: 12 months Purpose: Home renovation	
3	Upload valid required documents (e.g., proof of income)	The system should accept the uploaded files	Documents uploaded	Pass		File: income_proof.pdf	
4	Click on the "Submit" button properly or not	The system should process the application and display a confirmation	Application submitted	Pass	A confirmation message should appear: "Your loan application has been submitted successfully."		

7 References

- http://www.w3schools.com/html/html_intro.asp
- https://www.w3schools.com/php/default.asp
- https://www.javatpoint.com/uml