Banking Database System

REVIEW REPORT

Submitted by

Group Member1: Varun Chaudhary (20BCE2536)

Group Member2: Ananya Anand (19BCE2332)

Group Member3: Irene John (19BCE2437)

Prepared For

DATABASE MANAGEMENT SYSTEM (CSE2004)

PROJECT COMPONENT

Submitted To

Dr. Jyosimita Chaki

Associate Professor

School of Computer Science and Engineering

VIT®

Vellore Institute of Technology

(Deemed to be University under section 3 of UGC Act, 1956)

Table of contents

ABSTRACT

In the current world where every application finds a place in the online platform, Banking System would be one of them. A bank is a financial intermediary involving several functionalities such as safeguarding, transferring, exchanging, or lending of money. Understanding these fundamental functionalities helps one to understand how banking systems work and helps to build modern trends in banking and finance.

Keeping in mind the functionalities and the need of the present generation we have developed a database management system for bank accounts for all the customers enrolled in bank.It involves the database that the bank maintains for all customer functionality.It keeps the day by day tally record as a complete banking involving information of Account type, Deposit, Withdrawal and Searching the transaction. It removes the need of physical movement to a bank to carry out basic services offered at the bank.

This project involves various concepts of database and web development. Our website has a user friendly interface and it is being created using Xampp control Panel wherein MYSQL has been used for database management to store and retrieve data from the database. In addition we have created multiple pages linked to each other. These pages have been developed and designed using HTML and CSS. PhP is used as a tool for connectivity between the front-end and the back-end. Indeed, this has been a great learning experience especially for the concepts of database and its practical application.

1. INTRODUCTION

During the past several decades' personnel function has been transformed from a relatively obscure record keeping staff too 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 account 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 or account number of that customer. Similarly, record maintenance and updating can also be accomplished by using the account number 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.

1.1 Background

In this section of our project we will like to mention background or the prerequisites skills that we need to have in order to carry out this project. The main area of knowledge in this project is the creation of databases. Thorough knowledge of ER diagram, functional dependencies, normalization etc. For the completion of the project we should have knowledge of the subjects listed –

1. HTML, CSS and PHP for front end development,
2. MYSQL in XAMMP SERVER for backend,
3. SQL for preparing the database.

1.2 Objective

The main objective of the project is to develop online Banking system for banks. In present system all banking works is done manually. User have to visit bank for Withdrawal or Deposit amount. In present bank system it is also difficult to find account information of account holder. In this bank management system we will automate all the banking process. In our bank management system user can check his balance online and he can also transfer money to other account online. In this software you can keep record for daily Banking transactions. The main purpose of developing bank management system is to design an application, which could store bank data and provide an interface for retrieving customer related details.

1.3 Motivation

Our major motivation of carrying out this project is that amidst the ongoing digital banking environment, the need for an efficient banking management solution is strongly felt. These systems are crucial for the growth of any sector and provide a multidisciplinary approach to the management as well as the governance of the bank related activities. These systems make the best use of computer systems as well as software for helping the bank and customer to create new account easily. The project makes a sincere effort to provide all the mentioned features to meet the requirements of the bank in terms of both the employees and the customer. Also, another source of motivation is Scams which our going on in the market. Thus, such factors piqued our interests to work on such project.

1.4 Contributions of the Project

Using this bank management system any information can be easily searched. User can view all the details of the customer, user can create new customer account and maintain its data efficiently and effectively. Which are maintained constantly update by system. Manage large number of customer details with ease. Particular account information can be modified particular customer record can be modified for one or more field's customer name, address by providing account number. Activities like updating, modification, deletion of records should be easier. A customer record can be easily deleted by authorize user by providing account number.

1.5 Organization of the Project

- First, we started off with preparation of ER diagram taking into view all the possible attributes and relationships among them.
- Next, we converted our ER diagram to Relational mapping so that we can get an actual picture of all the relationships.
- After carrying out above mentioned steps we made list of all the tables and constraints of attributes.
- Next, we collected sample data to be stored in our database.
- After that we started with preparation of database in MYSQL with our collected data.
- After creation of initial Database, we normalized our tables so that inconsistency of our database can be reduced.
- After successful creation of our Final Database we operated few normal SQL queries and PL/SQL queries.
- After that we constructed our website and prepared its Front End and Back End and connected the Front end to our database.

1.6 Work Breakdown

Registration Number	Team Member-Name	Work Assigned
20BCE2536	Varun Chaudhary	-Entire front-end implementation of the project and backend coding -Compilation of the project (connection between back-end and front-end using php)
19BCE2332	Ananya Anand	Database implementation (database relations creation) -Documentation
19BCE2437	Irene John	Database implementation (data collection and application of constraints) -Documentation

2. PROJECT RESOURCE REQUIREMENTS

2.1 Software Requirements

Front- End Software Used:

- PHP
- HTML
- CSS (materialize style sheet)

Back- End Software Used:

- MYSQL in XAMMP SERVER

Text Editor to type php files: SUBLIME TEXT

2.2 Hardware Requirements

Processor- Intel i3 OR ABOVE

Clock speed- 2.5 GHz

Ram 8 GB or above

Windows 10 or any other suitable OS

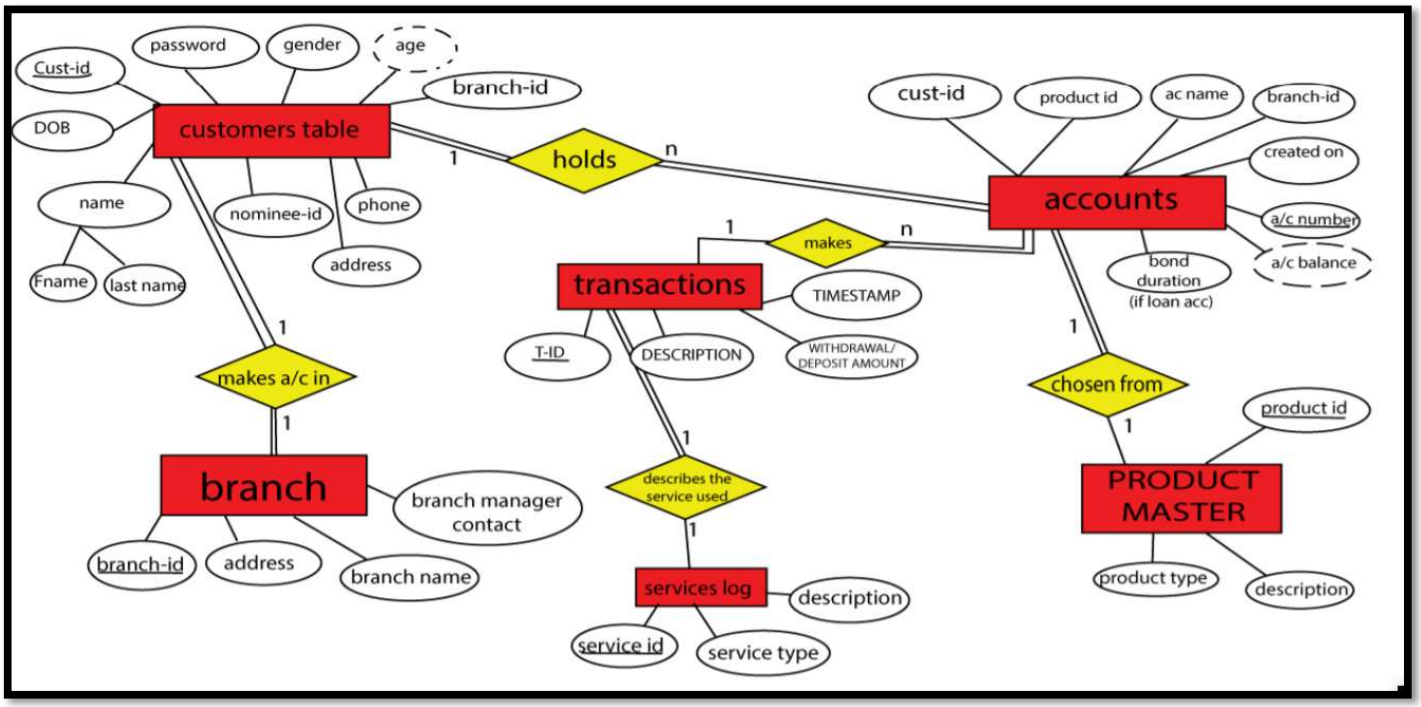
3 LITERATURE SURVEY

In this section, literature survey is given. Accordingly, research papers are reviewed and analyzed based on the prediction methods used.

Authors	Method	Purpose	Advantages	Disadvantages
Momenul Ahmad	How to do web development	Giving general idea about web development and internet	It provides essential knowledge to beginner.	Knowledge provided is limited and it is not helpful to a more experienced developer.
Alijetro Castillo	Quantitative analysis on database contents	Provides knowledge about database contents and contains vast range of examples to analyze contents of database	It is vast and contains wide range of examples	It requires a pre requisite knowledge and not recommended for beginners
Me Me Khaing	1.1.1.3 Why undergraduates should learn web development	Provides us with basic knowledge of HTML and CSS with some examples related to it	Provides HTML syntax and some examples regarding the same	It is nice document but it lacks some or the other syntax and contains less examples
Raghu Ramakrishnan	Introduction to DBMS	It is a textbook which helped us to understand ER diagram and conversion of it to relational mapping	Contains a nice overview of database	It would be better if it contains more examples and was better organized
Kavya .S	1.1.1.1 A study on Database	Gives an overview on databases	Explains the general fundamentals and functioning	Lacks practical examples for reference

4. DESIGN OF THE PROJECT

4.1 ER Diagram



KEY:

Entities: **Entities**

Relationships between Entities: Partial relation

Total relation

Relation: Relation

Structural Constraints: Primary key

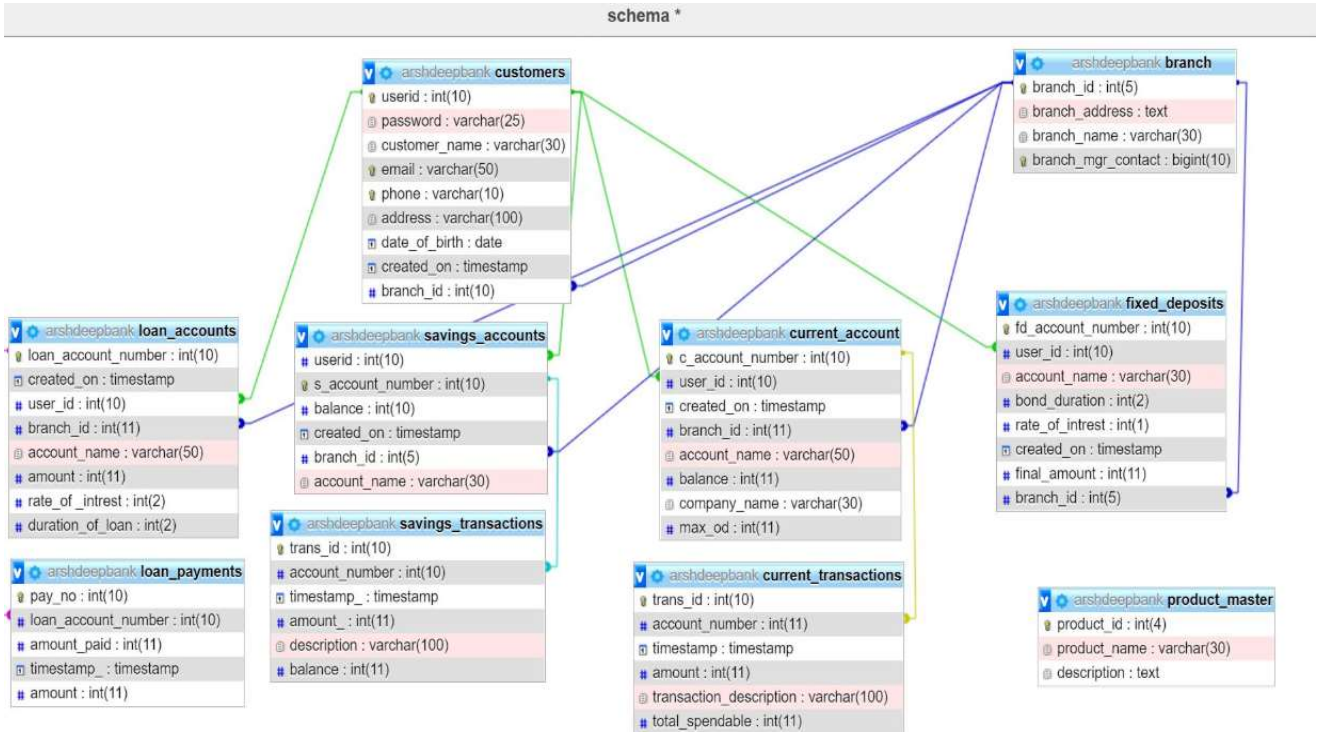
Cardinality ratios: 1:1- One to one

1: N – One to Many

N: 1 – Many to one

N: N- Many to many

4.2 ER to Relational Mapping (Schema Diagram)



KEY:

Is the foreign key on user_id

Is the foreign key on branch_id

Is the foreign key on loan_acc_no

Is the foreign key on savings_acc_no

Is the foreign key on current_acc_no

4.3 Normalization

Rules for Normalization:

1NF (FIRST NORMAL FORM)

- Each table cell should contain a single value.
- Each record needs to be unique.

2NF (SECOND NORMAL FORM)

- Rule 1- Be in 1NF
- Rule 2- There should be no partial dependency.

3NF (THIRD NORMAL FORM)

- Rule 1- Be in 2NF
- Rule 2- There should be no transitive functional dependencies.

BCNF

- Even when a database is in 3rd Normal Form, still there would be anomalies resulted if it has more than one Candidate Key.
- Sometimes is BCNF is also referred as 3.5 Normal Form.

-Normalization of the Tables

1) Customers

[User_id, Password,Name,email_id,phone,address,DOB.created_on,Gender]

Functional dependencies:

User_id-> Password

User_id-> created_on

User_id->Name

User_id->Gender

User_id-> address

User_id->phone

User_id->DOB

User_id->email_id

Candidate Key: User_id

1NF: It is in 1NF due to atomicity

2NF: It is in 2NF as it is in 1NF and there are no partial dependencies

3NF: It is in 3 NF as it is in 2NF and there are no transitive dependencies

BCNF: It is in BCNF as it is in 3NF and the LHS of the F.d's is a prime key

Since the table is already normalized, the table Customers remains the same.

2) Branch

[br_id,br_name,address,mgr_contact]

Functional dependencies:

br_Id->address br_Id-> br_name

br_Id->mgr_contact

Candidate Key: br_Id

1NF: It is in 1NF due to atomicity

2NF: It is in 2NF as it is in 1NF and there are no partial dependencies

3NF: It is in 3 NF as it is in 2NF and there are no transitive dependencies

BCNF: It is in BCNF as it is in 3NF and the LHS of the F.d's is a prime key

Since the table is already normalized, the table Branch remains the same.

3) Product master

[product_id,acc_type,ac_info]

Functional dependencies:

product_Id->acc_type,ac_info

Candidate Key: product_Id

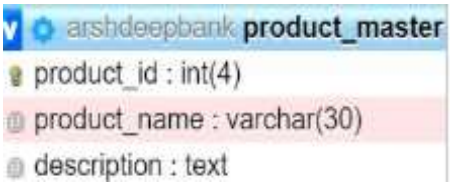
1NF: It is in 1NF due to atomicity

2NF: It is in 2NF as it is in 1NF and there are no partial dependencies

3NF: It is in 3 NF as it is in 2NF and there are no transitive dependencies

BCNF: It is in BCNF as it is in 3NF and the LHS of the F.d's is a prime key

Since the table is already normalized, the table Product Master remains the same.



Accounts

The accounts table in the initial database was inconsistent as all account types were clubbed together with many null able domains.

Ex: If account number 1000010 has a savings account the values like bond duration or rate of interest which concerns with loan type will be null able

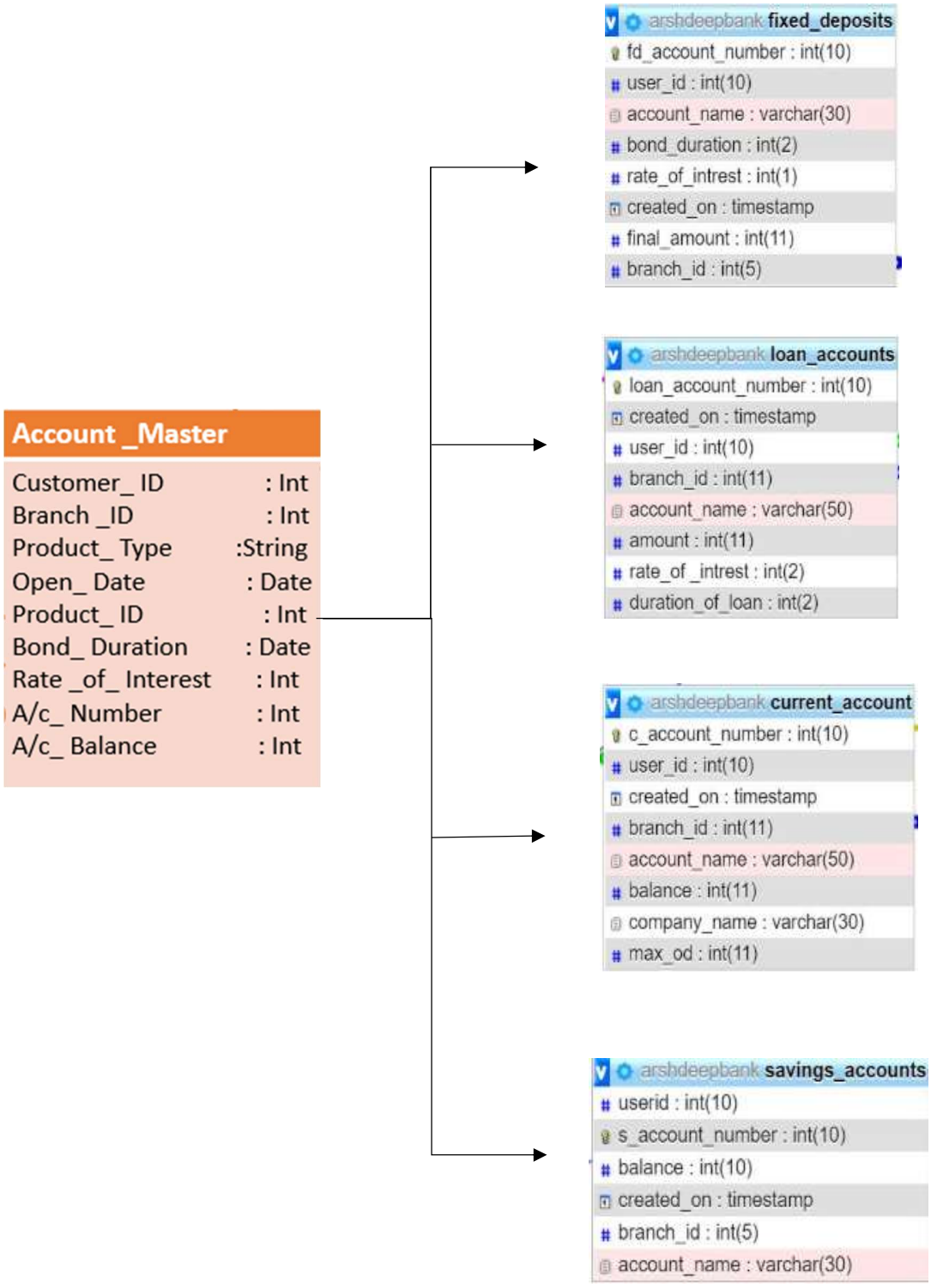
Thus accounts table has been parted into
-Savings account

-Current

-Loan

-Fixed Deposit

Normalizing Accounts table


Account _Master
Customer_ ID : Int
Branch _ID : Int
Product_ Type :String
Open_ Date : Date
Product_ ID : Int
Bond_ Duration : Date
Rate _of_ Interest : Int
A/c_ Number : Int
A/c_ Balance : Int
arshdeepbank fixed_deposits
fd_account_number : int(10)
user_id : int(10)
account_name : varchar(30)
bond_duration : int(2)
rate_of_intrest : int(1)
created_on : timestamp
final_amount : int(11)
branch_id : int(5)
arshdeepbank loan_accounts
loan_account_number : int(10)
created_on : timestamp
user_id : int(10)
branch_id : int(11)
account_name : varchar(50)
amount : int(11)
rate_of _intrest : int(2)
duration_of_loan : int(2)
arshdeepbank current_account
c_account_number : int(10)
user_id : int(10)
created_on : timestamp
branch_id : int(11)
account_name : varchar(50)
balance : int(11)
company_name : varchar(30)
max_od : int(11)
arshdeepbank savings_accounts
userid : int(10)
s_account_number : int(10)
balance : int(10)
created_on : timestamp
branch_id : int(5)
account_name : varchar(30)

4) Savings Account

[Acc_id,cust_id,creationtimestamp,branch_id,Acc_name,balance]

Functional dependencies:

Acc_Id-> cust_id Acc_Id-> branch_id

Acc_Id-> created_timestamp Acc_Id->Acc_name

Acc_Id-> balance

Candidate Key: Acc_Id

1NF: It is in 1NF due to atomicity

2NF: It is in 2NF as it is in 1NF and there are no partial dependencies

3NF: It is in 3 NF as it is in 2NF and there are no transitive dependencies

BCNF: It is in BCNF as it is in 3NF and the LHS of the F.d's is a prime key

Hence the table is normalized.

5) Current Account

[Acc_id,cust_id,creationtimestamp,branch_id,Acc_name,balance,company_name,max_d]

Functional dependencies:

Acc_Id-> cust_id Acc_Id-> branch_id

Acc_Id-> created_timestamp Acc_Id->Acc_name

Acc_Id-> balance Acc_Id-> max od_amt

Acc_Id-> company name

Candidate Key: Acc_Id

1NF: It is in 1NF due to atomicity

2NF: It is in 2NF as it is in 1NF and there are no partial dependencies

3NF: It is in 3 NF as it is in 2NF and there are no transitive dependencies

BCNF: It is in BCNF as it is in 3NF and the LHS of the F.d's is a prime key

Hence the table is normalized.

6) Loan

[Ln_no,cust_id,created_timestamp,branch_id,Acc_name,rate_of_interest,duration,amount]

Functional dependencies:

Ln_no-> cust_id

Ln_no-> branch_id

Ln_no-> created_timestamp

Ln_no ->Acc_name

Ln_no-> duration

Ln_no ->rate_of_interest

Candidate Key: Ln_no

1NF: It is in 1NF due to atomicity

2NF: It is in 2NF as it is in 1NF and there are no partial dependencies

3NF: It is in 3 NF as it is in 2NF and there are no transitive dependencies

BCNF: It is in BCNF as it is in 3NF and the LHS of the F.d's is a prime key

Hence the table is normalized.

7) Fixed Deposit

[Acc_id,cust_id,name,duration,rate_of_interest,created_on,final_amount,Acc_name]

Functional dependencies:

Acc_Id-> cust_id Acc_Id->duration

Acc_Id-> created_on Acc_Id->Acc_name

Acc_Id-> rate_of_interest Acc_Id->final_amount

Candidate Key: Acc_Id

1NF: It is in 1NF due to atomicity

2NF: It is in 2NF as it is in 1NF and there are no partial dependencies

3NF: It is in 3 NF as it is in 2NF and there are no transitive dependencies

BCNF: It is in BCNF as it is in 3NF and the LHS of the F.d's is a prime key

Hence the table is normalized.

Transactions

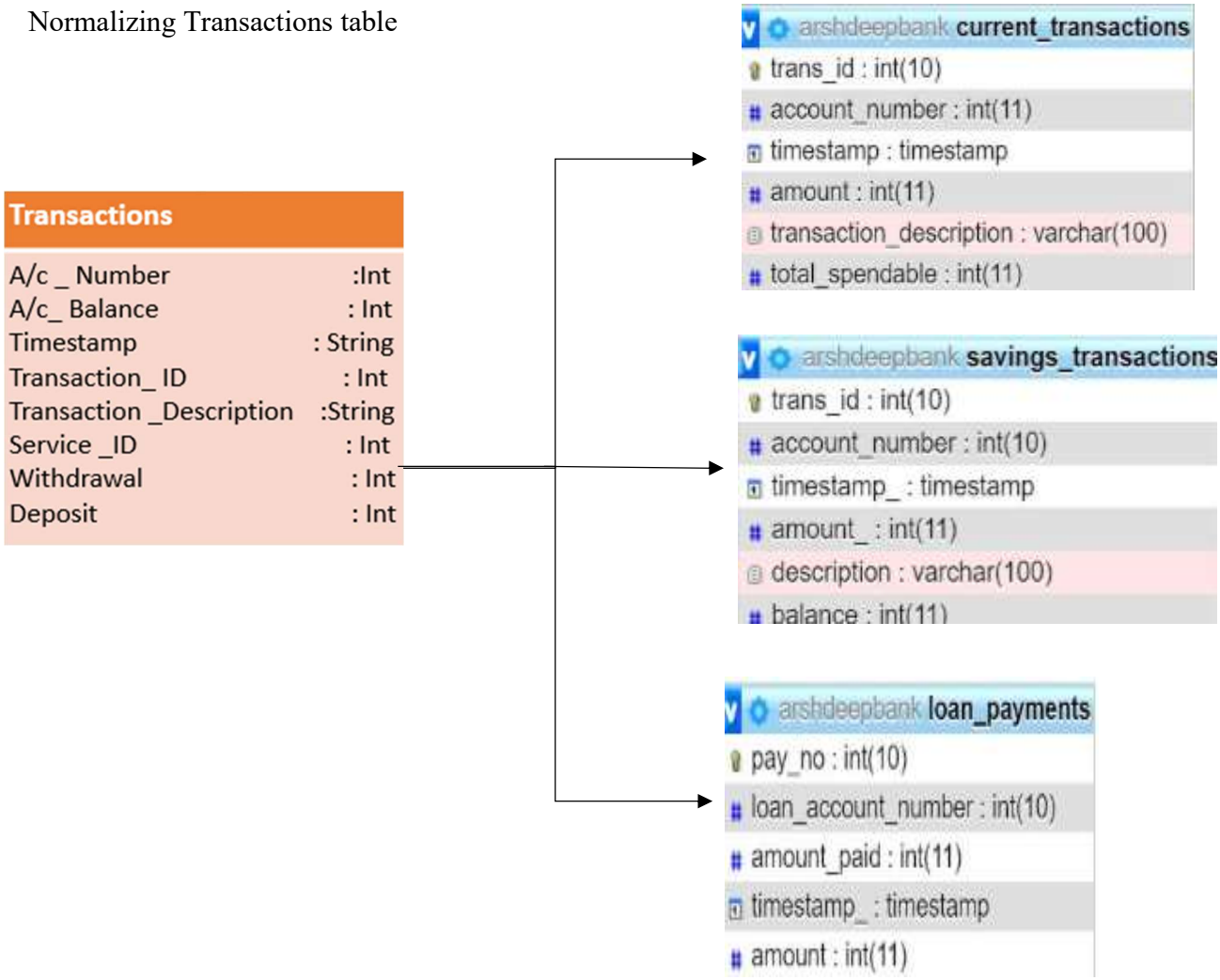
Just like the accounts table the transaction table was clubbed under one table which leads to inconsistencies and abnormalities. Hence breaking the tables into:

-Savings Transactions

-Current Transactions

-Loan payments

Normalizing Transactions table



8) Savings_transactions

[TID,Acc_id,Timestamp,amount,description,balance]

Functional dependencies:

TID-> Acc_id TID->amount

TID-> Timestamp TID-> balance

TID-> description

Candidate Key: TID

1NF: It is in 1NF due to atomicity

2NF: It is in 2NF as it is in 1NF and there are no partial dependencies

3NF: It is in 3 NF as it is in 2NF and there are no transitive dependencies

BCNF: It is in BCNF as it is in 3NF and the LHS of the F.d's is a prime key

Hence the table is normalized.

9) Current_transaction

[TID,Acc_id,Timestamp,amount,description,Total]

Functional dependencies:

TID-> Acc_id TID->amount

TID-> Timestamp TID-> Total

TID-> description

Candidate Key: TID

1NF: It is in 1NF due to atomicity

2NF: It is in 2NF as it is in 1NF and there are no partial dependencies

3NF: It is in 3 NF as it is in 2NF and there are no transitive dependencies

BCNF: It is in BCNF as it is in 3NF and the LHS of the F.d's is a prime key

Hence the table is normalized.

10) Loan_Payments

[Pay_no,Ln_no,amt_paid,date_timestamp,remaining_due]

Functional dependencies:

Pay_no->ln_no Ln_no-> amt_paid

Pay_no-> date_timestamp Ln_no->remaining_due

Candidate Key: Pay_no

1NF: It is in 1NF due to atomicity

2NF: It is in 2NF as it is in 1NF and there are no partial dependencies

3NF: It is in 3 NF as it is in 2NF and there are no transitive dependencies

BCNF: It is in BCNF as it is in 3NF and the LHS of the F.d's is a prime key

Hence the table is normalized.

4.4 Tables and Constraints

TABLE : CUSTOMER

CUSTOMER		
User_ID	int (10)	Primary key
Password	Varchar2(20)	Not null
Name	Varchar2(50)	Not null(no numerical values)
Email_ID	Varchar2(50)	Not null
Phone	Number(10)	Not null
Address	Varchar2(50)	Not null
DOB	Date	Not null
Created_on	Time	Not null(18 digits must)
Gender	Varchar2	Not null(M,F,other)

TABLE: PRODUCT MASTER

PRODUCT MASTER		
Product_ID	Number(5)	Primary Key
Acc_Type	Varchar2(10)	Not Null
Acc_Info	Varchar2(50)	Not Null

TABLE: BRANCH

BRANCH		
Branch_ID	Number(5)	Primary Key
Address	Varchar2(50)	Not Null
Branch_name	Varchar2(30)	Not Null
Mgr_contact	Varchar2(10)	Not Null(10 digits must)

TABLE: SAVINGS

SAVINGS		
Acc_ID	Number(10)	Primary Key
Cust_ID	Number(10)	Foreign Key
Creation_Timestamp	Timestamp	Not Null
Branch_ID	Number(5)	Foreign Key
Acc_name	Varchar2(30)	Not Null
Balance	Number(derived)	Not Null

TABLE: FIXED DEPOSIT

FIXED DEPOSIT		
Ac_ID	Number(10)	Primary Key
Cust_ID	Number(10)	Foreign Key
Name	Varchar2(30)	Not Null
Duration	Varchar2(10)	Not Null
Rae_of_Interest	Varchar2(5)	Not Null
Created_On	Date	Not Null
Final_Amount	Number(20)	Not Null

TABLE: LOAN

LOAN		
Ln_no	Number(10)	Primary Key
Cust_ID	Number(10)	Foreign Key
Created_timestamp	Timestamp	Not Null
Branch_ID	Number(5)	Foreign Key
Acc_name	Varchar2(30)	Not Null
Rate_of_Interest	Varchar2(5)	Not Null
Duration	Varchar2(10)	Not Null
amount	Number(10)	Not Null

TABLE: CURRENT

CURRENT		
Acc_ID	Number(10)	Primary Key
Cust_ID	Number(10)	Foreign Key
Created_timestamp	Timestamp	Not Null
Branch_ID	Numbers(5)	Foreign Key
Acc_name	Varchar2(30)	Not null
Balance	Number(5)	Not Null
Company_name	Varchar2(10)	Not Null
Max_od	Number	Not Null

TABLE: SAVINGS TRANSACTION

SAVINGS_TRANSACTION		
TID	Int(10)	Primary Key
Acc_ID	Int(10)	Foreign Key
Timestamp	Date	Not Null
Amount	Int(10)	Not Null
Description	Varchar(50)	Not Null
Balance	Int(10)	Not Null

TABLE: CURRENT TRANSACTION

CURRENT_TRANSACTION		
TID	Int(10)	Primary Key
Acc_ID	Int(10)	Foreign Key
Timestamp	Date	Not Null
Amount	Int(10)	Not Null
Description	Varchar(50)	Not Null
Tot_spending_capacity	Varchar(50)	Not Null

TABLE: LOAN PAYMENTS

LOAN_PAYMENTS		
Pay_no	Int(10)	Primary Key
Ln_No	Int(10)	Foreign Key
Amount_paid	Int(10)	Not Null
Timestamp	Date	Not Null
Remaining_due	Int(10)	Not Null

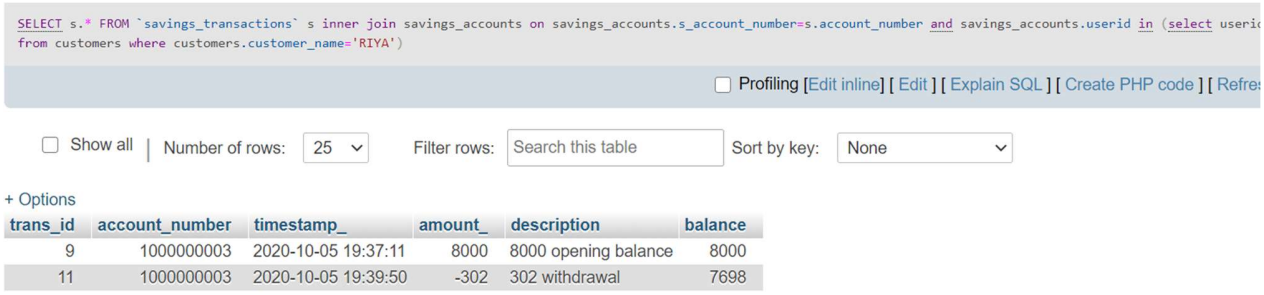
5. IMPLEMENTATION

5.1 Introduction

A simple user can access their account and can deposit/withdraw money from their account. User can also transfer money from their account to any other bank account. User can see their transaction report and balance enquiry too.

5.2 DDL & DML Queries

1) Select all transactions on saving accounts owned by RIYA (use of inner join to join transactions accounts and customer table)



```
SELECT s.* FROM `savings_transactions` s inner join savings_accounts on savings_accounts.s_account_number=s.account_number and savings_accounts.userid in (select useri
from customers where customers.customer_name='RIYA')
```

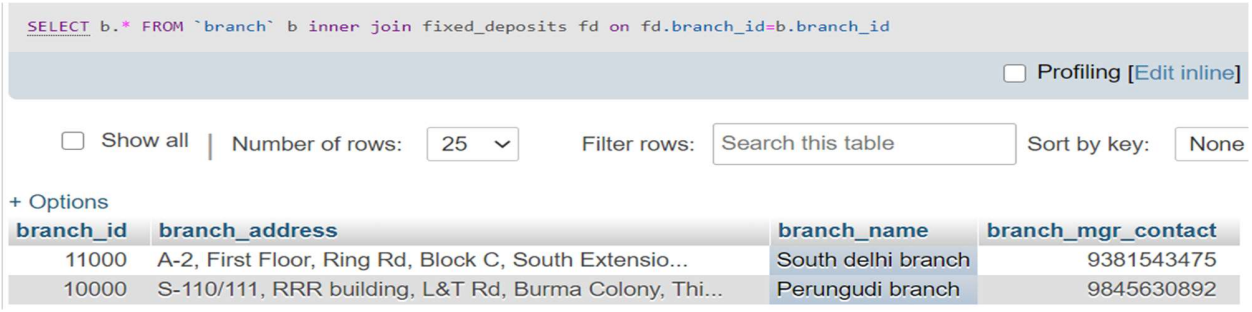
Profiling [Edit inline] [Edit] [Explain SQL] [Create PHP code] [Refre

Show all | Number of rows: 25 Filter rows: Search this table Sort by key: None

+ Options

trans_id	account_number	timestamp_	amount_	description	balance
9	1000000003	2020-10-05 19:37:11	8000	8000 opening balance	8000
11	1000000003	2020-10-05 19:39:50	-302	302 withdrawal	7698

2) Display branch information for all fixed deposit accounts (use of inner join on branch and fixed deposits table)



```
SELECT b.* FROM `branch` b inner join fixed_deposits fd on fd.branch_id=b.branch_id
```

Profiling [Edit inline]

Show all | Number of rows: 25 Filter rows: Search this table Sort by key: None

+ Options

branch_id	branch_address	branch_name	branch_mgr_contact
11000	A-2, First Floor, Ring Rd, Block C, South Extensio...	South delhi branch	9381543475
10000	S-110/111, RRR building, L&T Rd, Burma Colony, Thi...	Perungudi branch	9845630892

3) Select the branch manager contact for each user. (Use of nested sub-queries)

```
SELECT branch_mgr_contact from branch where branch_id in (select branch_id from customers where userid=1000000049)
```

Profiling [Edit inli

Show all | Number of rows: 25 Filter rows: Search this table

+ Options

	branch_mgr_contact
Edit Copy Delete	7836657390

4) Select all loan payments on 2020-10-01(use of date function to convert timestamp to date format.)

select * from loan_payments where date(timestamp)=“2020-10-01

```
select * from loan_payments where date(timestamp_)="2020-10-01"
```

Profiling [Edit inline] [Edit]

Show all | Number of rows: 25 Filter rows: Search this table Sort by key: None

+ Options

	pay_no	loan_account_number	amount_paid	timestamp_	amount
Edit Copy Delete	2	242000001	18334	2020-10-01 21:33:30	-1081666
Edit Copy Delete	3	242000000	10000	2020-10-01 21:33:30	-1180000

5) Select all branch information and customer information for a user =1000000049 using join.

select * from branch inner join customers on customers.branch_id=branch.branch_id and customers.userid=1000000049

branch_id	branch_address	branch_name	branch_mgr_contact	userid	password	customer_name	email	phone	address	date_of_birth	created_on	branch_id
13453	No 25, 1st East Main Road Gandhi Nagar, Katpadi, V...	Vellore branch	7836657390	1000000049	0000	IRENE JOHN	irene.john2019@vitstudent.ac.in	9840849927	HOUSE-05,gandhi nagar NAGAR,vellore,640202	1999-01-06	2020-10-05 18:16:39	13453

5.3 SQL Queries

1)SELECT * FROM customers inner join savings_accounts oncustomers.userid=savings_accoun ts.userid and savings_accounts.balance<=6000 (inner join to select all information on joining customers and savings acc with balance <=6000)

+ Options

userid	password	customer_name	email	phone	address	date_of_birth	created_on	branch_id	userid	s_account_number	balance	created_on	branch_id	account_name
1000000048	Arshdeep123	ARSHDEEP SINGH BHATIA	arshdeepdgreat@gmail.com	8754541603	A4-405,adora akshaya homes,padur,chennai	1993-02-18	2020-10-05 18:12:49	10000	1000000048	1000000001	5000	2020-10-05 18:46:08	10000	savings account upi
1000000053	0000	JOHN	john@vit.ac.in	7399366492	A4-405,adora akshaya homes,padur,chennai	1991-05-23	2020-10-12 22:43:45	10000	1000000053	1000000026	6000	2020-10-13 11:24:51	10000	savings account john

2)select loan_payments.* from loan_payments inner join loan_accounts on loan_payments.loan_ account_number=loan_accounts.loan_account_number and loan_accounts.branch_id in (select br anch_id from branch where branch_mgr_contact=9381543475)

--use of join and sub query)

pay_no	loan_account_number	amount_paid	timestamp_	amount
1	242000000	10000	2020-09-01 21:33:30	-1190000
2	242000001	18334	2020-10-01 21:33:30	-1081666
3	242000000	10000	2020-10-01 21:33:30	-1180000

3) Combined use of sub query and date function

SELECT * FROM current_account WHERE user_id in (select userid from custo- mers where year (customers.date_of_birth) = 1999)

c_account_number	user_id	created_on	branch_id	account_name	balance	company_name	max_od
150000000	1000000049	2020-10-05 21:02:48	13453	current_acc	10000	l and k logistics	10000

4) Illustration of right join on current accounts and branch (all branch rows are displayed irrespective of Current account)

c_account_number	branch_id	branch_name
150000000	13453	Vellore branch
150000001	10000	Perungudi branch
150000002	10000	Perungudi branch
150000011	11000	South delhi branch
NULL	12000	Lal bazar branch
NULL	13452	Girinagar branch

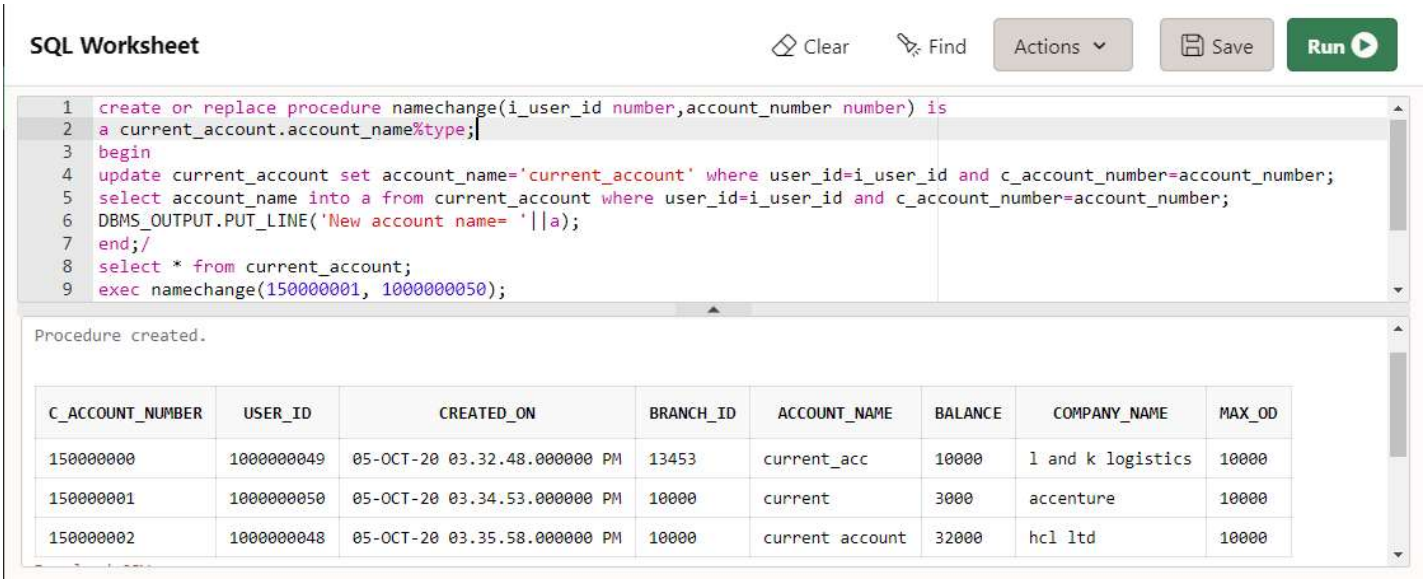
5) Illustration of left join on loan accounts and branch (query looks similar to inner join because all loan accounts mandatory to have branch id)

loan_account_number	branch_id	branch_name
242000000	11000	South delhi branch
242000001	11000	South delhi branch
242000004	10000	Perungudi branch

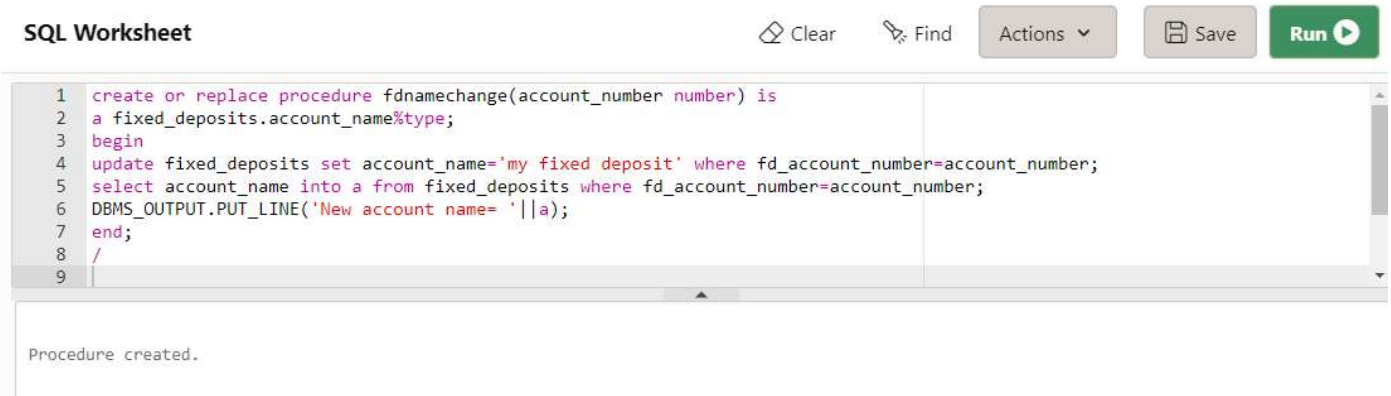
5.4 PL/SQL

PROCEDURES (3 Questions)

Q1.CREATE A PROCEDURE THAT CHANGES THE ACCOUNT NAME TO "CURRENT_ACCOUNT" FOR A PARTICULAR INPUT FOR CURRENT ACCOUNT.



Q2.CREATE A PROCEDURE THAT CHANGES THE ACCOUNT NAME TO "my fixed deposit" FOR A PARTICULAR INPUT for fixed deposit.



Q3: CHANGE ACCOUNT NAME TO “MY_LOAN” IN LOAN_ACCOUNTS.

SQL Worksheet | Clear | Find | Actions | Save | Run

```
create or replace procedure loannamechange(account_number number) is
a loan_accounts.account_name%type;
begin
update loan_accounts set account_name='my loan' where loan_account_number=account_number;
select account_name into a from loan_accounts where loan_account_number=account_number;
DBMS_OUTPUT.PUT_LINE('New account name= '||a);
end;
/
```

```
Procedure created.
```

FUNCTIONS (3 questions)

Q4.Count the number of customers using a function

SQL Worksheet | Clear | Find | Actions | Save | Run

```
create or replace function totalcustomers
return number is
    total number(2):=0;
BEGIN
select count(*) into total from customers;
dbms_output.put_line('the total number of customers is '||total);
return total;
end;
/

declare
c number(2);
begin
c:=totalcustomers();
end;
/
```

```
Function created.
```

SQL Worksheet

Clear Find Actions Save Run

```
1  create or replace function totalcustomers
2  return number is
3      total number(2):=0;
4  BEGIN
5  select count(*) into total from customers;
6  dbms_output.put_line('the total number of customers is '||total);
7  return total;
8  end;
9  /
10
11 declare
```

```
Function created.


Statement processed.
the total number of customers is 4
```

Q5.FIND THE BRANCH ID OF A GIVEN USERID AS INPUT USING A FUNCTION.(USE SUBQUERY TO SELECT)

SQL Worksheet

Clear Find Actions Save Run

```
1  CREATE OR REPLACE FUNCTION BRANCHNAME(X IN customers.userid%TYPE)
2  RETURN VARCHAR2 IS BR_NAME BRANCH.BRANCH_NAME%TYPE;
3  BEGIN
4  SELECT BRANCH_NAME INTO BR_NAME FROM BRANCH WHERE BRANCH_ID IN(SELECT BRANCH_ID FROM CUSTOMERS WHERE USERID=X);
5  DBMS_OUTPUT.PUT_LINE('THE BRANCH NAME IS '||BR_NAME);
6  RETURN BR_NAME;
7  END;
8  /
9
10 DECLARE
11 USER_ID NUMBER;
12 VARIABLENAME VARCHAR2(50);
13 BEGIN
14 USER_ID:=1000000049;
15 VARIABLENAME:=BRANCHNAME(USER_ID);
16 END;
```

```
Function created.
```

Q6.SHOW THE TOTALSPENDABLE AMOUNT FOR A PARTICULAR USERID WHO HAS A CURRENT ACCOUNT.

SQL Worksheet

Clear Find Actions Save Run

```
1  CREATE OR REPLACE FUNCTION TOTSPENDABLE(X IN customers.userid%TYPE)
2  RETURN NUMBER IS TOT_SPEN current_transactions.total_spendable%TYPE;
3  BEGIN
4  SELECT TOTAL_SPENDABLE INTO TOT_SPEN FROM current_transactions WHERE account_number IN(SELECT c_account_number FROM
5  current_account WHERE USER_ID=X);
6  DBMS_OUTPUT.PUT_LINE('THE total spendable amount for given user is '||tot_spen);
7  return tot_spen;
8  END;/
9  DECLARE
10 USER_ID NUMBER;
11 c number;
12 BEGIN
13 USER_ID:=1000000049;
14 c:=totspendable(USER_ID);
15 END;/
```

```
Function created.


Statement processed.
THE total spendable amount for given user is 20000
```

CURSORS (1-implicit;1-explicit total= 2 questions)

Implicit

Q7:USE IMPLICIT CURSORS TO CHANGE ALL PASSWORDS FOR CUSTOMERS TO ABCD AND ALSO DISPLAY THE NUMBER OF ROWS AFFECTED.

SQL Worksheet

Clear Find Actions Save Run

```
1  DECLARE
2     total_rows number(2);
3  BEGIN
4     UPDATE customers SET password = 'abcd';
5     IF sql%notfound THEN
6        dbms_output.put_line('no customers selected');
7     ELSIF sql%found THEN
8        total_rows := sql%rowcount;
9        dbms_output.put_line( total_rows || ' customers selected ');
10    END IF;
11 END;
12 /
13
```

```
Statement processed.
4 customers selected
```

Explicit

Q8.DISPLAY CUSTOMER MAIL,NAME AND USERID USING CURSORS

SQL Worksheet

Clear Find Actions Save Run

```
DECLARE
   c_id customers.userid%type;
   c_name customers.customer_name%type;
   c_mail customers.email%type;
   CURSOR c_customers is
      SELECT userid, customer_name, email FROM customers;
BEGIN
   OPEN c_customers;
   LOOP
   FETCH c_customers into c_id, c_name, c_mail;
      EXIT WHEN c_customers%notfound;
      dbms_output.put_line(c_id || ' ' || c_name || ' ' || c_mail);
   END LOOP;
   CLOSE c_customers;
END; /
```

```
Statement processed.
1000000048 ARSHDEEP SINGH BHATIA arshdeepdgreat@gmail.com
1000000049 IRENE JOHN irene.john2019@vitstudent.ac.in
1000000050 RIYA riya@vitstudent.ac.in
1000000051 KARTIK kartik@email.com
```

<u>TRIGGERS (2 questions)</u>

Q9.CREATE A TRIGGER THAT DISPLAYS THE OLD AND NEW PASSWORD WHENEVER A PASSWORD IN CUSTOMER TABLE IS CHANGED.

SQL Worksheet

Clear Find Actions Save Run

```
create or replace trigger funds
before update on savings_accounts
for each row
declare
fund_diff number;
begin
fund_diff:=:new.balance-:old.balance;
dbms_output.put_line('old balance= '||:old.balance);
dbms_output.put_line('new balance= '||:new.balance);
dbms_output.put_line('difference in fund is '||fund_diff);
end;
/
update savings_accounts
set savings_accounts.balance=190002 where s_account_number=1000000001;
```

```
1 row(s) updated.
old balance= 5000
new balance= 190002
difference in fund is 185002
```

Q10.CREATE A TRIGGER THAT DISPLAYS A DIFFERENCE IN THE BALANCE IF A SAVINGS ACCOUNT IS UPDATED

SQL Worksheet

Clear Find Actions Save Run

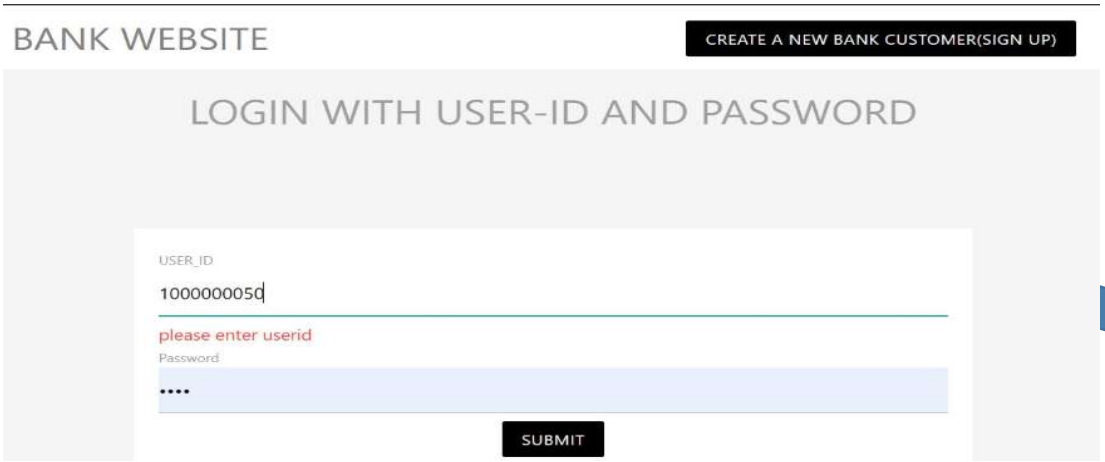
```
2  before update on customers
3  for each row
4  begin
5  dbms_output.put_line('old password= '||:old.password);
6  dbms_output.put_line('new password= '||:new.password);
7  end;
8  /
9  update customers
10 set password='ire0205' where customer_name='IRENE JOHN';
11
12
```

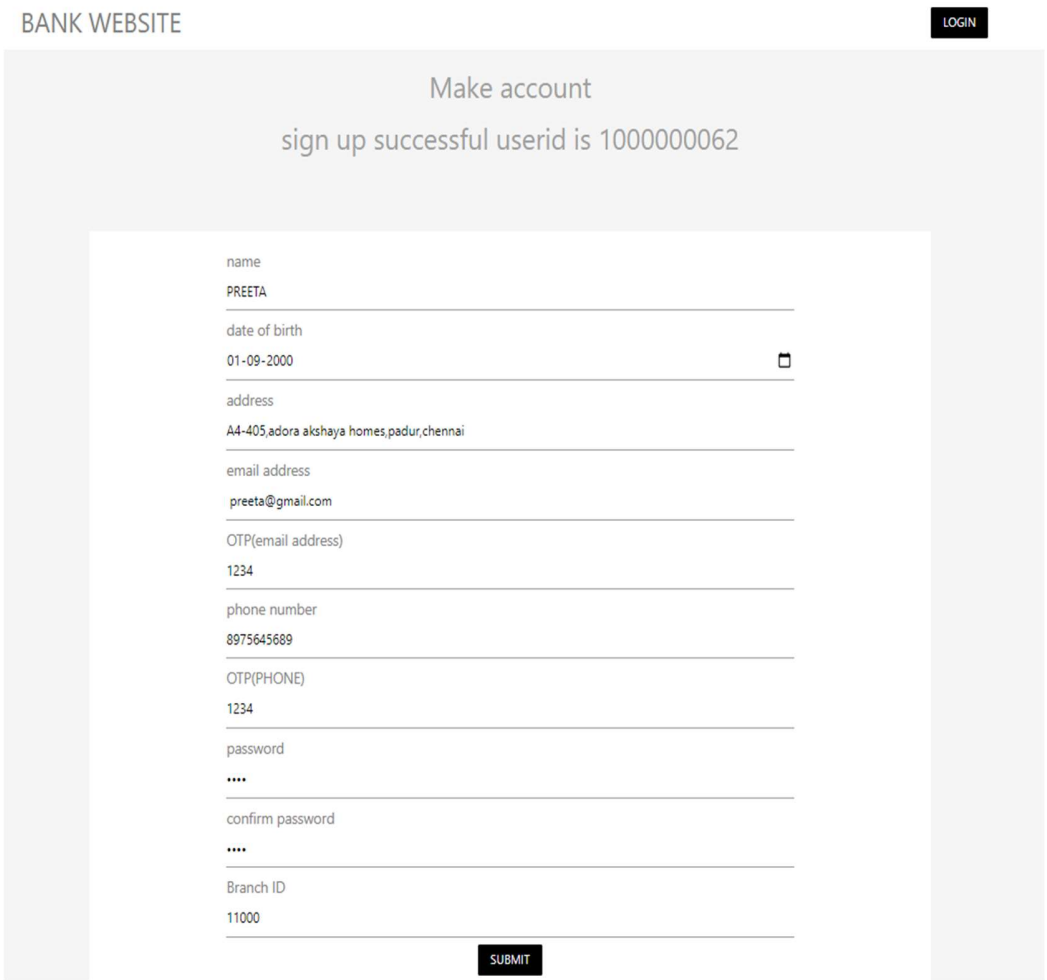
```
Trigger created.


1 row(s) updated.
old password= 0000
new password= ire0205
```

6. SCREENSHOTS (FRONT END-WITH EXPLANATION)

6.1 Login screen

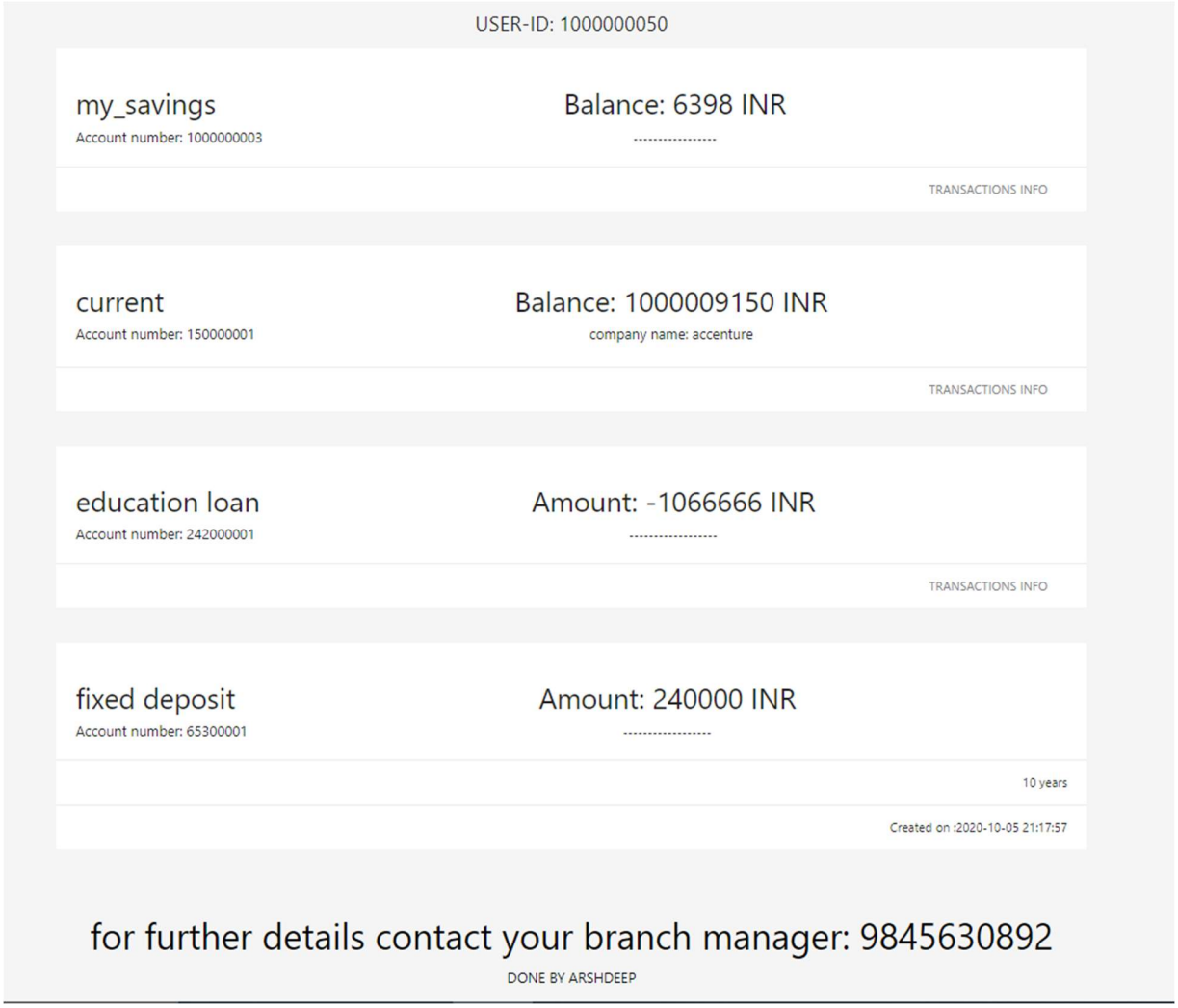




We register as a customer Preeta.

On successful sign in

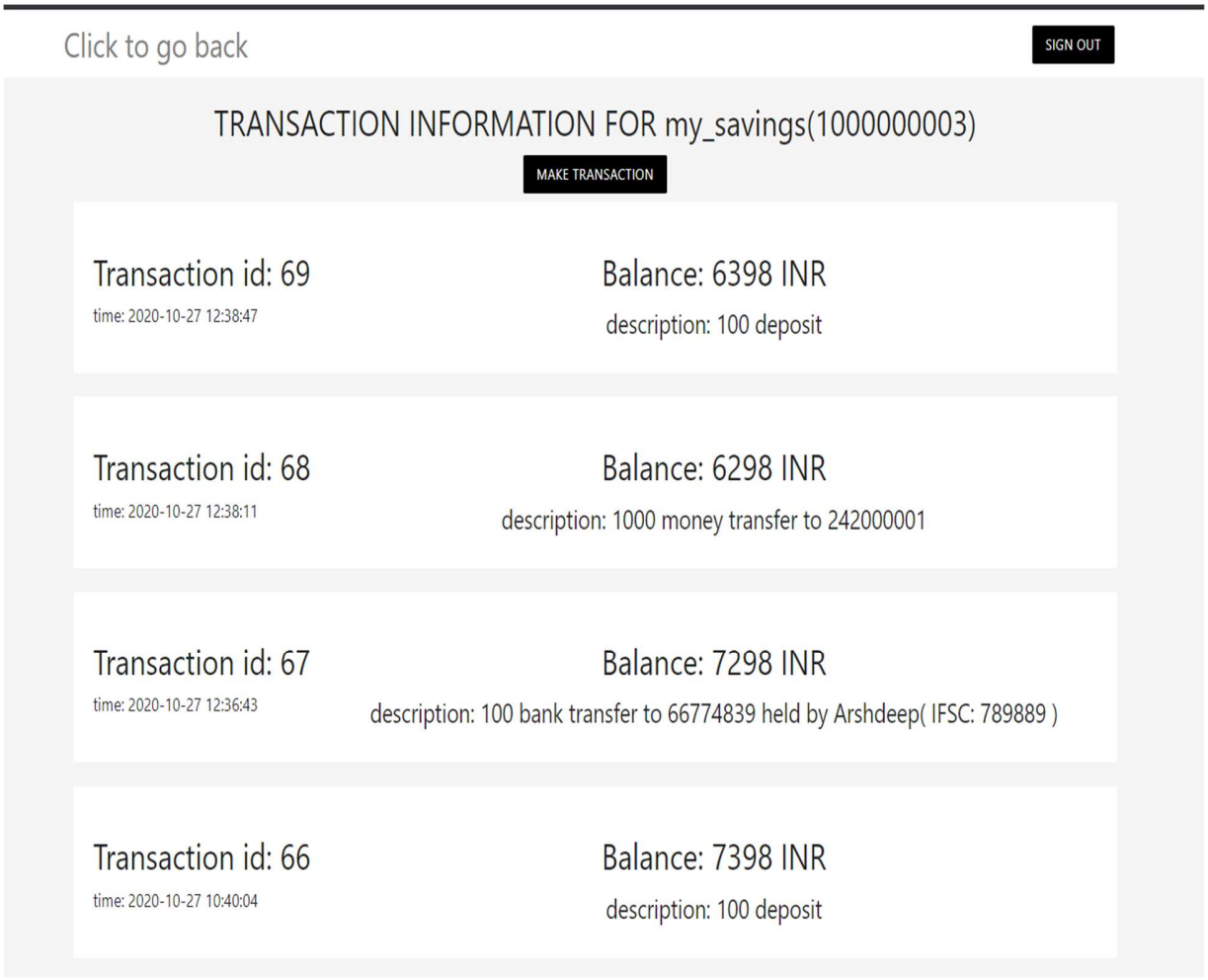
Accounts view



All transactions read for “my_savings” account

Displayed values

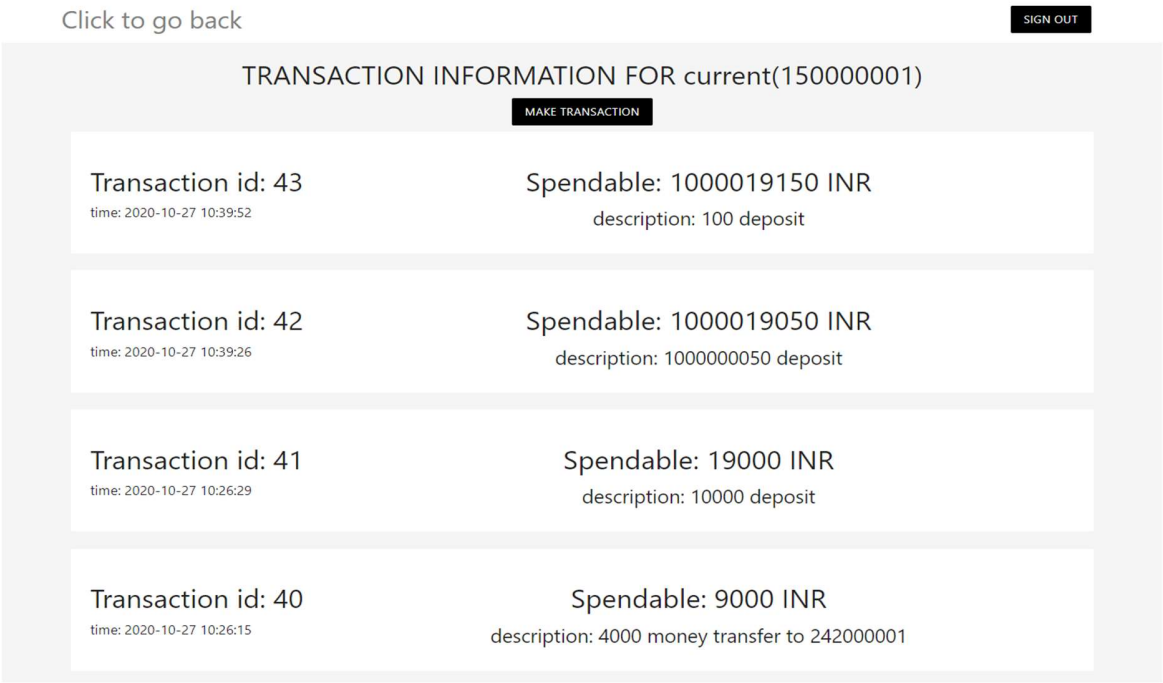
1. Transaction id
2. Balance after transaction
3. Transaction timestamp
4. Transaction description



All transactions read for “current” account

Displayed values

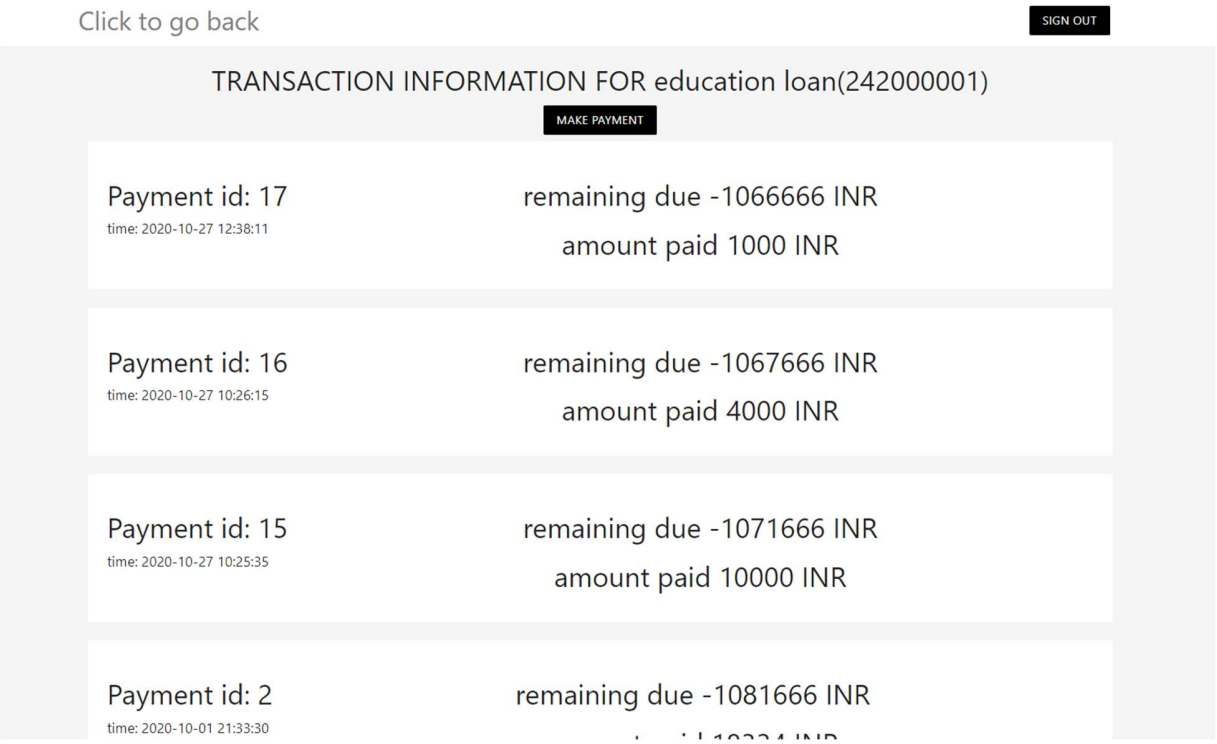
1. Transaction id
2. Balance after transaction
3. Transaction timestamp
4. Transaction description



All payments on loan account

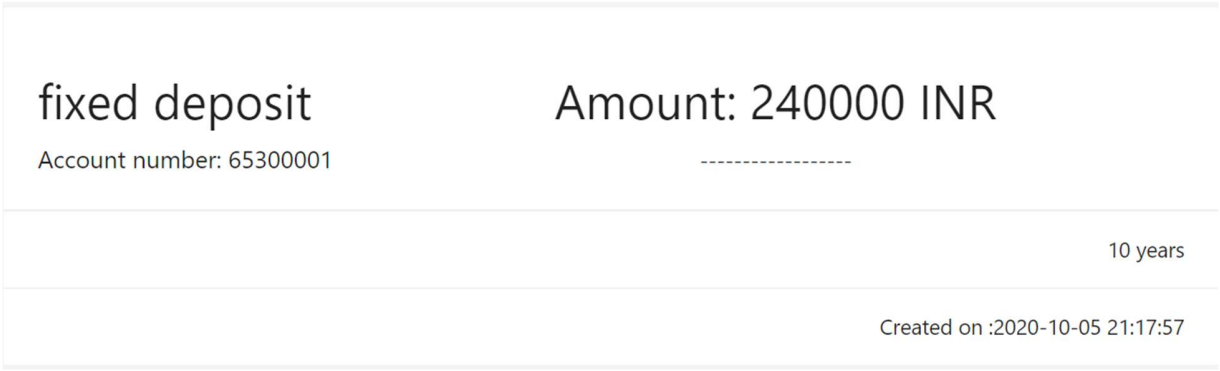
Displayed values

1. Payment id
2. Remaining Due after transaction
3. Transaction timestamp
4. Amount paid



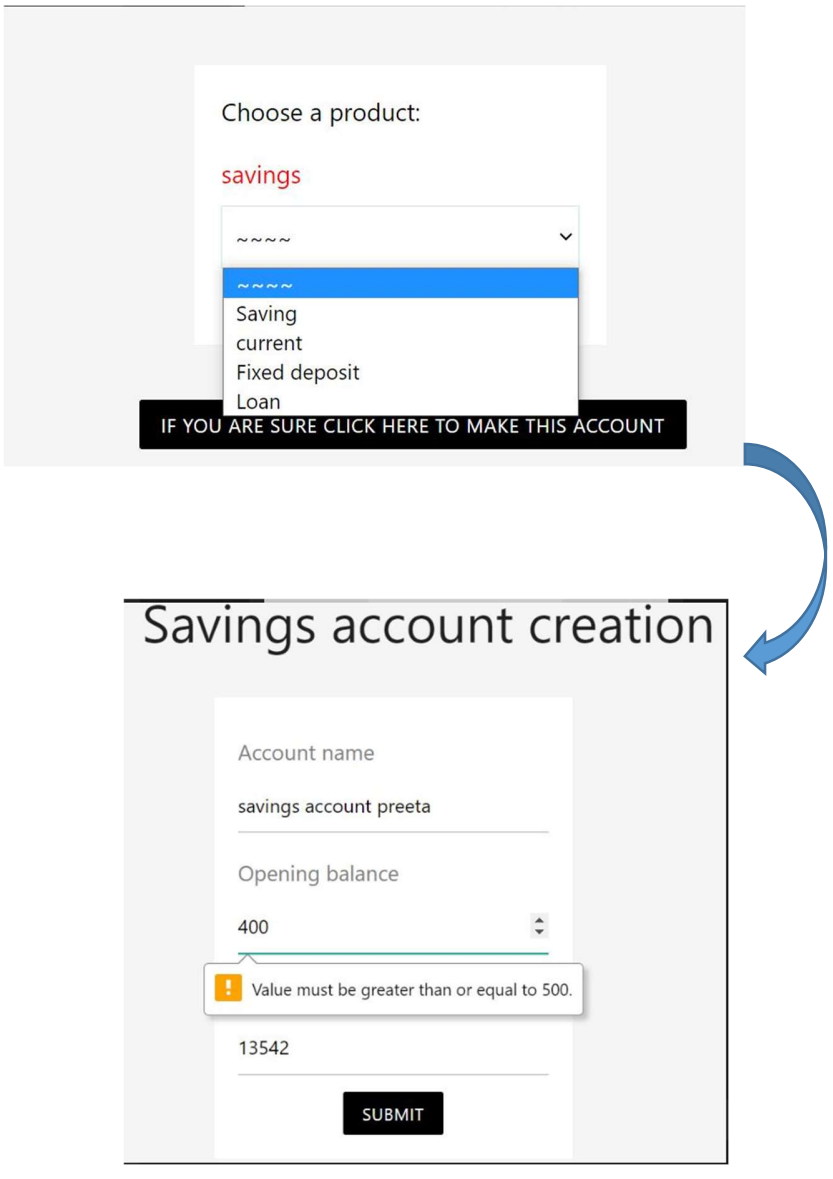
Fixed Deposits

1. amount on maturity
2. account number
3. duration of FD
4. creation timestamp

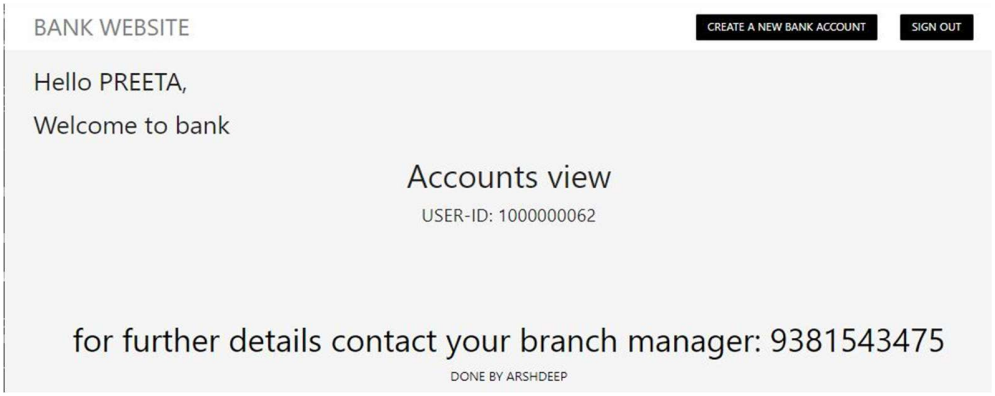


6.2 Savings Account creation

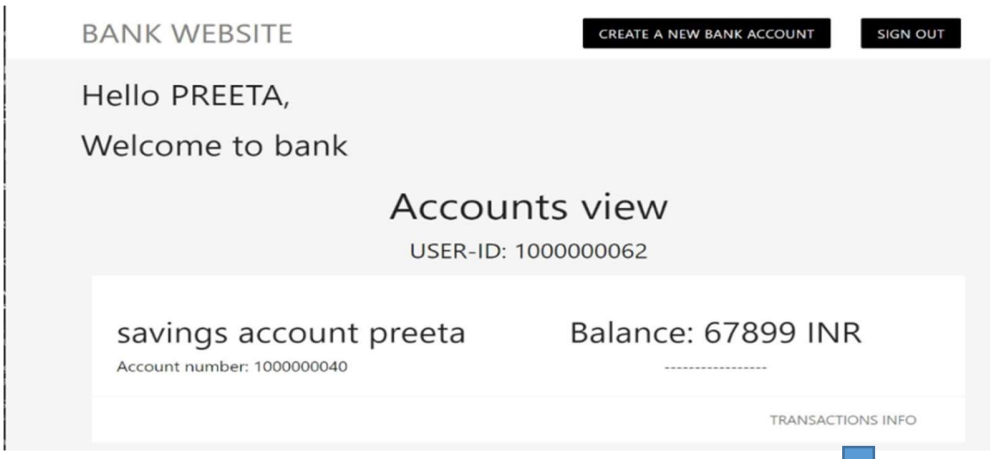
We create a Savings Account.



Before Savings Account Is Created

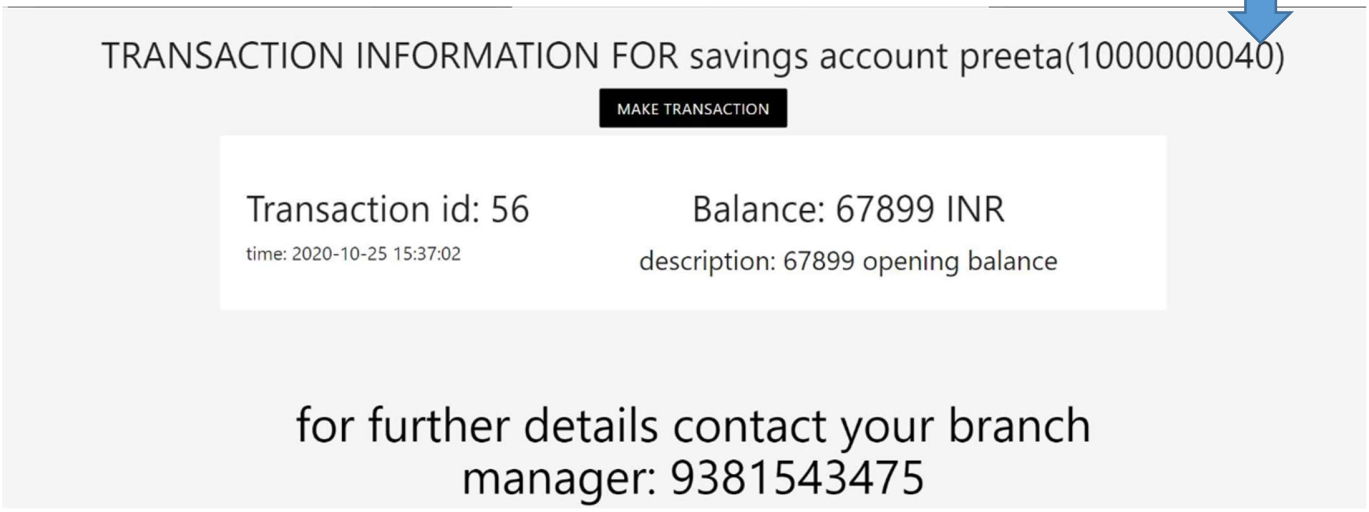


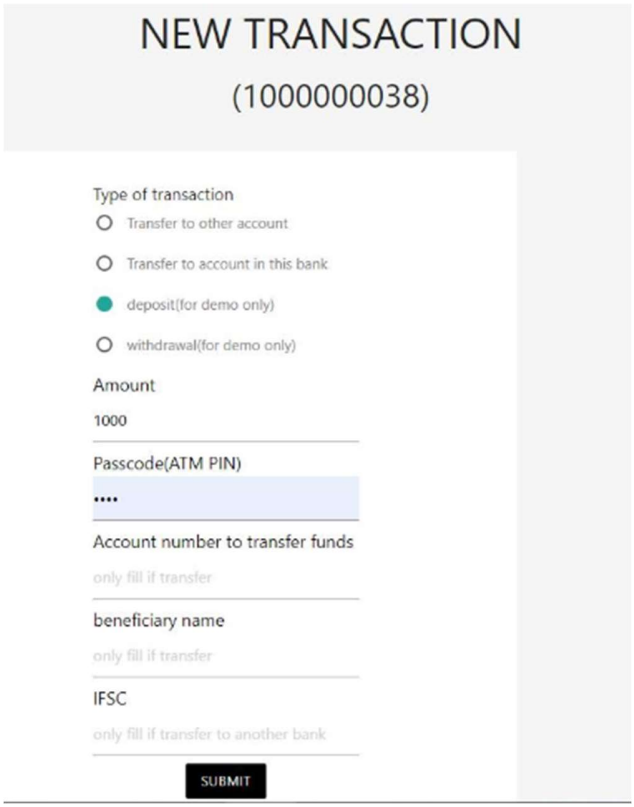
After Savings Account Is Created



6.3 Transactions

"Transaction Info" Opens To



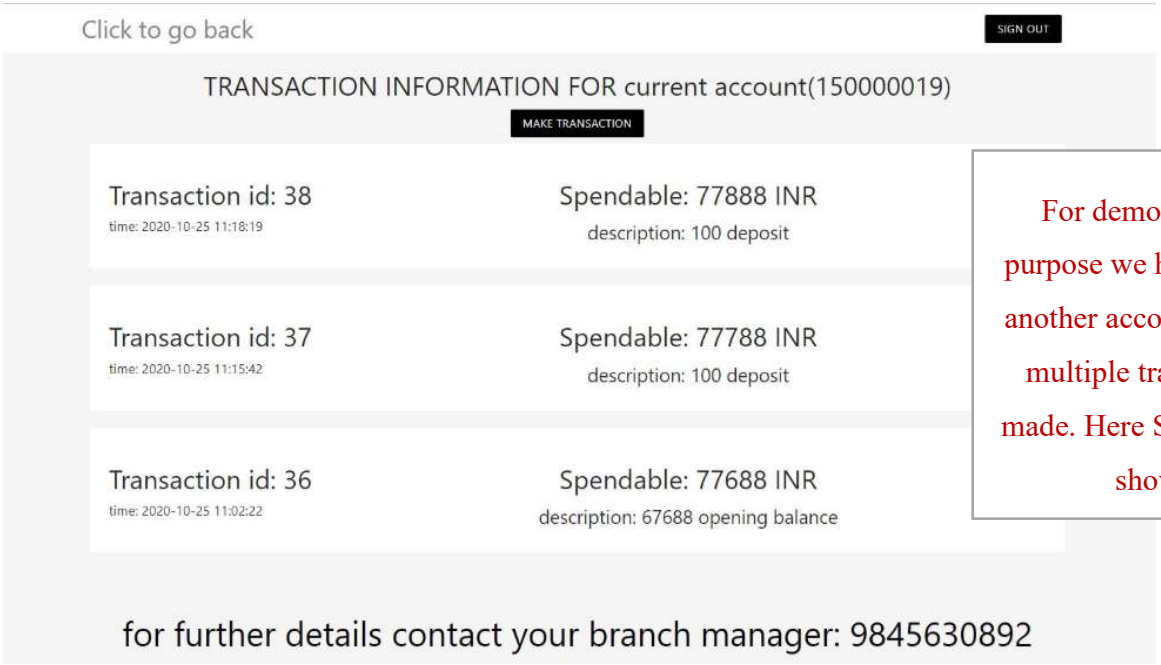


Make Transaction (Refer previous screen shot) opens to…

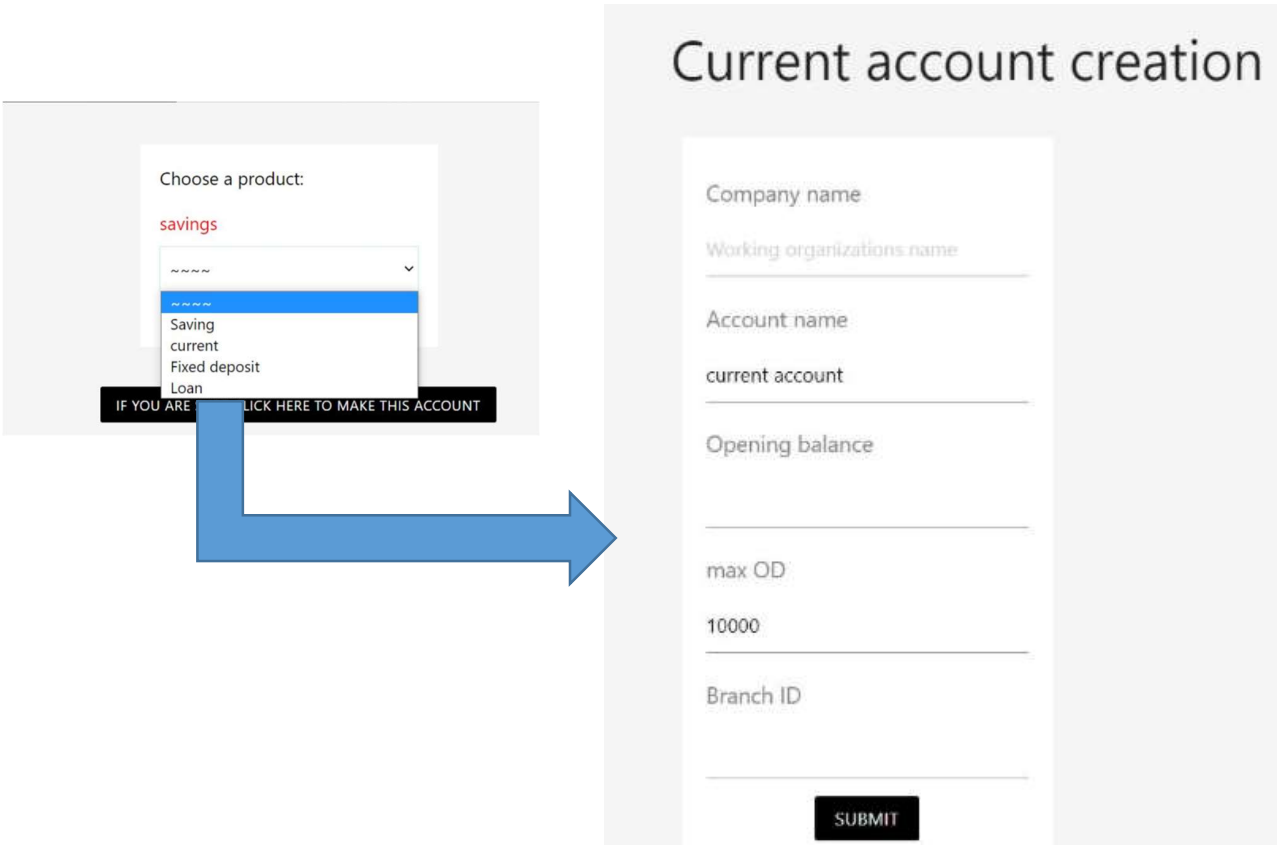
Here there are 4 different types:

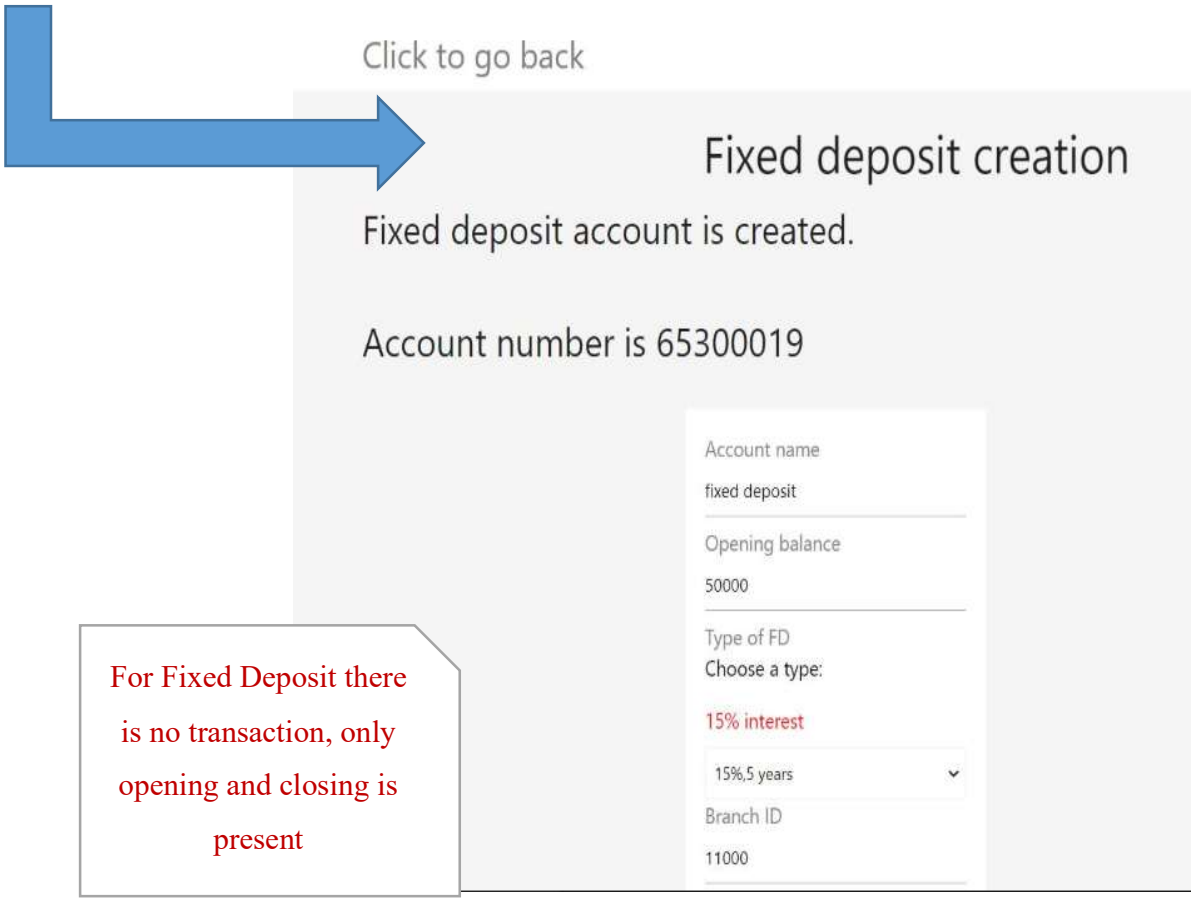
Deposit and Withdrawal works only when the user manually performs it in the bank, Here it is shown for demonstration purpose

Transaction updated in database and frontend

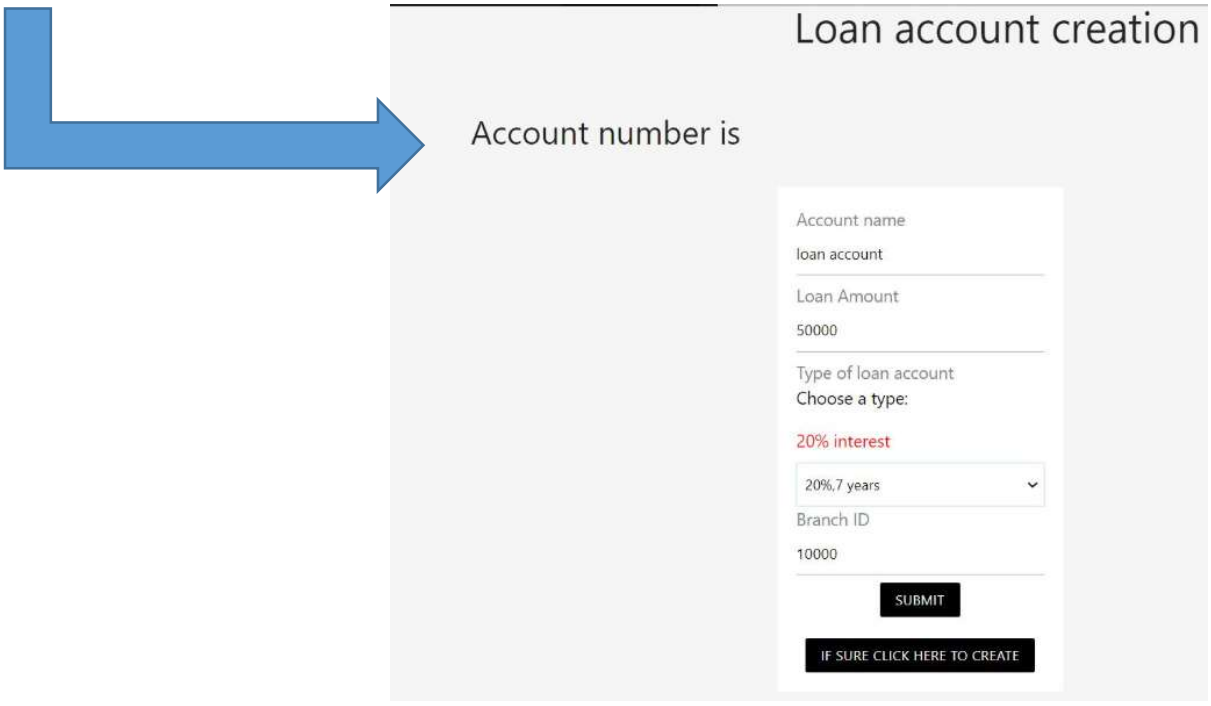


For demonstration purpose we have chosen another account to show multiple transactions made. Here Spendable is shown

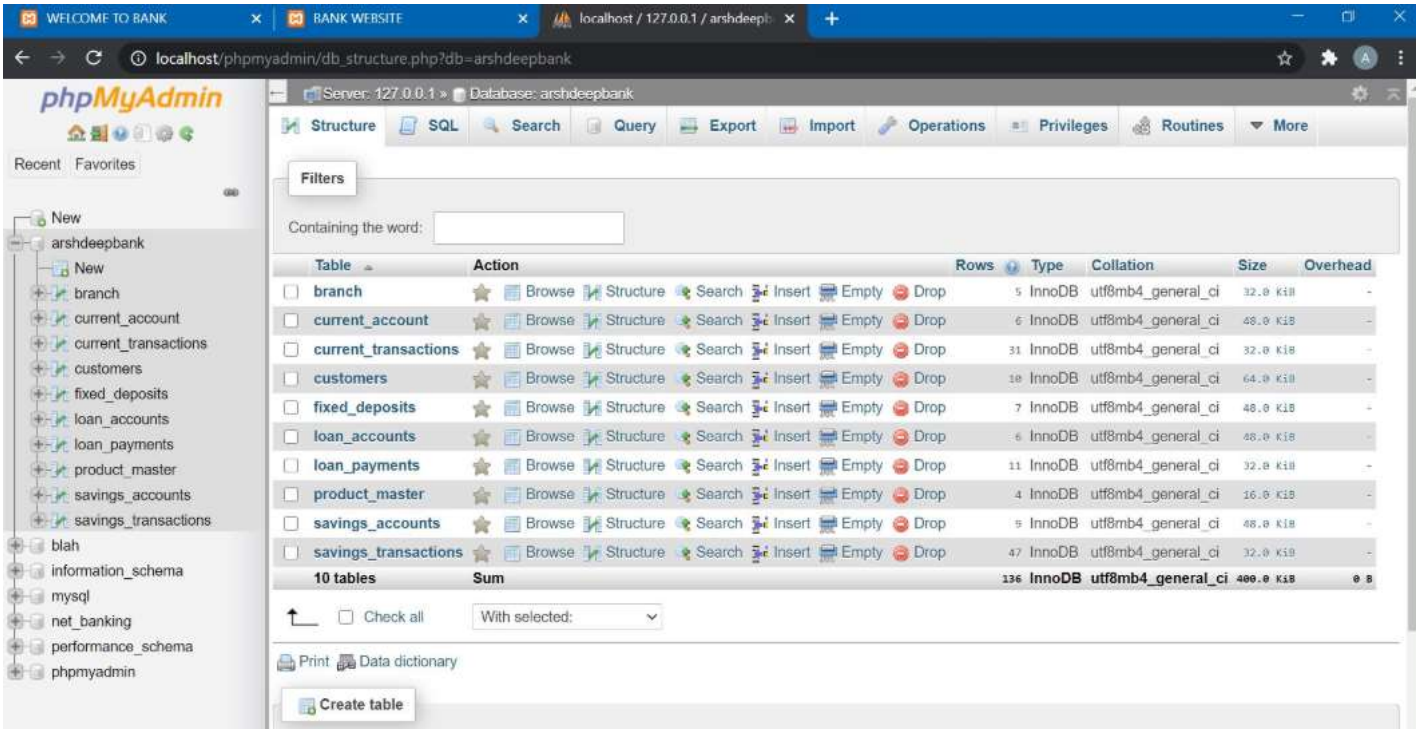




For Fixed Deposit there is no transaction, only opening and closing is present


Loan account creation
Account number is
Account name
loan account
Loan Amount
50000
Type of loan account
Choose a type:
20% interest
20%,7 years
Branch ID
10000
SUBMIT
IF SURE CLICK HERE TO CREATE

Back-end: database view



1. **Branch table**

Structure

#	Name	Type	Collation	Attributes	Null	Default	Comments	Extra	Action
1	branch_id	int(5)			No	None		AUTO_INCREMENT	Change Drop More
2	branch_address	text	utf8mb4_general_ci		No	None			Change Drop More
3	branch_name	varchar(30)	utf8mb4_general_ci		No	None			Change Drop More
4	branch_mgr_contact	bigint(10)			No	None			Change Drop More

Snapshot of data

branch_id	branch_address	branch_name	branch_mgr_contact
10000	S-110/111, RRR building, L&T Rd, Burma Colony, Thi...	Perungudi branch	9845630892
11000	A-2, First Floor, Ring Rd, Block C, South Extensio...	South delhi branch	9381543475
12000	3/1, 4th Floor, RN Mukherjee Rd, Dal Housie, Lal B...	Lal bazar branch	8757391603
13452	588, 2nd Main Rd, 2nd Phase, Hosakerehalli Layout,...	Girinagar branch	6875484849
13453	No 25, 1st East Main Road Gandhi Nagar, Katpadi, V...	Vellore branch	7836657390

2. **Customers table structure**

#	Name	Type	Collation	Attributes	Null	Default	Comments	Extra
1	**userid**	int(10)			No	*None*		AUTO_INCREMENT
2	**password**	varchar(25)	utf8mb4_general_ci		No	*None*		
3	**customer_name**	varchar(30)	utf8mb4_general_ci		No	*None*		
4	**email**	varchar(50)	utf8mb4_general_ci		No	*None*		
5	**phone**	varchar(10)	utf8mb4_general_ci		No	*None*		
6	**address**	varchar(100)	utf8mb4_general_ci		No	*None*		
7	**date_of_birth**	date			No	*None*		
8	**created_on**	timestamp			No	current_timestamp()		ON UPDATE CURRENT_TIMESTAMP()
9	**branch_id**	int(10)			No	0		

Foreign key constraints

		Database	Table	Column
branchfk	branch_id	arshdeepbank	branch	branch_id
	+ Add column			
ON DELETE	RESTRICT			
ON UPDATE	RESTRICT			

Snapshot of data

userid	password	customer_name	email	phone	address
1000000048	Arshdeep123	ARSHDEEP SINGH BHATIA	arshdeepdgreat@gmail.com	8754541603	A4-405,adora akshaya homes,padur,chennai
1000000049	0000	IRENE JOHN	irene.john2019@vitstudent.ac.in	9840849927	HOUSE-05,gandhi nagar NAGAR,vellore,640202
1000000050	0000	RIYA	riya@vitstudent.ac.in	8974652672	house 5,palm homes,Gandhi Nagar, Adyar, Chennai, T...
1000000051	0000	KARTIK	kartik@gmail.com	8926647489	house 205,Mandakini Apartment,Pocket 2, Sector 2 D...
1000000053	0000	JOHN	john@vit.ac.in	7399366492	A4-405,adora akshaya homes,padur,chennai
1000000054	0000	TEJINDER KAUR BHATIA	gbtk@yahoo.com	9840037871	A4-405,adora akshaya homes,padur,chennai
1000000055	0000	SWASTIK DAS	swastik.d@yahoo.com	9840037856	HOUSE 10,Palm homes,Adyar,chennai,600408

3. **Product master**

Name	Type	Collation	Attributes	Null	Default	Comments	Extra
product_id	int(4)			No	*None*		AUTO_INCREMENT
product_name	varchar(30)	utf8mb4_general_ci		No	*None*		
description	text	utf8mb4_general_ci		No	*None*		

Data snapshot

product_id	product_name	description
100	fixed deposit	Fixed deposits will be offered with a given rate o...
101	savings account	savings account provides an account for the holder...
120	Loan account	home loan,car loan,education loan can be provision...
151	current account	current account can be provisioned for employees o...

4. **Current accounts**

Name	Type	Collation	Attributes	Null	Default	Comments	Extra
c_account_number	int(10)			No	*None*		AUTO_INCREMENT
user_id	int(10)			No	*None*		
created_on	timestamp			No	current_timestamp()		
branch_id	int(11)			No	*None*		
account_name	varchar(50)	utf8mb4_general_ci		No	*None*		
balance	int(11)			No	*None*		
company_name	varchar(30)	utf8mb4_general_ci		No	*None*		
max_od	int(11)			No	*None*		

Foreign key Constraints

Constraint properties	Column	Foreign key constraint (INNODB)		
		Database	Table	Column
c_userid	user_id	arshdeepbank	customers	userid
	+ Add column			
ON DELETE RESTRICT				
ON UPDATE RESTRICT				
ca_branch	branch_id	arshdeepbank	branch	branch_id
	+ Add column			
ON DELETE RESTRICT				
ON UPDATE RESTRICT				

Data snapshot

c_account_number	user_id	created_on	branch_id	account_name	balance	company_name	max_od
150000000	1000000049	2020-10-05 21:02:48	13453	current_acc	10000	l and k logistics	10000
150000001	1000000050	2020-10-05 21:04:53	10000	current	1000009150	accenture	10000
150000002	1000000048	2020-10-05 21:05:58	10000	current account	32000	hcl ltd	10000
150000011	1000000053	2020-10-13 11:25:21	11000	current account john	10100	accenture	10000
150000014	1000000060	2020-10-24 23:26:39	13452	current account	9690	FIITJEE	5000
150000019	1000000055	2020-10-25 11:02:22	13453	current account	67888	tata consultancy services	10000

5. Current transactions

#	Name	Type	Collation	Attributes	Null	Default	Comments	Extra
1	trans_id	int(10)			No	*None*		AUTO_INCREMENT
2	account_number	int(11)			No	*None*		
3	timestamp	timestamp			No	current_timestamp()		
4	amount	int(11)			No	*None*		
5	transaction_description	varchar(100)	utf8mb4_general_ci		No	*None*		
6	total_spendable	int(11)			No	*None*		

Constraints

Constraint properties	Column	Foreign key constraint (INNODB)		
		Database	Table	Column
curfk	account_numbe	arshdeepbank	current_account	c_account_numl
ON DELETE CASCADE	+ Add column			
ON UPDATE RESTRICT				

Snapshot of data

trans_id	account_number	timestamp	amount	transaction_description	total_spendable
1	150000000	2020-10-05 21:08:16	10000	10000 opening balance	20000
2	150000001	2020-10-05 21:08:53	10000	10000 opening balance	20000
3	150000002	2020-10-05 21:09:48	20000	20000 opening balance	30000
4	150000001	2020-10-05 21:11:19	-7000	7000 withdrawal	13000
5	150000002	2020-10-05 21:12:15	12000	12000 deposit	42000
8	150000011	2020-10-13 11:25:21	10000	10000 opening balance	20000
11	150000014	2020-10-24 23:26:39	10000	10000 opening balance	15000
13	150000014	2020-10-24 23:54:58	1000	1000 deposit	16000
14	150000014	2020-10-24 23:56:27	100	100 deposit	16100
15	150000014	2020-10-24 23:56:47	-300	300 withdrawal	15800
16	150000014	2020-10-24 23:58:37	-100	100 bank transfer to 887248992 held by Gurbir Sing...	15700

6. **Fixed Deposits**

Structure

#	Name	Type	Collation	Attributes	Null	Default	Comments	Extra
1	**fd_account_number**	int(10)			No	*None*		AUTO_INCREMENT
2	**user_id**	int(10)			No	*None*		
3	**account_name**	varchar(30)	utf8mb4_general_ci		No	*None*		
4	**bond_duration**	int(2)			No	*None*		
5	**rate_of_intrest**	int(1)			No	*None*		
6	**created_on**	timestamp			No	current_timestamp()		
7	**final_amount**	int(11)			No	*None*		
8	**branch_id**	int(5)			No	*None*		

Foreign keys

Constraint properties	Column	Foreign key constraint (INNODB)		
		Database	Table	Column
fd_branch	branch_id	arshdeepbank	branch	branch_id
ON DELETE RESTRICT	+ Add column			
ON UPDATE RESTRICT				
fd_userid	user_id	arshdeepbank	customers	userid
ON DELETE RESTRICT	+ Add column			
ON UPDATE RESTRICT				

Snapshot of data

fd_account_number	user_id	account_name	bond_duration	rate_of_intrest	created_on	final_amount	branch_id
65300000	1000000051	fixed deposit(7yr)	7	15	2020-10-05 21:16:46	115000	11000
65300001	1000000050	fixed deposit	10	20	2020-10-05 21:17:57	240000	10000
65300012	1000000053	fixed deposit	7	17	2020-10-15 10:28:18	81900	10000
65300015	1000000060	fixed deposit	5	15	2020-10-24 23:25:56	57500	10000
65300018	1000000055	fixed deposit	5	15	2020-10-25 11:08:17	57500	13453

7. Loan accounts

Structure

#	Name	Type	Collation	Attributes	Null	Default	Comments	Extra
1	loan_account_number	int(10)			No	*None*		AUTO_INCREMENT
2	created_on	timestamp			No	current_timestamp()		
3	user_id	int(10)			No	*None*		
4	branch_id	int(11)			No	*None*		
5	account_name	varchar(50)	utf8mb4_general_ci		No	*None*		
6	amount	int(11)			No	*None*		
7	rate_of _intrest	int(2)			No	*None*		
8	duration_of_loan	int(2)			No	*None*		

Foreign key

Constraint properties	Column	Foreign key constraint (INNODB)		
		Database	Table	Column
loan_branch	branch_id	arshdeepbank	branch	branch_id
	+ Add column			
ON DELETE RESTRICT				
ON UPDATE RESTRICT				
loan_userid	user_id	arshdeepbank	customers	userid
	+ Add column			
ON DELETE RESTRICT				
ON UPDATE RESTRICT				

Snapshot of data

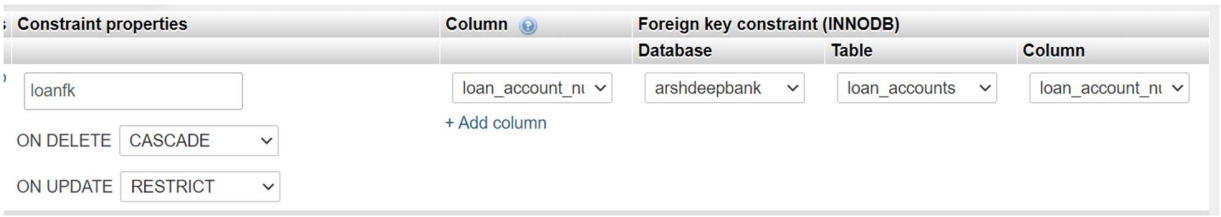
loan_account_number	created_on	user_id	branch_id	account_name	amount	rate_of _intrest	duration_of_loan
242000000	2020-08-05 21:24:37	1000000051	11000	home loan	-1180000	20	7
242000001	2020-08-05 21:24:37	1000000050	11000	education loan	-1066666	15	5
242000004	2020-10-15 11:36:32	1000000053	10000	loan account	-57400	15	5
242000006	2020-10-24 23:23:55	1000000060	10000	loan account	-48800	20	7
242000007	2020-10-25 11:11:45	1000000055	13453	loan account	-53240	15	5
242000008	2020-10-25 15:51:54	1000000055	10000	loan account	-60000	20	7

8. **Loan Payments**

Structure

#	Name	Type	Collation	Attributes	Null	Default	Comments	Extra
1	**pay_no**	int(10)			No	*None*		AUTO_INCREMENT
2	**loan_account_number**	int(10)			No	*None*		
3	**amount_paid**	int(11)			No	*None*		
4	**timestamp_**	timestamp			No	current_timestamp()		
5	**amount**	int(11)			No	*None*		

Foreign key



Snapshot of data

pay_no	loan_account_number	amount_paid	timestamp_	amount
1	242000000	10000	2020-09-01 21:33:30	-1190000
2	242000001	18334	2020-10-01 21:33:30	-1081666
3	242000000	10000	2020-10-01 21:33:30	-1180000
5	242000004	100	2020-10-24 12:52:11	-57400
6	242000006	10000	2020-10-24 23:24:42	-50000
7	242000006	100	2020-10-25 00:01:54	-49900
8	242000006	1000	2020-10-25 00:25:03	-48900
9	242000006	100	2020-10-25 00:43:16	-48800
10	242000007	60	2020-10-25 15:08:38	-57440
11	242000007	100	2020-10-25 15:10:40	-57340
12	242000007	3000	2020-10-25 15:45:55	-54340
13	242000007	1000	2020-10-26 18:26:20	-53340

9. **Savings Accounts**

Structure

#	Name	Type	Collation	Attributes	Null	Default	Comments	Extra
1	**userid**	int(10)			No	*None*		
2	**s_account_number**	int(10)			No	*None*		AUTO_INCREMENT
3	**balance**	int(10)			No	*None*		
4	**created_on**	timestamp			No	current_timestamp()		
5	**branch_id**	int(5)			No	*None*		
6	**account_name**	varchar(30)	utf8mb4_general_ci		No	savings_account		

Foreign keys

Constraint properties	Column	Foreign key constraint (INNODB)		
		Database	Table	Column
s_branch	branch_id	arshdeepbank	branch	branch_id
ON DELETE RESTRICT	+ Add column			
ON UPDATE RESTRICT				
s_userid	userid	arshdeepbank	customers	userid
ON DELETE RESTRICT	+ Add column			
ON UPDATE RESTRICT				

Snapshot of data

userid	s_account_number	balance	created_on	branch_id	account_name
1000000048	1000000000	10000	2020-10-01 17:39:09	10000	savings account
1000000048	1000000001	5000	2020-10-05 18:46:08	10000	savings account upi
1000000049	1000000002	50000	2020-10-05 18:46:08	13453	savings debit_card
1000000050	1000000003	6398	2020-10-05 19:17:26	10000	my_savings
1000000051	1000000004	15000	2020-10-05 19:18:35	11000	savings_account
1000000053	1000000026	7300	2020-10-13 11:24:51	10000	savings account john
1000000060	1000000029	43210	2020-10-24 23:23:05	10000	savings account
1000000055	1000000038	67789	2020-10-25 10:56:10	13452	savings account
1000000062	1000000040	67899	2020-10-25 15:37:02	13452	savings account preeta

10. **Savings Transactions**

Structure

#	Name	Type	Collation	Attributes	Null	Default	Comments	Extra
1	**trans_id**	int(10)			No	*None*		AUTO_INCREMENT
2	**account_number**	int(10)			No	*None*		
3	**timestamp_**	timestamp			Yes	current_timestamp()		
4	**amount_**	int(11)			No	*None*		
5	**description**	varchar(100)	utf8mb4_general_ci		No	*None*		
6	**balance**	int(11)			No	*None*		

Foreign keys

Constraint properties	Column	Foreign key constraint (INNODB)		
		Database	Table	Column
savfk	account_numbe	arshdeepbank	savings_accoun	s_account_numl
ON DELETE CASCADE	+ Add column			
ON UPDATE RESTRICT				

Snapshot of data

trans_id	account_number	timestamp_	amount_	description	balance
1	1000000000	2020-10-02 19:23:23	100	100 deposit	10100
2	1000000000	2020-10-03 19:23:23	-150	150 withdrawal	9950
3	1000000000	2020-10-05 19:23:23	-320	320 withdrawal	9630
4	1000000000	2020-10-10 19:23:23	370	370 deposit	10000
5	1000000001	2020-10-05 19:28:59	10000	10000 opening balance	10000
6	1000000002	2020-10-05 19:30:35	30000	30000 opening balance	30000
7	1000000001	2020-10-05 19:31:31	-5000	5000 withdrawal	5000
8	1000000002	2020-10-05 19:33:35	20000	20000 deposit	50000
9	1000000003	2020-10-05 19:37:11	8000	8000 opening balance	8000
10	1000000004	2020-10-05 19:38:30	15000	15000 opening balance	15000
11	1000000003	2020-10-05 19:39:50	-302	302 withdrawal	7698
12	1000000000	2020-10-01 17:21:50	10000	10000 opening balance	10000

7. CONCLUSION AND FUTURE WORK

7.1 Conclusion

Thus, we successfully created a Banking Management System and created a website by making use of Html, CSS, PHP, MYSQL in XAMMP SERVER, SQL. We also normalized our database in order to maintain consistency in our database. We also created Registration and Login system using PHP and connected that to our database to check the user's activity in real time. We also added trigger to, MYSQL in XAMMP SERVER database which will be used to store an activity such as insertion, updating, and other functions. Online banking is an innovative tool that is fast becoming a necessity. It is a successful strategic weapon for banks to remain profitable in a volatile and competitive marketplace of today. If proper training should be given to customer by the bank employs to open an account will be beneficial secondly the website should be made friendlier from where the first time customers can directly make and access their accounts.

7.2 Future Work

In order to improve our website further we will add Google API services to make the sign in with Google option enable so that login system can become faster. Also, also add Mailing system to this project using Node Mailer module of NodeJS. We can also deal through internet by creating web pages and a banking website for internet dealing. To attract Account Holder's we can offer various offers during festivals months. We can also deal in various types of Banking Transactions .To have more and more customer satisfaction we will emphasize more and more on our dealings.

REFERENCES:

[1] C. J. Date, A. Kannan and S. Swamynathan, An Introduction to Database Systems, Pearson Education, Eighth Edition, 2009.

[2] Abraham Silberschatz, Henry F. Korth and S. Sudarshan, Database System Concepts, McGraw-Hill Education (Asia), Fifth Edition, 2006.

[3] Shio Kumar Singh, Database Systems Concepts, Designs and Application, Pearson Education, Second Edition, 2011

[4] Matthew MacDonald, "Creating a Website - The Missing Manual", 3rd ed, 2011, O'Reilly. (A good introductory book on HTML/CSS. A new version is expected in July 2015.)

[5] PHP documentation