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Department of Computer Science and Engineering
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SEMESTER – 5

DBMS PROJECT ASSIGNMENT 2

BANK MANAGEMENT SYSTEM

Mapping conceptual model to Relational Data Model

DBMS chosen: Relational DBMS

Our project which is based on Bank Management System comprises the Relational Database Management System and can be implemented using the PostgreSQL RDBMS.

An RDBMS is a type of database management system (DBMS) that stores data in a row-based table structure that connects related data elements. An RDBMS includes functions that maintain the security, accuracy, integrity, and consistency of the data.
PostgreSQL also known as Postgres, is a free and open-source relational database management system emphasizing extensibility and SQL compliance.

List of reasons to choose Relational DBMS:

1) Maintainability

• It provides easy usability.

• It allows database admins to maintain, control, update data into the database easily. With RDBMS, backing up data becomes easy.

• Automation tools of RDBMS automate these tasks.

2) Flexibility

• This feature of RDBMS saves a lot of time as updating data in one place is enough. For example, suppose you have data from students, and you have to update one student's detail. In that case, you just have to update that detail in the main table rather than updating it in every file;

• It automatically updates that information in every file of the database.

3) Data Structure

• As RDBMS stores data in a table format, it is easily understood by the users.

• Data are organized in a structured manner and matches entries by firing queries.

4) Privileges

• This feature of RDBMS allows database administrators to control activities over the database.

• Administrators can give specific access to a user rather than giving all Access.

• Administrators can also stop user access.

Implementation:

Postgresql:

- We have used postgreSQL database to implement the Relational Database as it is a highly stable database management system, backed by more than 20 years of community development which has contributed to its high levels of resilience, integrity and correctness.
- PostgreSQL is **an advanced, enterprise class open source relational database** that supports both SQL (relational) and JSON (non-relational) querying. ... PostgreSQL is used as the primary data store or data warehouse for many web, mobile, geospatial, and analytics applications. The latest major version is PostgreSQL 12.
- **PL/pgSQL** (Procedural Language/PostgreSQL) is a procedural programming language supported by the PostgreSQL ORDBMS. ... The language is able to be defined as trusted by the server. PL/pgSQL is one of the programming languages included in the standard PostgreSQL distribution, the others being PL/Tcl, PL/Perl and PL/Python.
- PostgreSQL is **an object-relational database management system** (ORDBMS) based on POSTGRES, Version 4.2, developed at the University of California at Berkeley Computer Science Department. POSTGRES pioneered many concepts that only became available in some commercial database systems much later.

Characteristics of Postgresql:

1. Open Source DBMS: Only PostgreSQL provides enterprise-class performance and functions among current Open Source DBMS with no end of development possibilities. Also, PostgreSQL users can directly participate in the community and post and share inconveniences and bugs.

2. Diverse Community: One of the characteristics of PostgreSQL is that there are a wide variety of communities. Regarding PostgreSQL as Open source DBMS, users themselves can develop modules and propose the module to the community. The development possibility is superiorly high with collecting opinions from its own global community organized with all different kinds of people. Collective Intelligence, as some might call it, facilitates transmission of indigenous knowledge greatly within the communities.

3. Function: SQL functions called ‘Store Procedure’ can be used for server environment. Also, we support languages similar to PL/SQL in Oralcle such as PL/pgSQL, PL/Python, PL/Perl, C/C++, and PL/R.

4. Flexible Full-text search: Full-text search is available when searching for strings with execution of vector operation and string search.

5. Diverse kinds of replication: PostgreSQL supports a variety of replication methods such as Streaming Replication, Slony-I, and cascading.

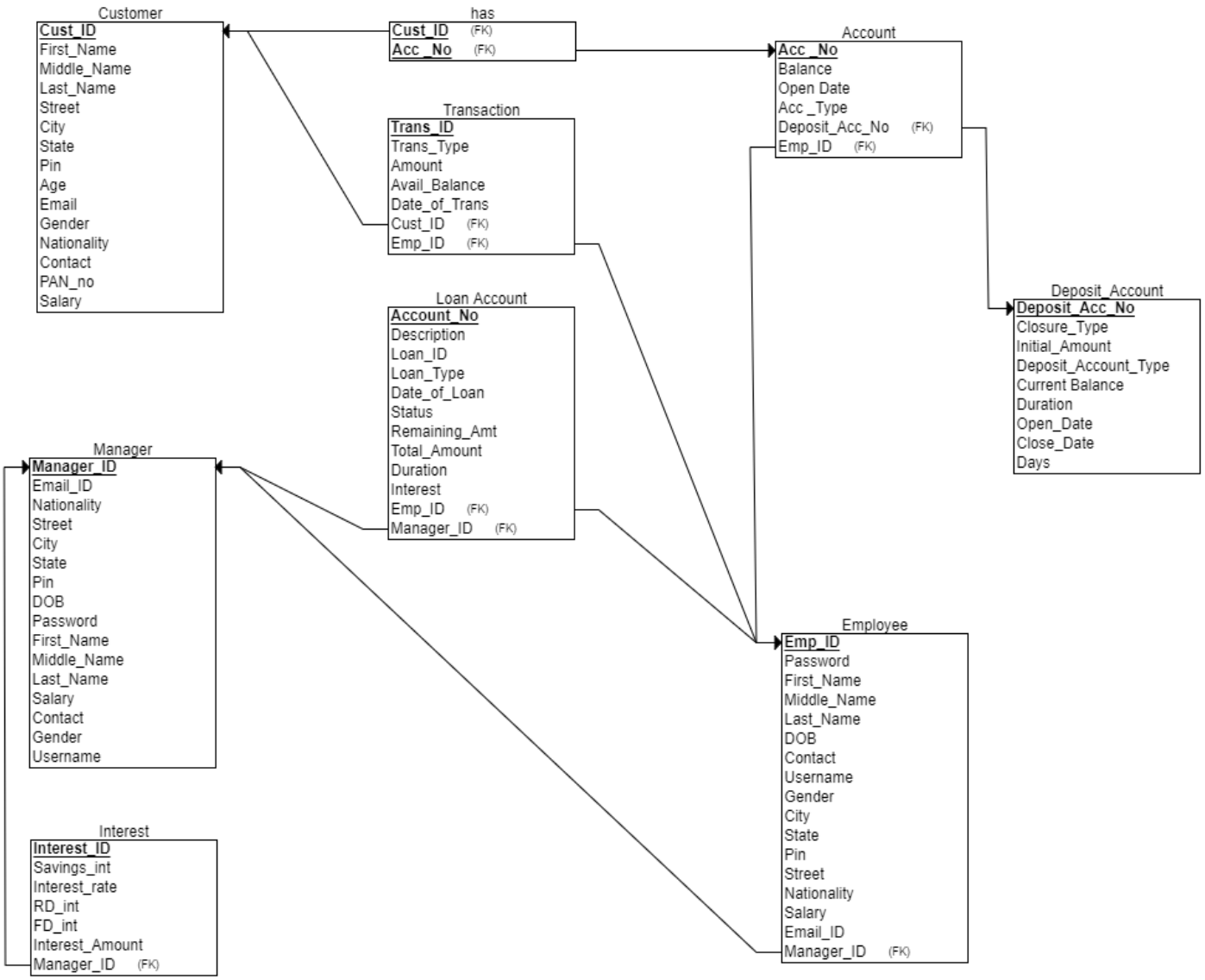
Installation of Postgresql:

PostgreSQL: Windows installers

There are three steps to complete the postgreSQL Installation:

1. Download PostgreSQL installer for windows
2. Install postgreSQL
3. Verify the installation
4. You can also use the GUI Application of Postgresql.

Relational Schema:



E-R CONSTRAINTS:

NOTATIONS:

TP->Total participation
All other entities which haven't been marked as TP are partially participating

1)Customer(TP) has Account(TP)[(M-N)]
Relationship type->has
2) Account can be Deposit-Account(TP)[(1-1)]
Relationship type->can be
3) Customer requests Transaction(TP)[(1-N)]
Relationship type->requests
4) Transaction controlled by Employee[(N-1)]
Relationship type->controlled by
5) Account created by Employee [(N-1)]
Relationship type->created by
6) Employee makes Loan_Account(TP)[(N-1)]
Relationship type->makes
7) Manager(TP) approves Loan_Account(TP)[(N-1)]
Relationship type->approves
8) Manager(TP) governs Employee[(1-N)]
Relationship type->governs
9) Manager updates Interest [(N-1)]
Relationship type->updates

Relational constraints like key constraints, Domain constraints, Entity Integrity constraints and Referential Integrity constraints are clearly specified in our Bank Management System and also been Implemented using psql.

Implementation of the database and populating the database with suitable values.

CREATE STATEMENTS:

SQL Shell (psql)

```
Server [localhost]:
Database [postgres]:
Port [5432]:
Username [postgres]:
Password for user postgres:
psql (13.4)
WARNING: Console code page (437) differs from Windows code page (1252)
         8-bit characters might not work correctly. See psql reference
         page "Notes for Windows users" for details.
Type "help" for help.

postgres=# CREATE DATABASE BANK;
CREATE DATABASE
postgres=# \c bank;
You are now connected to database "bank" as user "postgres".
bank=# \l
                                  List of databases
   Name    |  Owner   | Encoding |      Collate       |       Ctype        |   Access privileges
-----------+----------+----------+--------------------+--------------------+-----------------------
 bank      | postgres | UTF8     | English_India.1252 | English_India.1252 |
 postgres  | postgres | UTF8     | English_India.1252 | English_India.1252 |
 template0 | postgres | UTF8     | English_India.1252 | English_India.1252 | =c/postgres          +
           |          |          |                    |                    | postgres=CTc/postgres
 template1 | postgres | UTF8     | English_India.1252 | English_India.1252 | =c/postgres          +
           |          |          |                    |                    | postgres=CTc/postgres
(4 rows)


bank=# \dt
Did not find any relations.
bank=#
```

Select SQL Shell (psql)

```
bank=# CREATE TABLE Customer(
bank(#  First_Name varchar(50) NOT NULL,
bank(#  Middle_Name varchar(50),
bank(#  Last_Name varchar(50) NOT NULL,
bank(#  Street varchar(20),
bank(#  City varchar(20),
bank(#  State varchar(20),
bank(#  Pin int,
bank(#  Age int NOT NULL,
bank(#  Email varchar(30),
bank(#  Gender char NOT NULL,
bank(#  Nationality varchar(15) NOT NULL,
bank(#  Cust_ID varchar(10) NOT NULL,
bank(#  Contact bigint NOT NULL,
bank(#  PAN_no varchar(10) NOT NULL,
bank(#  Salary int,
bank(#  Primary key(Cust_ID));
CREATE TABLE
```

```
bank=# CREATE TABLE Account(
bank(#  Acc_No int NOT NULL,
bank(#  Balance int,
bank(#  Open_Date date NOT NULL,
bank(#  Acc_Type varchar(30) NOT NULL,
bank(#  Primary key(Acc_No));
CREATE TABLE
```

```
bank=# ALTER TABLE Account
bank-# ADD Deposit_Acc_No int NOT NULL,
bank-# ADD Emp_ID int NOT NULL,
bank-# ADD Foreign key(Deposit_Acc_No) references Deposit_Account(Deposit_Acc_No),
bank-# ADD Foreign key(Emp_ID) references Employee(Emp_ID);
ALTER TABLE
```

```
bank=# DROP TABLE Deposit_Account;
DROP TABLE
bank=# CREATE TABLE Deposit_Account(
bank(#  Deposit_Acc_No int NOT NULL,
bank(#  Initial_Amount int NOT NULL,
bank(#  Deposit_Account_Type varchar(30) NOT NULL,
bank(#  Current_Balance int NOT NULL,
bank(#  Duration int,
bank(#  Open_Date date NOT NULL,
bank(#  Close_Date date NOT NULL,
bank(#  Days int,
bank(#  Closure_Type varchar(30) NOT NULL,
bank(#  Primary key(Deposit_Acc_No));
CREATE TABLE
```

```
bank=# CREATE TABLE Manager(
bank(#  Manager_ID int NOT NULL,
bank(#  Email_ID varchar(30) ,
bank(#  Nationality varchar(15) NOT NULL,
bank(#  First_Name varchar(50) NOT NULL,
bank(#  Middle_Name varchar(50) NOT NULL,
bank(#  Last_Name varchar(50) NOT NULL,
bank(#  Street varchar(20),
bank(#  City varchar(20),
bank(#  State varchar(20),
bank(#  Pin int,
bank(#  DOB date NOT NULL,
bank(#  Username varchar(30),
bank(#  Password varchar(30) UNIQUE,
bank(#  Salary int NOT NULL,
bank(#  Contact bigint NOT NULL,
bank(#  Gender char NOT NULL,
bank(#  Primary key(Manager_ID));
CREATE TABLE
```

```
bank=# CREATE TABLE Interest(
bank(#  Interest_ID int NOT NULL,
bank(#  Savings_int float NOT NULL,
bank(#  RD_int float,
bank(#  FD_int float,
bank(#  Interest_rate float NOT NULL,
bank(#  Interest_Amount int NOT NULL,
bank(#  Primary key(Interest_ID),
bank(#  Manager_id int NOT NULL,
bank(#  Foreign key(Manager_ID) references Manager(Manager_ID));
CREATE TABLE
```

```
bank=# CREATE TABLE Employee(
bank(#  First_Name varchar(50) NOT NULL,
bank(#  Middle_Name varchar(50) NOT NULL,
bank(#  Last_Name varchar(50) NOT NULL,
bank(#  Street varchar(20),
bank(#  City varchar(20),
bank(#  State varchar(20),
bank(#  Pin int,
bank(#  DOB date NOT NULL,
bank(#  Username varchar(30),
bank(#  Password varchar(30) UNIQUE,
bank(#  Salary int NOT NULL,
bank(#  Email_ID varchar(30) ,
bank(#  Contact bigint NOT NULL,
bank(#  Gender char NOT NULL,
bank(#  Nationality varchar(15) NOT NULL,
bank(#  Emp_ID int NOT NULL,
bank(#  Manager_ID int NOT NULL,
bank(#  Primary key(Emp_ID),
bank(#  Foreign key(Manager_ID) references Manager(Manager_ID));
CREATE TABLE
```

```
bank=# CREATE TABLE has(
bank(#  Cust_ID varchar(10) NOT NULL,
bank(#  Acc_No int NOT NULL,
bank(#  Primary key(Cust_ID,Acc_No),
bank(#  Foreign key(Cust_ID) references Customer(Cust_ID),
bank(#  Foreign key(Acc_No) references Account(Acc_No));
CREATE TABLE
```

```
bank=# CREATE TABLE Transaction(
bank(#  Trans_ID int NOT NULL,
bank(#  Trans_Type varchar(20) NOT NULL,
bank(#  Amount int,
bank(#  Avail_Balance int NOT NULL,
bank(#  Date_of_Trans date NOT NULL,
bank(#  Cust_ID varchar(10) NOT NULL,
bank(#  Emp_ID int NOT NULL,
bank(#  Foreign key(Cust_ID) references Customer(Cust_ID),
bank(#  Foreign key(Emp_ID) references Employee(Emp_ID));
CREATE TABLE
```

```
bank=# CREATE TABLE Loan_Account(
bank(#  Account_No int NOT NULL,
bank(#  Loan_ID int NOT NULL,
bank(#  Loan_Type varchar(15),
bank(#  Date_of_Loan date NOT NULL,
bank(#  Status varchar(20),
bank(#  Remaining_Amt int NOT NULL,
bank(#  Total_Amount int NOT NULL,
bank(#  Duration int,
bank(#  Interest float NOT NULL,
bank(#  Description varchar(30),
bank(#  Emp_ID int NOT NULL,
bank(#  Manager_ID int NOT NULL,
bank(#  Primary key(Account_No),
bank(#  Foreign key(Emp_ID) references Employee(Emp_ID),
bank(#  Foreign key(Manager_ID) references Manager(Manager_ID));
CREATE TABLE
```

```
bank=# \d
             List of relations
 Schema |      Name       | Type  |  Owner
--------+-----------------+-------+----------
 public | account         | table | postgres
 public | customer        | table | postgres
 public | deposit_account | table | postgres
 public | employee        | table | postgres
 public | has             | table | postgres
 public | interest        | table | postgres
 public | loan_account    | table | postgres
 public | manager         | table | postgres
 public | transaction     | table | postgres
(9 rows)
```

INSERT STATEMENTS:

```
bank=# SELECT * FROM Customer;
 first_name | middle_name | last_name | street | city | state | pin | age | email | gender | nationality | cust_id | contact | pan_no | salary
------------+-------------+-----------+--------+------+-------+-----+-----+-------+--------+-------------+---------+---------+--------+--------
(0 rows)


bank=# INSERT INTO Customer(Cust_ID,First_Name,Middle_Name,Last_Name,Street,City,State,Pin,Age,Email,Gender,Nationality,Contact,PAN_no,Salary)
bank-# VALUES
bank-# ('AB124D1','Chandan','R','Kumar','Colaba','Mumbai','Maharashtra',590022,34,'chan123@gmail.com','M','India',9940328910,'AEF161JHK9',40000),
bank-# ('AB124D2','Rahul','K','Kumar','Connaught','New Delhi','Delhi',590552,38,'raj183@gmail.com','M','India',9940328450,'AWF16R4HK6',42000),
bank-# ('AB124D3','Shruthi','S','Kumari','Brigade Road','Bangalore','Karnataka',594452,32,'shur63@gmail.com','F','India',9840328450,'ASF16RTTK6',48500),
bank-# ('AB124D4','Nagendra','L','Kumar','Avenue Street','Bangalore','Karnataka',560072,36,'kiytr38@gmail.com','M','India',9930328445,'AL086RUP78',40000),
bank-# ('AB124D5','Dwayne','L','Johnson','Tupac Line','New York City','New York',909079,36,'turde98@gmail.com','M','USA',9970368995,'ATJ86RUP55',50000),
bank-# ('AB124D6','Asha','U','Bannu','Hazratganj','Lucknow','Uttar Pradesh',678764,38,'asha45@gmail.com','F','India',9970368863,'ARR8121UP5',50000),
bank-# ('AB124D7','Roshani','R','Reddy','Fontainhas','Goa City','Goa',678009,34,'roshani23@gmail.com','F','India',7970568840,'BR49121US2',68000),
bank-# ('AB124D8','Prakash','P','Kumar','Park Street','Kolkata','West Bengal',668879,30,'mike@gmail.com','M','India',7768950122,'BB6712DU33',70000);
INSERT 0 8
bank=# SELECT * FROM Customer;
 first_name | middle_name | last_name |    street     |     city      |     state     |  pin   | age |        email        | gender | nationality | cust_id |  contact   |   pan_no   | salary
------------+-------------+-----------+---------------+---------------+---------------+--------+-----+---------------------+--------+-------------+---------+------------+------------+--------
 Chandan    | R           | Kumar     | Colaba        | Mumbai        | Maharashtra   | 590022 |  34 | chan123@gmail.com   | M      | India       | AB124D1 | 9940328910 | AEF161JHK9 |  40000
 Rahul      | K           | Kumar     | Connaught     | New Delhi     | Delhi         | 590552 |  38 | raj183@gmail.com    | M      | India       | AB124D2 | 9940328450 | AWF16R4HK6 |  42000
 Shruthi    | S           | Kumari    | Brigade Road  | Bangalore     | Karnataka     | 594452 |  32 | shur63@gmail.com    | F      | India       | AB124D3 | 9840328450 | ASF16RTTK6 |  48500
 Nagendra   | L           | Kumar     | Avenue Street | Bangalore     | Karnataka     | 560072 |  36 | kiytr38@gmail.com   | M      | India       | AB124D4 | 9930328445 | AL086RUP78 |  40000
 Dwayne     | L           | Johnson   | Tupac Line    | New York City | New York      | 909079 |  36 | turde98@gmail.com   | M      | USA         | AB124D5 | 9970368995 | ATJ86RUP55 |  50000
 Asha       | U           | Bannu     | Hazratganj    | Lucknow       | Uttar Pradesh | 678764 |  38 | asha45@gmail.com    | F      | India       | AB124D6 | 9970368863 | ARR8121UP5 |  50000
 Roshani    | R           | Reddy     | Fontainhas    | Goa City      | Goa           | 678009 |  34 | roshani23@gmail.com | F      | India       | AB124D7 | 7970568840 | BR49121US2 |  68000
 Prakash    | P           | Kumar     | Park Street   | Kolkata       | West Bengal   | 668879 |  30 | mike@gmail.com      | M      | India       | AB124D8 | 7768950122 | BB6712DU33 |  70000
(8 rows)


bank=#
```

```
bank=# SELECT * FROM Manager;
 manager_id | email_id | nationality | first_name | middle_name | last_name | street | city | state | pin | dob | username | password | salary | contact | gender
------------+----------+-------------+------------+-------------+-----------+--------+------+-------+-----+-----+----------+----------+--------+---------+--------
(0 rows)


bank=# INSERT INTO Manager(Manager_ID,Email_ID,Nationality,First_Name,Middle_Name,Last_Name,Street,City,State,Pin,DOB,Username,Password,Salary,Contact,Gender)
bank-# VALUES
bank-# (1001,'pvthi43@gmail.com','India','Rajendra','V','Kumar','Mall Road','Shimla','Himachal Pradesh',609876,'1976-07-24','Rocky120','CnM85yi',60000,9854521993,'M'),
bank-# (1002,'ddolak3@gmail.com','India','Pranav','M','Varma','Nice Road','Bangalore','Karnataka',956646,'1979-03-21','posty10','PnMJ3Eoyi',65000,9914523191,'M'),
bank-# (1003,'priya32@gmail.com','India','Priya','K','Sharma','Aroli','Mumbai','Maharashtra',566902,'1981-08-09','kiretf56','LU0MJ3Ekgt',65000,8494763217,'F'),
bank-# (1004,'harini612@gmail.com','India','Harini','K','Kumari','Aundh','Pune','Maharashtra',690677,'1980-04-17','Loefco23','DE8JJ2Okl',68000,9832910282,'F'),
bank-# (1005,'santar30@gmail.com','India','Santhosh','R','Kumar','Tenjur','Hyderabad','Andhra Pradesh',691123,'1975-06-12','dd2wdef90','EffE80Ogr3',70000,9214102812,'M'),
bank-# (1006,'aman177@gmail.com','India','Aman','J','Kumar','Fashion Street','Pune','Maharashtra',612109,'1984-07-10','anme122f','ihbSS0d3f',70000,8675312566,'M'),
bank-# (1007,'daniel27@gmail.com','India','Daniel','S','Robert','Sampige Road','Malleshwaram','Karnataka',560089,'1984-05-19','Dewf12w3','JKclw032',75000,7866152123,'M'),
bank-# (1008,'Sima11@gmail.com','India','Sima','J','Roy','Marine Drive','Kochi','Kerala',561245,'1987-01-20','rED2sw3','JDWqdc43',72000,7213248243,'F');
INSERT 0 8
bank=# SELECT * FROM Manager;
 manager_id |      email_id      | nationality | first_name | middle_name | last_name |     street     |     city     |      state      |  pin   |    dob     | username |  password  | salary |  contact   | ge
nder
------------+--------------------+-------------+------------+-------------+-----------+----------------+--------------+-----------------+--------+------------+----------+------------+--------+------------+---
-----
       1001 | pvthi43@gmail.com  | India       | Rajendra   | V           | Kumar     | Mall Road      | Shimla       | Himachal Pradesh | 609876 | 1976-07-24 | Rocky120 | CnM85yi    |  60000 | 9854521993 | M
       1002 | ddolak3@gmail.com  | India       | Pranav     | M           | Varma     | Nice Road      | Bangalore    | Karnataka        | 956646 | 1979-03-21 | posty10  | PnMJ3Eoyi  |  65000 | 9914523191 | M
       1003 | priya32@gmail.com  | India       | Priya      | K           | Sharma    | Aroli          | Mumbai       | Maharashtra      | 566902 | 1981-08-09 | kiretf56 | LU0MJ3Ekgt |  65000 | 8494763217 | F
       1004 | harini612@gmail.com| India       | Harini     | K           | Kumari    | Aundh          | Pune         | Maharashtra      | 690677 | 1980-04-17 | Loefco23 | DE8JJ2Okl  |  68000 | 9832910282 | F
       1005 | santar30@gmail.com | India       | Santhosh   | R           | Kumar     | Tenjur         | Hyderabad    | Andhra Pradesh   | 691123 | 1975-06-12 | dd2wdef90| EffE80Ogr3 |  70000 | 9214102812 | M
       1006 | aman177@gmail.com  | India       | Aman       | J           | Kumar     | Fashion Street | Pune         | Maharashtra      | 612109 | 1984-07-10 | anme122f | ihbSS0d3f  |  70000 | 8675312566 | M
       1007 | daniel27@gmail.com | India       | Daniel     | S           | Robert    | Sampige Road   | Malleshwaram | Karnataka        | 560089 | 1984-05-19 | Dewf12w3 | JKclw032   |  75000 | 7866152123 | M
       1008 | Sima11@gmail.com   | India       | Sima       | J           | Roy       | Marine Drive   | Kochi        | Kerala           | 561245 | 1987-01-20 | rED2sw3  | JDWqdc43   |  72000 | 7213248243 | F
(8 rows)


bank=#
```

```
bank=# SELECT * FROM Interest;
 interest_id | savings_int | rd_int | fd_int | interest_rate | interest_amount | manager_id
-------------+-------------+--------+--------+---------------+-----------------+------------
(0 rows)


bank=# INSERT INTO Interest(Interest_ID,Savings_int,RD_int,FD_int,Interest_rate,Interest_Amount,Manager_ID)
bank-# VALUES
bank-# (101,5.3,6.2,7.3,12.9,10000,1001),
bank-# (102,5.0,4.2,8.3,9.6,12000,1002),
bank-# (103,4.12,6.44,3.3,4.8,8000,1003),
bank-# (104,6.13,2.17,5.32,7.98,12500,1004),
bank-# (105,6.87,9.10,5.92,8.18,12700,1005),
bank-# (106,2.34,7.21,8.11,6.5,11000,1006),
bank-# (107,8.66,9.12,4.45,6.13,13000,1007),
bank-# (108,8.77,5.96,4.34,3.18,12500,1008);
INSERT 0 8
bank=# SELECT * FROM Interest;
 interest_id | savings_int | rd_int | fd_int | interest_rate | interest_amount | manager_id
-------------+-------------+--------+--------+---------------+-----------------+------------
         101 |         5.3 |    6.2 |    7.3 |          12.9 |           10000 |       1001
         102 |           5 |    4.2 |    8.3 |           9.6 |           12000 |       1002
         103 |        4.12 |   6.44 |    3.3 |           4.8 |            8000 |       1003
         104 |        6.13 |   2.17 |   5.32 |          7.98 |           12500 |       1004
         105 |        6.87 |    9.1 |   5.92 |          8.18 |           12700 |       1005
         106 |        2.34 |   7.21 |   8.11 |           6.5 |           11000 |       1006
         107 |        8.66 |   9.12 |   4.45 |          6.13 |           13000 |       1007
         108 |        8.77 |   5.96 |   4.34 |          3.18 |           12500 |       1008
(8 rows)


bank=#
```

```
bank=# SELECT * FROM Employee;
 first_name | middle_name | last_name | street | city | state | pin | dob | username | password | salary | email_id | contact | gender | nationality | emp_id | manager_id
------------+-------------+-----------+--------+------+-------+-----+-----+----------+----------+--------+----------+---------+--------+-------------+--------+------------
(0 rows)


bank=# INSERT INTO Employee(First_Name,Middle_Name,Last_Name,Street,City,State,Pin,DOB,Username,Password,Salary,Email_ID,Contact,Gender,Nationality,Emp_ID,Manager_ID)
bank-# VALUES
bank-# ('Rohan','S','Kumar','Belathur','Bangalore','Karnataka',560067,'1987-08-05','jack2334','CN32rfy8',48000,'rohan45@gmail.com',9985412102,'M','India',1,1001),
bank-# ('Rakesh','M','Sharma','Nagar Chowk','Mumbai','Maharashtra',113457,'1984-01-09','Krit4322','KLd7891O',47000,'rakesh24@gmail.com',9783452099,'M','India',2,1002),
bank-# ('Disha','R','Sharma','Hutatma Chowk','Mumbai','Maharashtra',679053,'1984-03-19','Hinse64h','Ome76NU9',46000,'Disha67@gmail.com',8843101293,'F','India',3,1003),
bank-# ('Akriti','N','Verma','Jessore Road','Kolkata','West Bengal',619087,'1989-03-28','kdi2rfkd','LdmRE84M',46000,'akriti243@gmail.com',7812905632,'F','India',4,1004),
bank-# ('Akhil','G','Reddy','Meenakshi Road','Bangalore','Karnataka',592319,'1982-11-12','akhi21md','B7nIK92',42000,'akhil292@gmail.com',9320490140,'M','India',5,1005),
bank-# ('Pooja','S','Roy','Tin Road','Mysore','Karnataka',612211,'1983-02-02','pooj21ie','GH46Ii32',44000,'pooj156@gmail.com',9888430560,'F','India',6,1006),
bank-# ('Prerna','K','Kumari','Warangal','Chennai','Tamil Nadu',721030,'1987-05-08','prerndai2','MIVO98ij',48000,'prerena119@gmail.com',8595602203,'F','India',7,1007),
bank-# ('Pawan','J','Roy','Saylam','Chennai','Tamil Nadu',680530,'1980-07-28','pawa8jio','KwoTY89',45000,'pawan357@gmail.com',8435609688,'M','India',8,1008);
INSERT 0 8
bank=# SELECT * FROM Employee;
 first_name | middle_name | last_name |    street     |   city    |    state    |  pin   |    dob     | username | password | salary |       email_id       |  contact   | gender | nationality | emp_id | manage
r_id
------------+-------------+-----------+---------------+-----------+-------------+--------+------------+----------+----------+--------+----------------------+------------+--------+-------------+--------+-------
-----
 Rohan      | S           | Kumar     | Belathur      | Bangalore | Karnataka   | 560067 | 1987-08-05 | jack2334 | CN32rfy8 |  48000 | rohan45@gmail.com    | 9985412102 | M      | India       |      1 |
1001
 Rakesh     | M           | Sharma    | Nagar Chowk   | Mumbai    | Maharashtra | 113457 | 1984-01-09 | Krit4322 | KLd789iO |  47000 | rakesh24@gmail.com   | 9783452099 | M      | India       |      2 |
1002
 Disha      | R           | Sharma    | Hutatma Chowk | Mumbai    | Maharashtra | 679053 | 1984-03-19 | Hinse64h | Ome76NU9 |  46000 | Disha67@gmail.com    | 8843101293 | F      | India       |      3 |
1003
 Akriti     | N           | Verma     | Jessore Road  | Kolkata   | West Bengal | 619087 | 1989-03-28 | kdi2rfkd | LdmRE84M |  46000 | akriti243@gmail.com  | 7812905632 | F      | India       |      4 |
1004
 Akhil      | G           | Reddy     | Meenakshi Road | Bangalore | Karnataka   | 592319 | 1982-11-12 | akhi21md | B7nIK92  |  42000 | akhil292@gmail.com   | 9320490140 | M      | India       |      5 |
1005
 Pooja      | S           | Roy       | Tin Road      | Mysore    | Karnataka   | 612211 | 1983-02-02 | pooj21ie | GH46Ii32 |  44000 | pooj156@gmail.com    | 9888430560 | F      | India       |      6 |
1006
 Prerna     | K           | Kumari    | Warangal      | Chennai   | Tamil Nadu  | 721030 | 1987-05-08 | prerndai2 | MIVO98ij |  48000 | prerena119@gmail.com | 8595602203 | F      | India       |      7 |
1007
 Pawan      | J           | Roy       | Saylam        | Chennai   | Tamil Nadu  | 680530 | 1980-07-28 | pawa8jio | KwoTY89  |  45000 | pawan357@gmail.com   | 8435609688 | M      | India       |      8 |
1008
(8 rows)


bank=#
```

```
bank=# SELECT * FROM Deposit_Account;
 deposit_acc_no | initial_amount | deposit_account_type | current_balance | duration | open_date | close_date | days | closure_type
----------------+----------------+----------------------+-----------------+----------+-----------+------------+------+--------------
(0 rows)


bank=# INSERT INTO Deposit_Account(Deposit_Acc_No,Initial_Amount,Deposit_Account_Type,Current_Balance,Duration,Open_Date,Close_Date,Days,Closure_Type)
bank-# VALUES
bank-# (10001,6000,'Savings Account',20000,158,'2018-08-23','2024-05-28',15,'Not closed'),
bank-# (10002,2000,'Savings Account',30000,188,'2016-08-21','2024-06-20',20,'Not closed'),
bank-# (10003,1500,'Savings Account',20200,118,'2019-01-11','2026-03-18',26,'Not closed'),
bank-# (10004,100000,'Current Account',300000,313,'2017-02-07','2023-04-12',22,'Not closed'),
bank-# (10005,120000,'Current Account',320000,317,'2016-09-10','2021-04-17',24,'closed'),
bank-# (10006,200000,'Fixed Deposit Account',500000,300,'2018-05-06','2026-05-27',28,'Not closed'),
bank-# (10007,5000,'Saving Account',300000,367,'2015-09-06','2021-03-23',30,'closed'),
bank-# (10008,50000,'Current Account',400000,369,'2018-09-26','2025-03-15',27,'Not closed');
INSERT 0 8
bank=# SELECT * FROM Deposit_Account;
 deposit_acc_no | initial_amount | deposit_account_type  | current_balance | duration | open_date  | close_date | days | closure_type
----------------+----------------+-----------------------+-----------------+----------+------------+------------+------+--------------
          10001 |           6000 | Savings Account       |           20000 |      158 | 2018-08-23 | 2024-05-28 |   15 | Not closed
          10002 |           2000 | Savings Account       |           30000 |      188 | 2016-08-21 | 2024-06-20 |   20 | Not closed
          10003 |           1500 | Savings Account       |           20200 |      118 | 2019-01-11 | 2026-03-18 |   26 | Not closed
          10004 |         100000 | Current Account       |          300000 |      313 | 2017-02-07 | 2023-04-12 |   22 | Not closed
          10005 |         120000 | Current Account       |          320000 |      317 | 2016-09-10 | 2021-04-17 |   24 | closed
          10006 |         200000 | Fixed Deposit Account |          500000 |      300 | 2018-05-06 | 2026-05-27 |   28 | Not closed
          10007 |           5000 | Saving Account        |          300000 |      367 | 2015-09-06 | 2021-03-23 |   30 | closed
          10008 |          50000 | Current Account       |          400000 |      369 | 2018-09-26 | 2025-03-15 |   27 | Not closed
(8 rows)


bank=#
```

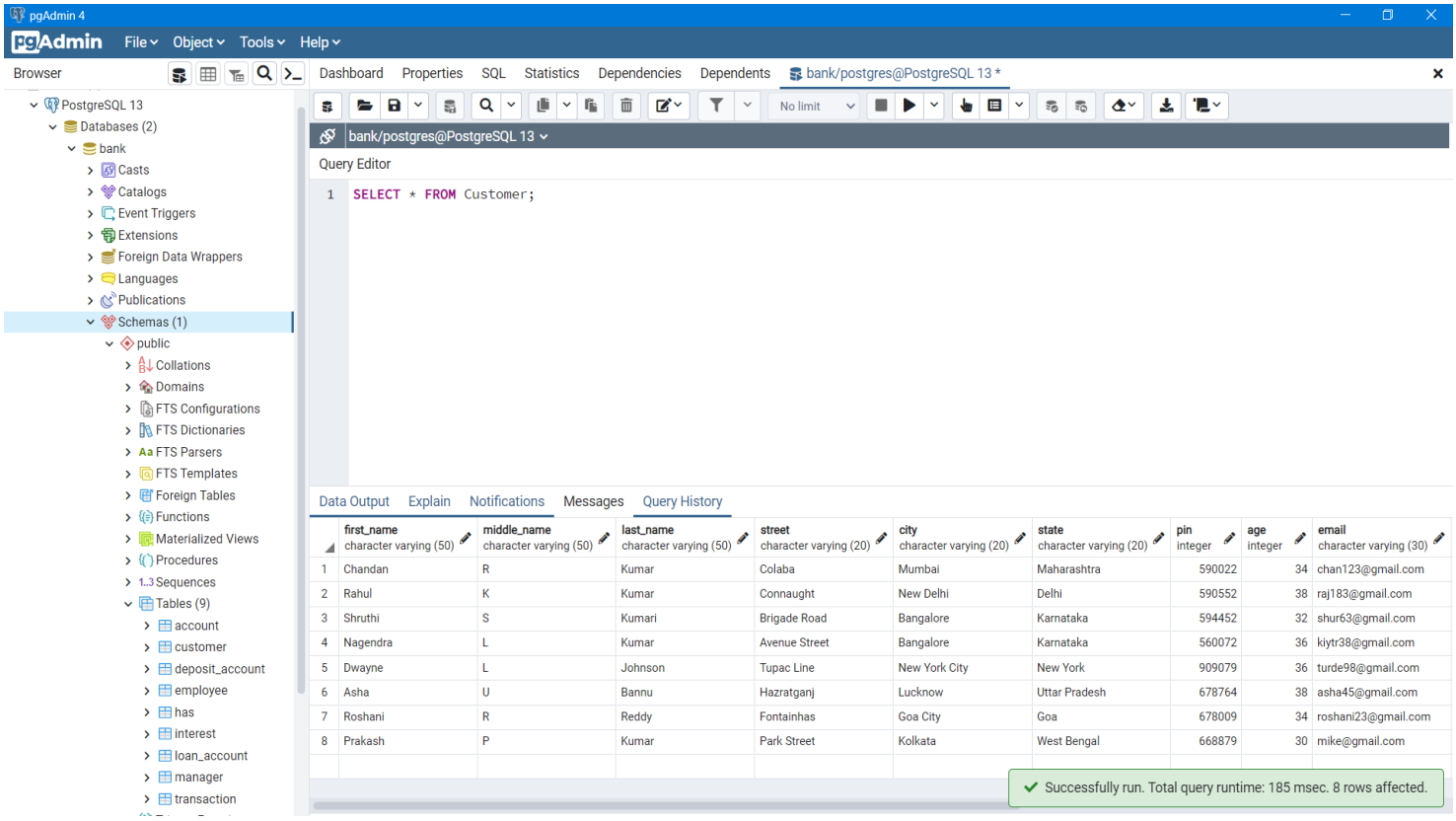
```
bank=# SELECT * FROM Account;
 acc_no | balance | open_date | acc_type | deposit_acc_no | emp_id
--------+---------+-----------+----------+----------------+--------
(0 rows)


bank=# INSERT INTO Account(Acc_No,Balance,Open_Date,Acc_Type,Deposit_Acc_No,Emp_ID)
bank-# VALUES
bank-# (100001,50000,'2014-04-13','Saving Account',10001,1),
bank-# (100002,150000,'2016-07-23','Saving Account',10002,2),
bank-# (100003,100000,'2016-08-23','Saving Account',10003,3),
bank-# (100004,200000,'2018-10-06','Current Account',10004,4),
bank-# (100005,200000,'2017-04-16','Current Account',10005,5),
bank-# (100006,250000,'2017-01-03','Fixed Deposit Account',10006,6),
bank-# (100007,400000,'2013-01-05','Saving Account',10007,7),
bank-# (100008,300000,'2014-09-15','Current Account',10008,8);
INSERT 0 8
bank=# SELECT * FROM Account;
 acc_no | balance | open_date  |       acc_type        | deposit_acc_no | emp_id
--------+---------+------------+-----------------------+----------------+--------
 100001 |   50000 | 2014-04-13 | Saving Account        |          10001 |      1
 100002 |  150000 | 2016-07-23 | Saving Account        |          10002 |      2
 100003 |  100000 | 2016-08-23 | Saving Account        |          10003 |      3
 100004 |  200000 | 2018-10-06 | Current Account       |          10004 |      4
 100005 |  200000 | 2017-04-16 | Current Account       |          10005 |      5
 100006 |  250000 | 2017-01-03 | Fixed Deposit Account |          10006 |      6
 100007 |  400000 | 2013-01-05 | Saving Account        |          10007 |      7
 100008 |  300000 | 2014-09-15 | Current Account       |          10008 |      8
(8 rows)


bank=#
```

```
bank=# INSERT INTO has(Cust_ID,Acc_No)
bank-# VALUES
bank-# ('AB124D1',100001),
bank-# ('AB124D2',100002),
bank-# ('AB124D3',100003),
bank-# ('AB124D4',100004),
bank-# ('AB124D5',100005),
bank-# ('AB124D6',100006),
bank-# ('AB124D7',100007),
bank-# ('AB124D8',100008);
INSERT 0 8
bank=# SELECT * FROM has;
 cust_id | acc_no
---------+--------
 AB124D1 | 100001
 AB124D2 | 100002
 AB124D3 | 100003
 AB124D4 | 100004
 AB124D5 | 100005
 AB124D6 | 100006
 AB124D7 | 100007
 AB124D8 | 100008
(8 rows)


bank=#
```

```
bank=# SELECT * FROM Transaction;
 trans_id | trans_type | amount | avail_balance | date_of_trans | cust_id | emp_id
----------+------------+--------+---------------+---------------+---------+--------
(0 rows)


bank=# INSERT INTO Transaction(Trans_ID,Trans_Type,Amount,Avail_Balance,Date_of_Trans,Cust_ID,Emp_ID)
bank-# VALUES
bank-# (111,'Debit',10000,80000,'2021-05-09','AB124D4',2),
bank-# (112,'Debit',5000,100000,'2021-04-29','AB124D2',1),
bank-# (113,'Debit',2000,200000,'2018-03-10','AB124D8',6),
bank-# (114,'Debit',10000,250000,'2017-03-01','AB124D1',5),
bank-# (115,'Credit',10000,300000,'2019-09-11','AB124D3',4),
bank-# (116,'Credit',25000,350000,'2020-09-16','AB124D5',3),
bank-# (117,'Debit',25000,350000,'2021-07-16','AB124D7',7),
bank-# (118,'Debit',20000,450000,'2021-06-26','AB124D8',8);
INSERT 0 8
bank=# SELECT * FROM Transaction;
 trans_id | trans_type | amount | avail_balance | date_of_trans | cust_id | emp_id
----------+------------+--------+---------------+---------------+---------+--------
      111 | Debit      |  10000 |         80000 | 2021-05-09    | AB124D4 |      2
      112 | Debit      |   5000 |        100000 | 2021-04-29    | AB124D2 |      1
      113 | Debit      |   2000 |        200000 | 2018-03-10    | AB124D8 |      6
      114 | Debit      |  10000 |        250000 | 2017-03-01    | AB124D1 |      5
      115 | Credit     |  10000 |        300000 | 2019-09-11    | AB124D3 |      4
      116 | Credit     |  25000 |        350000 | 2020-09-16    | AB124D5 |      3
      117 | Debit      |  25000 |        350000 | 2021-07-16    | AB124D7 |      7
      118 | Debit      |  20000 |        450000 | 2021-06-26    | AB124D8 |      8
(8 rows)


bank=#
```

```
bank=# SELECT * FROM Loan_Account;
 account_no | loan_id | loan_type | date_of_loan | status | remaining_amt | total_amount | duration | interest | description | emp_id | manager_id
------------+---------+-----------+--------------+--------+---------------+--------------+----------+----------+-------------+--------+------------
(0 rows)


bank=# INSERT INTO Loan_Account(Account_No,Loan_ID,Loan_type,Date_of_Loan,Status,Remaining_Amt,Total_Amount,Duration,Interest,Description,Emp_ID,Manager_ID)
bank-# VALUES
bank-# (121,11,'Personal Loan','2018-09-05','Approved',10000,100000,125,4.7,'To get new home',1,1001),
bank-# (122,46,'Personal Loan','2019-04-17','Not Approved',100000,1000000,425,10.4,'To get new home',2,1002),
bank-# (123,71,'Car Loan','2019-02-17','Approved',80000,1000000,315,13.9,'To get new car',3,1003),
bank-# (124,78,'Car Loan','2020-01-27','Not Approved',50000,500000,289,7.45,'To get new car',4,1004),
bank-# (125,93,'Personal Loan','2021-01-04','Approved',100000,500000,214,8.5,'To get new things',5,1005),
bank-# (126,23,'Home Loan','2017-01-04','Approved',1000000,10000000,1114,16.5,'To get new home',6,1006),
bank-# (127,20,'Business Loan','2014-06-14','Approved',1000000,30000000,2067,11.5,'To start business',7,1007),
bank-# (128,21,'Business Loan','2018-07-04','Not Approved',1000000,40000000,2167,13.5,'To start business',8,1008);
INSERT 0 8
bank=# SELECT * FROM Loan_Account;
 account_no | loan_id |   loan_type   | date_of_loan |    status    | remaining_amt | total_amount | duration | interest |    description    | emp_id | manager_id
------------+---------+---------------+--------------+--------------+---------------+--------------+----------+----------+-------------------+--------+------------
        121 |      11 | Personal Loan | 2018-09-05   | Approved     |         10000 |       100000 |      125 |      4.7 | To get new home   |      1 |       1001
        122 |      46 | Personal Loan | 2019-04-17   | Not Approved |        100000 |      1000000 |      425 |     10.4 | To get new home   |      2 |       1002
        123 |      71 | Car Loan      | 2019-02-17   | Approved     |         80000 |      1000000 |      315 |     13.9 | To get new car    |      3 |       1003
        124 |      78 | Car Loan      | 2020-01-27   | Not Approved |         50000 |       500000 |      289 |     7.45 | To get new car    |      4 |       1004
        125 |      93 | Personal Loan | 2021-01-04   | Approved     |        100000 |       500000 |      214 |      8.5 | To get new things |      5 |       1005
        126 |      23 | Home Loan     | 2017-01-04   | Approved     |       1000000 |     10000000 |     1114 |     16.5 | To get new home   |      6 |       1006
        127 |      20 | Business Loan | 2014-06-14   | Approved     |       1000000 |     30000000 |     2067 |     11.5 | To start business |      7 |       1007
        128 |      21 | Business Loan | 2018-07-04   | Not Approved |       1000000 |     40000000 |     2167 |     13.5 | To start business |      8 |       1008
(8 rows)


bank=#
```

GUI BASED PostgreSQL pgAdmin4: (only Customer Entity)



CONTRIBUTIONS:

NAME	SRN	CONTRIBUTION	TIME SPENT
Pawan Prasad P	PES2UG19CS280	Create Statements	60 min
Phani Kumar Vedurumudi	PES2UG19CS281	Insert Statements	45 min
Rahul S Bhat	PES2UG19CS315	List of reasons to justify the choice of DBMS and also the constraints of our database.	45 min