NATIONAL INSTITUTE OF TECHNOLOGY WARANGAL

Department of Computer Science and Engineering

B. Tech 2nd year 2nd Semester (CSE)

BANKING DATABASE MANAGEMENT PROJECT

Ahana Panja (197206)

Sanjana Kosuru (197272)

Rimpal Kumari (197169)

Problem Statement:

The Bank Account Management System is an application for maintaining records of the daily transactions in a bank. In this project, we have simulated the database of a bank. It stores information about all the accounts registered in the bank and the account holders. It also keeps track of the changing rate of interests, the status of payment of loans e.t.c. The database also holds information about the employees of the bank and keeps track of which employee has been allotted which responsibility. The application is used for crediting/ debiting from the accounts and processing all the transactions in between the accounts. It can also be used to deposit salaries of the employees.

The database has been designed in a way that ensures easy accessibility and updation. It has been normalized toBCNF normal form rule out chances of data redundancy.

Contents:

Tables :

1. Account

Attribute	Datatype	Constraints and Characteristics
Acc_no	INTEGER	Primary key , Not null
Cust_id .	INTEGER	Foreign key, Not null

Acc_type	VARCHAR2(20)	Not null
Balance	DOUBLE	Not null
Open_date	DATE	Not null
Interest_rate	INT	Not null
Interest_amount	INTEGER	Not null
Interest_id	INT	Foreign key, Not null
Createdby	INT	Foreign key, Not null

2. Deposit Account

Attribute	**Datatype**	**Constraints and Characteristics**
Deposit_acc_no	INTEGER	Primary key , Not null

Closure_type	VARCHAR2(20)	Not null
Cust_id	INT	Foreign key, Not null
Acc_no	INTEGER	Foreign key, Not null
Initial_amount	DOUBLE	Not null
Deposit_acc_type	VARCHAR(20)	Not null
Interest_amount	INT	Not null
Interest_id	INTEGER	Foreign key, Not null
Current_balance	DOUBLE	Not null
duration	INT	Not null
Open_date	DATE	Not null
Close_date	DATE	Not null
Days	INT	Not null

Interest_rate	INT	Not null

3. Loan Account

Attribute	Datatype	Constraints and Characteristics
Loan _id	INTEGER	Primary key , Not null
Description	VARCHAR2(50)	Not null
Status	VARCHAR2(20)	Not null
Interest	INT	Not null
Total_amount	DOUBLE	Not null
Remaining_amount	DOUBLE	Not null
Duration	INT	Not null
Date_of_loan	DATE	Not null
Loan_type	VARCHAR(20)	Not null

Acc_no	INT	Foreign key, Not null
ApprovedBy	INT	Foreign key, Not null
MadeBy	INT	Foreign key, Not null

4. Customer

Cust_ID	INT	Primary Key, Not null
PAN	INT	Unique
Contact_no	INT	Not null
First_name	VARCHAR(20)	Not null
Middle_name	VARCHAR(20)	---------------
Last_name	VARCHAR(20)	Not null
Email	VARCHAR(20)	Not null
Gender	CHAR	---------------
DOB	DATE	Not null
AddressPinCode	VARCHAR(20)	ForeignKey, Not null
Salary	INT	--------------
OfficerEmp_ID	INT	Foreign Key, Not null

5. Officer

Emp_ID	INT	Primary Key, Not null
Username	VARCHAR(20)	Unique, Not null
Password	VARCHAR(20)	Unique, Not null
First_name	VARCHAR(20)	Not null
Middle_name	VARCHAR(20)	---------------
Last_name	VARCHAR(20)	Not null
Contact_no	INT	Not null
Gender	CHAR	---------------
DOB	DATE	Not null
AddressPinCode	VARCHAR(20)	Foreign Key, Not null
Salary	DOUBLE	Not null
Manager_ID	INT	Foreign Key, Not null

6. Transactions

Trans_ID	INT	Primary Key, Not null
Ac_no	INT	Foreign Key, Not null
Trans_type	VARCHAR(20)	Not null
Cust_ID	INT	Foreign Key, Not null
OfficerEmp_ID	INT	Foreign Key, Not null

Amount	DOUBLE	Not null
Total_Balance	DOUBLE	Not null
Date_of_Trans	DATE	Not null

7.Address

PIN	INT	Primary key,Not null
Nationality	VARCHAR(20)	Not null
State	VARCHAR(20)	Not null
City	VARCHAR(20)	Not null
Street	VARCHAR(20)	Not null

8. Manager

Emp_ID	INT	Primary key, not null
Email	VARCHAR	Unique, Not null
Username	VARCHAR	Unique, Not null
Password	VARCHAR	Not null
First_name	VARCHAR	Not null
Middle_name	VARCHAR	
Last_name	VARCHAR	Not null
Salary	DOUBLE	Not null

DOB	DATE	
Contact	INT	Unique,Not null
Gender	VARCHAR	
AddressPINCode	VARCHAR	Foriegn key, not null

9. Interest

Instrest_id	VARCHAR	Primary key and not null
Savings_int	DOUBLE	Not null
LoanInterest	DOUBLE	Not null
Rd_int	DOUBLE	Not null
Fd_int	DOUBLE	Not null
Current_int	DOUBLE	Not null
Updatedby	INT	Foreign Key and Not null

ER Model Clarifications-

- Each customer can ***have*** several Accounts but each Account has only one AccountHolder, i.e, 1: n relationship.
- Each customer asks ***requests*** to only one officer.
- Each customer can ***request*** several transactions.
- Every officer is ***governed*** by one Manager, but a Manager can have several Officers working under him.

- An officer ***controls*** several Transactions on behalf of Customer requests.
- An officer can ***create*** several Accounts and ***make*** several Loan Accounts.
- Each Manager ***approves*** several Loan Accounts and ***updates*** several Interest Rates.
- An Account ***can be*** a Deposit Account.
- No customers and employees or employees have multiple address, contacts, and email IDs.

Functional Dependencies and Primary / Foreign Key

1. Account:Acc_no→(**Acc_no,** Cust_id , Acc_type ,Balance , Open_date , interest_rate , interest_amount , interest_id,CreatedBy).
Since Acc_no uniquely determines all the other attributes of the table Account, i.e,(**Acc_no**) + -> R, **Acc_no** is selected as the primary key.
Cust_id,interest_id and CreatedBy are taken as foreign key from tables Customer and Interest and Officer.

2. Deposit Account:

Deposit_acc_no →(**Deposit_acc_no** ,closure_type , Cust_id, Acc_no , initial_amount , Deposit_acc_type , interest_amount , Interest_id , Current_balance , duration , Open_date , Close_date , Days , interest_rate).
Since Deposit_acc_no uniquely determines all the other attributes of the table

Deposit Account ,i.e,**(<u>Deposit_acc_no</u>)** + -> R, **<u>Deposit_acc_no</u>** is selected as the primary key.
Acc_no, Cust_id and Interest_id are taken as foreign key from table Account, Customer and Interest.

3. Loan Account:

<u>Loan_id</u> →(**<u>Loan_id</u>** , Description , Status , interest , Total_amount , Remaining_amount , Duration , Date_of_loan , Loan_type , Acc_no,MadeBy,ApprovedBy). Since Loan_id uniquely determines all the other attributes of the table Loan Account ,i.e,(**<u>Loan_id</u>**) + -> R, **<u>Loan_id</u>** is selected as the primary key.
Acc_no,MadeBy and CreatedBy are taken as foreign key from tables Account,Officer and Manager.

4. Customer:

<u>Cust_ID</u>→(**<u>Cust_ID</u>**,Name,Email,Contact_no,Gender,DOB,PAN,AddressPinCode,Salary, OfficerEmp_ID).
Since Cust_ID uniquely determines all the other attributes of the table Customer,i.e,(**<u>Cust_ID</u>**) + -> R, **<u>Cust_ID</u>** is selected as the primary key.
PAN is also an unique attribute but all customers may not have a PAN card, so it is not chosen as primary key.
Since, relation between customer and officer is 1:1 **<u>Cust_ID</u>** uniquely identifies OfficerEmp_ID which is the foreign key Emp_ID from Officer table.

5. Officer:

<u>Emp_ID</u>→(**<u>Emp_ID</u>**,Username,Password,Name,Email,Contact_no,Gender,DOB,AddressPinCode,Salary,Manager_ID).
Since **<u>Emp_ID</u>** uniquely determines all the other attributes of the table Officer,i.e,(**<u>Emp_ID</u>**) + -> R, **<u>Emp_ID</u>** is selected as the primary key.
The relation between Officer and Manager is n:1, i.e, each officer has exactly one manager,**<u>Emp_ID</u>** can uniquely identify Manager_ID which is the foreign key Emp_ID from Manager table.

6.Transaction:

<u>Trans_ID</u>→(**<u>Trans_ID</u>**,Acc_no,Trans_type,Amount,TotalBalance,Date_of_Trans, Cust_ID ,Officer_ID).

(**Trans_ID**)+ -> R as it determines all other attributes including Cust_ID and Officer_ID which are foreign keys from Customer and Officer tables respectively.

7.Address:

Pin→(**Pin**,Nationality,State,City,Street).
(**Pin**)+ -> R as it determines all other attributes.Hence, **Pin** is selected as the primary key.

8. Manager

Emp_ID→(Emp_ID, Email, Nationality, Username, Password, First_name, Middle_name, Last_name, Salary, DOB, Contact, Gender, AddressPINCode)

Since **Emp_ID** uniquely determines all the other attributes of the table Manager,i.e,(**Emp_ID**) + -> R, **Emp_ID** is selected as the primary key.

9. Interest

Interest_ID→(Instrest_ID, Savings_int, LoanInterest, Rd_int, Fd_int, Current_int)
Interest_ID acts as the primary key for this relation, as it uniquely determines the rest.

Normalisation-

1. Account

Primary key: Acc_no
There are no multivalued valued attributes in the table as mentioned in the ER diagram clarification. Hence, Account table is 1NF.
All attributes depend on the Acc_no , hence the table is 2NF.
All attributes depend directly on Acc_no , hence the table is in 3NF.
All determinants(Acc_no) are candidate keys, hence the table is in BCNF.

2. Deposit Account

Primary key: Deposit_acc_no There are no multivalued valued attributes in the table as mentioned in the ER diagram clarification. Hence, Deposit Account table is 1NF.
All attributes depend on the Deposit_acc_no hence the table is 2NF.
All attributes depend directly on Deposit_acc_no , hence the table is in 3NF.
All determinants(Deposit_acc_no) are candidate keys, hence the table is in BCNF.

3. Loan Account

Primary key: Loan_id
There are no multivalued valued attributes in the table as mentioned in the ER diagram clarification. Hence, Loan Account table is 1NF.
All attributes depend on the Loan_id , hence the table is 2NF.
All attributes depend directly on Loan_id , hence the table is in 3NF.
All determinants(Loan_id) are candidate keys, hence the table is in BCNF.

4. Customer

Primary key: Cust_ID
There are no multivalued valued attributes in the table as mentioned in the ER diagram clarification. Hence, Customer table is 1NF.
All attributes depend on the Cust_ID, hence the table is 2NF.
All attributes depend directly on Cust _ID, hence the table is in 3NF.
All determinants(Cust_ID) are candidate keys, hence the table is in BCNF.

5. Officer

Primary key: Emp_ID
There are no multivalued valued attributes in the table as mentioned in the ER diagram clarification. Hence, Officer table is 1NF.
All attributes depend on the Emp_ID, hence the table is 2NF.
All attributes depend directly on Emp_ID, hence the table is in 3NF.
All determinants(Emp_ID) are candidate keys, hence the table is in BCNF.

6. Transaction

Primary key: Trans_ID
There are no multivalued valued attributes in the table. Hence,Transaction table is 1NF.
All attributes depend on theTrans _ID, hence the table is 2NF.
All attributes depend directly on Trans_ID, hence the table is in 3NF.
All determinants(Trans_ID) are candidate keys, hence the table is in BCNF.

7. Address

Primary key: PIN
There are no multivalued valued attributes in the table. Hence,Transaction table is 1NF.
All attributes depend on the PIN, hence the table is 2NF.
All attributes depend directly on PIN, hence the table is in 3NF.
All determinants(PIN) are candidate keys, hence the table is in BCNF.

8. Manager

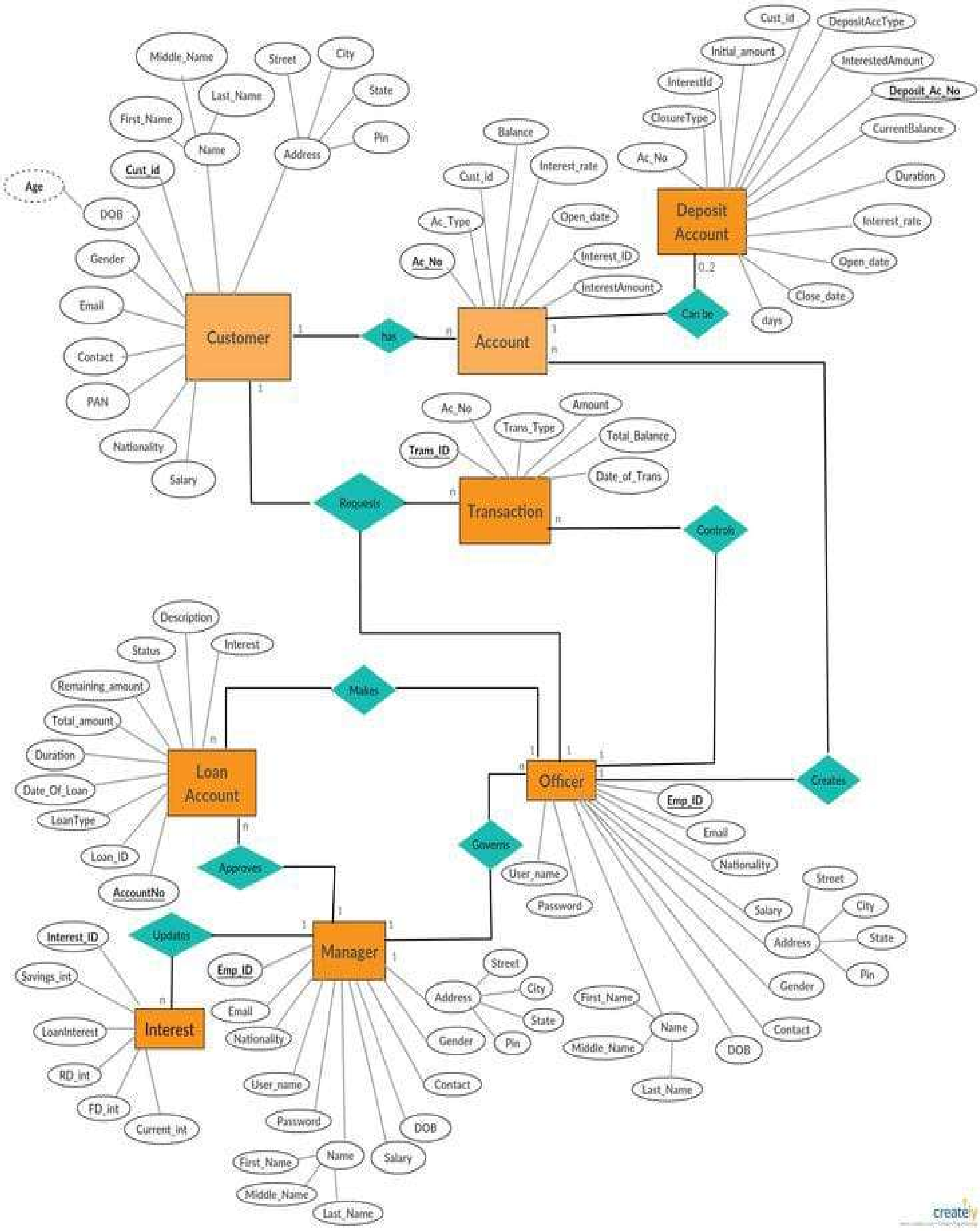
Primary key: Emp_ID
There are no multivalued valued attributes in the table. Hence,Transaction table is 1NF.
All attributes depend on the Emp_ID, hence the table is 2NF.
All attributes depend directly on Emp_ID, hence the table is in 3NF.
All determinants(Emp_ID) are candidate keys, hence the table is in BCNF.

9. Interest

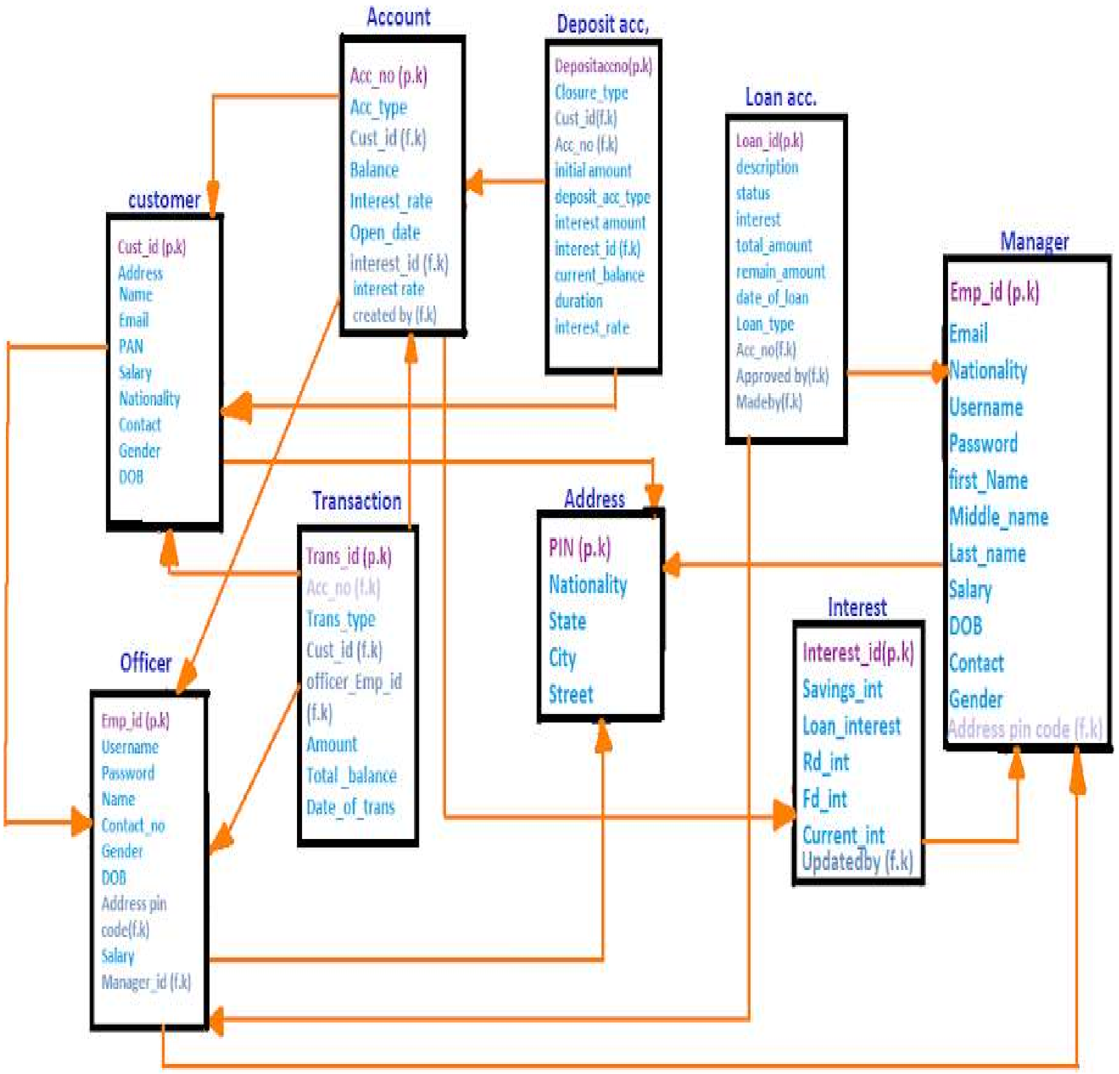
Primary key: Interest_ID
There are no multivalued valued attributes in the table. Hence,Transaction table is 1NF.
All attributes depend on the Interest_ID, hence the table is 2NF.
All attributes depend directly on Interest_ID, hence the table is in 3NF.

All determinants(Interest_ID) are candidate keys, hence the table is in BCNF.

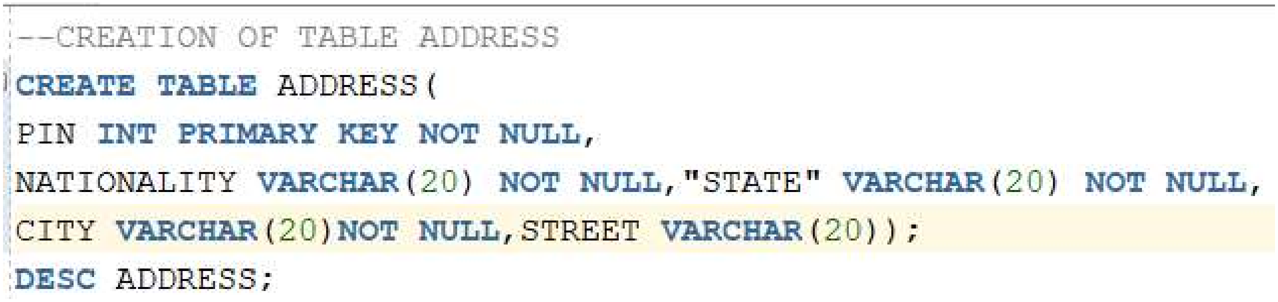
ER Diagram :-


Customer
Middle_Name
Last_Name
First_Name
Name
Street
City
State
Pin
Address
Cust_id
Age
DOB
Gender
Email
Contact
PAN
Nationality
Salary
has
1
n
Account
Balance
Cust_id
Interest_rate
Ac_Type
Open_date
Ac_No
Interest_ID
InterestAmount
Can be
1
n
0..2
Deposit Account
Cust_id
DepositAccType
Initial_amount
InterestedAmount
InterestId
Deposit_Ac_No
ClosureType
CurrentBalance
Ac_No
Duration
Interest_rate
Open_date
Close_date
days
Transaction
Ac_No
Amount
Trans_Type
Total_Balance
Trans_ID
Date_of_Trans
Requests
1
n
Controls
n
Loan Account
Description
Status
Interest
Remaining_amount
Total_amount
Duration
Date_Of_Loan
LoanType
Loan_ID
AccountNo
Makes
n
Approves
n
Officer
1
1
1
1
n
Emp_ID
Email
Nationality
Salary
Street
City
State
Pin
Address
Gender
Contact
DOB
Name
First_Name
Middle_Name
Last_Name
User_name
Password
Creates
Governs
Manager
1
1
1
1
Emp_ID
Email
Nationality
User_name
Password
Name
First_Name
Middle_Name
Last_Name
Salary
DOB
Contact
Gender
Address
Street
City
State
Pin
Updates
n
Interest
Interest_ID
Savings_int
LoanInterest
RD_int
FD_int
Current_int
creately

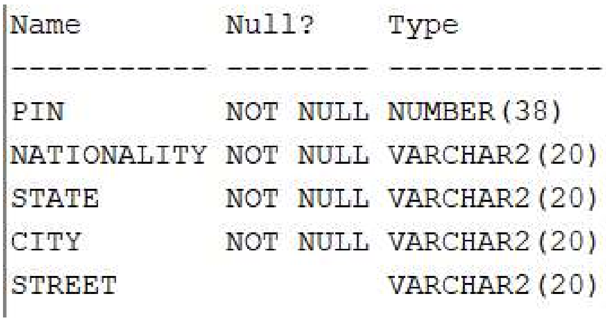
Relational Schema with Normalised Tables :-



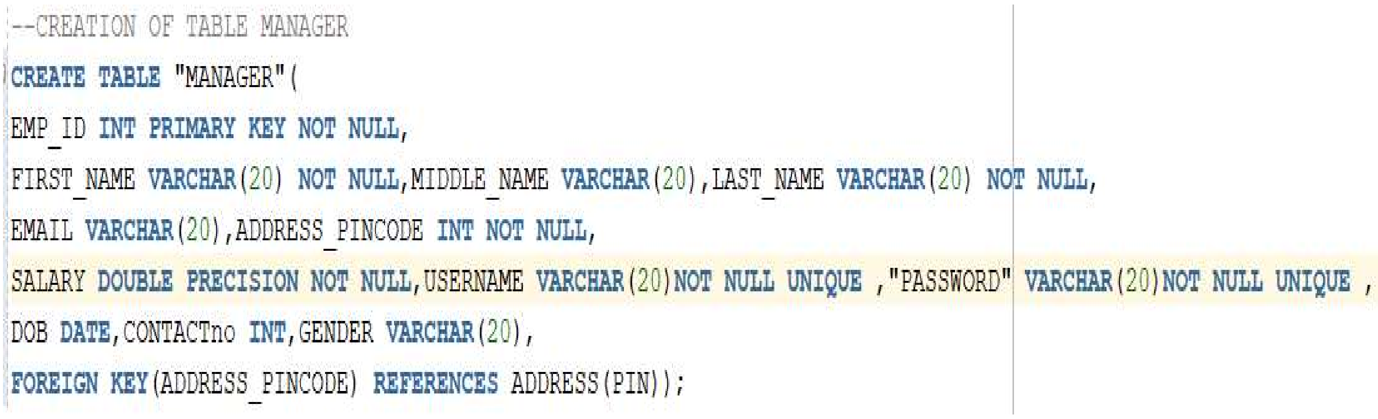
SQL Code:



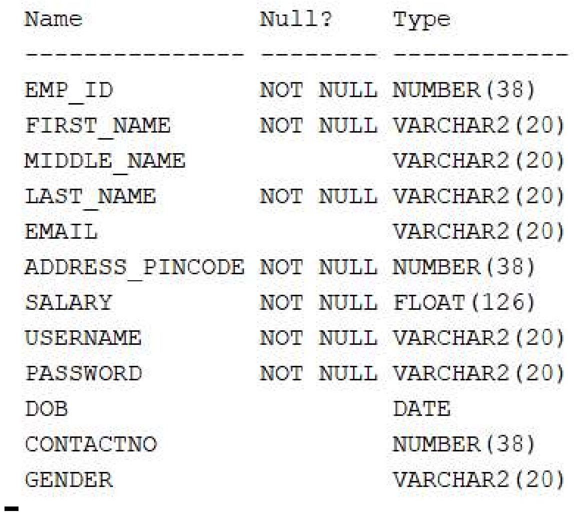
```
--CREATION OF TABLE ADDRESS
CREATE TABLE ADDRESS(
PIN INT PRIMARY KEY NOT NULL,
NATIONALITY VARCHAR(20) NOT NULL,"STATE" VARCHAR(20) NOT NULL,
CITY VARCHAR(20)NOT NULL,STREET VARCHAR(20));
DESC ADDRESS;
```



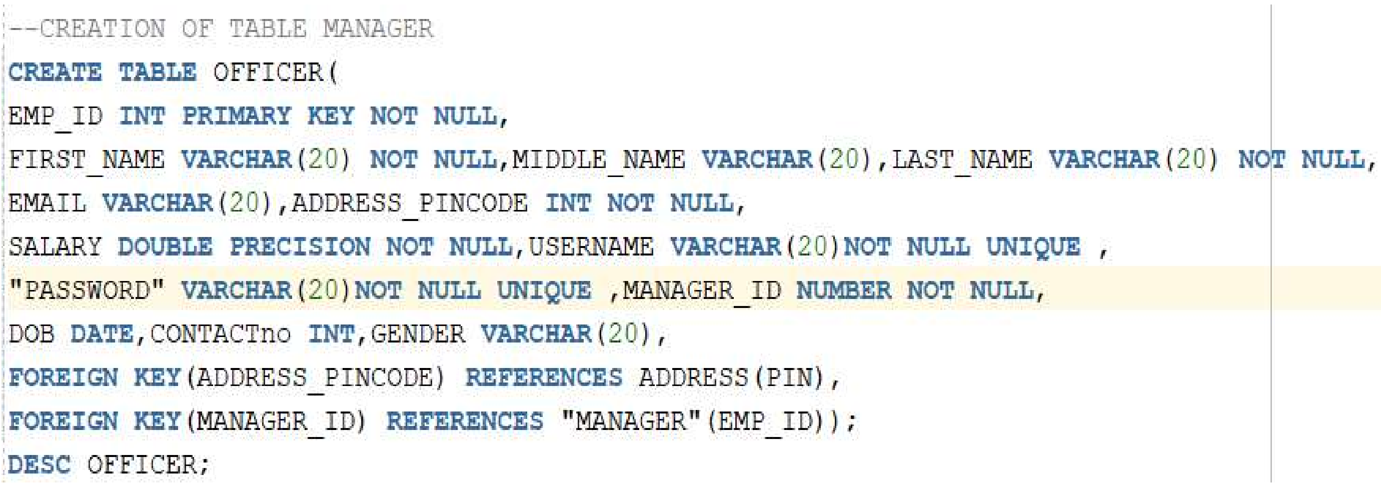
```
Name        Null?    Type
----------- -------- ------------
PIN         NOT NULL NUMBER(38)
NATIONALITY NOT NULL VARCHAR2(20)
STATE       NOT NULL VARCHAR2(20)
CITY        NOT NULL VARCHAR2(20)
STREET               VARCHAR2(20)
```



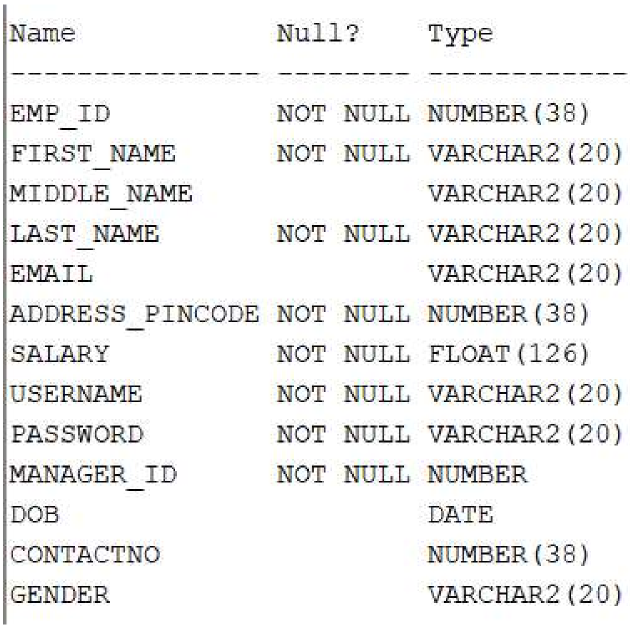
```
--CREATION OF TABLE MANAGER
CREATE TABLE "MANAGER"(
EMP_ID INT PRIMARY KEY NOT NULL,
FIRST_NAME VARCHAR(20) NOT NULL,MIDDLE_NAME VARCHAR(20),LAST_NAME VARCHAR(20) NOT NULL,
EMAIL VARCHAR(20),ADDRESS_PINCODE INT NOT NULL,
SALARY DOUBLE PRECISION NOT NULL,USERNAME VARCHAR(20)NOT NULL UNIQUE ,"PASSWORD" VARCHAR(20)NOT NULL UNIQUE ,
DOB DATE,CONTACTno INT,GENDER VARCHAR(20),
FOREIGN KEY(ADDRESS_PINCODE) REFERENCES ADDRESS(PIN));
```



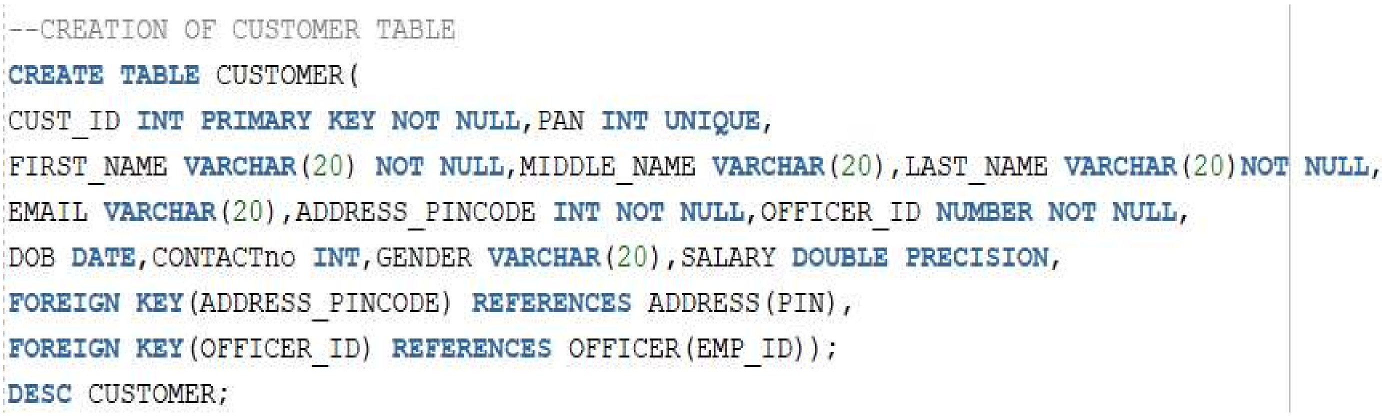
```
Name            Null?    Type
--------------- -------- ------------
EMP_ID          NOT NULL NUMBER(38)
FIRST_NAME      NOT NULL VARCHAR2(20)
MIDDLE_NAME              VARCHAR2(20)
LAST_NAME       NOT NULL VARCHAR2(20)
EMAIL                    VARCHAR2(20)
ADDRESS_PINCODE NOT NULL NUMBER(38)
SALARY          NOT NULL FLOAT(126)
USERNAME        NOT NULL VARCHAR2(20)
PASSWORD        NOT NULL VARCHAR2(20)
DOB                      DATE
CONTACTNO                NUMBER(38)
GENDER                   VARCHAR2(20)
```



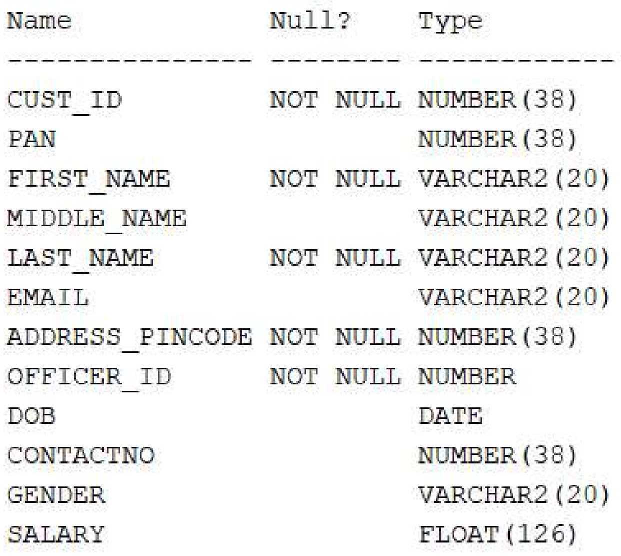
```
--CREATION OF TABLE MANAGER
CREATE TABLE OFFICER(
EMP_ID INT PRIMARY KEY NOT NULL,
FIRST_NAME VARCHAR(20) NOT NULL,MIDDLE_NAME VARCHAR(20),LAST_NAME VARCHAR(20) NOT NULL,
EMAIL VARCHAR(20),ADDRESS_PINCODE INT NOT NULL,
SALARY DOUBLE PRECISION NOT NULL,USERNAME VARCHAR(20)NOT NULL UNIQUE ,
"PASSWORD" VARCHAR(20)NOT NULL UNIQUE ,MANAGER_ID NUMBER NOT NULL,
DOB DATE,CONTACTno INT,GENDER VARCHAR(20),
FOREIGN KEY(ADDRESS_PINCODE) REFERENCES ADDRESS(PIN),
FOREIGN KEY(MANAGER_ID) REFERENCES "MANAGER"(EMP_ID));
DESC OFFICER;
```



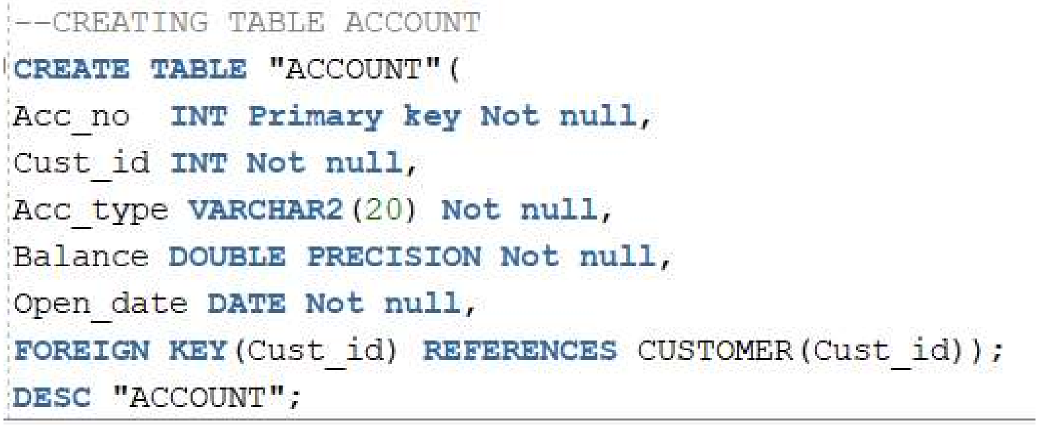
```
Name             Null?    Type
---------------- -------- ------------
EMP_ID           NOT NULL NUMBER(38)
FIRST_NAME       NOT NULL VARCHAR2(20)
MIDDLE_NAME               VARCHAR2(20)
LAST_NAME        NOT NULL VARCHAR2(20)
EMAIL                     VARCHAR2(20)
ADDRESS_PINCODE  NOT NULL NUMBER(38)
SALARY           NOT NULL FLOAT(126)
USERNAME         NOT NULL VARCHAR2(20)
PASSWORD         NOT NULL VARCHAR2(20)
MANAGER_ID       NOT NULL NUMBER
DOB                       DATE
CONTACTNO                 NUMBER(38)
GENDER                    VARCHAR2(20)
```



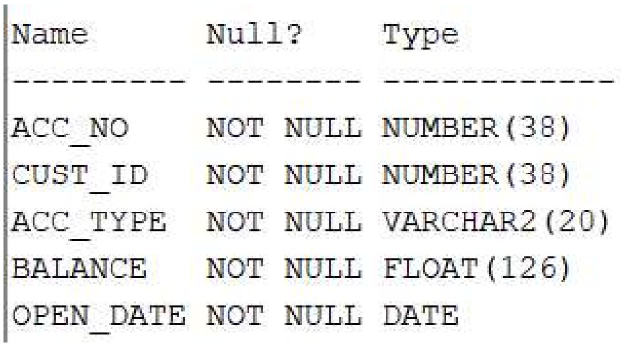
```
--CREATION OF CUSTOMER TABLE
CREATE TABLE CUSTOMER(
CUST_ID INT PRIMARY KEY NOT NULL,PAN INT UNIQUE,
FIRST_NAME VARCHAR(20) NOT NULL,MIDDLE_NAME VARCHAR(20),LAST_NAME VARCHAR(20)NOT NULL,
EMAIL VARCHAR(20),ADDRESS_PINCODE INT NOT NULL,OFFICER_ID NUMBER NOT NULL,
DOB DATE,CONTACTno INT,GENDER VARCHAR(20),SALARY DOUBLE PRECISION,
FOREIGN KEY(ADDRESS_PINCODE) REFERENCES ADDRESS(PIN),
FOREIGN KEY(OFFICER_ID) REFERENCES OFFICER(EMP_ID));
DESC CUSTOMER;
```



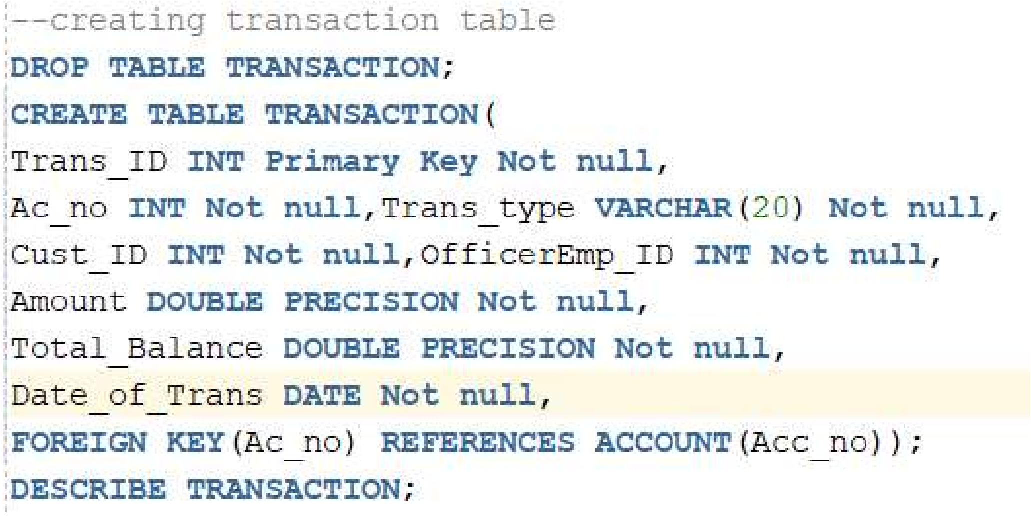
```
Name             Null?    Type
---------------- -------- ------------
CUST_ID          NOT NULL NUMBER(38)
PAN                       NUMBER(38)
FIRST_NAME       NOT NULL VARCHAR2(20)
MIDDLE_NAME               VARCHAR2(20)
LAST_NAME        NOT NULL VARCHAR2(20)
EMAIL                     VARCHAR2(20)
ADDRESS_PINCODE  NOT NULL NUMBER(38)
OFFICER_ID       NOT NULL NUMBER
DOB                       DATE
CONTACTNO                 NUMBER(38)
GENDER                    VARCHAR2(20)
SALARY                    FLOAT(126)
```



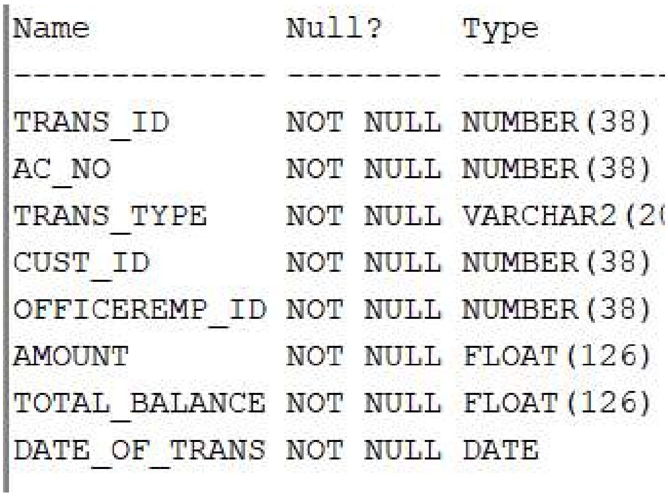
```
--CREATING TABLE ACCOUNT
CREATE TABLE "ACCOUNT"(
Acc_no  INT Primary key Not null,
Cust_id INT Not null,
Acc_type VARCHAR2(20) Not null,
Balance DOUBLE PRECISION Not null,
Open_date DATE Not null,
FOREIGN KEY(Cust_id) REFERENCES CUSTOMER(Cust_id));
DESC "ACCOUNT";
```



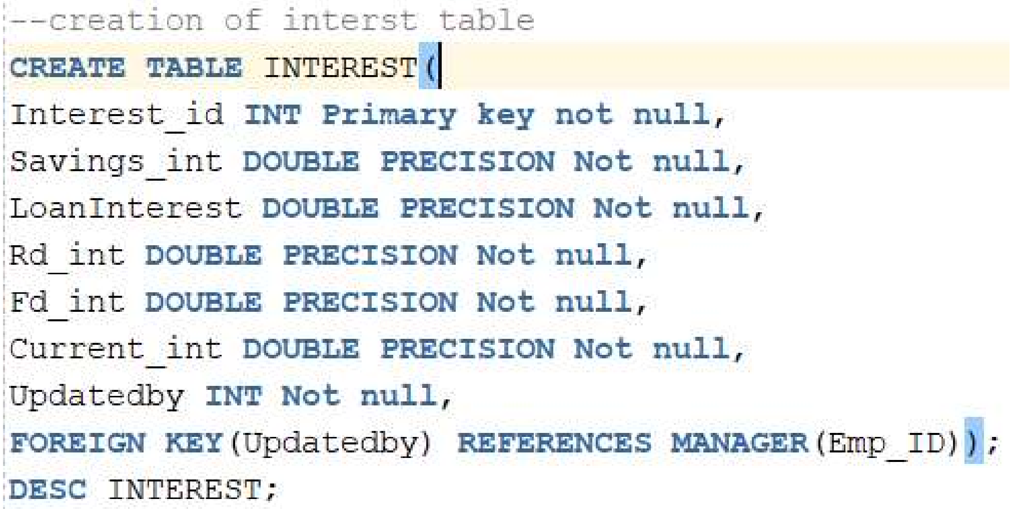
```
Name       Null?    Type
---------- -------- ------------
ACC_NO     NOT NULL NUMBER(38)
CUST_ID    NOT NULL NUMBER(38)
ACC_TYPE   NOT NULL VARCHAR2(20)
BALANCE    NOT NULL FLOAT(126)
OPEN_DATE  NOT NULL DATE
```



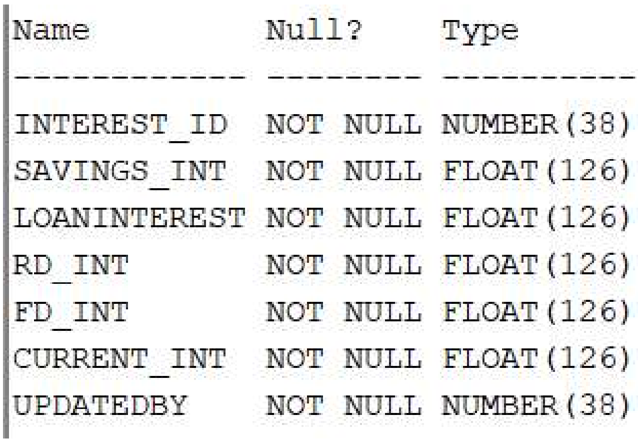
```
--creating transaction table
DROP TABLE TRANSACTION;
CREATE TABLE TRANSACTION(
Trans_ID INT Primary Key Not null,
Ac_no INT Not null,Trans_type VARCHAR(20) Not null,
Cust_ID INT Not null,OfficerEmp_ID INT Not null,
Amount DOUBLE PRECISION Not null,
Total_Balance DOUBLE PRECISION Not null,
Date_of_Trans DATE Not null,
FOREIGN KEY(Ac_no) REFERENCES ACCOUNT(Acc_no));
DESCRIBE TRANSACTION;
```



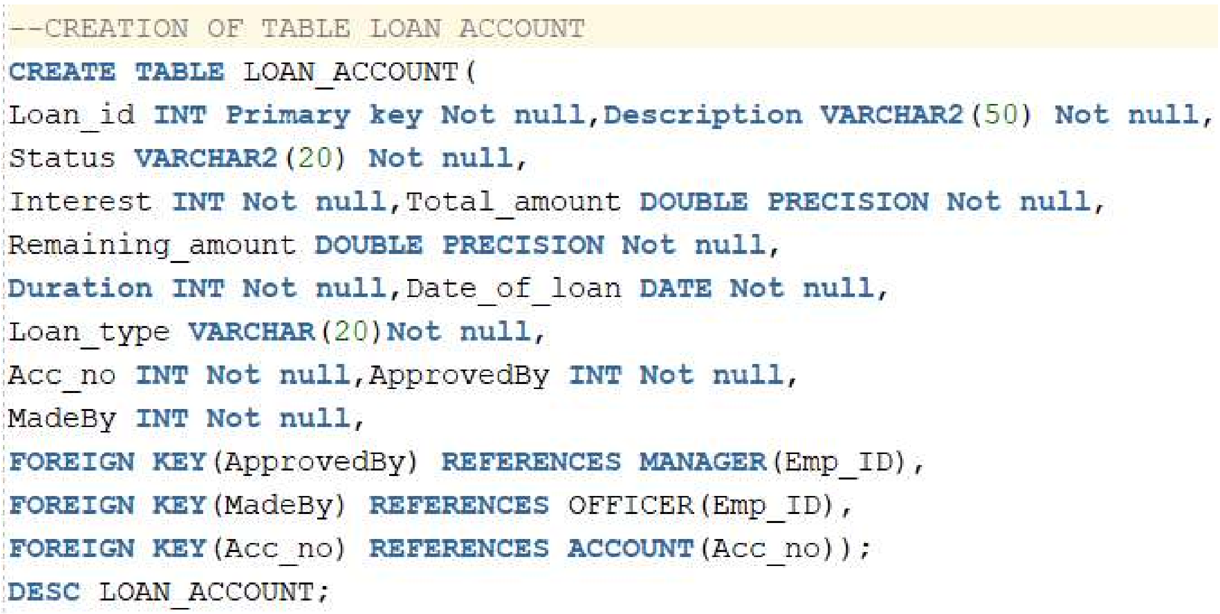
```
Name          Null?    Type
------------- -------- -----------
TRANS_ID      NOT NULL NUMBER(38)
AC_NO         NOT NULL NUMBER(38)
TRANS_TYPE    NOT NULL VARCHAR2(2
CUST_ID       NOT NULL NUMBER(38)
OFFICEREMP_ID NOT NULL NUMBER(38)
AMOUNT        NOT NULL FLOAT(126)
TOTAL_BALANCE NOT NULL FLOAT(126)
DATE_OF_TRANS NOT NULL DATE
```



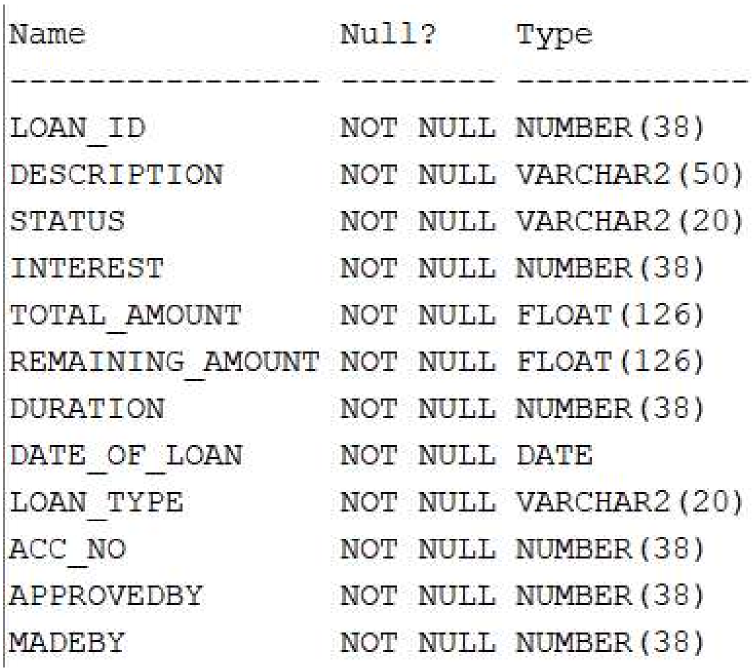
```
--creation of interst table
CREATE TABLE INTEREST(
Interest_id INT Primary key not null,
Savings_int DOUBLE PRECISION Not null,
LoanInterest DOUBLE PRECISION Not null,
Rd_int DOUBLE PRECISION Not null,
Fd_int DOUBLE PRECISION Not null,
Current_int DOUBLE PRECISION Not null,
Updatedby INT Not null,
FOREIGN KEY(Updatedby) REFERENCES MANAGER(Emp_ID));
DESC INTEREST;
```



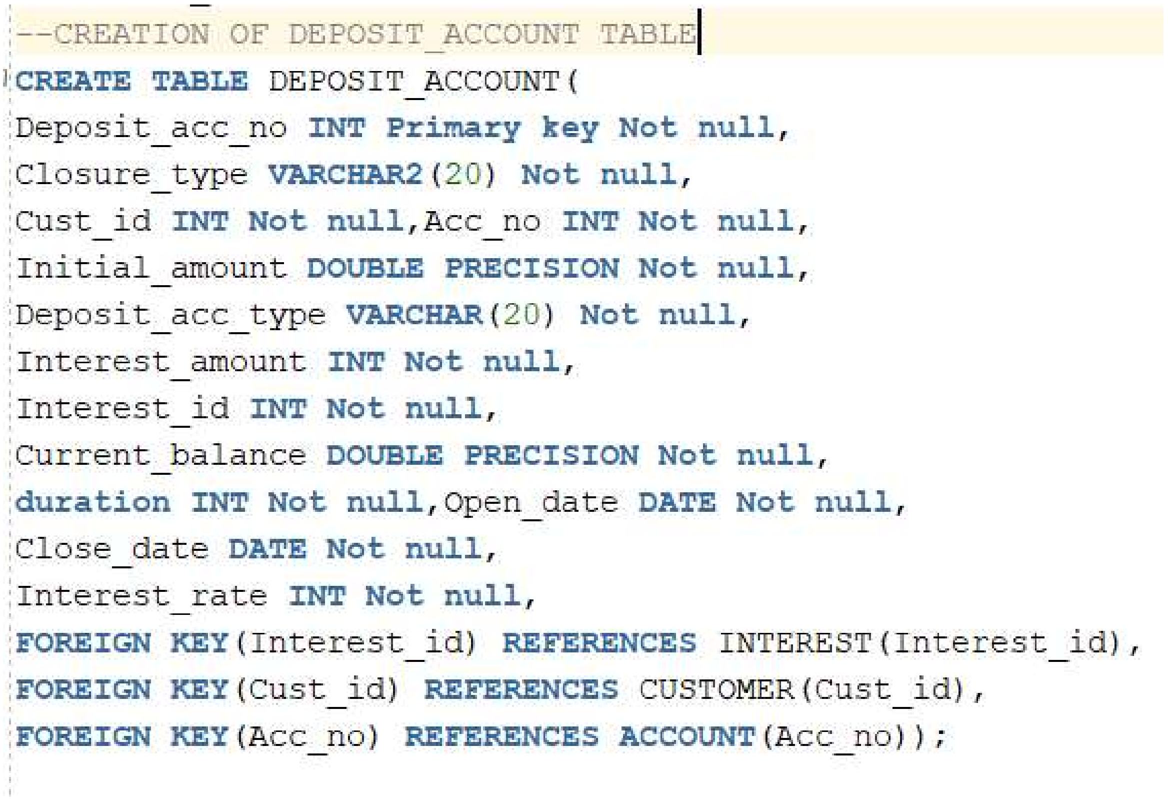
```
Name         Null?    Type
------------ -------- ----------
INTEREST_ID  NOT NULL NUMBER(38)
SAVINGS_INT  NOT NULL FLOAT(126)
LOANINTEREST NOT NULL FLOAT(126)
RD_INT       NOT NULL FLOAT(126)
FD_INT       NOT NULL FLOAT(126)
CURRENT_INT  NOT NULL FLOAT(126)
UPDATEDBY    NOT NULL NUMBER(38)
```



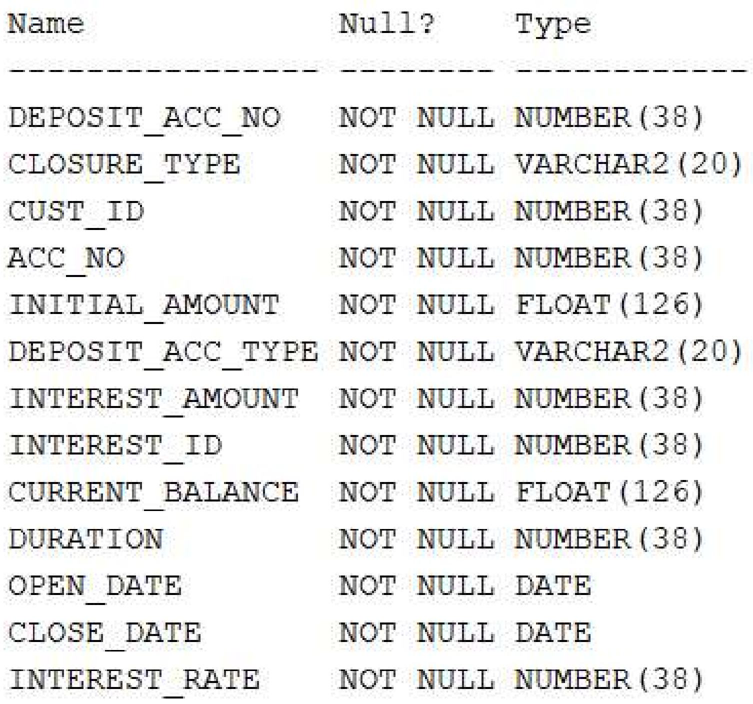
```
--CREATION OF TABLE LOAN ACCOUNT
CREATE TABLE LOAN_ACCOUNT(
Loan_id INT Primary key Not null,Description VARCHAR2(50) Not null,
Status VARCHAR2(20) Not null,
Interest INT Not null,Total_amount DOUBLE PRECISION Not null,
Remaining_amount DOUBLE PRECISION Not null,
Duration INT Not null,Date_of_loan DATE Not null,
Loan_type VARCHAR(20)Not null,
Acc_no INT Not null,ApprovedBy INT Not null,
MadeBy INT Not null,
FOREIGN KEY(ApprovedBy) REFERENCES MANAGER(Emp_ID),
FOREIGN KEY(MadeBy) REFERENCES OFFICER(Emp_ID),
FOREIGN KEY(Acc_no) REFERENCES ACCOUNT(Acc_no));
DESC LOAN_ACCOUNT;
```



```
Name               Null?    Type
------------------ -------- ------------
LOAN_ID            NOT NULL NUMBER(38)
DESCRIPTION        NOT NULL VARCHAR2(50)
STATUS             NOT NULL VARCHAR2(20)
INTEREST           NOT NULL NUMBER(38)
TOTAL_AMOUNT       NOT NULL FLOAT(126)
REMAINING_AMOUNT   NOT NULL FLOAT(126)
DURATION           NOT NULL NUMBER(38)
DATE_OF_LOAN       NOT NULL DATE
LOAN_TYPE          NOT NULL VARCHAR2(20)
ACC_NO             NOT NULL NUMBER(38)
APPROVEDBY         NOT NULL NUMBER(38)
MADEBY             NOT NULL NUMBER(38)
```

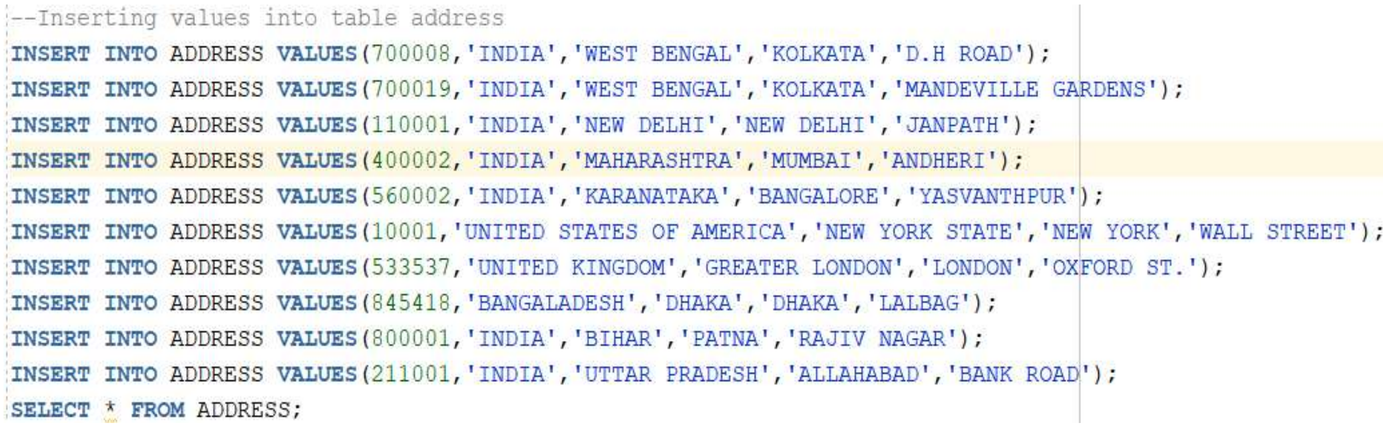


```
--CREATION OF DEPOSIT_ACCOUNT TABLE
CREATE TABLE DEPOSIT_ACCOUNT(
Deposit_acc_no INT Primary key Not null,
Closure_type VARCHAR2(20) Not null,
Cust_id INT Not null,Acc_no INT Not null,
Initial_amount DOUBLE PRECISION Not null,
Deposit_acc_type VARCHAR(20) Not null,
Interest_amount INT Not null,
Interest_id INT Not null,
Current_balance DOUBLE PRECISION Not null,
duration INT Not null,Open_date DATE Not null,
Close_date DATE Not null,
Interest_rate INT Not null,
FOREIGN KEY(Interest_id) REFERENCES INTEREST(Interest_id),
FOREIGN KEY(Cust_id) REFERENCES CUSTOMER(Cust_id),
FOREIGN KEY(Acc_no) REFERENCES ACCOUNT(Acc_no));
```

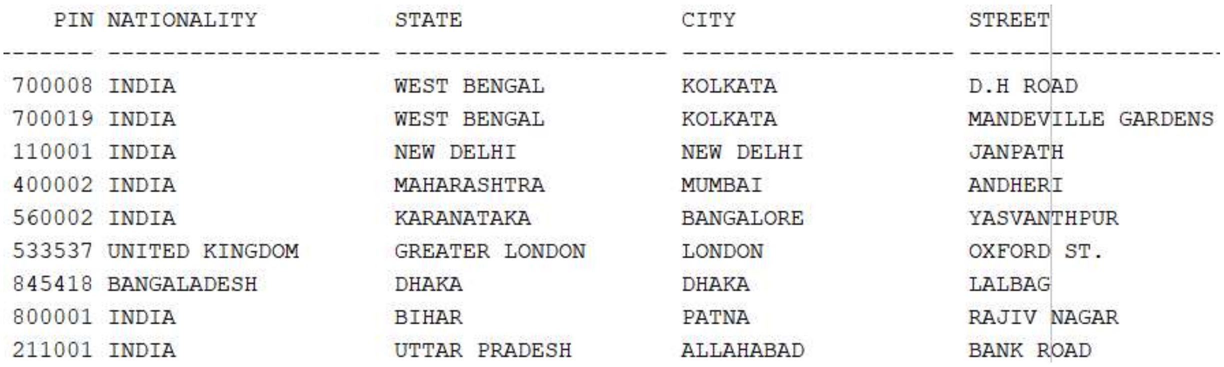


```
Name                  Null?    Type
-----------------     -------- ------------
DEPOSIT_ACC_NO        NOT NULL NUMBER(38)
CLOSURE_TYPE          NOT NULL VARCHAR2(20)
CUST_ID               NOT NULL NUMBER(38)
ACC_NO                NOT NULL NUMBER(38)
INITIAL_AMOUNT        NOT NULL FLOAT(126)
DEPOSIT_ACC_TYPE      NOT NULL VARCHAR2(20)
INTEREST_AMOUNT       NOT NULL NUMBER(38)
INTEREST_ID           NOT NULL NUMBER(38)
CURRENT_BALANCE       NOT NULL FLOAT(126)
DURATION              NOT NULL NUMBER(38)
OPEN_DATE             NOT NULL DATE
CLOSE_DATE            NOT NULL DATE
INTEREST_RATE         NOT NULL NUMBER(38)
```

TABLE ADDRESS

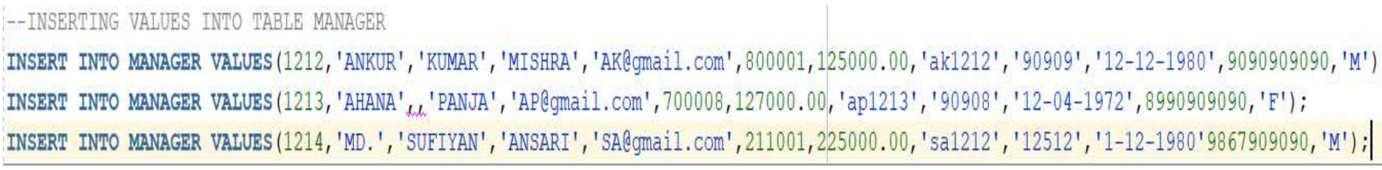


```
--Inserting values into table address
INSERT INTO ADDRESS VALUES(700008,'INDIA','WEST BENGAL','KOLKATA','D.H ROAD');
INSERT INTO ADDRESS VALUES(700019,'INDIA','WEST BENGAL','KOLKATA','MANDEVILLE GARDENS');
INSERT INTO ADDRESS VALUES(110001,'INDIA','NEW DELHI','NEW DELHI','JANPATH');
INSERT INTO ADDRESS VALUES(400002,'INDIA','MAHARASHTRA','MUMBAI','ANDHERI');
INSERT INTO ADDRESS VALUES(560002,'INDIA','KARANATAKA','BANGALORE','YASVANTHPUR');
INSERT INTO ADDRESS VALUES(10001,'UNITED STATES OF AMERICA','NEW YORK STATE','NEW YORK','WALL STREET');
INSERT INTO ADDRESS VALUES(533537,'UNITED KINGDOM','GREATER LONDON','LONDON','OXFORD ST.');
INSERT INTO ADDRESS VALUES(845418,'BANGALADESH','DHAKA','DHAKA','LALBAG');
INSERT INTO ADDRESS VALUES(800001,'INDIA','BIHAR','PATNA','RAJIV NAGAR');
INSERT INTO ADDRESS VALUES(211001,'INDIA','UTTAR PRADESH','ALLAHABAD','BANK ROAD');
SELECT * FROM ADDRESS;
```

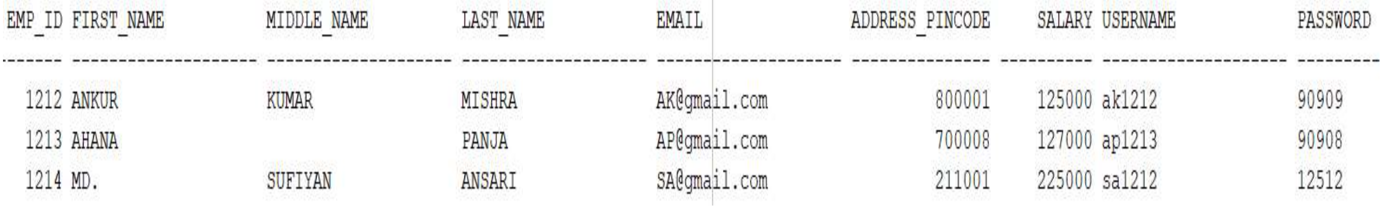


```
   PIN NATIONALITY          STATE                CITY                 STREET
------- -------------------- -------------------- -------------------- --------------------
 700008 INDIA                WEST BENGAL          KOLKATA              D.H ROAD
 700019 INDIA                WEST BENGAL          KOLKATA              MANDEVILLE GARDENS
 110001 INDIA                NEW DELHI            NEW DELHI            JANPATH
 400002 INDIA                MAHARASHTRA          MUMBAI               ANDHERI
 560002 INDIA                KARANATAKA           BANGALORE            YASVANTHPUR
 533537 UNITED KINGDOM       GREATER LONDON       LONDON               OXFORD ST.
 845418 BANGALADESH          DHAKA                DHAKA                LALBAG
 800001 INDIA                BIHAR                PATNA                RAJIV NAGAR
 211001 INDIA                UTTAR PRADESH        ALLAHABAD            BANK ROAD
```

TABLE MANAGER

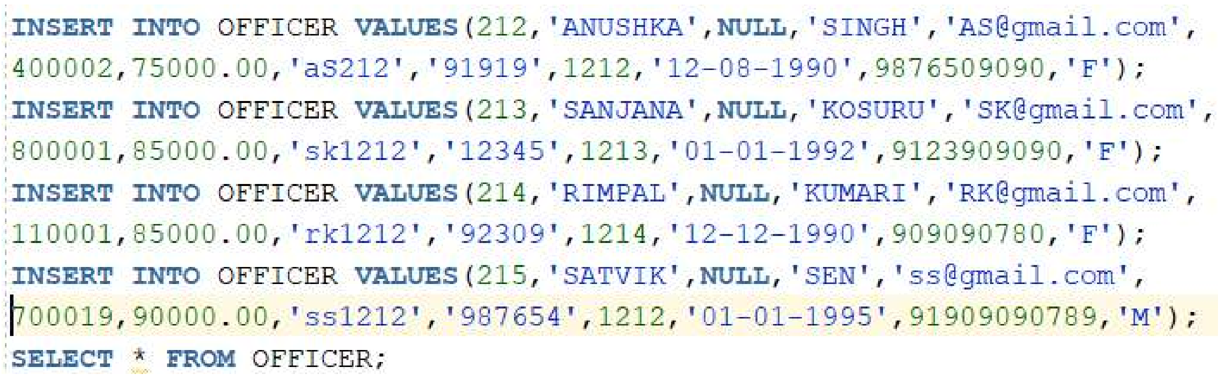


```
--INSERTING VALUES INTO TABLE MANAGER
INSERT INTO MANAGER VALUES(1212,'ANKUR','KUMAR','MISHRA','AK@gmail.com',800001,125000.00,'ak1212','90909','12-12-1980',9090909090,'M')
INSERT INTO MANAGER VALUES(1213,'AHANA',,'PANJA','AP@gmail.com',700008,127000.00,'ap1213','90908','12-04-1972',8990909090,'F');
INSERT INTO MANAGER VALUES(1214,'MD.','SUFIYAN','ANSARI','SA@gmail.com',211001,225000.00,'sa1212','12512','1-12-1980'9867909090,'M');
```

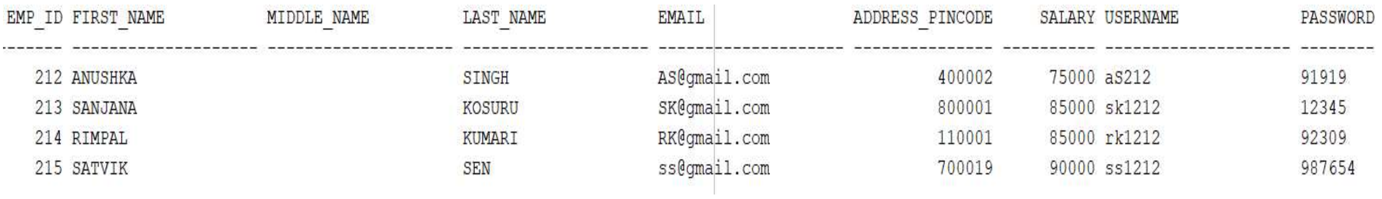


```
EMP_ID FIRST_NAME           MIDDLE_NAME          LAST_NAME            EMAIL                ADDRESS_PINCODE     SALARY USERNAME             PASSWORD
------ -------------------- -------------------- -------------------- -------------------- --------------- ---------- -------------------- ---------
  1212 ANKUR                KUMAR                MISHRA               AK@gmail.com                  800001     125000 ak1212               90909
  1213 AHANA                                     PANJA                AP@gmail.com                  700008     127000 ap1213               90908
  1214 MD.                  SUFIYAN              ANSARI               SA@gmail.com                  211001     225000 sa1212               12512
```

TABLE OFFICER

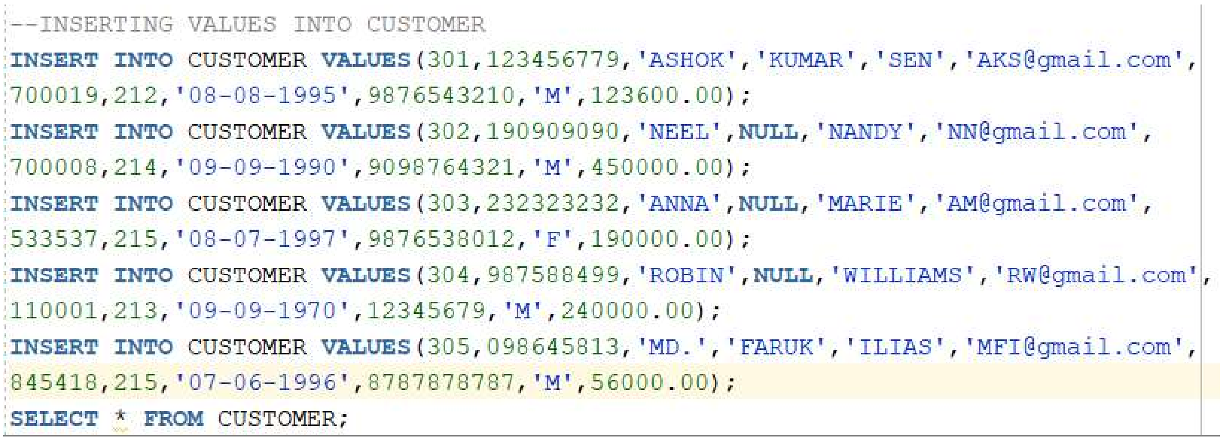


```
INSERT INTO OFFICER VALUES(212,'ANUSHKA',NULL,'SINGH','AS@gmail.com',
400002,75000.00,'aS212','91919',1212,'12-08-1990',9876509090,'F');
INSERT INTO OFFICER VALUES(213,'SANJANA',NULL,'KOSURU','SK@gmail.com',
800001,85000.00,'sk1212','12345',1213,'01-01-1992',9123909090,'F');
INSERT INTO OFFICER VALUES(214,'RIMPAL',NULL,'KUMARI','RK@gmail.com',
110001,85000.00,'rk1212','92309',1214,'12-12-1990',909090780,'F');
INSERT INTO OFFICER VALUES(215,'SATVIK',NULL,'SEN','ss@gmail.com',
700019,90000.00,'ss1212','987654',1212,'01-01-1995',91909090789,'M');
SELECT * FROM OFFICER;
```

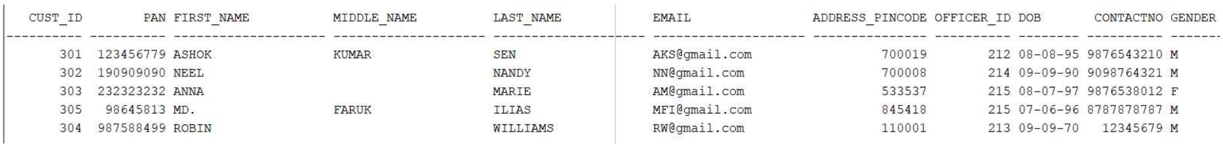


```
EMP_ID FIRST_NAME           MIDDLE_NAME          LAST_NAME            EMAIL                ADDRESS_PINCODE     SALARY USERNAME             PASSWORD
------ -------------------- -------------------- -------------------- -------------------- --------------- ---------- -------------------- --------
   212 ANUSHKA                                   SINGH                AS@gmail.com                  400002      75000 aS212                91919
   213 SANJANA                                   KOSURU               SK@gmail.com                  800001      85000 sk1212               12345
   214 RIMPAL                                    KUMARI               RK@gmail.com                  110001      85000 rk1212               92309
   215 SATVIK                                    SEN                  ss@gmail.com                  700019      90000 ss1212               987654
```

TABLE CUSTOMER

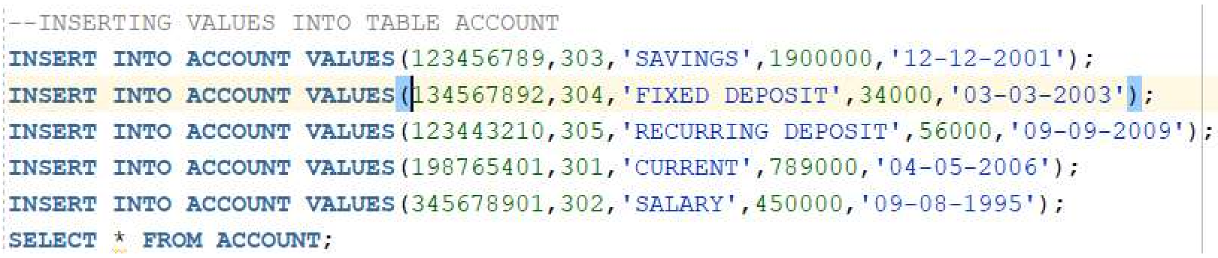


```
--INSERTING VALUES INTO CUSTOMER
INSERT INTO CUSTOMER VALUES(301,123456779,'ASHOK','KUMAR','SEN','AKS@gmail.com',
700019,212,'08-08-1995',9876543210,'M',123600.00);
INSERT INTO CUSTOMER VALUES(302,190909090,'NEEL',NULL,'NANDY','NN@gmail.com',
700008,214,'09-09-1990',9098764321,'M',450000.00);
INSERT INTO CUSTOMER VALUES(303,232323232,'ANNA',NULL,'MARIE','AM@gmail.com',
533537,215,'08-07-1997',9876538012,'F',190000.00);
INSERT INTO CUSTOMER VALUES(304,987588499,'ROBIN',NULL,'WILLIAMS','RW@gmail.com',
110001,213,'09-09-1970',12345679,'M',240000.00);
INSERT INTO CUSTOMER VALUES(305,098645813,'MD.','FARUK','ILIAS','MFI@gmail.com',
845418,215,'07-06-1996',8787878787,'M',56000.00);
SELECT * FROM CUSTOMER;
```

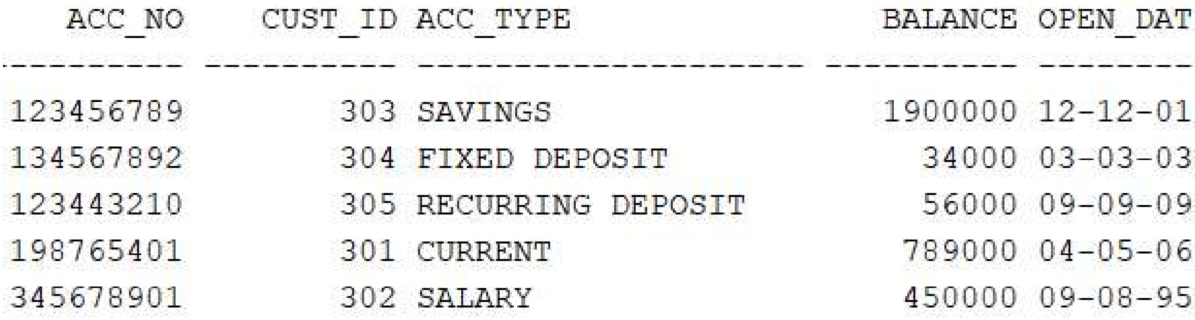


```
   CUST_ID        PAN FIRST_NAME           MIDDLE_NAME          LAST_NAME            EMAIL                ADDRESS_PINCODE OFFICER_ID DOB       CONTACTNO GENDER
---------- ---------- -------------------- -------------------- -------------------- -------------------- --------------- ---------- -------- ---------- -------
       301  123456779 ASHOK                KUMAR                SEN                  AKS@gmail.com                 700019        212 08-08-95 9876543210 M
       302  190909090 NEEL                                      NANDY                NN@gmail.com                  700008        214 09-09-90 9098764321 M
       303  232323232 ANNA                                      MARIE                AM@gmail.com                  533537        215 08-07-97 9876538012 F
       305   98645813 MD.                  FARUK                ILIAS                MFI@gmail.com                 845418        215 07-06-96 8787878787 M
       304  987588499 ROBIN                                     WILLIAMS             RW@gmail.com                  110001        213 09-09-70   12345679 M
```

TABLE ACCOUNT

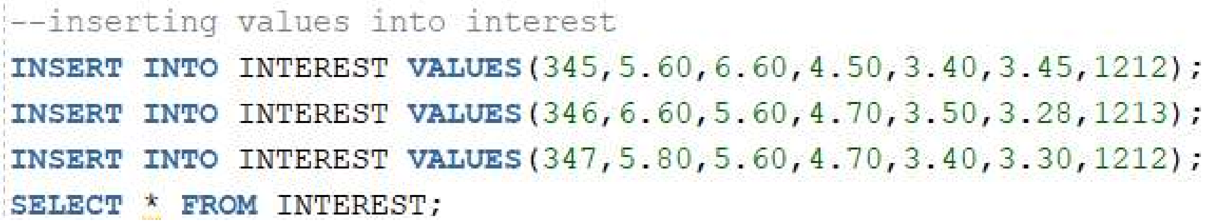


```
--INSERTING VALUES INTO TABLE ACCOUNT
INSERT INTO ACCOUNT VALUES(123456789,303,'SAVINGS',1900000,'12-12-2001');
INSERT INTO ACCOUNT VALUES(134567892,304,'FIXED DEPOSIT',34000,'03-03-2003');
INSERT INTO ACCOUNT VALUES(123443210,305,'RECURRING DEPOSIT',56000,'09-09-2009');
INSERT INTO ACCOUNT VALUES(198765401,301,'CURRENT',789000,'04-05-2006');
INSERT INTO ACCOUNT VALUES(345678901,302,'SALARY',450000,'09-08-1995');
SELECT * FROM ACCOUNT;
```

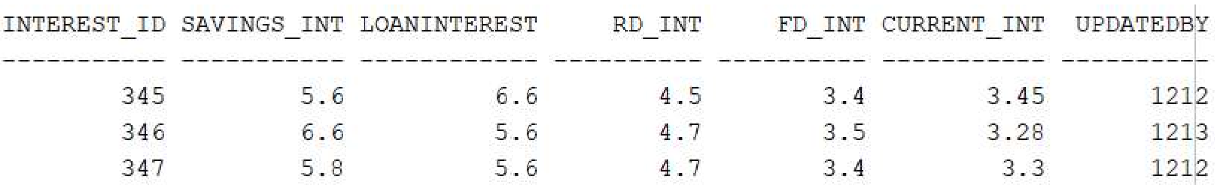


```
    ACC_NO    CUST_ID ACC_TYPE                BALANCE OPEN_DAT
---------- ---------- -------------------- ---------- --------
123456789         303 SAVINGS                 1900000 12-12-01
134567892         304 FIXED DEPOSIT             34000 03-03-03
123443210         305 RECURRING DEPOSIT         56000 09-09-09
198765401         301 CURRENT                  789000 04-05-06
345678901         302 SALARY                   450000 09-08-95
```

TABLE INTEREST

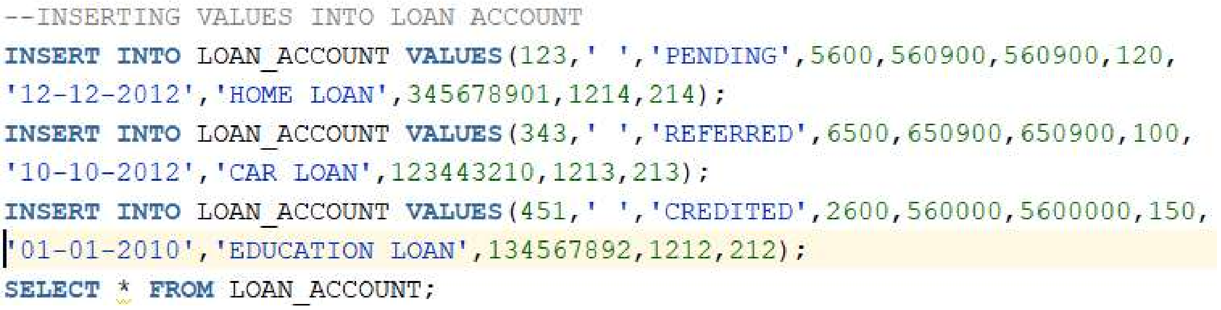


```
--inserting values into interest
INSERT INTO INTEREST VALUES(345,5.60,6.60,4.50,3.40,3.45,1212);
INSERT INTO INTEREST VALUES(346,6.60,5.60,4.70,3.50,3.28,1213);
INSERT INTO INTEREST VALUES(347,5.80,5.60,4.70,3.40,3.30,1212);
SELECT * FROM INTEREST;
```

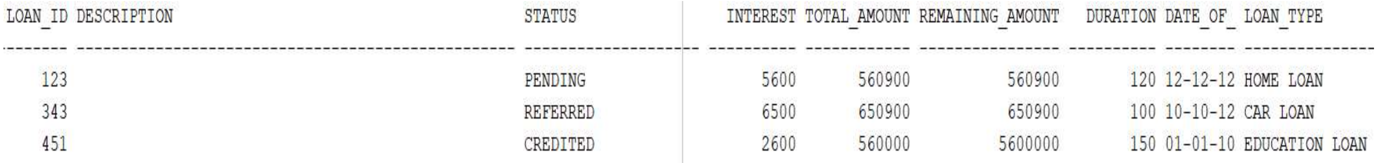


```
INTEREST_ID SAVINGS_INT LOANINTEREST     RD_INT     FD_INT CURRENT_INT  UPDATEDBY
----------- ----------- ------------ ---------- ---------- ----------- ----------
        345         5.6          6.6        4.5        3.4        3.45       1212
        346         6.6          5.6        4.7        3.5        3.28       1213
        347         5.8          5.6        4.7        3.4         3.3       1212
```

TABLE LOANACCOUNT

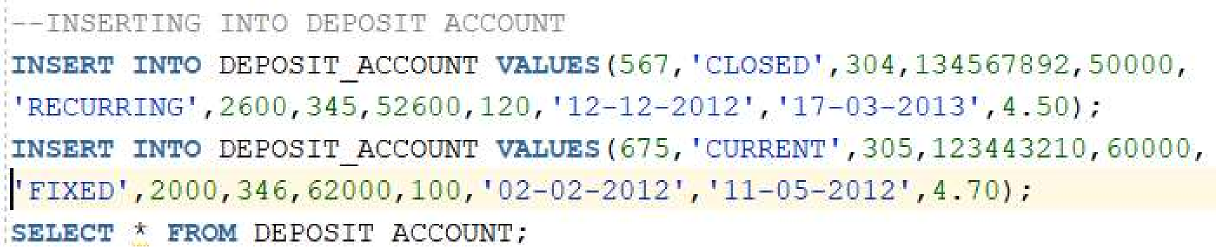


```
--INSERTING VALUES INTO LOAN ACCOUNT
INSERT INTO LOAN_ACCOUNT VALUES(123,' ','PENDING',5600,560900,560900,120,
'12-12-2012','HOME LOAN',345678901,1214,214);
INSERT INTO LOAN_ACCOUNT VALUES(343,' ','REFERRED',6500,650900,650900,100,
'10-10-2012','CAR LOAN',123443210,1213,213);
INSERT INTO LOAN_ACCOUNT VALUES(451,' ','CREDITED',2600,560000,5600000,150,
'01-01-2010','EDUCATION LOAN',134567892,1212,212);
SELECT * FROM LOAN_ACCOUNT;
```

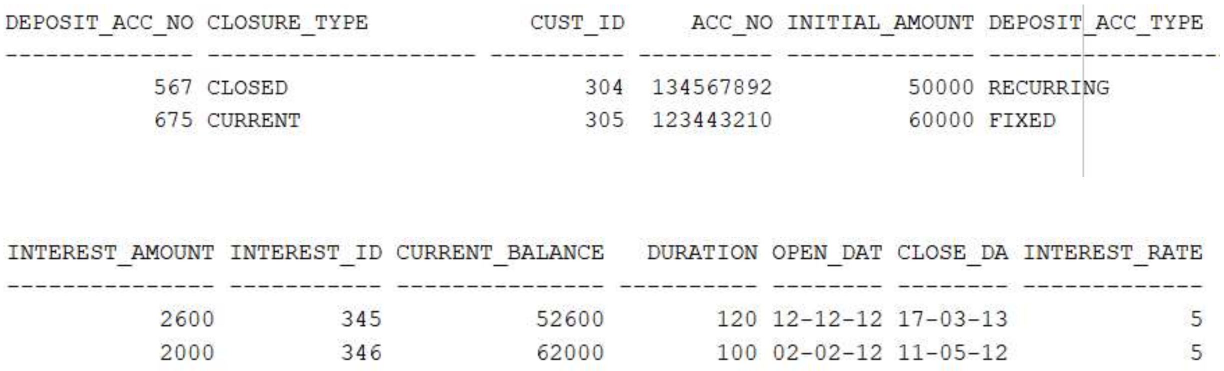


```
LOAN_ID DESCRIPTION                                          STATUS                INTEREST TOTAL_AMOUNT REMAINING_AMOUNT   DURATION DATE_OF_ LOAN_TYPE
------- ---------------------------------------------------- -------------------- ---------- ------------ ---------------- ---------- -------- ---------------
    123                                                      PENDING                    5600       560900           560900        120 12-12-12 HOME LOAN
    343                                                      REFERRED                   6500       650900           650900        100 10-10-12 CAR LOAN
    451                                                      CREDITED                   2600       560000          5600000        150 01-01-10 EDUCATION LOAN
```

TABLE DEPOSITACCOUNT



```
--INSERTING INTO DEPOSIT ACCOUNT
INSERT INTO DEPOSIT_ACCOUNT VALUES(567,'CLOSED',304,134567892,50000,
'RECURRING',2600,345,52600,120,'12-12-2012','17-03-2013',4.50);
INSERT INTO DEPOSIT_ACCOUNT VALUES(675,'CURRENT',305,123443210,60000,
'FIXED',2000,346,62000,100,'02-02-2012','11-05-2012',4.70);
SELECT * FROM DEPOSIT ACCOUNT;
```



```
DEPOSIT_ACC_NO CLOSURE_TYPE                CUST_ID     ACC_NO INITIAL_AMOUNT DEPOSIT_ACC_TYPE
-------------- -------------------- ---------- ---------- -------------- -----------------
           567 CLOSED                      304  134567892          50000 RECURRING
           675 CURRENT                     305  123443210          60000 FIXED

INTEREST_AMOUNT INTEREST_ID CURRENT_BALANCE   DURATION OPEN_DAT CLOSE_DA INTEREST_RATE
--------------- ----------- --------------- ---------- -------- -------- -------------
           2600         345           52600        120 12-12-12 17-03-13             5
           2000         346           62000        100 02-02-12 11-05-12             5
```

Conclusion:

The Banking System a Database Project system is more efficient, fast, reliable, user friendly. Over and above the proposed system does not have any possibility of data loss during processing. This banking system project will serve as a useful approach to data base dialogue box to deposit and withdraw the money for the person. It serves as a helpful approach for the users. It provides easy way of the deposit and withdraws the money. It reduces the time taken by the user to save the money. Thus the project is the user friendly approach.