

DBMS LAB EXPERIMENT

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16BCE0789

D1+TD1

1. Design the tables in the Bank database and Normalize the tables to 3NF. Write this design in your answer sheet and verify with the faculty. Proceed to the next problem only if your design is correct.

This is in 3rd normalization form

As

Table 1 : rank(code(pk),name)

Table 2: rankbr(name,branchno(pk),code(fk))

Table 3: loans(loansno(pk), amount, ssn(fk), branchno(fk))

Table 4: accounts(acno(pk),balance,ssn(fk),branchno(fk))

Table 5: customers(ssn(pk),name,addr)

As they are different therefore not conflicting.

2. Create the tables in Oracle and populate them using the data given in the end. – Create a '%_create' file for doing this.

TABLE CREATION

```

SQL> CREATE TABLE RANK<
  2  CODE NUMBER(4),
  3  NAME VARCHAR2(100)>;

Table created.

SQL> CREATE TABLE RANKBR<
  2  BRANCHNO NUMBER(4),
  3  NAME VARCHAR2(100),
  4  CODE NUMBER(4)>;

Table created.

SQL> CREATE TABLE LOAN<
  2  LOAN_NO;
LOAN_NO
  *
ERROR at line 2:
ORA-00907: missing right parenthesis

SQL> CREATE TABLE CUSTOMERS<
  2  SSN NUMBER(4),
  3  NAME VARCHAR2(100),
  4  ADDR VARCHAR2(100)>;

Table created.

SQL> CREATE TABLE LOANS<
  2  LOAN_NO NUMBER(4),
  3  AMOUNT NUMBER(12),
  4  SSN NUMBER(4),
  5  BRANCHNO NUMBER(4)>;

Table created.

SQL> CREATE TABLE ACCOUNTS<
  2  ACNO NUMBER(4),
  3  BALANCE NUMBER(12),
  4  SSN NUMBER(4),
  5  BRANCHNO NUMBER(4)>;

Table created.

```

The Primary Keys

```

SQL> ALTER TABLE RANK ADD CONSTRAINT RANK_PK PRIMARY KEY(CODE);
Table altered.

SQL> ALTER TABLE BRANCHNO ADD CONSTRAINT RANKBR_PK PRIMARY KEY(BRANCHNO);
ALTER TABLE BRANCHNO ADD CONSTRAINT RANKBR_PK PRIMARY KEY(BRANCHNO)
*
ERROR at line 1:
ORA-00942: table or view does not exist

SQL> ALTER TABLE RANKBR ADD CONSTRAINT RANKBR_PK PRIMARY KEY(BRANCHNO);
Table altered.

SQL> ALTER TABLE LOAN ADD CONSTRAINT LOAN_PK PRIMARY KEY(LOAN_NO);
ALTER TABLE LOAN ADD CONSTRAINT LOAN_PK PRIMARY KEY(LOAN_NO)
*
ERROR at line 1:
ORA-00942: table or view does not exist

SQL> ALTER TABLE LOANS ADD CONSTRAINT LOAN_PK PRIMARY KEY(LOAN_NO);
Table altered.

SQL> ALTER TABLE ACCOUNTS ADD CONSTRAINT ACCOUNT_PK PRIMARY KEY(ACNO);
Table altered.

SQL> ALTER TABLE CUSTOMERS ADD CONSTRAINT CUSTOMERS_PK PRIMARY KEY(SSN);
Table altered.

```

The Foreign Keys

```

SQL> ALTER TABLE RANKBR ADD CONSTRAINT RANKBR_FK1 FOREIGN KEY(CODE) REFERENCES RANK(CODE);
Table altered.

SQL> ALTER TABLE LOANS ADD CONSTRAINT LOAN_FK1 FOREIGN KEY(SSN) REFERENCES CUSTOMERS(SSN);
ALTER TABLE LOANS ADD CONSTRAINT LOAN_FK1 FOREIGN KEY(SSN) REFERENCES CUSTOMERS(SSN)
*
ERROR at line 1:
ORA-00942: table or view does not exist

SQL> ALTER TABLE LOANS ADD CONSTRAINT LOAN_FK1 FOREIGN KEY(SSN) REFERENCES CUSTOMERS(SSN);
Table altered.

SQL> ALTER TABLE LOANS ADD CONSTRAINT LOAN_FK2 FOREIGN KEY(BRANCHNO) REFERENCES RANKBR(BRANCHNO);
Table altered.

SQL> ALTER TABLE ACCOUNTS ADD CONSTRAINT ACCOUNT_FK2 FOREIGN KEY(BRANCHNO) REFERENCES RANKBR(BRANCHNO);
Table altered.

SQL> ALTER TABLE ACCOUNTS ADD CONSTRAINT ACCOUNT_FK1 FOREIGN KEY(SSN) REFERENCES CUSTOMERS(SSN);
Table altered.

```

```
SQL> insert into rank values(01,'SBI');
1 row created.

SQL> insert into rank values(01,'SBI');
insert into rank values(01,'SBI')
*
ERROR at line 1:
ORA-00001: unique constraint (16BCE0789.RANK_PK) violated

SQL> insert into rank values(02,'KV');
1 row created.
```

```
SQL> insert into rankBR values(13,'SBI',01);
1 row created.

SQL> insert into rankBR values(15,'SBI',01);
1 row created.

SQL> insert into rankBR values(26,'KV',02);
1 row created.

SQL> insert into rankBR values(22,'KV',02);
1 row created.

SQL> insert into rankBR values(27,'KV',02);
1 row created.

SQL> insert into rankBR values(11,'SBI',01);
1 row created.

SQL> insert into rankBR values(27,'KV',02);
insert into rankBR values(27,'KV',02)
```

```
SQL> insert into CUSTOMERS values(01,'ANIL','120,mg road');
1 row created.

SQL> insert into CUSTOMERS values(02,'PREETHI','12,MOUNT ROAD');
1 row created.

SQL> insert into CUSTOMERS values(03,'RAJESH','12,18TH CROSS');
1 row created.

SQL> insert into CUSTOMERS values(04,'SURESH','40,LB ROAD');
1 row created.
```

```
SQL> COMMIT;
Commit complete.
SQL> insert into LOANS values(0001,12000,01,13);
1 row created.
SQL> insert into LOANS values(0001,8000,01,13);
insert into LOANS values(0001,8000,01,13)
*
ERROR at line 1:
ORA-00001: unique constraint (16BCE0789.LOAN_PK) violated

SQL> insert into LOANS values(0002,10000,01,15);
1 row created.
SQL> insert into LOANS values(0003,2000,01,26);
1 row created.
SQL> insert into LOANS values(0004,6000,04,13);
1 row created.
```

```

SQL> insert into LOANS values(0002,10000,01,15);
1 row created.
SQL> insert into LOANS values(0003,2000,01,26);
1 row created.
SQL> insert into LOANS values(0004,6000,04,13);
1 row created.
SQL> insert into ACCOUNTS values(001,5000,01,13);
1 row created.
SQL> insert into ACCOUNTS values(0002,6000,01,15);
1 row created.
SQL> insert into ACCOUNTS values(0003,11500,01,26);
1 row created.
SQL> insert into ACCOUNTS values(0008,10000,01,22);
1 row created.
SQL> insert into ACCOUNTS values(0004,22500,02,27);
1 row created.
SQL> insert into ACCOUNTS values(0005,12000,03,11);
1 row created.
SQL> insert into ACCOUNTS values(0006,30000,04,27);
1 row created.
SQL> insert into ACCOUNTS values(0007,15000,04,13);
1 row created.

```

3. Validate the following using a check constraint while creating the table.
 - Balance does not fall below 5000

```

SQL> SELECT RANKBR.BRANCHNO,ADDR FROM RANKBR INNER JOIN ACCOUNTS ON RANKBR.BRANCHNO=ACCOUNTS.BRANCHNO WHERE BALANCE>5000;
SELECT RANKBR.BRANCHNO,ADDR FROM RANKBR INNER JOIN ACCOUNTS ON RANKBR.BRANCHNO=ACCOUNTS.BRANCHNO WHERE BALANCE>5000

```

4. Write SQL queries for the following:
 - a. Find the branch where total deposits exceed Rs. 50,000.00
 - b. Find for each customer having loan in Madurai branch, his name and total deposit amount in all the accounts of branches of different banks

(II)

```

Sql> SELECT NAME,BALANCE FROM CUSTOMER,LOANS,RANKBR,ACCOUNTS WHERE
CUSTOMER.SSN=LONS.SSN AND CUSTOMER.SSN=AMOUNT.SSN AND
LOAN.BRANCHNO=RACKBR.BRANCHNO AND RANKBR.ADDR='madurai'

```

NAME	BALANCE
------	---------

ANIL	5000
------	------

ANIL	6000
------	------

ANIL	11500
------	-------

ANIL	10000
------	-------

(I)

```
SQL> SELECT RANKBR.BRANCHNO,ADDR FROM RANKBR INNER JOIN ACCOUNTS ON  
RANKBR.BRANCHNO=ACCOUNTS.BRANCHNO WHERE BALANCE>5000;
```

BRANCHNO	ADDR
----------	------

26	TRICHY
----	--------

15	MADURAI
----	---------

22	MADURAI
----	---------

27	CHENNAI
----	---------

11	COMIBATORE
----	------------

28	CHENNAI
----	---------

14	CHENNAI
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