Exercises

Q1. Consider a database LOANS with the following tuples:

Table: LOANS

AccNo	Cust_Name	Loan_Amount	Instalments	Int_Rate	Start_Date	Interest
1	R.K.Gupta	300000	36	12.00	19-07-2009	1200
2	S.P.Sharma	500000	48	10.00	22-03-2008	1800
3	K.P.Jain	300000	36	NULL	08-03-2007	1600
4	M.P.Yadav	800000	60	10.00	06-12-2008	2250
5	S.P.Sinha	200000	36	12.50	03-01-2010	4500
6	P.Sharma	700000	60	12.50	05-06-2008	3500
7	K.S.Dhall	500000	48	NULL	05-03-2008	3800

1) Create the table Loans and insert tuples in it.

```
create table LOANS(ACCNo int,Cust_Name varchar(20),Loan_Amount number,installments integer,Int_Rate decimal(10,2),Start_Date date,interest integer);

insert into LOANS values('1','R K Gipta',300000,36,12.00,'19-july-09',1200);

insert into LOANS values(2,'S P Shanna',500000,48,10.00,'22-Mar-09',1800);

insert into LOANS values(3,'K P Jain',300000,36,NULL,'08-Mar-07',1600);

insert into LOANS values(4,'M P Yadavu',800000,60,10.00,'06-Dec-08',2250);

insert into LOANS values(5,'S P Sinha',200000,36,12.50,'03-Jan-10',4500);

insert into LOANS values(6,'P.Shanna',700000,60,12.50,'05-Jun-08',3500);

insert into LOANS values(7,'K S Dhall',500000,48,NULL,'05-Mar-08',3800);
```

2) Display the details of all the loans.

```
select * from LOANS;
```

```
SQL> select * from LOANS;

     ACCNO CUST_NAME            LOAN_AMOUNT INSTALLMENTS   INT_RATE START_DAT   INTEREST
---------- -------------------- ----------- ------------ ---------- --------- ----------
         1 R K Gipta                 300000           36         12 19-JUL-09       1200
         2 S P Shanna                500000           48         10 22-MAR-09       1800
         3 K P Jain                  300000           36            08-MAR-07       1600
         4 M P Yadavu                800000           60         10 06-DEC-08       2250
         5 S P Sinha                 200000           36       12.5 03-JAN-10       4500
         6 P.Shanna                  700000           60       12.5 05-JUN-08       3500
         7 K S Dhall                 500000           48            05-MAR-08       3800
```

3) Display the AccNo, Cust_Name, and Loan_Amount of all the loans.

select ACCNO,CUST_NAME,LOAN_AMOUNT from LOANS;

```
SQL> select ACCNO,CUST_NAME,LOAN_AMOUNT from LOANS;

     ACCNO CUST_NAME            LOAN_AMOUNT
---------- -------------------- -----------
         1 R K Gipta                 300000
         2 S P Shanna                500000
         3 K P Jain                  300000
         4 M P Yadavu                800000
         5 S P Sinha                 200000
         6 P.Shanna                  700000
         7 K S Dhall                 500000
```

Conditional Select using Where Clause

4) Display the details of all the loans with less than 40 instalments.

select * from LOANS where INSTALLMENTS<40;

```
SQL> select * from LOANS where INSTALLMENTS<40;

     ACCNO CUST_NAME            LOAN_AMOUNT INSTALLMENTS   INT_RATE START_DAT   INTEREST
---------- -------------------- ----------- ------------ ---------- --------- ----------
         1 R K Gipta                 300000           36         12 19-JUL-09       1200
         3 K P Jain                  300000           36            08-MAR-07       1600
         5 S P Sinha                 200000           36       12.5 03-JAN-10       4500
```

5) Display the AccNo and Loan_Amount of all the loans started before 01-04-2009.

select ACCNO,LOAN_AMOUNT from LOANS where START_DATE<'01-APR-09';

```
SQL> select ACCNO,LOAN_AMOUNT from LOANS where START_DATE<'01-APR-09';

     ACCNO LOAN_AMOUNT
---------- -----------
         2      500000
         3      300000
         4      800000
         6      700000
         7      500000
```

6) Display the Int_Rate of all the loans started after 01-04-2009.

select ACCNO,LOAN_AMOUNT from LOANS where START_DATE>'01-APR-09';

```
SQL> select ACCNO,LOAN_AMOUNT from LOANS where START_DATE>'01-APR-09';

     ACCNO LOAN_AMOUNT
---------- -----------
         1      300000
         5      200000
```

Using NULL

7) Display the details of all the loans whose rate of interest is NULL.

select * from LOANS where INT_RATE is NULL;

```
SQL> select * from LOANS where INT_RATE is NULL;

     ACCNO CUST_NAME            LOAN_AMOUNT INSTALLMENTS   INT_RATE START_DAT   INTEREST
---------- -------------------- ----------- ------------ ---------- --------- ----------
         3 K P Jain                  300000           36            08-MAR-07       1600
         7 K S Dhall                 500000           48            05-MAR-08       3800
```

8) Display the details of all the loans whose rate of interest is not NULL.

select * from LOANS where INT_RATE is NOT NULL;

```
SQL> select * from LOANS where INT_RATE is NOT NULL;

     ACCNO CUST_NAME            LOAN_AMOUNT INSTALLMENTS   INT_RATE START_DAT   INTEREST
---------- -------------------- ----------- ------------ ---------- --------- ----------
         1 R K Gipta                 300000           36         12 19-JUL-09       1200
         2 S P Shanna                500000           48         10 22-MAR-09       1800
         4 M P Yadavu                800000           60         10 06-DEC-08       2250
         5 S P Sinha                 200000           36       12.5 03-JAN-10       4500
         6 P.Shanna                  700000           60       12.5 05-JUN-08       3500
```

Using DISTINCT Clause

9) Display the amounts of various loans from the table LOANS. A loan amount should appear only once.

select distinct(LOAN_AMOUNT) from LOANS;

```
SQL> select distinct(LOAN_AMOUNT) from LOANS;

LOAN_AMOUNT
-----------
     300000
     200000
     700000
     800000
     500000
```

10) Display the number of installments of various loans from the table LOANS. An instalment should appear only once.

select distinct(INSTALLMENTS) from LOANS;

```
SQL> select distinct(INSTALLMENTS) from LOANS;

INSTALLMENTS
------------
          48
          36
          60
```

Using Logical Operators (NOT, AND, OR) and Between

11) Display the details of all the loans started after 31-12-2008 for which the number of instalments are more than 36.

select * from LOANS where START_DATE>'31-DEC-08' AND INSTALLMENTS>36;

```
SQL> select * from LOANS where START_DATE>'31-DEC-08' AND INSTALLMENTS>36;

     ACCNO CUST_NAME            LOAN_AMOUNT INSTALLMENTS   INT_RATE START_DAT   INTEREST
---------- -------------------- ----------- ------------ ---------- --------- ----------
         2 S P Shanna                500000           48         10 22-MAR-09       1800
```

12) Display the Cust_Name and Loan_Amount for all the loans which do not have number of instalments 36.

select CUST_NAME,LOAN_AMOUNT from LOANS where INSTALLMENTS<>36;

```
SQL> select CUST_NAME,LOAN_AMOUNT from LOANS where INSTALLMENTS<>36;

CUST_NAME            LOAN_AMOUNT
-------------------- -----------
S P Shanna                500000
M P Yadavu                800000
P.Shanna                  700000
K S Dhall                 500000
```

13) Display the Cust_Name and Loan_Amount for all the loans for which the loan amount is less than 500000 or int_rate is more than 12.

select CUST_NAME,LOAN_AMOUNT from LOANS where LOAN_AMOUNT<500000 or INT_RATE>12;

```
SQL> select CUST_NAME,LOAN_AMOUNT from LOANS where LOAN_AMOUNT<500000 or INT_RATE>12;

CUST_NAME            LOAN_AMOUNT
-------------------- -----------
R K Gipta                 300000
K P Jain                  300000
S P Sinha                 200000
P.Shanna                  700000
```

14) Display the details of all the loans whose Loan_Amount is in the range 400000 to 500000.

select * from LOANS where LOAN_AMOUNT between 400000 and 500000;

```
SQL> select * from LOANS where LOAN_AMOUNT between 400000 and 500000;

     ACCNO CUST_NAME            LOAN_AMOUNT INSTALLMENTS   INT_RATE START_DAT   INTEREST
---------- -------------------- ----------- ------------ ---------- --------- ----------
         2 S P Shanna                500000           48         10 22-MAR-09       1800
         7 K S Dhall                 500000           48            05-MAR-08       3800
```

15) Display the details of all the loans whose rate of interest is in the range 11% to 12%.

select * from LOANS where INT_RATE between 11 and 12;

```
SQL>  select * from LOANS where INT_RATE between 11 and 12;

     ACCNO CUST_NAME            LOAN_AMOUNT INSTALLMENTS   INT_RATE START_DAT   INTEREST
---------- -------------------- ----------- ------------ ---------- --------- ----------
         1 R K Gipta                 300000           36         12 19-JUL-09       1200
```

Using IN Operator

16) Display the Cust_Name and Loan_Amount for all the loans for which the number of installments are 24, 36, or 48. (Using IN operator)

select CUST_NAME,LOAN_AMOUNT from LOANS where INSTALLMENTS IN(24,36,48);

```
SQL> select CUST_NAME,LOAN_AMOUNT from LOANS where INSTALLMENTS IN(24,36,48);

CUST_NAME            LOAN_AMOUNT
-------------------- -----------
R K Gipta                 300000
S P Shanna                500000
K P Jain                  300000
S P Sinha                 200000
K S Dhall                 500000
```

Using LIKE Operator

17) Display the AccNo, Cust_Name, and Loan_Amount for all the loans for which the Cust_Name ends with 'Sharma'.

select ACCNO,CUST_NAME,LOAN_AMOUNT from LOANS where CUST_NAME like '%Sharma';

```
> select ACCNO,CUST_NAME,LOAN_AMOUNT from LOANS where CUST_NAME like '%Sharma';

rows selected
```

18) Display the AccNo, Cust_Name, and Loan_Amount for all the loans for which the Cust_Name ends with 'a'.

select ACCNO,CUST_NAME,LOAN_AMOUNT from LOANS where CUST_NAME like '%a';

```
SQL>  select ACCNO,CUST_NAME,LOAN_AMOUNT from LOANS where CUST_NAME like '%a';

     ACCNO CUST_NAME            LOAN_AMOUNT
---------- -------------------- -----------
         1 R K Gipta                 300000
         2 S P Shanna                500000
         5 S P Sinha                 200000
         6 P.Shanna                  700000
```

19) Display the AccNo, Cust_Name, and Loan_Amount for all the loans for which the Cust_Name contains 'a'.

select ACCNO,CUST_NAME,LOAN_AMOUNT from LOANS where CUST_NAME like '%a%';

```
SQL> select ACCNO,CUST_NAME,LOAN_AMOUNT from LOANS where CUST_NAME like '%a%';

     ACCNO CUST_NAME            LOAN_AMOUNT
---------- -------------------- -----------
         1 R K Gipta                 300000
         2 S P Shanna                500000
         3 K P Jain                  300000
         4 M P Yadavu                800000
         5 S P Sinha                 200000
         6 P.Shanna                  700000
         7 K S Dhall                 500000
```

20) Display the AccNo, Cust_Name, and Loan_Amount for all the loans for which the Cust_Name does not contain 'P'.

select ACCNO,CUST_NAME,LOAN_AMOUNT from LOANS where NOT (CUST_NAME like '%P%');

```
SQL> select ACCNO,CUST_NAME,LOAN_AMOUNT from LOANS where NOT (CUST_NAME like '%P%');

     ACCNO CUST_NAME            LOAN_AMOUNT
---------- -------------------- -----------
         1 R K Gipta                 300000
         7 K S Dhall                 500000
```

21) Display the AccNo, Cust_Name, and Loan_Amount for all the loans for which the Cust_Name contains 'a' as the second last character.

select ACCNO,CUST_NAME,LOAN_AMOUNT from LOANS where CUST_NAME like '%a_';

```
SQL> select ACCNO,CUST_NAME,LOAN_AMOUNT from LOANS where CUST_NAME like '%a_';

no rows selected
```

Using ORDER BY clause

22) Display the details of all the loans in the ascending order of their Loan_Amount.

select * from LOANS ORDER BY LOAN_AMOUNT;

```
SQL> select * from LOANS ORDER BY LOAN_AMOUNT;

     ACCNO CUST_NAME            LOAN_AMOUNT INSTALLMENTS   INT_RATE START_DAT   INTEREST
---------- -------------------- ----------- ------------ ---------- --------- ----------
         5 S P Sinha                 200000           36       12.5 03-JAN-10       4500
         1 R K Gipta                 300000           36         12 19-JUL-09       1200
         3 K P Jain                  300000           36            08-MAR-07       1600
         2 S P Shanna                500000           48         10 22-MAR-09       1800
         7 K S Dhall                 500000           48            05-MAR-08       3800
         6 P.Shanna                  700000           60       12.5 05-JUN-08       3500
         4 M P Yadavu                800000           60         10 06-DEC-08       2250
```

23) Display the details of all the loans in the descending order of their Start_Date.

select * from LOANS ORDER BY START_DATE DESC;

```
SQL> select * from LOANS ORDER BY START_DATE DESC;

     ACCNO CUST_NAME            LOAN_AMOUNT INSTALLMENTS   INT_RATE START_DAT   INTEREST
---------- -------------------- ----------- ------------ ---------- --------- ----------
         5 S P Sinha                 200000           36       12.5 03-JAN-10       4500
         1 R K Gipta                 300000           36         12 19-JUL-09       1200
         2 S P Shanna                500000           48         10 22-MAR-09       1800
         4 M P Yadavu                800000           60         10 06-DEC-08       2250
         6 P.Shanna                  700000           60       12.5 05-JUN-08       3500
         7 K S Dhall                 500000           48            05-MAR-08       3800
         3 K P Jain                  300000           36            08-MAR-07       1600
```

24)

Using UPDATE, DELETE, ALTER TABLE

25) Put the interest rate 11.50% for all the loans for which interest rate is NULL.

update LOANS set INT_RATE=11.50 where INT_RATE is NULL;

```
SQL> update LOANS set INT_RATE=11.50 where INT_RATE is NULL;

2 rows updated.

SQL> select * from loans;

     ACCNO CUST_NAME            LOAN_AMOUNT INSTALLMENTS   INT_RATE START_DAT   INTEREST
---------- -------------------- ----------- ------------ ---------- --------- ----------
         1 R K Gipta                 300000           36         12 19-JUL-09       1200
         2 S P Shanna                500000           48         10 22-MAR-09       1800
         3 K P Jain                  300000           36       11.5 08-MAR-07       1600
         4 M P Yadavu                800000           60         10 06-DEC-08       2250
         5 S P Sinha                 200000           36       12.5 03-JAN-10       4500
         6 P.Shanna                  700000           60       12.5 05-JUN-08       3500
         7 K S Dhall                 500000           48       11.5 05-MAR-08       3800
```

26) Increase the interest rate by 0.5% for all the loans for which the loan amount is more than 400000.

update LOANS set INT_RATE=INT_RATE+0.5 where LOAN_AMOUNT>400000;

```
SQL> update LOANS set INT_RATE=INT_RATE+0.5 where LOAN_AMOUNT>400000;

4 rows updated.

SQL> select * from Loans;

     ACCNO CUST_NAME            LOAN_AMOUNT INSTALLMENTS   INT_RATE START_DAT   INTEREST
---------- -------------------- ----------- ------------ ---------- --------- ----------
         1 R K Gipta                 300000           36         12 19-JUL-09       1200
         2 S P Shanna                500000           48       10.5 22-MAR-09       1800
         3 K P Jain                  300000           36       11.5 08-MAR-07       1600
         4 M P Yadavu                800000           60       10.5 06-DEC-08       2250
         5 S P Sinha                 200000           36       12.5 03-JAN-10       4500
         6 P.Shanna                  700000           60         13 05-JUN-08       3500
         7 K S Dhall                 500000           48         12 05-MAR-08       3800
```

27) For each loan replace Interest with (Loan_Amount*Int_Rate*Instalments) 12*100.

update LOANS set INTEREST=(LOAN_AMOUNT*INT_RATE*INSTALLMENTS)/12*100;

```
SQL> update LOANS set INTEREST=(LOAN_AMOUNT*INT_RATE*INSTALLMENTS)/12*100;

7 rows updated.

SQL> select * from loans;

     ACCNO CUST_NAME            LOAN_AMOUNT INSTALLMENTS   INT_RATE START_DAT   INTEREST
---------- -------------------- ----------- ------------ ---------- --------- ----------
         1 R K Gipta                 300000           36         12 19-JUL-09 1080000000
         2 S P Shanna                500000           48       10.5 22-MAR-09 2100000000
         3 K P Jain                  300000           36       11.5 08-MAR-07 1035000000
         4 M P Yadavu                800000           60       10.5 06-DEC-08 4200000000
         5 S P Sinha                 200000           36       12.5 03-JAN-10  750000000
         6 P.Shanna                  700000           60         13 05-JUN-08 4550000000
         7 K S Dhall                 500000           48         12 05-MAR-08 2400000000
```

28) Delete the records of all the loans of 'K.P. Jain'

delete from LOANS where CUST_NAME='K P Jain';

```
SQL> delete from LOANS where CUST_NAME='K P Jain';

1 row deleted.

SQL> select * from loans;

     ACCNO CUST_NAME            LOAN_AMOUNT INSTALLMENTS   INT_RATE START_DAT   INTEREST
---------- -------------------- ----------- ------------ ---------- --------- ----------
         1 R K Gipta                 300000           36         12 19-JUL-09 1080000000
         2 S P Shanna                500000           48       10.5 22-MAR-09 2100000000
         4 M P Yadavu                800000           60       10.5 06-DEC-08 4200000000
         5 S P Sinha                 200000           36       12.5 03-JAN-10  750000000
         6 P.Shanna                  700000           60         13 05-JUN-08 4550000000
         7 K S Dhall                 500000           48         12 05-MAR-08 2400000000
```

29) Add another column Category of type CHAR(1) in the Loan table.

alter table LOANS add category char(1);

```
SQL> alter table LOANS add category char(1);

Table altered.


SQL> describe loans;
 Name                                                                    Null?    Type
 ----------------------------------------------------------------------- -------- ------------------------
 ACCNO                                                                            NUMBER(38)
 CUST_NAME                                                                        VARCHAR2(20)
 LOAN_AMOUNT                                                                      NUMBER
 INSTALLMENTS                                                                     NUMBER(38)
 INT_RATE                                                                         NUMBER(10,2)
 START_DATE                                                                       DATE
 INTEREST                                                                         NUMBER(38)
 CATEGORY                                                                         CHAR(1)
```

Using Aggregate Functions

30) Display the sum of all Loan Amount for whose Interest rate is greater than 10.

select sum(LOAN_AMOUNT) from loans where INT_RATE>10;

```
SQL> select sum(LOAN_AMOUNT) from loans where INT_RATE>10;

SUM(LOAN_AMOUNT)
----------------
         3000000
```

31) Display the Maximum Interest from Loans table.

select MAX(INTEREST) from LOANS;

```
SQL> select MAX(INTEREST) from LOANS;

MAX(INTEREST)
-------------
   4550000000
```

32) Display the count of all loan holders whose name is ending with ‘Sharma’.

select count(CUST_NAME) from loans where CUST_NAME like '%Sharma';

```
SQL> select count(CUST_NAME) from loans where CUST_NAME like '%Sharma';

COUNT(CUST_NAME)
----------------
               0
```

33) Display the count of all loan holders whose Interest is Null.

select count(CUST_NAME) from loans where INTEREST is NULL;

```
SQL> select count(CUST_NAME) from loans where  INTEREST is NULL;

COUNT(CUST_NAME)
----------------
               0
```

Using Group By Clause

34) Display the Interest wise details of Loan Account Holders.

select interest from loans group by interest;

```
SQL> select interest from loans group by interest;

  INTEREST
----------
2100000000
2400000000
1080000000
 750000000
4550000000
4200000000
```

35) Display the Interest wise details of Loan Account Holders with at least 10 installments remaining.

select INTEREST,INSTALLMENTS from LOANS group by INTEREST,INSTALLMENTS having INSTALLMENTS>=10;

```
SQL>  select INTEREST,INSTALLMENTS from LOANS group by INTEREST,INSTALLMENTS having INSTALLMENTS>=10
;

  INTEREST INSTALLMENTS
---------- ------------
 750000000           36
1080000000           36
2100000000           48
2400000000           48
4550000000           60
4200000000           60
```

36) Display the Interest wise count of all loan holders whose Installment due is more than 5 in each group.

select count(interest),installments from loans group by interest,installments having installments>5;

```
SQL> select count(interest),installments from loans group by interest,installments having installmen
ts>5;

COUNT(INTEREST) INSTALLMENTS
--------------- ------------
              1           36
              1           36
              1           48
              1           48
              1           60
              1           60
```