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

- **Create the table Loans and insert tuples in it.**

create table loan(acc_no integer,cust_name varchar(25),loan_amt integer,instalments integer,int_rate integer,start_date date,interest integer);

- **Display the details of all the loans.**

set linesize 150;

SQL> select *from loan;

ACC_NO CUST_NAME LOAN_AMT INSTALMENTS INT_RATE START_DAT INTEREST

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1 r.k.gupta 300000 36 12 19-JUL-09 1200

2 s.p.sharma 500000 48 10 22-MAR-08 1800

3 k.p.jain 300000 36 08-MAR-07 1600

4 m.p.yadav 800000 60 10 06-DEC-08 2250

5 s.p.sinha 200000 36 13 03-JAN-10 4500

6 p.sharma 700000 60 13 05-JUN-08 3500

7 k.s.dhall 500000 48 05-MAR-08 3800

7 rows selected.

- **Display the AccNo, Cust_Name, and Loan_Amount of all the loans.**

select acc_no,cust_name,loan_amt from loan;

ACC_NO CUST_NAME LOAN_AMT

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1 r.k.gupta 300000

2 s.p.sharma 500000

3 k.p.jain 300000

4 m.p.yadav 800000

5 s.p.sinha 200000

6 p.sharma 700000

7 k.s.dhall 500000

- **Conditional Select using Where Clause**
- **Display the details of all the loans with less than 40 instalments**.

select *from loan where instalments<40;

ACC_NO CUST_NAME LOAN_AMT INSTALMENTS INT_RATE START_DAT

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TEREST

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1 r.k.gupta 300000 36 12 19-JUL-09

1200

3 k.p.jain 300000 36 08-MAR-07

1600

5 s.p.sinha 200000 36 13 03-JAN-10

4500

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

select acc_no,loan_amt from loan where start_date<'01-apr-2009';

ACC_NO LOAN_AMT

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2 500000

3 300000

4 800000

6 700000

7 500000

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

select int_rate from loan where start_date>'01-apr-2009';

INT_RATE

12

13

- **<u>Using NULL</u>**
- **Display the details of all the loans whose rate of interest is NULL.**

select * from loan where int_rate is NULL;

ACC_NO CUST_NAME LOAN_AMT INSTALMENTS INT_RATE START_DAT INTEREST

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3 k.p.jain 300000 36 08-MAR-07 1600

7 k.s.dhall 500000 48 05-MAR-08 3800

- **Display the details of all the loans whose rate of interest is not NULL.**

SQL> select * from loan where int_rate is not NULL;

ACC_NO	CUST_NAME	LOAN_AMT	INSTALMENTS	INT_RATE	START_DAT	INTEREST
1	r.k.gupta	300000	36	12	19-JUL-09	1200
2	s.p.sharma	500000	48	10	22-MAR-08	1800
4	m.p.yadav	800000	60	10	06-DEC-08	2250
5	s.p.sinha	200000	36	13	03-JAN-10	4500
6	p.sharma	700000	60	13	05-JUN-08	3500

- **<u>Using DISTINCT Clause</u>**
- **Display the amounts of various loans from the table LOANS. A loan amount should appear only once.**

SQL> select distinct(loan_amt) from loan;

LOAN_AMT
300000
200000
700000
800000
500000

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

SQL> select distinct instalments from loan;

INSTALMENTS

48

36

60

- **Using Logical Operators (NOT, AND, OR) and Between**
- **Display the details of all the loans started after 31-12-2008 for which the number of instalments are more than 36.**

SQL> select * from loan where start_date>'31-dec-2008' and instalments>36;

no rows selected

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

SQL> select cust_name, loan_amt from loan where instalments<>36;

CUST_NAME	LOAN_AMT
s.p.sharma	500000
m.p.yadav	800000
p.sharma	700000
k.s.dhall	500000

- **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.**

SQL> select cust_name,loan_amt from loan where loan_amt<500000 or int_rate>12;

CUST_NAME LOAN_AMT

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r.k.gupta 300000

k.p.jain 300000

s.p.sinha 200000

p.sharma 700000

- **Display the details of all the loans whose Loan_Amount is in the range 400000 to 500000.**

SQL> select * from loan where loan_amt between 400000 and 500000;

ACC_NO CUST_NAME LOAN_AMT INSTALMENTS INT_RATE START_DAT INTEREST

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2 s.p.sharma 500000 48 10 22-MAR-08 1800

7 k.s.dhall 500000 48 05-MAR-08 3800

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

SQL> select * from loan where int_rate between 11 and 12;

ACC_NO CUST_NAME LOAN_AMT INSTALMENTS INT_RATE START_DAT INTEREST

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1 r.k.gupta 300000 36 12 19-JUL-09 1200

- **<u>Using IN Operator</u>**
- **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)**

SQL> select cust_name,loan_amt from loan where instalments in(24,36,48);

CUST_NAME LOAN_AMT

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r.k.gupta 300000

s.p.sharma 500000

k.p.jain 300000

s.p.sinha 200000

k.s.dhall 500000

- **Using LIKE Operator**

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

SQL> select acc_no,cust_name,loan_amt from loan where cust_name like '%sharma';

ACC_NO	CUST_NAME	LOAN_AMT
2	s.p.sharma	500000
6	p.sharma	700000

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

SQL> select acc_no,cust_name,loan_amt from loan where cust_name like '%a';

ACC_NO	CUST_NAME	LOAN_AMT
1	r.k.gupta	300000
2	s.p.sharma	500000
5	s.p.sinha	200000
6	p.sharma	700000

- **Display the AccNo, Cust_Name, and Loan_Amount for all the loans for which the Cust_Name contains 'a'.**

SQL> select acc_no,cust_name,loan_amt from loan where cust_name like '%a%';

ACC_NO	CUST_NAME	LOAN_AMT
1	r.k.gupta	300000
2	s.p.sharma	500000
3	k.p.jain	300000
4	m.p.yadav	800000
5	s.p.sinha	200000
6	p.sharma	700000
7	k.s.dhall	500000

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

```
SQL>  select acc_no,cust_name,loan_amt from loan where cust_name not like '%p%';
```

ACC_NO	CUST_NAME	LOAN_AMT
7	k.s.dhall	500000

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

```
SQL> select acc_no,cust_name,loan_amt from loan where cust_name like '%a_';
```

ACC_NO	CUST_NAME	LOAN_AMT
4	m.p.yadav	800000

- **<u>Using ORDER BY clause</u>**
- **Display the details of all the loans in the ascending order of their Loan_Amount**.

```
SQL> select * from loan order by loan_amt;
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ACC_NO	CUST_NAME	LOAN_AMT	INSTALMENTS	INT_RATE	START_DAT	INTEREST
5	s.p.sinha	200000	36	13	03-JAN-10	4500
1	r.k.gupta	300000	36	12	19-JUL-09	1200
3	k.p.jain	300000	36		08-MAR-07	1600
2	s.p.sharma	500000	48	10	22-MAR-08	1800
7	k.s.dhall	500000	48		05-MAR-08	3800
6	p.sharma	700000	60	13	05-JUN-08	3500
4	m.p.yadav	800000	60	10	06-DEC-08	2250

- **Display the details of all the loans in the descending order of their Start_Date**.

SQL> select * from loan order by loan_amt desc;

ACC_NO	CUST_NAME	LOAN_AMT	INSTALMENTS	INT_RATE	START_DAT	INTEREST
4	m.p.yadav	800000	60	10	06-DEC-08	2250
6	p.sharma	700000	60	13	05-JUN-08	3500
2	s.p.sharma	500000	48	10	22-MAR-08	1800
7	k.s.dhall	500000	48		05-MAR-08	3800
3	k.p.jain	300000	36		08-MAR-07	1600
1	r.k.gupta	300000	36	12	19-JUL-09	1200
5	s.p.sinha	200000	36	13	03-JAN-10	4500

- **<u>Using UPDATE, DELETE, ALTER TABLE</u>**
- **Put the interest rate 11.50% for all the loans for which interest rate is NULL.**

SQL> update loan set int_rate = 11.50 where int_rate is NULL;

2 rows updated.

SQL> select *from loan;

ACC_NO	CUST_NAME	LOAN_AMT	INSTALMENTS	INT_RATE	START_DAT	INTEREST
1	r.k.gupta	300000	36	12	19-JUL-09	1200
2	s.p.sharma	500000	48	10	22-MAR-08	1800
3	k.p.jain	300000	36	12	08-MAR-07	1600
4	m.p.yadav	800000	60	10	06-DEC-08	2250
5	s.p.sinha	200000	36	13	03-JAN-10	4500
6	p.sharma	700000	60	13	05-JUN-08	3500
7	k.s.dhall	500000	48	12	05-MAR-08	3800

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

SQL> update loan set int_rate= int_rate+0.5 where loan_amt>400000;

4 rows updated.

SQL> select *from loan;

ACC_NO	CUST_NAME	LOAN_AMT	INSTALMENTS	INT_RATE	START_DAT	INTEREST
1	r.k.gupta	300000	36	12	19-JUL-09	1200
2	s.p.sharma	500000	48	2	22-MAR-08	1800
3	k.p.jain	300000	36	12	08-MAR-07	1600
4	m.p.yadav	800000	60	2	06-DEC-08	2250

5	s.p.sinha	200000	36	13	03-JAN-10 4500
6	p.sharma	700000	60	2	05-JUN-08 3500
7	k.s.dhall	500000	48	2	05-MAR-08 3800

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

SQL> update loan set interest=(loan_amt*int_rate*instalments)/12*100;

7 rows updated.

SQL> select *from loan;

ACC_NO	CUST_NAME	LOAN_AMT	INSTALMENTS	INT_RATE	START_DAT	INTEREST
1	r.k.gupta	300000	36	12	19-JUL-09	1080000000
2	s.p.sharma	500000	48	2	22-MAR-08	400000000
3	k.p.jain	300000	36	12	08-MAR-07	1080000000
4	m.p.yadav	800000	60	2	06-DEC-08	800000000
5	s.p.sinha	200000	36	13	03-JAN-10	780000000
6	p.sharma	700000	60	2	05-JUN-08	700000000
7	k.s.dhall	500000	48	2	05-MAR-08	400000000

- **Delete the records of all the loans of 'K.P. Jain'**

SQL> delete from loan where cust_name='k.p.jain';

1 row deleted.

SQL> select *from loan;

```
   ACC_NO CUST_NAME              LOAN_AMT INSTALMENTS   INT_RATE
START_DAT   INTEREST

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         1 r.k.gupta                300000         36         12 19-JUL-09 1080000000

         2 s.p.sharma                500000         48          2 22-MAR-08  400000000

         4 m.p.yadav                 800000         60          2 06-DEC-08  800000000

         5 s.p.sinha                200000         36         13 03-JAN-10  780000000

         6 p.sharma                  700000         60          2 05-JUN-08  700000000

         7 k.s.dhall                500000         48          2 05-MAR-08  400000000


6 rows selected.
```

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

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


Table altered.


SQL>  select *from loan;


   ACC_NO CUST_NAME              LOAN_AMT INSTALMENTS   INT_RATE
START_DAT   INTEREST C

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         1 r.k.gupta                300000         36         12 19-JUL-09 1080000000

         2 s.p.sharma                500000         48          2 22-MAR-08  400000000

         4 m.p.yadav                 800000         60          2 06-DEC-08  800000000

         5 s.p.sinha                200000         36         13 03-JAN-10  780000000

         6 p.sharma                  700000         60          2 05-JUN-08  700000000

         7 k.s.dhall                500000         48          2 05-MAR-08  400000000
```

6 rows selected.

- **Using Aggregate Functions**
- **Display the sum of all Loan Amount for whose Interest rate is greater than 10.**

SQL> select sum(loan_amt) from loan where int_rate>10;

SUM(LOAN_AMT)

500000

- **Display the Maximum Interest from Loans table**.

SQL> select max(interest) from loan;

MAX(INTEREST)

1080000000

- **Display the count of all loan holders whose name is ending with 'Sharma'.**

SQL> select count(*) from loan where cust_name like '%sharma';

COUNT(*)

2

- **Display the count of all loan holders whose Interest is Null.**

SQL> select count(*) from loan where interest is NULL;

COUNT(*)

0

- **Using Group By Clause**

- **Display the Interest wise details of Loan Account Holders**.

SQL> select interest from loan group by interest;

INTEREST

780000000

800000000

700000000

400000000

1080000000

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

SQL> select interest, instalments from loan group by interest,instalments having instalments>=10;

INTEREST INSTALMENTS

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780000000 36

1080000000 36

800000000 60

700000000 60

400000000 48

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

SQL> select count(interest) from loan group by interest,instalments having instalments>=5;

COUNT(INTEREST)

1

1

1

1

2

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