NAME: Atharva Chavan
TE-A IT
ROLL NO: T1851010
PRN: 71901316L

Group B: SQL & PL/SQL
Assignment No: 5

Aim :

Design and implement a database and apply at least 10 different DML queries for the following task. For a given input string display only those records which match the given pattern or a phrase in the search string. Make use of wild characters and LIKE operator for the same. Make use of Boolean and arithmetic operators wherevernecessary.

Objective :

- To understand the different issues involved in the design and implementation of a databasesystem
- To understand and use Data Manipulation Language to query to manage adatabase

Theory :

DATA MANIPULATION LANGUAGE (DML): The Data Manipulation Language (DML) is used to retrieve, insert and modify database information. These commands will be used by all database users during the routine operation of the database. Let's take a brief look at the basic DML commands:

- SELECT – retrieve data from the adatabase
- INSERT – insert data into atable
- UPDATE – updates existing data within atable
- DELETE – deletes all records from atable

1. INSERT INTO: This is used to add records into a relation. These are three type of INSERT INTO queries which areas

a) Inserting a singlerecord

Syntax: INSERT INTO < relation/table name> **(field_1,field_2……**field_n)VALUES
(data_1,data_2,…..... data_n);

Example: INSERT INTO student(sno,sname,address)VALUES
(1,'Ravi','M.Tech','Palakol');

b) To insert multiplerecord

Here, we are going to insert record in the "cus_tbl" table of "customers"
database. INSERT INTO student

(cus_id, cus_firstname, cus_surname)

```
          VALUES
          (5, 'Ajeet', 'Maurya'),
          (6, 'Deepika', 'Chopra'),
          (7, 'Vimal', 'Jaiswal');
table(column1,column2. )
VLUES (value1)
```

2. SELECT: This is used to Retrieve data from one or moretables.

a) SELECT FROM: To display all fields for allrecords.

Syntax : SELECT * FROM relation_name;

Example : SQL> select * from dept;

```
DEPTNO      DNAME              LOC
 --------   -----------        ----------
10          ACCOUNTING         NEW YORK
20          RESEARCH           DALLAS
30          SALES              CHICAGO
40          OPERATIONS         BOSTON
```

b) SELECT - FROM -WHERE: This query is used to display a selected set of fields for a selected set of records of a relation.

Syntax: SELECT a set of fields FROM relation_name WHEREcondition;

Example: SQL> select * FROM dept WHERE deptno<=20;

```
      DEPTNO      DNAME              LOC
      ------      -----------        ------------
      10          ACCOUNTING         NEW YORK
                        RESEARC
      20                H            DALLAS
```

c) SELECT - FROM -WHERE-LIKE

The LIKE operator is used in a WHERE clause to search for a specified pattern in a column.

There are two wildcards used in conjunction with the LIKE operator:

- % - The percent sign represents zero, one, or multiplecharacters
- _ - The underscore represents a singlecharacter

Syntax: SELECT*column1,* *column2,* ...
FROM *table_name*
WHERE *columnN*LIKE *pattern*;

Example: SELECT * FROMCustomers
WHERE CustomerName LIKE 'a%';

LIKE Operator	**Description**
WHERE CustomerName LIKE 'a%'	Finds any values that starts with "a"
WHERE CustomerName LIKE '%a'	Finds any values that ends with "a"
WHERE CustomerName LIKE '%or%'	Finds any values that have "or" in any position
WHERE CustomerName LIKE '_r%'	Finds any values that have "r" in the second position
WHERE CustomerName LIKE 'a_%_%'	Finds any values that starts with "a" and are at least 3 characters in length
WHERE ContactName LIKE 'a%o'	Finds any values that starts with "a" and ends with "o"

d) SELECT -DISTINCT
The SELECT DISTINCT statement is used to return only distinct (different) values. Inside a table, a column often contains many duplicate values; and sometimes you only want to list the

different (distinct) values. The SELECT DISTINCT statement is used to return only distinct (different) values.

Syntax: SELECT DISTINCT*column1*,*column2,* ...
FROM *table_name*;

Example: SELECT COUNT(DISTINCT Country) FROM Customers;

e) SELECT -BETWEEN

The BETWEEN operator selects values within a given range. The values can be numbers, text, or dates.

The BETWEEN operator is inclusive: begin and end values are included.

Syntax: SELECT *column_name(s)*
FROM *table_name*
WHERE *column_name*BETWEEN *value1* AND *value2;*
Example: SELECT * FROMProducts
WHERE Price BETWEEN 10 AND 20;

f)WHERE with - *AND* LOGICALOperator

The WHERE clause when used together with the AND logical operator, is only executed if ALL filter criteria specified are met.

```
SELECT * FROM `movies` WHERE `category_id` = 2 AND `year_released` =2008;
```

g)WHERE with - *OR* LOGICAL Operator

The WHERE clause when used together with the OR operator, is only executed if any or the entire specified filter criteria is met.
The following script gets all the movies in either category 1 or category 2

```
SELECT * FROM `movies` WHERE `category_id` = 1 OR `category_id` = 2;
```

h) **WHERE with - *Arithmetic* Operator**

Operator	Description	Example

=	Checks if the values of the two operands are equal or not, if yes, then the condition becomes true.	(A = B) is not true.
!=	Checks if the values of the two operands are equal or not, if the values are not equal then the condition becomes true.	(A != B) is true.
>	Checks if the value of the left operand is greater than the value of the right operand, if yes, then the condition becomes true.	(A > B) is not true.
<	Checks if the value of the left operand is less than the value of the right operand, if yes then the condition becomes true.	(A < B) is true.
>=	Checks if the value of the left operand is greater than or equal to the value of the right operand, if yes, then the condition becomes true.	(A >= B) is not true.
<=	Checks if the value of the left operand is less than or equal to the value of the right operand, if yes, then the condition becomestrue.	(A <= B) is true.

Example: SELECTagent_code agent_name,
working_area, (commission*2)
FROM agents
WHERE (commission*2)>0.25;

3. UPDATE-SET-WHERE: This is used to update the content of a record in arelation.

Syntax: UPDATE relation name SET Field_name1=data,field_name2=data,

WHERE field_name=data;

Example: UPDATE student SET **sname = 'kumar' WHERE sno=1;**

4. DELETE-FROM: This is used to delete all the records of a relation but it will retain the structure of thatrelation.

a) DELETE-FROM: This is used to delete all the records ofrelation.

Syntax: DELETE FROM relation_name;

Example: DELETE FROMstd;

b) DELETE -FROM-WHERE: This is used to delete a selected record from arelation.

Syntax: DELETE FROM relation_name WHEREcondition;

Example: DELETE FROM student WHERE sno = 2;

LAB PRACTICE ASSIGNMENT:

Consider the following table structure for this assignment:

CUSTOMER(Cust_id, C_name, City)
BRANCH(Branch_id, bname, City)
DEPOSIT(Acc_no , Cust_id, Amount, Branch_id, Open_date)
BORROW(Loan_no, Cust_id, Branch_id, Amount)

Perform the following queries on the above table:

1. Insert minimum 10 rows on each table and display thatdata.
2. List Cust_id along with customername.
3. List Cust_id of depositors having amount greater than10000.
4. List account date of customer'Anil'.
5. List Cust_id of customers who have opened account after01/01/2016.
6. List account no., amount and Cust_id of customers having amount between 40,000 and 80,000.
7. List customer name starting with'S'.
8. List customer from depositor starting with'_a%'.
9. List customer name from customer having exactly 5 characters in theirname.
10. List Cust_id, Loan no and Loan amount ofborrowers.
11. List cust_id and C_name ofdepositors.
12. List all the customers who are depositors but notborrowers.
13. List all the customers who are both depositors andborrowers.
14. List all the customers along with their amount who are either borrowers or depositors.
15. List the cites of depositor having branch'Akurdi'.
16. Update 10% interest to alldepositors.
17. Update 10% to all depositors living in'Nagpur'.
18. Change living city of the 'Nigdi' branch borrowers toNagpur.

19. Delete branches having deposit fromNagpur.
20. Delete depositors of branches having number of customers between 1 and3.
21. Delete depositors having deposit less thanRs500.

Conclusion:-

We have designed and implemented a database and applied different DML queries

Code & Output: -

```
Atharva@BRAINMETRON:~$ sudomysql -u root #

mysql> use Atharva
Reading table information for completion of table and column names
You can turn off this feature to get a quicker startup with -A

Database changed

mysql> create table customer(CID int primary key,cname varchar(20), balance int, cadd
varchar(10),opening date);
Query OK, 0 rows affected (0.73 sec)

mysql> insert into customer values(1122,'krish',5000,'block 12','2000-12-02');
Query OK, 1 row affected (0.05 sec)

mysql> insert into customer values(1123,'sumit',5000,'block 2','2000-12-05');
Query OK, 1 row affected (0.06 sec)

mysql> insert into customer values(1124,'Atharva',5000,'block 50','2000-12-10');
Query OK, 1 row affected (0.07 sec)

mysql> insert into customer values(1125,'vish',5000,'block 14','2000-12-15');
Query OK, 1 row affected (0.06 sec)

mysql> insert into customer values(1126,'har',5000,'block 26','2000-12-25');
Query OK, 1 row affected (0.05 sec)
mysql> insert into customer values(1126,'har',5000,'block 26','2000-12-25');
ERROR 1062 (23000): Duplicate entry '1126' for key 'PRIMARY'
mysql> select * from customer;

+------+---------+---------+----------+------------+
| CID  | cname   | balance | cadd     | opening    |
+------+---------+---------+----------+------------+
| 1122 | krish   |    5000 | block 12 | 2000-12-02 |
| 1123 | sumit   |    5000 | block 2  | 2000-12-05 |
| 1124 | Atharva |    5000 | block 50 | 2000-12-10 |
| 1125 | vish    |    5000 | block 14 | 2000-12-15 |
| 1126 | har     |    5000 | block 26 | 2000-12-25 |

5 rows in set (0.00 sec)

mysql> update customer set CID=1120 where cname='krish';
Query OK, 1 row affected (0.09 sec)
Rows matched: 1  Changed: 1  Warnings: 0

mysql> select * from customer
    -> ;
+------+---------+---------+----------+------------+
| CID  | cname   | balance | cadd     | opening    |
+------+---------+---------+----------+------------+
| 1120 | krish   |    5000 | block 12 | 2000-12-02 |
| 1123 | sumit   |    5000 | block 2  | 2000-12-05 |
| 1124 | Atharva |    5000 | block 50 | 2000-12-10 |
| 1125 | vish    |    5000 | block 14 | 2000-12-15 |
| 1126 | har     |    5000 | block 26 | 2000-12-25 |
+------+---------+---------+----------+------------+
5 rows in set (0.00 sec)

mysql> update customer set balance=balance*0.1;
Query OK, 5 rows affected (0.06 sec)
Rows matched: 5  Changed: 5  Warnings: 0

mysql> select * from customer
    -> ;
+------+---------+---------+----------+------------+
| CID  | cname   | balance | cadd     | opening    |
+------+---------+---------+----------+------------+
| 1120 | krish   |     500 | block 12 | 2000-12-02 |
| 1123 | sumit   |     500 | block 2  | 2000-12-05 |
| 1124 | Atharva |     500 | block 50 | 2000-12-10 |
| 1125 | vish    |     500 | block 14 | 2000-12-15 |
| 1126 | har     |     500 | block 26 | 2000-12-25 |
+------+---------+---------+----------+------------+
5 rows in set (0.00 sec)

mysql> update customer set balance=balance*10 where CID=1120;
Query OK, 1 row affected (0.06 sec)
Rows matched: 1  Changed: 1  Warnings: 0

mysql> select * from customer
    -> ;
+------+---------+---------+----------+------------+
| CID  | cname   | balance | cadd     | opening    |
+------+---------+---------+----------+------------+
| 1120 | krish   |    5000 | block 12 | 2000-12-02 |
| 1123 | sumit   |     500 | block 2  | 2000-12-05 |
| 1124 | Atharva |     500 | block 50 | 2000-12-10 |
| 1125 | vish    |     500 | block 14 | 2000-12-15 |
| 1126 | har     |     500 | block 26 | 2000-12-25 |

5 rows in set (0.00 sec)

mysql> select * from customer where salary>3000
    -> ;
ERROR 1054 (42S22): Unknown column 'salary' in 'where clause'
mysql> select * from customer where balance>3000
    -> ;
+------+-------+---------+----------+------------+
| CID  | cname | balance | cadd     | opening    |
+------+-------+---------+----------+------------+
| 1120 | krish |    5000 | block 12 | 2000-12-02 |
+------+-------+---------+----------+------------+
1 row in set (0.00 sec)

mysql> select * from customer where balance>600 and balance<5000;
Empty set (0.00 sec)

mysql> select * from customer where balance>600 and balance<6000;
+------+-------+---------+----------+------------+
| CID  | cname | balance | cadd     | opening    |
+------+-------+---------+----------+------------+
| 1120 | krish |    5000 | block 12 | 2000-12-02 |
+------+-------+---------+----------+------------+
1 row in set (0.00 sec)

mysql> select * from customer where balance between 500 and 6000;
+------+---------+---------+----------+------------+
| CID  | cname   | balance | cadd     | opening    |
+------+---------+---------+----------+------------+
| 1120 | krish   |    5000 | block 12 | 2000-12-02 |
| 1123 | sumit   |     500 | block 2  | 2000-12-05 |
| 1124 | Atharva |     500 | block 50 | 2000-12-10 |
| 1125 | vish    |     500 | block 14 | 2000-12-15 |
| 1126 | har     |     500 | block 26 | 2000-12-25 |
+------+---------+---------+----------+------------+
5 rows in set (0.00 sec)

mysql> select * from customer where balance=500 or 6000;
+------+---------+---------+----------+------------+
| CID  | cname   | balance | cadd     | opening    |
+------+---------+---------+----------+------------+
| 1120 | krish   |    5000 | block 12 | 2000-12-02 |
| 1123 | sumit   |     500 | block 2  | 2000-12-05 |
| 1124 | Atharva |     500 | block 50 | 2000-12-10 |
| 1125 | vish    |     500 | block 14 | 2000-12-15 |
| 1126 | har     |     500 | block 26 | 2000-12-25 |
+------+---------+---------+----------+------------+
5 rows in set (0.00 sec)



mysql> select * from customer where balance between 600 and 6000;
+------+-------+---------+----------+------------+
| CID  | cname | balance | cadd     | opening    |
+------+-------+---------+----------+------------+
| 1120 | krish |    5000 | block 12 | 2000-12-02 |
+------+-------+---------+----------+------------+
1 row in set (0.00 sec)

mysql> select * from customer;
```

```
+------+---------+---------+----------+------------+
| CID  | cname   | balance | cadd     | opening    |
+------+---------+---------+----------+------------+
| 1120 | krish   |    5000 | block 12 | 2000-12-02 |
| 1123 | sumit   |     500 | block 2  | 2000-12-05 |
| 1124 | Atharva |     500 | block 50 | 2000-12-10 |
| 1125 | vish    |     500 | block 14 | 2000-12-15 |
| 1126 | har     |     500 | block 26 | 2000-12-25 |
+------+---------+---------+----------+------------+
5 rows in set (0.00 sec)

mysql> select * from customer where cname like 've%' ;
+------+---------+---------+----------+------------+
| CID  | cname   | balance | cadd     | opening    |
+------+---------+---------+----------+------------+
| 1124 | Atharva |     500 | block 50 | 2000-12-10 |
+------+---------+---------+----------+------------+
1 row in set (0.00 sec)

mysql> select * from customer where cname like '%sh' ;
+------+---------+---------+----------+------------+
| CID  | cname   | balance | cadd     | opening    |
+------+---------+---------+----------+------------+
| 1120 | krish   |    5000 | block 12 | 2000-12-02 |
| 1124 | Atharva |     500 | block 50 | 2000-12-10 |
| 1125 | vish    |     500 | block 14 | 2000-12-15 |
+------+---------+---------+----------+------------+
3 rows in set (0.00 sec)

mysql> select * from customer where cname like '%sh or ar%'  ;
Empty set (0.00 sec)

mysql> select * from customer where cname like '%um%'  ;
+------+-------+---------+---------+------------+
| CID  | cname | balance | cadd    | opening    |
+------+-------+---------+---------+------------+
| 1123 | sumit |     500 | block 2 | 2000-12-05 |
+------+-------+---------+---------+------------+
1 row in set (0.00 sec)



mysql> select * from customer where cname like '_a%'  ;
+------+-------+---------+----------+------------+
| CID  | cname | balance | cadd     | opening    |
+------+-------+---------+----------+------------+
| 1126 | har   |     500 | block 26 | 2000-12-25 |
+------+-------+---------+----------+------------+
1 row in set (0.00 sec)

mysql> select * from customer where cname like 'v___%'  ;
```

```
+------+---------+---------+----------+------------+
| CID  | cname   | balance | cadd     | opening    |
+------+---------+---------+----------+------------+
| 1124 | Atharva |     500 | block 50 | 2000-12-10 |
| 1125 | vish    |     500 | block 14 | 2000-12-15 |
+------+---------+---------+----------+------------+
2 rows in set (0.00 sec)

mysql> select * from customer where cname like 'v___'  ;
+------+-------+---------+----------+------------+
| CID  | cname | balance | cadd     | opening    |
+------+-------+---------+----------+------------+
| 1125 | vish  |     500 | block 14 | 2000-12-15 |
+------+-------+---------+----------+------------+
1 row in set (0.00 sec)

mysql> select * from customer where cname like '___'  ;
+------+-------+---------+----------+------------+
| CID  | cname | balance | cadd     | opening    |
+------+-------+---------+----------+------------+
| 1126 | har   |     500 | block 26 | 2000-12-25 |
+------+-------+---------+----------+------------+
1 row in set (0.00 sec)

mysql> select * from customer where cname like 'v_%__%'  ;
+------+---------+---------+----------+------------+
| CID  | cname   | balance | cadd     | opening    |
+------+---------+---------+----------+------------+
| 1124 | Atharva |     500 | block 50 | 2000-12-10 |
| 1125 | vish    |     500 | block 14 | 2000-12-15 |
+------+---------+---------+----------+------------+
2 rows in set (0.00 sec)

mysql> select * from customer where cname like 'v%h'  ;
+------+---------+---------+----------+------------+
| CID  | cname   | balance | cadd     | opening    |
+------+---------+---------+----------+------------+
| 1124 | Atharva |     500 | block 50 | 2000-12-10 |
| 1125 | vish    |     500 | block 14 | 2000-12-15 |
+------+---------+---------+----------+------------+
2 rows in set (0.00 sec)

mysql> select distinct balance,opening from customer;
+---------+------------+
| balance | opening    |
+---------+------------+
|    5000 | 2000-12-02 |
|     500 | 2000-12-05 |
|     500 | 2000-12-10 |
|     500 | 2000-12-15 |
|     500 | 2000-12-25 |
+---------+------------+
5 rows in set (0.00 sec)

mysql> select distinct balance from customer;
+---------+
| balance |
+---------+
|    5000 |
|     500 |
+---------+
2 rows in set (0.00 sec)

mysql> select * from customer where balance!=5000;
+------+---------+---------+----------+------------+
| CID  | cname   | balance | cadd     | opening    |
+------+---------+---------+----------+------------+
| 1123 | sumit   |     500 | block 2  | 2000-12-05 |
| 1124 | Atharva |     500 | block 50 | 2000-12-10 |
| 1125 | vish    |     500 | block 14 | 2000-12-15 |
| 1126 | har     |     500 | block 26 | 2000-12-25 |
+------+---------+---------+----------+------------+
4 rows in set (0.00 sec)

mysql> select * from customer where balance=5000;
+------+-------+---------+----------+------------+
| CID  | cname | balance | cadd     | opening    |
+------+-------+---------+----------+------------+
| 1120 | krish |    5000 | block 12 | 2000-12-02 |
+------+-------+---------+----------+------------+
1 row in set (0.00 sec)

mysql> select * from customer where balance>500;
+------+-------+---------+----------+------------+
| CID  | cname | balance | cadd     | opening    |
+------+-------+---------+----------+------------+
| 1120 | krish |    5000 | block 12 | 2000-12-02 |
+------+-------+---------+----------+------------+
1 row in set (0.00 sec)




mysql> delete from customer where CID=1124;
Query OK, 1 row affected (0.06 sec)

mysql> select * from customer;
+------+-------+---------+----------+------------+
| CID  | cname | balance | cadd     | opening    |
+------+-------+---------+----------+------------+
| 1120 | krish |    5000 | block 12 | 2000-12-02 |
| 1123 | sumit |     500 | block 2  | 2000-12-05 |
| 1125 | vish  |     500 | block 14 | 2000-12-15 |
| 1126 | har   |     500 | block 26 | 2000-12-25 |
+------+-------+---------+----------+------------+
4 rows in set (0.00 sec)

mysql> exit
Bye
```