Sample Lab Observation Note Preparation

LAB NO.: **Date:**

Title: STRUCTURED QUERY LANGUAGE

1. Implement the Bank Database and execute the given queries/updates

Bank Database Schema:

- ACCOUNT(ACCOUNT_NUMBER, BRANCH_NAME, BALANCE)
- BRANCH (BRANCH_NAME, BRANCH_CITY, ASSETS)
- CUSTOMER (CUSTOMER_NAME CUSTOMER_STREET, CUSTOMER_CITY)
- LOAN (LOAN_NUMBER, BRANCH_NAME, AMOUNT)
- DEPOSITOR(CUSTOMER_NAME, ACCOUNT_NUMBER)
- BORROWER(CUSTOMER_NAME, LOAN_NUMBER)

- **Creating Tables**

```
CREATE TABLE BRANCH
(BRANCH_NAME VARCHAR (15) PRIMARY KEY,
BRANCH_CITY VARCAHAR (20),
        ASSETS NUMBER (10));

CREATE TABLE ACCOUNT
(ACCOUNT_NUMBER NUMBER (10) PRIMARY KEY,
BRANCH_NAME VARCHAR (15) REFERENCES BRANCH,
        BALANCE NUMBER (8));

CREATE TABLE CUSTOMER
(CUSTOMER_NAME VARCHAR (20) PRIMARY KEY,
       CUSTOMER_STREETVARCHAR (15),
       CUSTOMER_CITY VARCHAR (10));

CREATE TABLE LOAN
(LOAN_NUMBER NUMBER (10) PRIMARY KEY,

BRANCH_NAME VARCHAR (15)REFERENCES BRANCH,
AMOUNT NUMBER (10))

CREATE TABLE DEPOSITOR
(CUSTOMER_NAME VARCHAR (2) REFERENCES CUSTOMER,
                ACCOUNT_NUMBER NUMBER (10) REFERENCES ACCOUNT,
PRIMARY KEY (CUSTOMER_NAME, ACCOUNT_NUMBER));
```

```
CREATE TABLE BORROWER
        (CUSTOMER_NAME VARCHAR(2) REFERENCES CUSTOMER,
         LOAN_NUMBER  NUMBER(10) REFERENCES LOAN,
        PRIMARY KEY(CUSTOMER_NAME,LOAN_NUMBER));
```

Queries/Update on Bank Database

(Questions followed by SQL statements)

Retrieving records from a table:

1. list the information of all account holders (name and account number).
   Select * from depositor.
2. List all branch names and their assets
   SELECT BRANCH_NAME, ASSETS FROM BRANCH;

3. List all accounts of Brooklyn branch
   SELECT * FROM ACCOUNT WHERE BRANCH_NAME= 'BROOKLYN';

4. List all loans with amount > 1000.
   SELECT * FROM LOAN WHERE AMOUNT>1000;

Updating records from a table:

4. Change the assets of Perryridge branch to 340000000.
   UPDATE BRANCH SET ASSETS=340000000
   WHERE BRANCH_NAME='Perryridge';

LAB NO.: 1 **Date:**

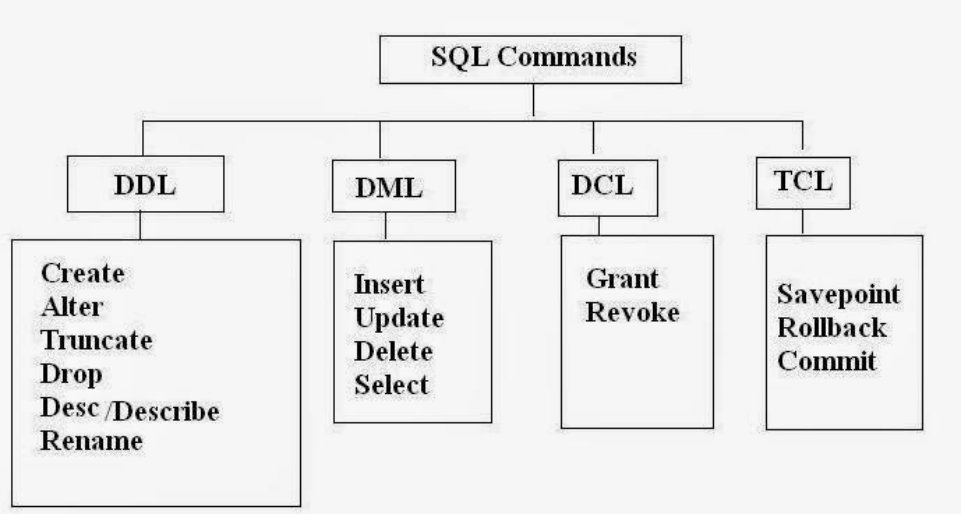
INTRODUCTION TO SQL

Objectives:

In this lab, student will be able to:

- Understand the working of DDL/DML commands.

SQL Statements can be categorized as -



DDL (Data definition language): Are used to define database structure or schema.
DML (Data manipulation language): Are used to change or alter data with the database or schema.
DCL (Data Control Language): Are used to control access or privileges.
TCL (Transaction Control Language): Are used to manage transactions in the database.

Basic Data Types used in SQL:

- CHARACTER [(length)] or CHAR [(length)],
- VARCHAR (length)
- BOOLEAN
- SMALLINT
- INTEGER or INT
- DECIMAL [(p[,s])] or DEC [(p[,s])]
- NUMERIC [(p[,s])]
- REAL
- FLOAT(p)
- DOUBLE PRECISION
- DATE
- TIME
- TIMESTAMP
- CLOB [(length)] or CHARACTER LARGE OBJECT [(length)] or CHAR LARGE OBJECT [(length)]
- BLOB [(length)] or BINARY LARGE OBJECT [(length)]

DDL COMMANDS:

1. CREATION OF TABLE:
SYNTAX:
create table<tablename>(column_name1 datatype(<size>),column_name2 datatype(<size>) ...);

EXAMPLE:
SQL>

create table STUDENT (
reg_no number (5),
stu_name varchar(20),
stu_age number(5),
stu_ dob date,
subject1_marks number (4,2),
subject2_marks number(4,2),
subject3_marks number(4,1));

SQL>insert into STUDENT values (101, 'AAA',16, '03-jul-88',80,90,98);

2. Modifying the structure of tables

a) Add new columns

Syntax:

Alter table <tablename>add (<new col><datatype (size),<newcol>datatype(size));

Ex: Add a new column 'Gender' to student table.

alter table student add(Gender char (5));

3. Dropping a column from a table

Syntax: Alter table <tablename> drop column <col>;

Ex: To drop a column 'Gender' from student table.

Alter table student drop column Gender;

4. Modifying existing columns

Syntax: Alter table <tablename> **modify** (<col><newdatatype>(<newsize>));

Ex: To modify the datatype of stu_age

Alter table student **modify** (stu_age number(3));

5. Renaming the tables

Syntax:

Rename <oldtable> to <new table>;

Ex: Rename student to students;

6. Truncate the table

Syntax: Trunc table <tablename>;

Ex: Trunc table students;

7. Delete the table structure

Syntax: Drop table <tablename>;

Ex: drop table student;

DML commands (ADDITIONAL EXAMPLES):

1. Selecting the information from table(s)

Syntax: Select col1,col2,col3,……, coln from <table_name> where < condition >

Ex:

a) List all the students
   Select * from student;
b) List age of all students with column aliased as 'student_age' rather stu_age
   Select stu_age student_age from student;
c) Find the sum of all three subject marks and name it as tot_marks.
   Select subject1_marks + subject2_marks + subject3_marks tot_marks from student.

2**. Inserting Data into Tables:**

Syntax: Insert into <tablename> (<col1>,<col2>) values (<exp>,<exp>);

Ex: insert into STUDENT(reg_no, stu_name) values (102, 'KRISH');

3. Delete operations

a) Removal of specified row/s

Syntax:Delete from <tablename> where <condition>;

Ex: Delete from STUDENT where reg_no=102;

b) Remove all rows

Syntax: Delete from <tablename>;

Ex: Delete from STUDENT;

4. Updating the contents of a table

a) Updating all rows

Syntax: Update <tablename> set <col>=<exp>, <col>=<exp>;

Ex: Update STUDENT set stu_name='MANAV';

b) Updating selected records

Syntax: Update <tablename> set <col>=<exp>,<col>=<exp>where <condition>;

Ex: Update STUDENT set stu_name='YADAV' where reg_no=101;

LAB EXERCISES:

1. Create a table employee with (emp_no, emp_name, emp_address)
2. Insert five employees information.
3. Display names of all employees.
4. Display all the employees from 'MANIPAL'.
5. Add a column named salary to employee table.
6. Assign the salary for all employees.
7. View the structure of the table employee using describe.
8. Delete all the employees from 'MANGALORE'
9. Rename employee as employee1.
10. Drop the table employee1.