Lab-1: Basics of DDL and DML Statements

Prepare Lab Sheet of MYSQL Statements for following.

1. Create a database named "Yourname_Roll_COMPANY" e.g.: Atiz_02_Company and then create following tables within the database. Specify proper primary keys and the needed constraints while defining the tables. Use appropriate data types for the attributes.
   Ans:
   Query:
   mysql> create database Suraj_38_Company;
   Query OK, 1 row affected (0.02 sec)

   mysql> show databases;
   Result

```
+--------------------+
| Database           |
+--------------------+
| classicmodels      |
| information_schema |
| mysql              |
| performance_schema |
| shopping           |
| suraj_38_company   |
| sys                |
+--------------------+
7 rows in set (0.03 sec)
```

   Query:

```
mysql> use  Suraj_38_company;
Database changed
```

   a. Employee (SSN, Ename, Gender, Bdate, Address, Salary, Ono, Years_of_experience); whereOno is a foreign key referencing to the Office table. Set default value of salary to 0.00. The Ename should not be null. Set SSN to auto increment. The Ename and address should be varchar, Gender should be char(1), Bdate should be date type, Salary should be decimal type with two digits after decimal.Years_of_experience should be integer. Use Check constraint for gender as CHECK (Gender IN ('M', 'F'))

      Ans:
      To create Employee table, create those table whose primary key is referencing as foreign key in employee table i.e. here is Ono is foreign key which is taken from office schema. So, firstly we need to create office schema before creating Employee Schema.
      Query:

```
CREATE TABLE Employee(
    SSN INT  AUTO_INCREMENT PRIMARY KEY,
    Ename VARCHAR(55) NOT NULL,
    Gender char(1)  CHECK (Gender IN('M','F')),
    Bdate Date,
    Address varchar(100),
    Salary decimal(10,2) Default  0.00,
```

```
    Ono int,
    Year_of_experence int,
      FOREIGN KEY (Ono) references Office(Onumber)
);

desc Employee;
```

Result:

```
+------------------+--------------+------+-----+---------+----------------+
| Field            | Type         | Null | Key | Default | Extra          |
+------------------+--------------+------+-----+---------+----------------+
| SSN              | int          | NO   | PRI | NULL    | auto_increment |
| Ename            | varchar(55)  | NO   |     | NULL    |                |
| Gender           | char(1)      | YES  |     | NULL    |                |
| Bdate            | date         | YES  |     | NULL    |                |
| Address          | varchar(100) | YES  |     | NULL    |                |
| Salary           | decimal(10,2)| YES  |     | 0.00    |                |
| Ono              | int          | YES  | MUL | NULL    |                |
| Year_of_experence| int          | YES  |     | NULL    |                |
+------------------+--------------+------+-----+---------+----------------+
8 rows in set (0.01 sec)
```

b. Office (<u>Onumber</u>, Oname, Country); where Oname should not be NULL. Country should be varchar.

Ans:

Query:

```
CREATE TABLE Office(
    Onumber INT NOT NULL AUTO_INCREMENT PRIMARY KEY,
    Oname VARCHAR(55) NOT NULL,
    Country varchar(50) );

   desc Office;
```

Result:

```
+---------+-------------+------+-----+---------+----------------+
| Field   | Type        | Null | Key | Default | Extra          |
+---------+-------------+------+-----+---------+----------------+
| Onumber | int         | NO   | PRI | NULL    | auto_increment |
| Oname   | varchar(55) | NO   |     | NULL    |                |
| Country | varchar(50) | YES  |     | NULL    |                |
+---------+-------------+------+-----+---------+----------------+
```

c. Project (<u>Pnumber</u>, Pname, Plocation, Onumber); where Onumber is a foreign key referencing Office table. Create a constraint name fk_pro for the foreign key. Pname should be unique and should not be null. Both Pname and Plocations should be of type varchar(40).

Ans:
Query:

```
create table Project(
 Pnumber  int auto_increment primary key,
 Pname varchar(40) not null unique,
 Plocation varchar(40),
 Onumber int,
CONSTRAINT fk_pro FOREIGN KEY (Onumber) REFERENCES Office(Onumber)
);

Desc Project;
```

Result:

```
+-----------+-------------+------+-----+---------+----------------+
| Field     | Type        | Null | Key | Default | Extra          |
+-----------+-------------+------+-----+---------+----------------+
| Pnumber   | int         | NO   | PRI | NULL    | auto_increment |
| Pname     | varchar(40) | NO   | UNI | NULL    |                |
| Plocation | varchar(40) | YES  |     | NULL    |                |
| Onumber   | int         | YES  | MUL | NULL    |                |
+-----------+-------------+------+-----+---------+----------------+
4 rows in set (0.00 sec)
```

d. Works_on(ESSN, Pno); where ESSN references Employee SSN and Pno references to Pnumber from Project . Set cascade on update and cascade on delete to both

Ans:
Query:

```
CREATE TABLE Works_on
(
ESSN int,
Pno int,
foreign key(ESSN) references Employee(SSN) on update cascade on delete cascade,
foreign key(Pno) references Project(Pnumber) on update cascade on delete cascade
);
desc Works_on;
```

Reuslt:

```
+-------+------+------+-----+---------+-------+
| Field | Type | Null | Key | Default | Extra |
+-------+------+------+-----+---------+-------+
| ESSN  | int  | YES  | MUL | NULL    |       |
| Pno   | int  | YES  | MUL | NULL    |       |
+-------+------+------+-----+---------+-------+
2 rows in set (0.00 sec)
```

Lab-1: Basics of DDL and DML Statements

e. Dependents(Did, Dname, Dage, SSN); where SSN is Foreign key referencing the employee. Set NULL on delete and on update to the foreign key. Add constraint age_constraint using CHECK(Dage<16).

Ans: create table Dependents
(
Did int auto_increment primary key,
Dname varchar(50),
Dage int,
SSN int,
foreign key (SSN) references Employee(SSN) on update set null on delete set null,
constraint age_constraint check (Dage<16)
);
desc Dependents;

Output:

```
+-------+-------------+------+-----+---------+----------------+
| Field | Type        | Null | Key | Default | Extra          |
+-------+-------------+------+-----+---------+----------------+
| Did   | int         | NO   | PRI | NULL    | auto_increment |
| Dname | varchar(50) | YES  |     | NULL    |                |
| Dage  | int         | YES  |     | NULL    |                |
| SSN   | int         | YES  | MUL | NULL    |                |
+-------+-------------+------+-----+---------+----------------+
4 rows in set (0.00 sec)
```

2. Alter table Dependent and add an attribute Drelation of type Char(50).
Ans:
Query:
alter table Dependents add column Drelation char(50);
Result:
Before:

```
+-------+-------------+------+-----+---------+----------------+
| Field | Type        | Null | Key | Default | Extra          |
+-------+-------------+------+-----+---------+----------------+
| Did   | int         | NO   | PRI | NULL    | auto_increment |
| Dname | varchar(50) | YES  |     | NULL    |                |
| Dage  | int         | YES  |     | NULL    |                |
| SSN   | int         | YES  | MUL | NULL    |                |
+-------+-------------+------+-----+---------+----------------+
4 rows in set (0.00 sec)
```

After:

```
+-----------+-------------+------+-----+---------+----------------+
| Field     | Type        | Null | Key | Default | Extra          |
+-----------+-------------+------+-----+---------+----------------+
```

```
| Did      | int         | NO   | PRI | NULL    | auto_increment |
| Dname    | varchar(50) | YES  |     | NULL    |                |
| Dage     | int         | YES  |     | NULL    |                |
| SSN      | int         | YES  | MUL | NULL    |                |
| Drelation | char(50)   | YES  |     | NULL    |                |
+----------+-------------+------+-----+---------+----------------+
5 rows in set (0.00 sec)
```

3. Alter table Dependent and modify the attribute Drelation of type Char(50) to Varchar(50)

   Ans:

   Query:

   alter table Dependents modify Drelation varchar(50);

   Result:

   Before:

```
+----------+-------------+------+-----+---------+----------------+
| Field    | Type        | Null | Key | Default | Extra          |
+----------+-------------+------+-----+---------+----------------+
| Did      | int         | NO   | PRI | NULL    | auto_increment |
| Dname    | varchar(50) | YES  |     | NULL    |                |
| Dage     | int         | YES  |     | NULL    |                |
| SSN      | int         | YES  | MUL | NULL    |                |
| Drelation | char(50)   | YES  |     | NULL    |                |
+----------+-------------+------+-----+---------+----------------+
```

   After:

```
+----------+-------------+------+-----+---------+----------------+
| Field    | Type        | Null | Key | Default | Extra          |
+----------+-------------+------+-----+---------+----------------+
| Did      | int         | NO   | PRI | NULL    | auto_increment |
| Dname    | varchar(50) | YES  |     | NULL    |                |
| Dage     | int         | YES  |     | NULL    |                |
| SSN      | int         | YES  | MUL | NULL    |                |
| Drelation | varchar(50) | YES  |     | NULL    |                |
+----------+-------------+------+-----+---------+----------------+
5 rows in set (0.00 sec)
```

4. Insert at least five tuples into the tables. (Illustrate insertion of single tuple and multiple tuples both). During insertion insert following as well.

   There should be one record in the Employee table having Ename “Your name” i. e. Deric and SSN “Your roll number” e.g. 2.

   Ans:

   Query:

```
insert into Employee( SSN , Ename,Gender , Bdate,Address, Salary,
Ono,Year_of_experence) values (38 , 'SuraJ', 'M' ,'2024-07-03', "lalitpur-2" , "30000" ,2,3
);
```

Lab-1: Basics of DDL and DML Statements

```
INSERT INTO Employee (SSN , Ename,Gender , Bdate,Address, Salary,
Ono,Year_of_experence)
VALUES (39 , 'hari', 'M' ,'2024-08-03', "lamahi-2" , "40000" ,4,7 ),
      (40, 'Ram', 'M' ,'2024-01-03', "ktm-2" , "20000" ,1,10 ),
      (41, 'Sita', 'F' , '1990-05-02' , 'australia' , '10000' ,5 ,4),
      (42, 'pratiksha', 'F' , '2061-05-07' , 'dang' , '100000' ,1 ,7);
```

Result:

```
mysql> select *from Employee;
+-----+-----------+--------+------------+------------+-----------+------+------------------+
| SSN | Ename     | Gender | Bdate      | Address    | Salary    | Ono  | Year_of_experence |
+-----+-----------+--------+------------+------------+-----------+------+------------------+
|  38 | SuraJ     | M      | 2024-07-03 | lalitpur-2 |  30000.00 |    2 |                3 |
|  39 | hari      | M      | 2024-08-03 | lamahi-2   |  40000.00 |    4 |                7 |
|  40 | Ram       | M      | 2024-01-03 | ktm-2      |  20000.00 |    1 |               10 |
|  41 | Sita      | F      | 1990-05-02 | australia  |  10000.00 |    5 |                4 |
|  42 | pratiksha | F      | 2061-05-07 | dang       | 100000.00 |    1 |                7 |
+-----+-----------+--------+------------+------------+-----------+------+------------------+
5 rows in set (0.00 sec)
```

There should be one record in the Project table having Pname =“Your name_ProjMDS” and Pnumber = 2*Your Roll number.

Ans:

Query:

```
insert into Project(Pnumber,Pname,Plocation,Onumber) values(2*38 ,'Suraj_ProjMDS',
'lalitpur', 1 );
insert into Project(Pnumber, Pname, Plocation, Onumber) values
( 20 ,'Hari_ProjMDS', 'bhaktapur', 2),
( 21 ,'Sita_ProjMDS', 'australia', 3),
( 22 ,'pratiksha_ProjMDS', 'bhaktapur', 4),
( 23 ,'Ram_ProjMDS', 'ktm-2', 5);
```

Result:

```
mysql> select *from project;
+---------+------------------+-----------+---------+
| Pnumber | Pname            | Plocation | Onumber |
+---------+------------------+-----------+---------+
|      20 | Hari_ProjMDS     | bhaktapur |       2 |
|      21 | Sita_ProjMDS     | australia |       3 |
|      22 | pratiksha_ProjMDS | bhaktapur |    4 |
|      23 | Ram_ProjMDS      | ktm-2     |       5 |
|      76 | Suraj_ProjMDS    | lalitpur  |       1 |
+---------+------------------+-----------+---------+
5 rows in set (0.00 sec)
```

Lab-1: Basics of DDL and DML Statements

One of the tuple in Office table should have office name "Yourname_Office_Roll" i.e. Deric_Office_06. Similarly one of the tuple in employee should have salary 30000.
In addition, there should be one tuple in office table having office name Yourname_Ncell_Roll.

Ans:

Query:

```
insert into Office(Onumber ,Oname,Country) values(1, 'Suraj_Office_38' ,'USA');
insert into Office(Onumber ,Oname,Country) values( 2,'Suraj_ncell_38' ,'UK');

INSERT INTO Office (Onumber, Oname, Country)
VALUES (3, 'hari_Office_06' , 'Nepal'),
        (4, 'Ram_Ncell_06',  'china'),
        (5, 'Sita_Ncell_06',  'australia');
```

Result:

```
mysql> select *from Office;
+---------+----------------+-----------+
| Onumber | Oname          | Country   |
+---------+----------------+-----------+
|       1 | Suraj_Office_38 | USA      |
|       2 | Suraj_ncell_38  | UK       |
|       3 | hari_Office_06  | Nepal    |
|       4 | Ram_Ncell_06    | china    |
|       5 | Sita_Ncell_06   | australia |
+---------+----------------+-----------+
5 rows in set (0.00 sec)
```

In the dependents table insert the rows with Dname and Drelation having values from your family. For example, Deric has his elder brother and mother as his dependents. So the table will have records with values Dname=Denish and Drelation=Brother and Dname=Gayatri and Drelation=Mother. Take assumptions based on your family members while inserting the values.

Ans:

Query:

```
insert into Dependents ( Did, Dname , Dage , SSN , Drelation) values( 1, 'himesh' , 15, 38 ,
'brother');
insert into Dependents ( Did, Dname , Dage , SSN , Drelation) values( 2, 'yam' , 15, 38 ,
'mother');

insert into Dependents (Did , Dname ,Dage , SSN, Drelation) values
(3,'sima', 10, 39, 'sister'),
(4, 'krinjal', 5, 40 , 'brother'),
(5, 'basu' , 14, 41, 'cousin' );
```

Result:

```
mysql> select *from Dependents;
+-----+---------+------+------+-----------+
| Did | Dname   | Dage | SSN  | Drelation |
```

```
+-----+---------+------+------+-----------+
|   1 | himesh  |   15 |   38 | brother   |
|   2 | yam     |   15 |   38 | mother    |
|   3 | sima    |   10 |   39 | sister    |
|   4 | krinjal |    5 |   40 | brother   |
|   5 | basu    |   14 |   41 | cousin    |
+-----+---------+------+------+-----------+
5 rows in set (0.01 sec)
```

5. Update the name of office having office name "Yourname_Ncell_Roll" to "Yourname_Ntc_Roll".

   Ans:
   Query:

```
update Office
 Set Oname = 'Suraj_ntc_38'
 where Onumber = 2;
```

   Result:
   Before:

```
mysql> select * from Office;
+---------+----------------+-----------+
| Onumber | Oname          | Country   |
+---------+----------------+-----------+
|       1 | Suraj_Office_38 | USA      |
|       2 | Suraj_ncell_38  | UK       |
|       3 | hari_Office_06  | Nepal    |
|       4 | Ram_Ncell_06    | china    |
|       5 | Sita_Ncell_06   | australia |
+---------+----------------+-----------+
5 rows in set (0.00 sec)
```

   After:

```
mysql> select * from Office;
+---------+----------------+-----------+
| Onumber | Oname          | Country   |
+---------+----------------+-----------+
|       1 | Suraj_Office_38 | USA      |
|       2 | Suraj_ntc_38    | UK       |
|       3 | hari_Office_06  | Nepal    |
|       4 | Ram_Ncell_06    | china    |
|       5 | Sita_Ncell_06   | australia |
+---------+----------------+-----------+
5 rows in set (0.00 sec)
```

6. Delete those employee whose SSN is 1.
   Ans:

Lab-1: Basics of DDL and DML Statements

Query:
Delete from Employee where SSN = 1;
Result:

Before:
mysql> select * from Employee;

```
+-----+-----------+--------+------------+------------+-----------+------+------------------+
| SSN | Ename     | Gender | Bdate      | Address    | Salary    | Ono  | Year_of_experence
|
+-----+-----------+--------+------------+------------+-----------+------+------------------+
|  38 | SuraJ     | M      | 2024-07-03 | lalitpur-2 |  30000.00 |    2 |             3 |
|  39 | hari      | M      | 2024-08-03 | lamahi-2   |  40000.00 |    4 |             7 |
|  40 | Ram       | M      | 2024-01-03 | ktm-2      |  20000.00 |    1 |            10 |
|  41 | Sita      | F      | 1990-05-02 | australia  |  10000.00 |    5 |            4 |
|  42 | pratiksha | F      | 2061-05-07 | dang       | 100000.00 |    1 |             7 |
+-----+-----------+--------+------------+------------+-----------+------+------------------+
5 rows in set (0.00 sec)
```

After:
mysql> select * from Employee;

```
+-----+-----------+--------+------------+------------+-----------+------+------------------+
| SSN | Ename     | Gender | Bdate      | Address    | Salary    | Ono  | Year_of_experence
|
+-----+-----------+--------+------------+------------+-----------+------+------------------+
|  38 | SuraJ     | M      | 2024-07-03 | lalitpur-2 |  30000.00 |    2 |             3 |
|  39 | hari      | M      | 2024-08-03 | lamahi-2   |  40000.00 |    4 |             7 |
|  40 | Ram       | M      | 2024-01-03 | ktm-2      |  20000.00 |    1 |            10 |
|  41 | Sita      | F      | 1990-05-02 | australia  |  10000.00 |    5 |            4 |
|  42 | pratiksha | F      | 2061-05-07 | dang       | 100000.00 |    1 |             7 |
+-----+-----------+--------+------------+------------+-----------+------+------------------+
5 rows in set (0.00 sec)
```

7. Alter table Project to rename the attribute in Plcoation to Proj_location
   Ans:

```
alter table  Project
change column Plocation  Proj_location  varchar(40);
```

   output:
   mysql> select *from project;

```
+---------+------------------+---------------+---------+
| Pnumber | Pname            | Proj_location | Onumber |
+---------+------------------+---------------+---------+
|      20 | Hari_ProjMDS     | bhaktapur     |       2 |
|      21 | Sita_ProjMDS     | australia     |       3 |
|      22 | pratiksha_ProjMDS | bhaktapur     |       4 |
|      23 | Ram_ProjMDS      | ktm-2         |       5 |
|      76 | Suraj_ProjMDS    | lalitpur      |       1 |
+---------+------------------+---------------+---------+
```

   5 rows in set (0.01 sec)
8. Select tuples from all of the tables individually.

Lab-1: Basics of DDL and DML Statements

```
mysql> select *from Employee;
+-----+-----------+--------+------------+------------+-----------+------+-------------------+
| SSN | Ename     | Gender | Bdate      | Address    | Salary    | Ono  | Year_of_experence
|
+-----+-----------+--------+------------+------------+-----------+------+-------------------+
|  38 | SuraJ     | M      | 2024-07-03 | lalitpur-2 |  30000.00 |    2 |              3 |
|  39 | hari      | M      | 2024-08-03 | lamahi-2   |  40000.00 |    4 |              7 |
|  40 | Ram       | M      | 2024-01-03 | ktm-2      |  20000.00 |    1 |             10 |
|  41 | Sita      | F      | 1990-05-02 | australia  |  10000.00 |    5 |              4 |
|  42 | pratiksha | F      | 2061-05-07 | dang       | 100000.00 |    1 |              7 |
+-----+-----------+--------+------------+------------+-----------+------+-------------------+
5 rows in set (0.00 sec)
mysql> select *from Office;
+---------+----------------+-----------+
| Onumber | Oname          | Country   |
+---------+----------------+-----------+
|       1 | Suraj_Office_38 | USA       |
|       2 | Suraj_ntc_38    | UK        |
|       3 | hari_Office_06  | Nepal     |
|       4 | Ram_Ncell_06    | china     |
|       5 | Sita_Ncell_06   | australia |
+---------+----------------+-----------+
5 rows in set (0.00 sec)

mysql> select * from Project;
+---------+-------------------+---------------+---------+
| Pnumber | Pname             | Proj_location | Onumber |
+---------+-------------------+---------------+---------+
|      20 | Hari_ProjMDS      | bhaktapur     |       2 |
|      21 | Sita_ProjMDS      | australia     |       3 |
|      22 | pratiksha_ProjMDS | bhaktapur     |       4 |
|      23 | Ram_ProjMDS       | ktm-2         |       5 |
|      76 | Suraj_ProjMDS     | lalitpur      |       1 |
+---------+-------------------+---------------+---------+
5 rows in set (0.00 sec)

mysql> select *from Dependents;
+-----+---------+------+------+-----------+
| Did | Dname   | Dage | SSN  | Drelation |
+-----+---------+------+------+-----------+
|   1 | himesh  |   15 |   38 | brother   |
|   2 | yam     |   15 |   38 | mother    |
|   3 | sima    |   10 |   39 | sister    |
|   4 | krinjal |    5 |   40 | brother   |
|   5 | basu    |   14 |   41 | cousin    |
+-----+---------+------+------+-----------+
5 rows in set (0.00 sec)
```

mysql> select *from Works_on;
Empty set (0.01 sec)

9. Drop the table Works_on. Make sure to export your database before you drop it so that you can recover.
   Ans:
   Query:
   Drop table Works_on;
   Output:
   mysql> Drop table Works_on;
   Query OK, 0 rows affected (0.04 sec)

   mysql> desc works_on;
   ERROR 1146 (42S02): Table 'suraj_38_company.works_on' doesn't exist

10. Drop the constraint age_constraint from dependent table
    Ans:

Query: alter table Dependents
drop constraint age_constraint

Result:

Before:

mysql> select *from Dependents;

Did	Dname	Dage	SSN	Drelation
1	himesh	15	38	brother
2	yam	15	38	mother
3	sima	10	39	sister
4	krinjal	5	40	brother
5	basu	14	41	cousin

5 rows in set (0.00 sec)

After:

mysql> alter table Dependents drop constraint age_constraint;
Query OK, 0 rows affected (0.03 sec)
Records: 0 Duplicates: 0 Warnings: 0
mysql> alter table Dependents drop constraint age_constraint;
ERROR 3940 (HY000): Constraint 'age_constraint' does not exist.

11. Drop the database COMPANY. Make sure to export your database before you drop it so that you can recover.
    Ans:
    Query:
    Drop Suraj_38_company

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Result:

```
mysql> drop database Suraj_38_Company;
Query OK, 0 rows affected (0.06 sec)
mysql> show databases;
+--------------------+
| Database           |
+--------------------+
| classicmodels      |
| information_schema |
| mysql              |
| performance_schema |
| shopping           |
| sys                |
+--------------------+
6 rows in set (0.01 sec)
```