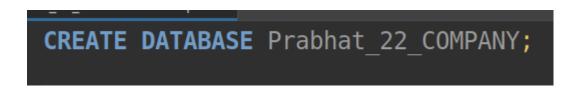
Lab-1: Basics of DDL and DML Statements

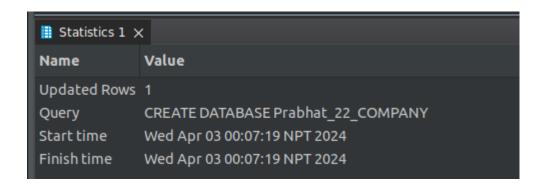
Prepare the Lab Sheet of MYSQL Statements for the following.

1. Create a database named "Yourname_Roll_COMPANY" e.g.: Atiz_02_Company and then create the following tables within the database. Specify proper primary keys and the needed constraints while defining the tables. Use appropriate data types for the attributes.

ANSWER: Creating a database named 'Prabhat_22_Company' SQL QUERY:



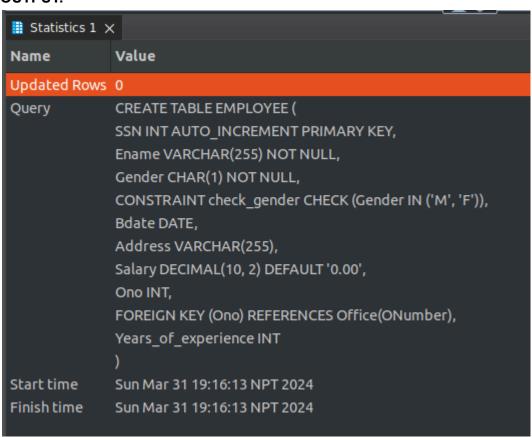
OUTPUT:



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

Creating Table name EMPLOYEE SQL QUERY:

```
📶 Databases
                               • CREATE TABLE EMPLOYEE (
                               SSN INT AUTO INCREMENT PRIMARY KEY,
   > 🎞 Tables
  > Views
                               Ename VARCHAR(255) NOT NULL,
                               Gender CHAR(1) NOT NULL,
   > Procedures
                               CONSTRAINT check gender CHECK (Gender IN ('M', 'F')),
  > Triggers
> Events
                               Bdate DATE,
                               Address VARCHAR(255),
                                Salary DECIMAL(10, 2) DEFAULT '0.00',
> <a> Administer</a>
                                Ono INT,
> 🛅 System Info
                                FOREIGN KEY (Ono) REFERENCES Office(ONumber),
Prabhat_22_COMPANY - localhost:3306
 m Databases
                                Years of experience INT
   > ≔ Tables
```



1. b. Office (Onumber, Oname, Country); where Oname should not be NULL. The country should be varchar.

SQL QUERY

```
•CREATE TABLE Office (
Onumber INT PRIMARY KEY,
Oname VARCHAR(255) NOT NULL,
Country VARCHAR(255)
);
```

OUTPUT

```
Name Value

Updated Rows 0

Query CREATE TABLE Office (
Onumber INT PRIMARY KEY,
Oname VARCHAR(255) NOT NULL,
Country VARCHAR(255)
)

Start time Sun Mar 31 19:07:55 NPT 2024
Finish time Sun Mar 31 19:07:55 NPT 2024
```

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

SQL QUERY:

```
•CREATE TABLE Project (
Pnumber INT PRIMARY KEY,
Pname VARCHAR(40) NOT NULL UNIQUE,
Plocation VARCHAR(40),
Onumber INT,
CONSTRAINT fk_pro FOREIGN KEY (Onumber) REFERENCES Office(Onumber)
)
```

```
Name Value

Updated Rows 0

Query CREATE TABLE Project (
Pnumber INT PRIMARY KEY,
Pname VARCHAR(40) NOT NULL UNIQUE,
Plocation VARCHAR(40),
Onumber INT,
CONSTRAINT fk_pro FOREIGN KEY (Onumber) REFERENCES Office(Onumber)
)

Start time Sun Mar 31 20:42:03 NPT 2024
Finish time Sun Mar 31 20:42:03 NPT 2024
```

1. 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

SQL 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,
PRIMARY KEY (ESSN, Pno)
)
```

```
Name Value

Updated Rows 0
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,
PRIMARY KEY (ESSN, Pno)
)

Start time Sun Mar 31 20:54:07 NPT 2024
Finish time Sun Mar 31 20:54:08 NPT 2024
```

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

SQL QUERY:

```
CREATE TABLE Dependents (
Did INT PRIMARY KEY,
Dname VARCHAR(255),
Dage INT,
CONSTRAINT age_constraint CHECK (Dage < 16),
SSN INT,
FOREIGN KEY (SSN) REFERENCES EMPLOYEE(SSN) ON DELETE SET NULL ON UPDATE SET NULL
)
```

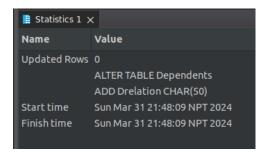
OUTPUT:

```
■ Statistics 1 ×
Name
             Value
Updated Rows 0
Query
             CREATE TABLE Dependents (
             DID INT PRIMARY KEY,
             Dname VARCHAR(255),
              Dage INT,
              CONSTRAINT age_constraint CHECK (Dage < 16),
              SSN INT,
              FOREIGN KEY (SSN) REFERENCES EMPLOYEE(SSN) ON DELETE SET NULL ON UPDATE SET NULL
Start time
              Sun Mar 31 21:44:17 NPT 2024
Finish time
              Sun Mar 31 21:44:17 NPT 2024
```

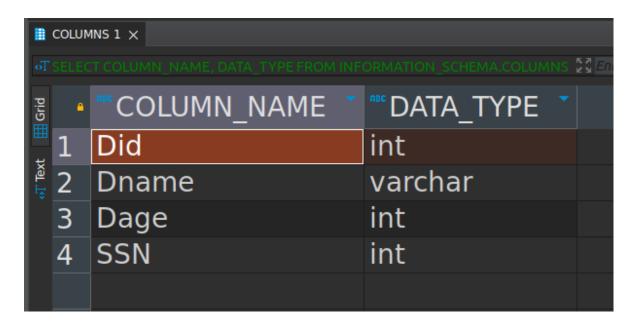
2. Alter table Dependents and add an attribute Drelation of type Char(50.

SQL QUERY:

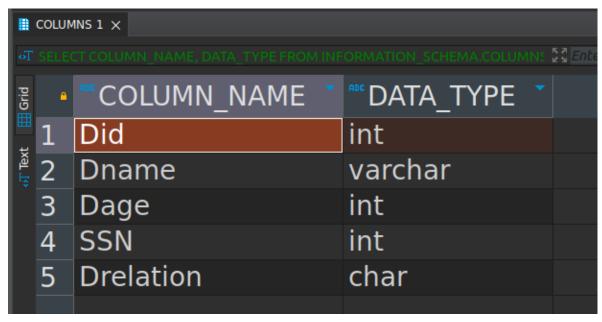
```
ALTER TABLE Dependents
ADD Drelation CHAR(50);
```



Before Making Alter Statement, the Dependents table schema structure was like this:



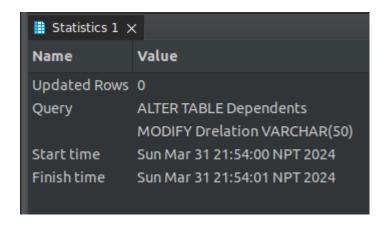
After Making Alter Statement, the Dependents table schema structure is like this:



Impact: A new column name called 'Drelation' with char(50) data type is added here.

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

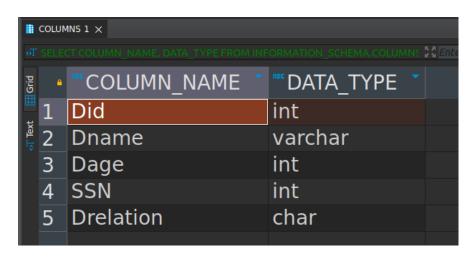
```
•ALTER TABLE Dependents
MODIFY Drelation VARCHAR(50);
```



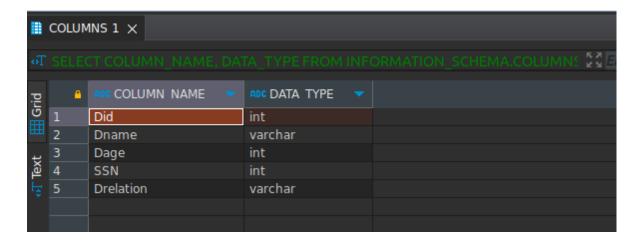
SELECTING THE NAME OF COLUMNS AS WELL AS THEIR DATA TYPES FROM Dependents Table Before & After Modifying the Dependents table schema.

```
•SELECT <u>COLUMN_NAME</u>, <u>DATA_TYPE</u> FROM INFORMATION_SCHEMA.COLUMNS
WHERE <u>TABLE_NAME</u> = "Dependents";
```

COLUMN NAMES OF Dependent Table Along with Their Data Types Before Applying Modify Operation:



COLUMN NAMES OF Dependent Table Along with Their Data Types AFTER Applying to Modify Operation



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

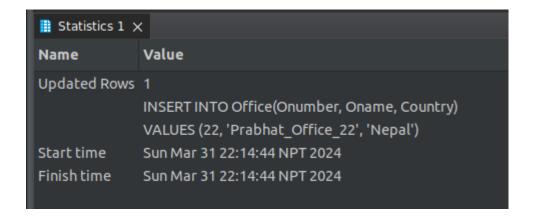
One of the tuples in the Office table should have the office name "Yourname_Office_Roll" i.e. Deric_Office_06. Similarly one of the tuple in an employee should have a salary of 30000.

In addition, there should be one tuple in the office table having the office name Yourname_Ncell_Roll.

Single Insertion: SQL QUERY:

```
•INSERT INTO Office(Onumber, Oname, Country)
VALUES (22, 'Prabhat_Office_22', 'Nepal');
```

OUTPUT:



SQL QUERY: (Single Insertion)

```
•INSERT INTO Office(Onumber, Oname, Country)
VALUES (11, 'Prabhat_Ncell_22', 'India');
```

```
Name Value

Updated Rows 1

INSERT INTO Office(Onumber, Oname, Country)

VALUES (11, 'Prabhat_Ncell_22', 'India')

Start time Sun Mar 31 23:09:31 NPT 2024

Finish time Sun Mar 31 23:09:31 NPT 2024
```

INSERTION OF MULTIPLE TUPLES. SQL QUERY:

```
•INSERT INTO Office(Onumber, Oname, Country)
VALUES
(2, 'Anish_Office_2', 'Canada'),
(33, 'Suman_Office_33', 'USA'),
(12, 'Gaurav_Office_12', 'Germany');
```

```
Name Value

Updated Rows 3

Query INSERT INTO Office(Onumber, Oname, Country)

VALUES

(2, 'Anish_Office_2', 'Canada'),

(33, 'Suman_Office_33', 'USA'),

(12, 'Gaurav_Office_12', 'Germany')

Start time Sun Mar 31 23:13:17 NPT 2024

Finish time Sun Mar 31 23:13:17 NPT 2024
```

Office Table After Inserting 5 rows:

There should be one record in the Employee table having Ename "Your name" i. e. Deric and SSN "Your roll number" e.g. 6

SQL QUERY:

```
•INSERT INTO EMPLOYEE(Ename, Gender, Bdate, Address, Salary, Ono, Years_of_experience)

VALUES
('Prabhat', 'M', '2054-12-15', 'Kritipur', 200000, 22, 4),
('Gaurav', 'M', '2056-07-24', 'MacheGaun', 30000, 12, 1);
```

OUTPUT:

```
Name Value

Updated Rows 2

INSERT INTO EMPLOYEE(Ename, Gender, Bdate, Address, Salary, Ono, Years_of_experience)

VALUES

('Prabhat', 'M', '2054-12-15', 'Kritipur', 200000, 22, 4),

('Gaurav', 'M', '2056-07-24', 'MacheGaun', 30000, 12, 1)

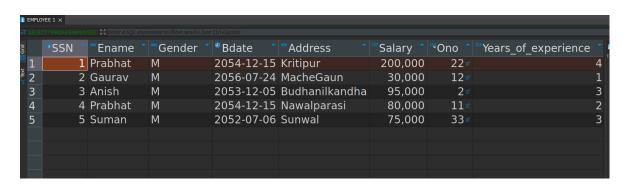
Start time Tue Apr 02 19:10:29 NPT 2024

Finish time Tue Apr 02 19:10:29 NPT 2024
```

INSERTION OF MULTIPLE TUPLES SQL QUERY:

```
•INSERT INTO EMPLOYEE(Ename, Gender, Bdate, Address, Salary, Ono, Years_of_experience)
VALUES
('Anish', 'M', '2053-12-05', 'Budhanilkandha', 95000, 2, 3),
('Prabhat', 'M', '2054-12-15', 'Nawalparasi', 80000, 11, 2),
('Suman', 'M', '2052-07-06', 'Sunwal', 75000, 33, 3);
```

Employee Table After Inserting 5 rows:



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

```
•INSERT INTO Project(Pnumber, Pname, Plocation, Onumber)

VALUES

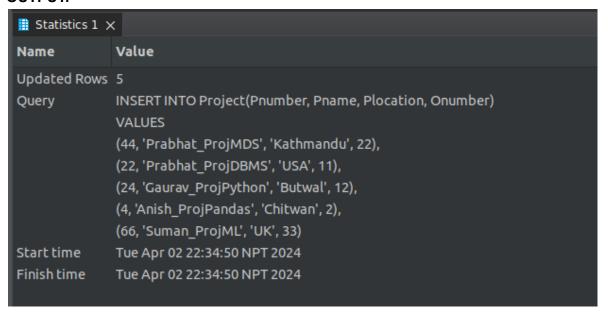
(44, 'Prabhat_ProjMDS', 'Kathmandu', 22),

(22, 'Prabhat_ProjDBMS', 'USA', 11),

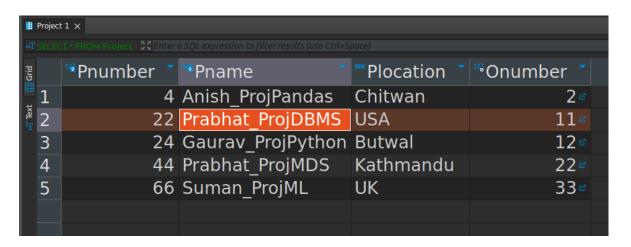
(24, 'Gaurav_ProjPython', 'Butwal', 12),

(4, 'Anish_ProjPandas', 'Chitwan', 2),

(66, 'Suman_ProjML', 'UK', 33);
```



Project Table After Inserting 5 rows:

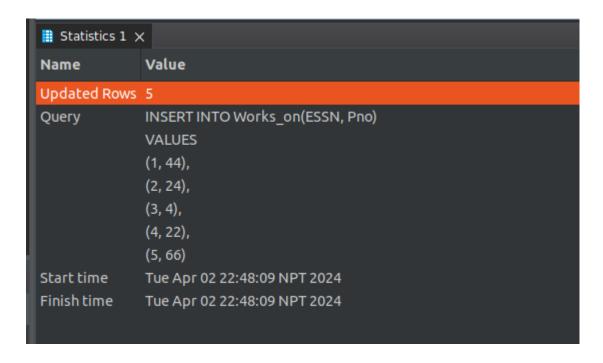


Insert the five tuples into Works_on table.

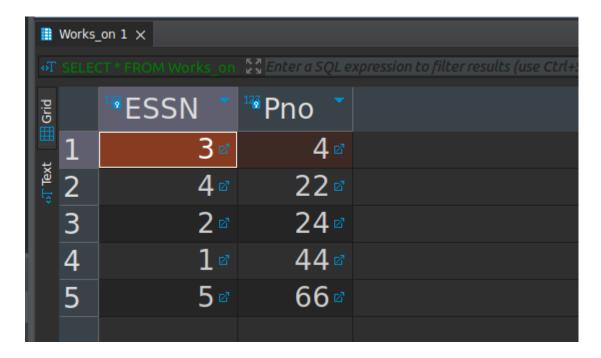
```
•INSERT INTO Works_on(ESSN, Pno)

VALUES

(1, 44),
(2, 24),
(3, 4),
(4, 22),
(5, 66);
```



Works_on Table After Inserting 5 rows:



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

Answer:

Since we have age constraint which restricts the dependent age to be less than 16 that's why it is really hard to select Drelation for Monther as Mother is always less than 16.

```
•INSERT INTO Dependents(Did, Dname, Dage, SSN, Drelation)

VALUES

(1, "Rihans", 6, 1, "Brother"),

(2, "Kabya", 8, 1, "Sister"),

(3, "Kabir", 3, 4, "Brother"),

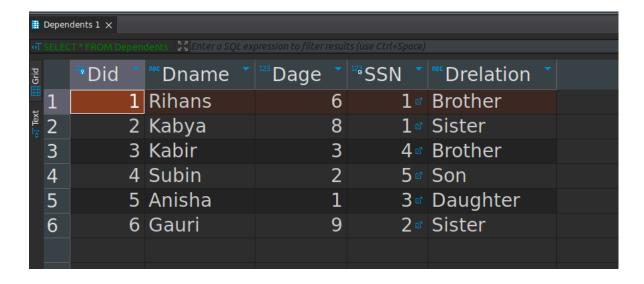
(4, "Subin", 2, 5, "Son"),

(5, "Anisha", 1, 3, "Daughter"),

(6, "Gauri", 9, 2, "Sister");
```

```
■ Statistics 1 ×
               Value
Name
Updated Rows 6
Query
               INSERT INTO Dependents (Did, Dname, Dage, SSN, Drelation)
               VALUES
                (1, "Rihans", 6, 1, "Brother"),
                (2, "Kabya", 8, 1, "Sister"),
                (3, "Kabir", 3, 4, "Brother"),
                (4, "Subin", 2, 5, "Son"),
                (5, "Anisha", 1, 3, "Daughter"),
                (6, "Gauri", 9, 2, "Sister")
Start time
               Tue Apr 02 23:01:03 NPT 2024
Finish time
                Tue Apr 02 23:01:03 NPT 2024
```

Dependent Table After Inserting 5 rows:

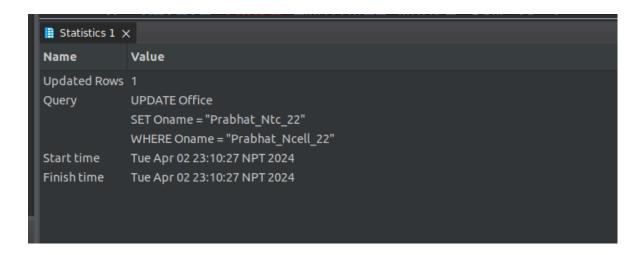


5. Update the name e of the office hathe ving office name "Yourname_Ncell_Roll" to "Yourname_Ntc_Roll".

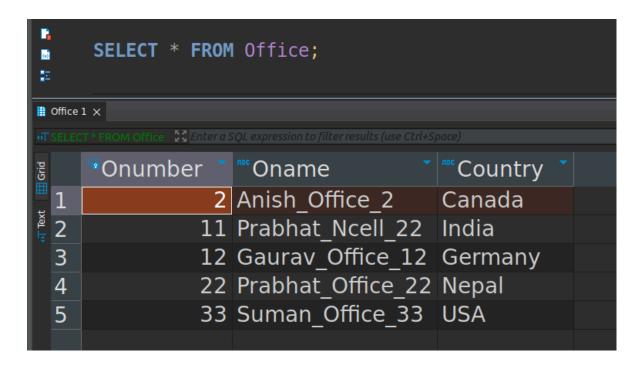
SQL QUERY:

```
•UPDATE Office
SET Oname = "Prabhat_Ntc_22"
WHERE Oname = "Prabhat_Ncell_22";
```

OUTPUT:



Office Table Before Update:



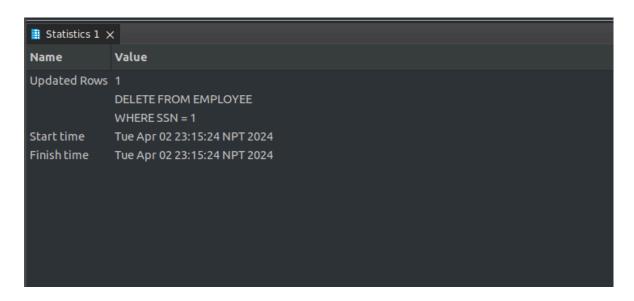
Office Table After Update:

■ Office 1 ×				
oT SELECT * FROM Office □ 23 Enter a SQL expression to filter results (use Ctrl+Space)				
⊞ Grid		Onumber	[™] Oname *	Country Country
_	1	2	Anish_Office_2	Canada
•∏ Text	2	11	Prabhat_Ntc_22	India
	3	12	Gaurav_Office_12	Germany
	4	22	Prabhat_Office_22	Nepal
	5	33	Suman_Office_33	USA

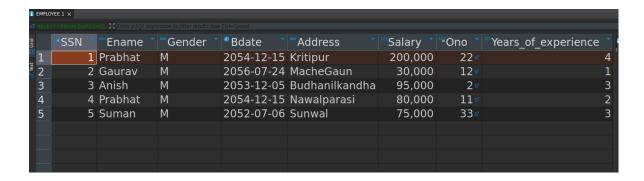
6. Delete employees whose SSN is 1.

SQL QUERY:

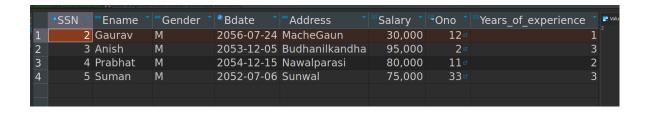
```
•DELETE FROM EMPLOYEE
WHERE SSN = 1;
```



EMPLOYEE TABLE BEFORE DELETE OPERATION:



EMPLOYEE TABLE AFTER DELETE OPERATION:

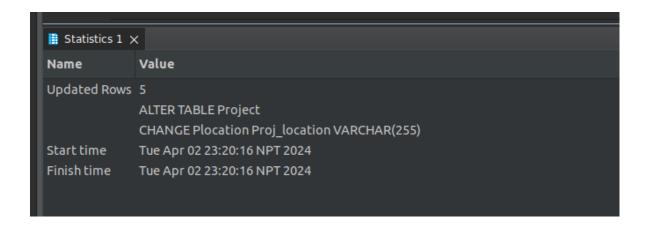


7. Alter table Project to rename the attribute in Plcoation to Proj_location

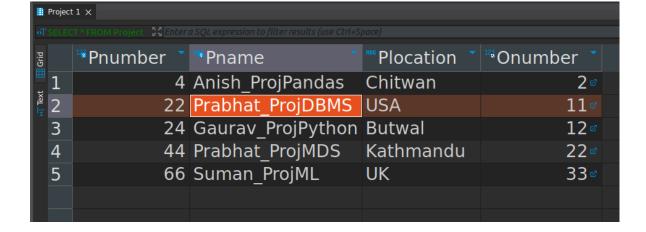
SQL QUERY:

```
•ALTER TABLE Project
CHANGE Plocation Proj_location VARCHAR(255);
```

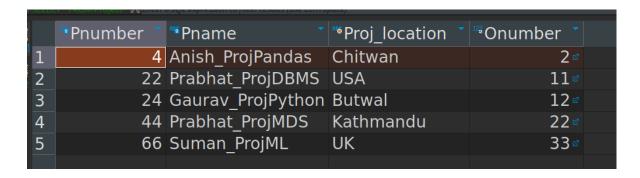
OUTPUT:



SQL TABLE BEFORE COLUMN RENAMING:



SQL TABLE AFTER COLUMN RENAMING:



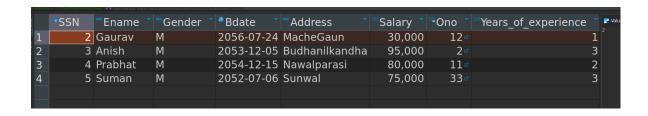
8. Select tuples from all of the tables individually

EMPLOYEE TABLE:

SQL QUERY:

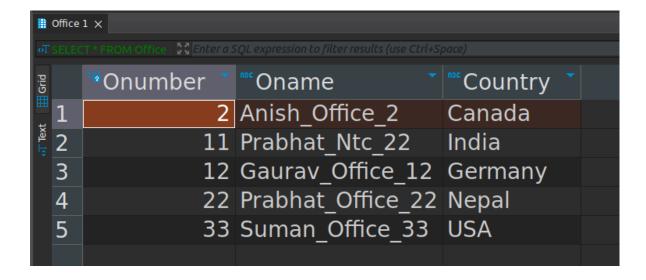


OUTPUT:



OFFICE TABLE:

```
SELECT * FROM Office;
```



PROJECT TABLE:

SQL QUERY:

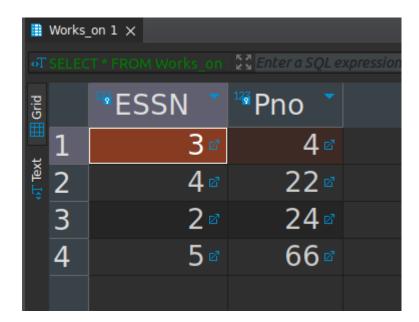
```
SELECT * FROM Project;
```

OUTPUT:



Works_on Table

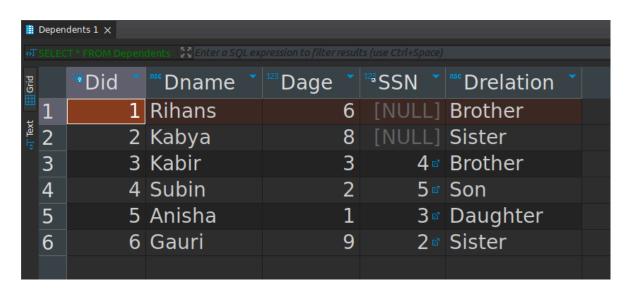
```
SELECT * FROM Works_on;
```



Dependents Table:

SQL QUERY:

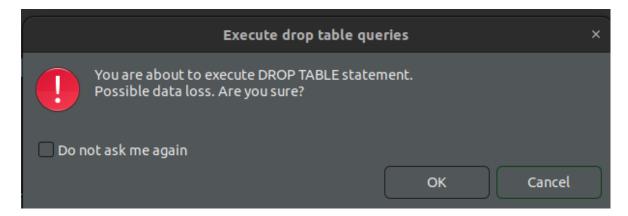
```
SELECT * FROM Dependents;
```

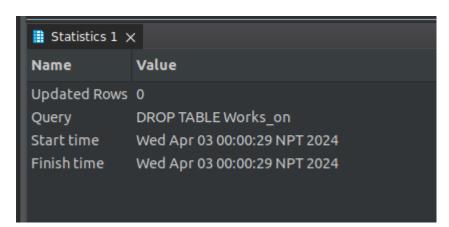


9. Drop the table Works_on. Make sure to export your database before you drop it so that you can recover.

DROP TABLE Works_on

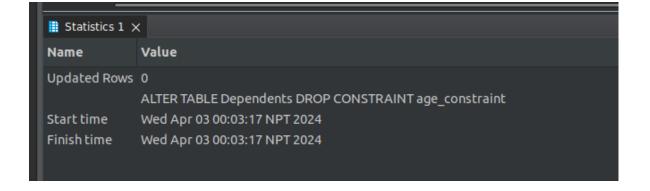






10. Drop the constraint age_constraint for the dependent table SQL QUERY:

```
ALTER TABLE Dependents DROP CONSTRAINT age_constraint;
```



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

SQL QUERY:

```
DROP DATABASE Prabhat_22_COMPANY;
```

