

INTRODUCTION TO PYTHON

LAB SHEET-6

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a) Create the tables as per the instructions given and insert suitable data.

Table DOCTOR:

```
mysql> desc DOCTOR;
+-----+-----+-----+-----+-----+-----+
| Field          | Type          | Null | Key | Default | Extra |
+-----+-----+-----+-----+-----+-----+
| DID            | int           | NO   | PRI | NULL    |       |
| DNAME          | varchar(25)   | YES  |     | NULL    |       |
| SPECIALIZATION | varchar(20)   | YES  |     | general  |       |
| AADHAR_NO      | varchar(12)   | YES  | UNI | NULL    |       |
| CONSULTATION_FEE | decimal(5,2) | YES  |     | NULL    |       |
| CITY           | varchar(20)   | YES  |     | NULL    |       |
+-----+-----+-----+-----+-----+-----+
6 rows in set (0.00 sec)
```

```
'DID' int NOT NULL,
'DNAME' varchar(25) DEFAULT NULL,
'SPECIALIZATION' varchar(20) DEFAULT 'general',
'AADHAR_NO' varchar(12) DEFAULT NULL,
'CONSULTATION_FEE' decimal(5,2) DEFAULT NULL,
'CITY' varchar(20) DEFAULT NULL,
PRIMARY KEY ('DID'),
UNIQUE KEY 'AADHAR_NO' ('AADHAR_NO'),
CONSTRAINT 'C1' CHECK (('CONSULTATION_FEE' > 50))
ENGINE=InnoDB DEFAULT CHARSET=utf8mb4 COLLATE=utf8mb4_0900_ai_ci |
```

Inserting data to DOCTOR:

```
mysql> INSERT INTO DOCTOR (DID, DNAME, SPECIALIZATION, AADHAR_NO, CONSULTATION_FEE, CITY)
-> VALUES
-> (1, 'Dr. John Smith', 'Cardiology', '1234567890', 75.00, 'New York'),
-> (2, 'Dr. Emily Johnson', 'Pediatrics', '0987654321', 60.00, 'Los Angeles'),
-> (3, 'Dr. Michael Brown', 'Orthopedics', '111122223333', 80.00, 'Chicago');
Query OK, 3 rows affected (0.01 sec)
Records: 3 Duplicates: 0 Warnings: 0
```

```
mysql> select * from DOCTOR;
+-----+-----+-----+-----+-----+-----+
| DID | DNAME          | SPECIALIZATION | AADHAR_NO | CONSULTATION_FEE | CITY       |
+-----+-----+-----+-----+-----+-----+
| 1   | Dr. John Smith | Cardiology     | 1234567890 | 75.00            | New York   |
| 2   | Dr. Emily Johnson | Pediatrics    | 0987654321 | 60.00            | Los Angeles |
| 3   | Dr. Michael Brown | Orthopedics    | 111122223333 | 80.00            | Chicago     |
+-----+-----+-----+-----+-----+-----+
3 rows in set (0.00 sec)
```

Table PATIENT

```
mysql> desc PATIENT;
+-----+-----+-----+-----+-----+-----+
| Field      | Type          | Null | Key | Default | Extra |
+-----+-----+-----+-----+-----+-----+
| PID        | int           | NO   | PRI | NULL    |       |
| PNAME      | varchar(25)   | YES  |     | NULL    |       |
| DATE_OF_BIRTH | date         | YES  |     | NULL    |       |
| ADDRESS    | varchar(20)   | YES  |     | NULL    |       |
+-----+-----+-----+-----+-----+-----+
4 rows in set (0.00 sec)
```

Inserting data into PATIENT

```
mysql> INSERT INTO PATIENT (PID, PNAME, DATE_OF_BIRTH, ADDRESS)
-> VALUES
-> (1, 'Alice Johnson', '1990-05-15', '123 Main St'),
-> (2, 'Bob Smith', '1985-10-20', '456 Elm St'),
-> (3, 'Jane Doe', '1978-03-08', '789 Oak St');
Query OK, 3 rows affected (0.03 sec)
Records: 3  Duplicates: 0  Warnings: 0
```

```
mysql> select * from PATIENT;
+-----+-----+-----+-----+
| PID | PNAME      | DATE_OF_BIRTH | ADDRESS    |
+-----+-----+-----+-----+
| 1   | Alice Johnson | 1990-05-15    | 123 Main St |
| 2   | Bob Smith    | 1985-10-20    | 456 Elm St  |
| 3   | Jane Doe     | 1978-03-08    | 789 Oak St  |
+-----+-----+-----+-----+
3 rows in set (0.00 sec)
```

b) Add a column called SPECIAL_FEE with data type NUMERIC(5,2) to DOCTOR table

```
mysql> ALTER TABLE DOCTOR
-> ADD SPECIAL_FEE NUMERIC(5,2);
Query OK, 0 rows affected (0.04 sec)
Records: 0  Duplicates: 0  Warnings: 0
```

```
mysql> select * from DOCTOR;
+-----+-----+-----+-----+-----+-----+
| DID | DNAME      | SPECIALIZATION | AADHAR_NO | CONSULTATION_FEE | CITY    | SPECIAL_FEE |
+-----+-----+-----+-----+-----+-----+
| 1   | Dr. John Smith | Cardiology    | 1234567890 | 75.00            | New York | NULL        |
| 2   | Dr. Emily Johnson | Pediatrics    | 0987654321 | 60.00            | Los Angeles | NULL        |
| 3   | Dr. Michael Brown | Orthopedics   | 11112223333 | 80.00            | Chicago  | NULL        |
+-----+-----+-----+-----+-----+-----+
3 rows in set (0.00 sec)
```

c) Add a check constraint to show that SPECIAL_FEE > CONSULTATION_FEE

```
mysql> use lab6;
Database changed
mysql> ALTER TABLE DOCTOR
  -> ADD CONSTRAINT CHK_SPECIAL_FEE CHECK (SPECIAL_FEE > CONSULTATION_FEE);
Query OK, 3 rows affected (0.07 sec)
Records: 3 Duplicates: 0 Warnings: 0

mysql> INSERT INTO DOCTOR (DID, DNAME, SPECIALIZATION, AADHAR_NO, SPECIAL_FEE, CONSULTATION_FEE, CITY)
  -> VALUES
  -> (5, 'Dr. Michael Green', 'Dermatology', '777788889999', 70.00, 80.00, 'Boston');
ERROR 3819 (HY000): Check constraint 'CHK_SPECIAL_FEE' is violated.
mysql> |
```

d) Using alter command, Drop the constraint C1.

```
mysql> ALTER TABLE DOCTOR
  -> DROP CONSTRAINT C1;
Query OK, 0 rows affected (0.02 sec)
Records: 0 Duplicates: 0 Warnings: 0

mysql> |
```

e) Add a column AADHAR_NUMBER to patient table with UNIQUE constraint

```
mysql> ALTER TABLE PATIENT
  -> ADD COLUMN AADHAR_NUMBER VARCHAR(12) UNIQUE;
Query OK, 0 rows affected (0.07 sec)
Records: 0 Duplicates: 0 Warnings: 0

mysql> select * from PATIENT;
+-----+-----+-----+-----+-----+
| PID | PNAME          | DATE_OF_BIRTH | ADDRESS    | AADHAR_NUMBER |
+-----+-----+-----+-----+-----+
| 1   | Alice Johnson  | 1990-05-15    | 123 Main St | NULL           |
| 2   | Bob Smith      | 1985-10-20    | 456 Elm St  | NULL           |
| 3   | Jane Doe       | 1978-03-08    | 789 Oak St  | NULL           |
+-----+-----+-----+-----+-----+
3 rows in set (0.00 sec)

mysql> desc PATIENT;
+-----+-----+-----+-----+-----+-----+
| Field          | Type          | Null | Key | Default | Extra |
+-----+-----+-----+-----+-----+-----+
| PID            | int           | NO   | PRI | NULL    |       |
| PNAME          | varchar(25)   | YES  |     | NULL    |       |
| DATE_OF_BIRTH  | date          | YES  |     | NULL    |       |
| ADDRESS        | varchar(20)   | YES  |     | NULL    |       |
| AADHAR_NUMBER  | varchar(12)   | YES  | UNI | NULL    |       |
+-----+-----+-----+-----+-----+-----+
5 rows in set (0.01 sec)
```

f) Add NOT NULL constraint to the DATE_OF_BIRTH column of PATIENT table.

```
mysql> ALTER TABLE PATIENT
-> MODIFY COLUMN DATE_OF_BIRTH DATE NOT NULL;
Query OK, 0 rows affected (0.06 sec)
Records: 0 Duplicates: 0 Warnings: 0

mysql> INSERT INTO PATIENT (PID, PNAME, ADDRESS) VALUES (1, 'John Doe', '123 Main St');
ERROR 1364 (HY000): Field 'DATE_OF_BIRTH' doesn't have a default value
mysql> |
```

g) Delete a doctor from DOCTOR table

```
mysql> select * from DOCTOR;
+-----+-----+-----+-----+-----+-----+-----+
| DID | DNAME           | SPECIALIZATION | AADHAR_NO | CONSULTATION_FEE | CITY           | SPECIAL_FEE |
+-----+-----+-----+-----+-----+-----+-----+
| 1 | Dr. John Smith | Cardiology     | 1234567890 | 75.00            | New York      | NULL        |
| 2 | Dr. Emily Johnson | Pediatrics     | 0987654321 | 60.00            | Los Angeles   | NULL        |
| 3 | Dr. Michael Brown | Orthopedics    | 111122223333 | 80.00            | Chicago       | NULL        |
+-----+-----+-----+-----+-----+-----+-----+
3 rows in set (0.00 sec)

mysql> DELETE FROM DOCTOR
-> WHERE DID = 3;
Query OK, 1 row affected (0.02 sec)

mysql> select * from DOCTOR;
+-----+-----+-----+-----+-----+-----+-----+
| DID | DNAME           | SPECIALIZATION | AADHAR_NO | CONSULTATION_FEE | CITY           | SPECIAL_FEE |
+-----+-----+-----+-----+-----+-----+-----+
| 1 | Dr. John Smith | Cardiology     | 1234567890 | 75.00            | New York      | NULL        |
| 2 | Dr. Emily Johnson | Pediatrics     | 0987654321 | 60.00            | Los Angeles   | NULL        |
+-----+-----+-----+-----+-----+-----+-----+
2 rows in set (0.00 sec)
```

h) Display the name of the doctors whose consultation fees are even.

```
mysql> select * from DOCTOR;
+-----+-----+-----+-----+-----+-----+-----+
| DID | DNAME           | SPECIALIZATION | AADHAR_NO | CONSULTATION_FEE | CITY           | SPECIAL_FEE |
+-----+-----+-----+-----+-----+-----+-----+
| 1 | Dr. John Smith | Cardiology     | 1234567890 | 75.00            | New York      | NULL        |
| 2 | Dr. Emily Johnson | Pediatrics     | 0987654321 | 60.00            | Los Angeles   | NULL        |
+-----+-----+-----+-----+-----+-----+-----+
2 rows in set (0.00 sec)

mysql> SELECT DNAME
-> FROM DOCTOR
-> WHERE CONSULTATION_FEE % 2 = 0;
+-----+
| DNAME           |
+-----+
| Dr. Emily Johnson |
+-----+
1 row in set (0.01 sec)
```

i) Find the doctors whose name starts with 'K' and ends with 'n'

```
mysql> select * from DOCTOR;
+-----+-----+-----+-----+-----+-----+-----+
| DID | DNAME           | SPECIALIZATION | AADHAR_NO | CONSULTATION_FEE | CITY           | SPECIAL_FEE |
+-----+-----+-----+-----+-----+-----+-----+
| 1 | Dr. John Smith | Cardiology     | 1234567890 | 75.00            | New York      | NULL        |
| 2 | Dr. Emily Johnson | Pediatrics     | 0987654321 | 60.00            | Los Angeles   | NULL        |
| 5 | Dr. Karan      | E.N.T         | 777788889999 | 60.00            | Boston        | 70.00       |
+-----+-----+-----+-----+-----+-----+-----+
3 rows in set (0.00 sec)
```

```
mysql> SELECT DNAME
      -> FROM DOCTOR
      -> WHERE DNAME LIKE 'K%an' OR DNAME LIKE 'Dr. K%an';
+-----+
| DNAME      |
+-----+
| Dr. Karan  |
+-----+
1 row in set (0.00 sec)
```

j) Find the patients whose name starts with 'A' and is followed by 2 characters only.

```
mysql> select * from PATIENT;
+-----+-----+-----+-----+
| PID | PNAME          | DATE_OF_BIRTH | ADDRESS      | AADHAR_NUMBER |
+-----+-----+-----+-----+
| 1 | Alice Johnson | 1990-05-15    | 123 Main St | NULL          |
| 2 | Bob Smith     | 1985-10-20    | 456 Elm St  | NULL          |
| 3 | Jane Doe      | 1978-03-08    | 789 Oak St  | NULL          |
| 4 | Anu           | 2000-01-01    | 346 New St  | NULL          |
+-----+-----+-----+-----+
4 rows in set (0.00 sec)

mysql> SELECT PNAME
      -> FROM PATIENT
      -> WHERE PNAME LIKE 'A__';
+-----+
| PNAME |
+-----+
| Anu   |
+-----+
1 row in set (0.00 sec)

mysql> |
```

k) Find the doctors whose name starts with 'J' or 'L'

```
mysql> SELECT DNAME
      -> FROM DOCTOR
      -> WHERE DNAME LIKE 'Dr. J%' OR 'Dr. L%';
+-----+
| DNAME          |
+-----+
| Dr. John Smith |
+-----+
1 row in set, 1 warning (0.01 sec)

mysql> |
```

l) Find the doctors whose specialization is 'E.N.T' and consultation fee is more than 60

```
mysql> select * from DOCTOR;
```

DID	DNAME	SPECIALIZATION	AADHAR_NO	CONSULTATION_FEE	CITY	SPECIAL_FEE
1	Dr. John Smith	Cardiology	1234567890	75.00	New York	NULL
2	Dr. Emily Johnson	Pediatrics	0987654321	60.00	Los Angeles	NULL
4	Dr. Arun	E.N.T	12345678	70.00	Delhi	80.00
5	Dr. Karan	E.N.T	777788889999	60.00	Boston	70.00

```
4 rows in set (0.00 sec)

mysql> SELECT DNAME
-> FROM DOCTOR
-> WHERE SPECIALIZATION = 'E.N.T' AND CONSULTATION_FEE > 60;
```

DNAME
Dr. Arun

```
1 row in set (0.00 sec)
```

m) Find the doctors whose consultation fee is between 50 and 100

```
mysql> SELECT DNAME
-> FROM DOCTOR
-> WHERE CONSULTATION_FEE BETWEEN 50 AND 100;
```

DNAME
Dr. John Smith
Dr. Emily Johnson
Dr. Arun
Dr. Karan

```
4 rows in set (0.00 sec)
```

n) Arrange the doctors in the descending order of name as well as city

```
mysql> select * from DOCTOR;
```

DID	DNAME	SPECIALIZATION	AADHAR_NO	CONSULTATION_FEE	CITY	SPECIAL_FEE
1	Dr. John Smith	Cardiology	1234567890	75.00	New York	NULL
2	Dr. Emily Johnson	Pediatrics	0987654321	60.00	Los Angeles	NULL
4	Dr. Arun	E.N.T	12345678	70.00	Delhi	80.00
5	Dr. Karan	E.N.T	777788889999	60.00	Boston	70.00
6	Dr. Arun	E.N.T	12345679	70.00	Mumbai	80.00

```
5 rows in set (0.00 sec)
```

```
mysql> SELECT DNAME, CITY
-> FROM DOCTOR
-> ORDER BY DNAME DESC, CITY DESC;
```

DNAME	CITY
Dr. Karan	Boston
Dr. John Smith	New York
Dr. Emily Johnson	Los Angeles
Dr. Arun	Mumbai
Dr. Arun	Delhi

5 rows in set (0.00 sec)

o) List the specialization of doctors without duplicate values.

```
mysql> SELECT DISTINCT SPECIALIZATION
-> FROM DOCTOR;
```

SPECIALIZATION
Cardiology
Pediatrics
E.N.T

3 rows in set (0.02 sec)

p) Find the total number of doctors

```
mysql> SELECT COUNT(*) AS total_doctors
-> FROM DOCTOR;
```

total_doctors
5

1 row in set (0.00 sec)

q) Find the number of doctors with 'E.N.T' specialization.

```
mysql> SELECT COUNT(*) AS total_ent_doctors
-> FROM DOCTOR
-> WHERE SPECIALIZATION = 'E.N.T';
```

total_ent_doctors
3

```
1 row in set (0.00 sec)
```

r) Find the number of patients who were treated by a doctor with ID = 1;

```
mysql> select * from PATIENT;
```

PID	PNAME	DATE_OF_BIRTH	ADDRESS	AADHAR_NUMBER	DOCTOR_ID
1	Alice Johnson	1990-05-15	123 Main St	NULL	2
2	Bob Smith	1985-10-20	456 Elm St	NULL	4
3	Jane Doe	1978-03-08	789 Oak St	NULL	1
4	Anu	2000-01-01	346 New St	NULL	6

```
4 rows in set (0.02 sec)
```

```
mysql> SELECT COUNT(*)
-> FROM PATIENT
-> WHERE DOCTOR_ID = 1;
```

COUNT(*)
1

```
1 row in set (0.00 sec)
```

```
mysql> |
```

s) Display the total fee i.e. special fee + consultation fee, for each doctor. (Use heading 'TOTAL_FEE')


```
mysql> SELECT DID,
->         DNAME,
->         (SPECIAL_FEE + CONSULTATION_FEE) AS TOTAL_FEE
-> FROM DOCTOR;
```

DID	DNAME	TOTAL_FEE
1	Dr. John Smith	NULL
2	Dr. Emily Johnson	NULL
4	Dr. Arun	150.00
5	Dr. Karan	130.00
6	Dr. Arun	150.00

5 rows in set (0.00 sec)

t) Find the number of doctors with no adhar number given. (i.e. is null)

```
mysql> SELECT COUNT(*) AS doctors_without_aadhar
-> FROM DOCTOR
-> WHERE AADHAR_NO IS NULL;
```

doctors_without_aadhar
0

1 row in set (0.00 sec)

u) Find the number of doctors with adhar number given. (i.e. is not null)

```
mysql> SELECT COUNT(*) AS doctors_with_aadhar
-> FROM DOCTOR
-> WHERE AADHAR_NO IS NOT NULL;
```

doctors_with_aadhar
5

1 row in set (0.00 sec)

```
mysql> |
```

v) Find the doctors whose CONSULTATION FEE is greater than 100 and SPECIALIZATION is Cardiac or coming from Kollam.

```
mysql> SELECT *
-> FROM DOCTOR
-> WHERE CONSULTATION_FEE > 100
-> AND (SPECIALIZATION = 'Cardiology' OR CITY = 'Kollam');
```

DID	DNAME	SPECIALIZATION	AADHAR_NO	CONSULTATION_FEE	CITY	SPECIAL_FEE
7	Dr. Dhruv	Pediatrics	1234567893	150.00	Kollam	NULL
8	Dr. Aishwarya	Cardiology	0987654329	120.00	Los Angeles	NULL

2 rows in set (0.00 sec)

w) Find the result of the query: select * from doctor order by 3

```
mysql> SELECT * FROM doctor ORDER BY 3;
```

DID	DNAME	SPECIALIZATION	AADHAR_NO	CONSULTATION_FEE	CITY	SPECIAL_FEE
1	Dr. John Smith	Cardiology	1234567890	75.00	New York	NULL
8	Dr. Aishwarya	Cardiology	0987654329	120.00	Los Angeles	NULL
4	Dr. Arun	E.N.T	12345678	70.00	Delhi	80.00
5	Dr. Karan	E.N.T	777788889999	60.00	Boston	70.00
6	Dr. Arun	E.N.T	12345679	70.00	Mumbai	80.00
2	Dr. Emily Johnson	Pediatrics	0987654321	60.00	Los Angeles	NULL
7	Dr. Dhruv	Pediatrics	1234567893	150.00	Kollam	NULL

7 rows in set (0.00 sec)