NATIONAL INSTITUTE OF TECHNOLOGY KARNATAKA

DATABASE MANAGEMENT SYSTEM LAB
REPORT : 5

Name : Shivam Yadav   Roll No : 211CS257

Sec : S2   Code : CS254

Q1) Build a basic database(of your choice) and explore the usage of following string function:

Query 1:

```
mysql> create table strFunc_l5(sno int auto_increment,
    -> FirstName varchar(20),LastName varchar(20),primary key(sno));
Query OK, 0 rows affected (0.00 sec)
```

Query 2:

```
mysql> insert into strFunc_l5 values(1,'Ashish','Kumar'),
    -> (2,'Abhinav','Bindra'),(3,'Ravi','Kisan'),
    -> (4,'David','Miller'),(5,'Gaurav','Kumar'),
    -> (6,'   Taimur   ','Khan'),(7,'sandeep','maheshawari');
Query OK, 7 rows affected (0.00 sec)
Records: 7  Duplicates: 0  Warnings: 0
```

Final table :

```
mysql> select *
    -> from strFunc_l5;
+-----+-----------+-------------+
| sno | FirstName | LastName    |
+-----+-----------+-------------+
|   1 | Ashish    | Kumar       |
|   2 | Abhinav   | Bindra      |
|   3 | Ravi      | Kisan       |
|   4 | David     | Miller      |
|   5 | Gaurav    | Kumar       |
|   6 |    Taimur | Khan        |
|   7 | sandeep   | maheshawari |
+-----+-----------+-------------+
7 rows in set (0.00 sec)
```

a) CHAR_LENGTH() :

```
mysql> select FirstName,char_length(FirstName) as fn_len
    -> from strFunc_l5;
+-----------+--------+
| FirstName | fn_len |
+-----------+--------+
| Ashish    |      6 |
| Abhinav   |      7 |
| Ravi      |      4 |
| David     |      5 |
| Gaurav    |      6 |
|    Taimur |     10 |
| sandeep   |      7 |
+-----------+--------+
7 rows in set (0.00 sec)
```

b) CONCAT() :

```
mysql> select concat(FirstName,' ',LastName) as Name
    -> from strFunc_l5;
+--------------------+
| Name               |
+--------------------+
| Ashish Kumar       |
| Abhinav Bindra     |
| Ravi Kisan         |
| David Miller       |
| Gaurav Kumar       |
|    Taimur    Khan  |
| sandeep maheshawari |
+--------------------+
7 rows in set (0.00 sec)
```

c) INSERT() :

i) before inserting :

```
mysql> select *
    -> from strFunc_l5
    -> where sno = 2;
+-----+-----------+----------+
| sno | FirstName | LastName |
+-----+-----------+----------+
|   2 | Abhinav   | Bindra   |
+-----+-----------+----------+
1 row in set (0.01 sec)
```

ii) update :

```
mysql> update strFunc_l5 set FirstName = insert(FirstName,5,3,'jit') where sno =
 2;
Query OK, 1 row affected (0.00 sec)
Rows matched: 1  Changed: 1  Warnings: 0
```

iii) after inserting :

```
mysql> select *
    -> from strFunc_l5
    -> where sno = 2;
+-----+-----------+----------+
| sno | FirstName | LastName |
+-----+-----------+----------+
|   2 | Abhijit   | Bindra   |
+-----+-----------+----------+
1 row in set (0.00 sec)
```

c) LCASE() :

Query :

```
mysql> update strFunc_l5
    -> set FirstName = lcase(FirstName);
Query OK, 6 rows affected (0.00 sec)
Rows matched: 7  Changed: 6  Warnings: 0
```

Output :

```
mysql> select *
    -> from strFunc_l5;
+------+-----------+-------------+
| sno  | FirstName | LastName    |
+------+-----------+-------------+
|    1 | ashish    | Kumar       |
|    2 | abhijit   | Bindra      |
|    3 | ravi      | Kisan       |
|    4 | david     | Miller      |
|    5 | gaurav    | Kumar       |
|    6 |    taimur | Khan        |
|    7 | sandeep   | maheshawari |
+------+-----------+-------------+
7 rows in set (0.00 sec)
```

d) LENGTH () :

Query :

```
mysql> select concat(FirstName,' ',LastName) as Name,length(concat(FirstName,' '
,LastName)) as n_len
    -> from strFunc_l5;
```

Output :

```
+------------------------+-------+
| Name                   | n_len |
+------------------------+-------+
| ashish Kumar           |    12 |
| abhijit Bindra         |    14 |
| ravi Kisan             |    10 |
| david Miller           |    12 |
| gaurav Kumar           |    12 |
|   taimur    Khan       |    15 |
| sandeep maheshawari    |    19 |
+------------------------+-------+
7 rows in set (0.00 sec)
```

e) LIKE :

Query :

```
mysql> select *
    -> from
    -> strFunc_l5
    -> where FirstName like 'a%' ;
```

Output :

```
+-----+-----------+----------+
| sno | FirstName | LastName |
+-----+-----------+----------+
|   1 | ashish    | Kumar    |
|   2 | abhijit   | Bindra   |
+-----+-----------+----------+
2 rows in set (0.00 sec)
```

f) TRIM() :

Before using trim function :

```
mysql> select *
    -> from strFunc_l5
    -> where sno = 6 ;
+-----+-----------+----------+
| sno | FirstName | LastName |
+-----+-----------+----------+
|   6 |    taimur |   Khan   |
+-----+-----------+----------+
1 row in set (0.01 sec)
```

Update :

```
mysql> update strFunc_l5
    -> set FirstName = trim(FirstName)
    -> where sno = 6 ;
Query OK, 1 row affected (0.00 sec)
Rows matched: 1  Changed: 1  Warnings: 0
```

After using trim function :

```
mysql> select *
    -> from strFunc_l5
    -> where sno = 6 ;
+-----+-----------+----------+
| sno | FirstName | LastName |
+-----+-----------+----------+
|   6 | taimur    | Khan     |
+-----+-----------+----------+
```

g) STRCMP() :

Query :

```
mysql> select strcmp(FirstName,LastName)
    -> from strFunc_l5 ;
```

Output :

```
+----------------------------+
| strcmp(FirstName,LastName) |
+----------------------------+
|                         -1 |
|                         -1 |
|                          1 |
|                         -1 |
|                         -1 |
|                          1 |
|                          1 |
+----------------------------+
7 rows in set (0.00 sec)
```

h) SUBSTR() :

Query :

```
mysql> select substr(FirstName,1,3) as First3
    -> from strFunc_l5 ;
```
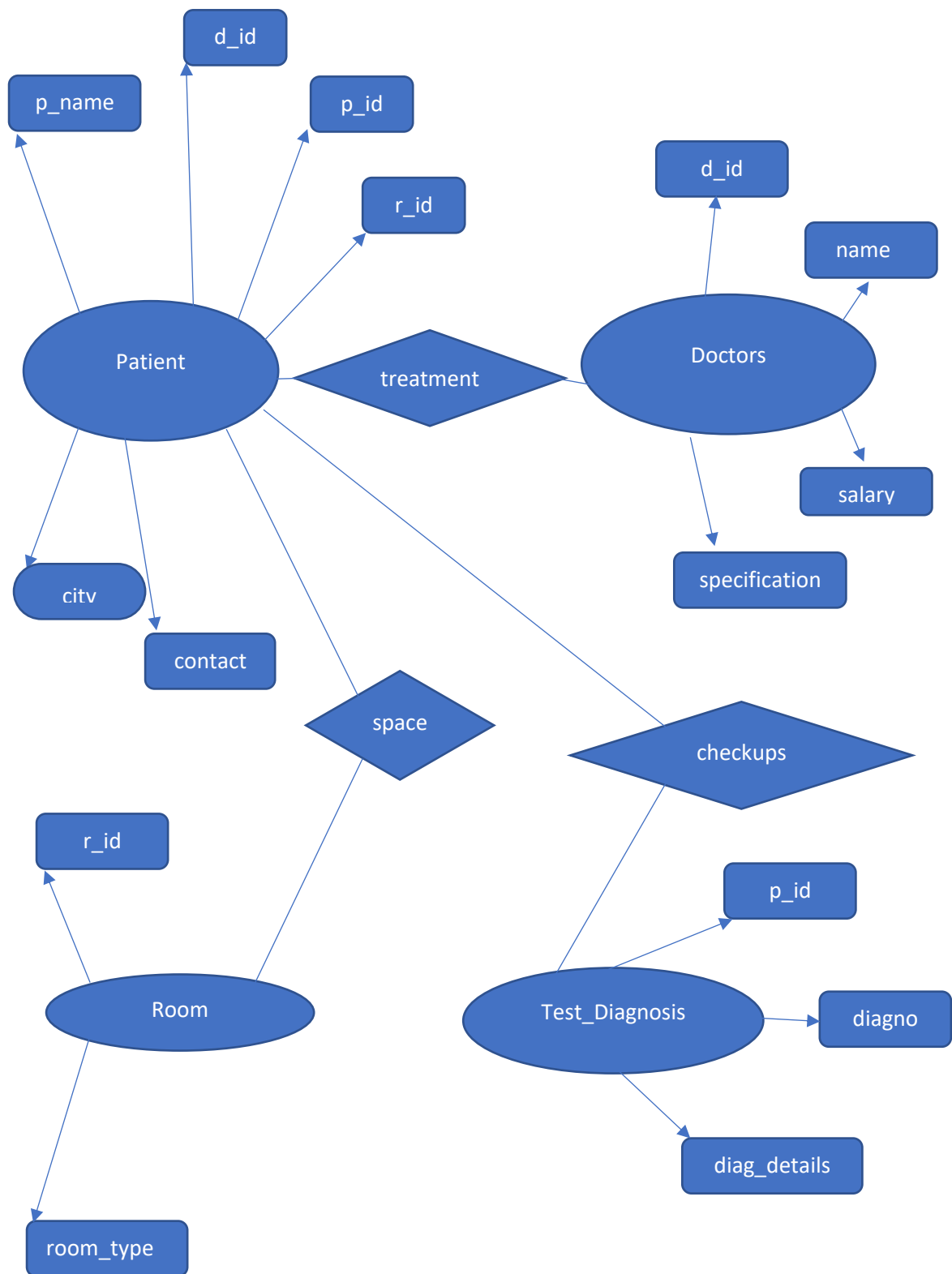
Output :

```
+--------+
| First3 |
+--------+
| ash    |
| abh    |
| rav    |
| dav    |
| gau    |
| tai    |
| san    |
+--------+
7 rows in set (0.00 sec)
```

Q2) ER Diagram :

Initial tables :

Patient :

```
mysql> select *
    -> from Patient ;
+------+------+-------+----------+-----------+------------+
| p_id | r_id | d_id  | p_name   | city      | contact    |
+------+------+-------+----------+-----------+------------+
| 1001 |  100 | 20034 | Saif     | HYD       | 6380964532 |
| 1009 |  101 | 30864 | Raman    | Mumbai    | 6378968965 |
| 1012 |  102 | 50047 | Mohit    | Surat     | 8873096234 |
| 1019 |  103 | 40802 | Gaurav M | Manglore  | 9897656701 |
| 1021 |  104 | 68592 | Sam      | Benguluru | 9901970483 |
| 1002 |  110 | 68592 | Garvit   | Mumbai    | 6378965403 |
| 1003 |  105 | 68592 | Lalit    | Noida     | 7889760703 |
| 1004 |  106 | 68592 | Preetam  | Mumbai    | 8976584934 |
| 1005 |  107 | 68592 | Lakshya  | Manglore  | 9998706514 |
| 1006 |  108 | 50200 | Aasha    | Benguluru | 7678899801 |
| 1007 |  109 | 40700 | Gagan    | Delhi     | 7889965640 |
| 1008 |  111 | 30217 | Raghav   | Kolkata   | 9956764320 |
| 1010 |  106 | 20034 | Rihan    | Chennai   | 7677086201 |
+------+------+-------+----------+-----------+------------+
13 rows in set (0.00 sec)
```

Doctors :

```
mysql> select *
    -> from Doctors ;
+-------+---------------+--------+---------------+
| d_id  | name          | salary | specification |
+-------+---------------+--------+---------------+
| 20034 | Vaibhav Sharma |  50000 | Dentist       |
| 30864 | Anuj Agrawal  |  65000 | Ortho         |
| 50047 | Raghav Shetty |  55000 | Physician     |
| 40802 | Shravan Kumar | 100000 | Neuro         |
| 68592 | Himanshu      | 100000 | Brain S       |
| 33815 | Sumitra       |  30000 | Nurse         |
| 40700 | Bhargav       |  28000 | Skin-Care     |
| 50600 | Akshar        |  15000 | Normal-Dieses |
| 50200 | Pooja         |  35000 | Eye-Care      |
| 30217 | Karim         |  60000 | Fungal-Dieses |
+-------+---------------+--------+---------------+
10 rows in set (0.00 sec)
```

Room :

```
mysql> select *
    -> from Room ;
+------+-----------+
| r_id | room_type |
+------+-----------+
|  100 | AC        |
|  101 | NON AC    |
|  102 | AC        |
|  103 | AC        |
|  104 | NON AC    |
|  110 | deluxe    |
|  105 | AC        |
|  106 | deluxe    |
|  107 | NON AC    |
|  108 | AC        |
|  109 | deluxe    |
|  111 | deluxe    |
+------+-----------+
12 rows in set (0.00 sec)
```

Test_Diagnosis :

```
mysql> select *
    -> from Test_Diagnosis ;
+------+--------+--------------+
| p_id | diagno | diag_details |
+------+--------+--------------+
| 1001 |   2005 | Positive     |
| 1009 |   2045 | Negative     |
| 1012 |   2655 | Negative     |
| 1019 |   4870 | Negative     |
| 1021 |   7070 | postive      |
| 1012 |   2657 | Negative     |
| 1012 |   2658 | Negative     |
| 1012 |   2659 | Positive     |
| 1002 |   2011 | Positive     |
| 1003 |   2015 | Negative     |
| 1004 |   2016 | Positive     |
| 1005 |   2017 | Negative     |
| 1005 |   2050 | Positive     |
| 1006 |   2018 | Positive     |
| 1007 |   2019 | Negative     |
| 1008 |   2020 | Negative     |
| 1009 |   2060 | Positive     |
| 1010 |   2025 | Positive     |
+------+--------+--------------+
18 rows in set (0.00 sec)
```

a) List the patient details with multiple diagnosis records.

```
mysql> select *
    -> from Patient p natural join Test_Diagnosis t
    -> where p.p_id in (select p_id from Test_Diagnosis group by p_id having count(*) > 1) ;
+------+------+-------+---------+----------+------------+--------+--------------+
| p_id | r_id | d_id  | p_name  | city     | contact    | diagno | diag_details |
+------+------+-------+---------+----------+------------+--------+--------------+
| 1009 |  101 | 30864 | Raman   | Mumbai   | 6378968965 |   2045 | Negative     |
| 1012 |  102 | 50047 | Mohit   | Surat    | 8873096234 |   2655 | Negative     |
| 1012 |  102 | 50047 | Mohit   | Surat    | 8873096234 |   2657 | Negative     |
| 1012 |  102 | 50047 | Mohit   | Surat    | 8873096234 |   2658 | Negative     |
| 1012 |  102 | 50047 | Mohit   | Surat    | 8873096234 |   2659 | Positive     |
| 1005 |  107 | 68592 | Lakshya | Manglore | 9998706514 |   2017 | Negative     |
| 1005 |  107 | 68592 | Lakshya | Manglore | 9998706514 |   2050 | Positive     |
| 1009 |  101 | 30864 | Raman   | Mumbai   | 6378968965 |   2060 | Positive     |
+------+------+-------+---------+----------+------------+--------+--------------+
8 rows in set (0.00 sec)
```

b) Add a new attribute p_date (i.e hospital joining date)to the PATIENT table.

Query :

```
mysql> alter table Patient
    -> add p_date date ;
Query OK, 0 rows affected (0.04 sec)
Records: 0  Duplicates: 0  Warnings: 0
```

Output :

```
mysql> select *
    -> from Patient ;
+------+------+-------+---------+-----------+------------+--------+
| p_id | r_id | d_id  | p_name  | city      | contact    | p_date |
+------+------+-------+---------+-----------+------------+--------+
| 1001 |  100 | 20034 | Saif    | HYD       | 6380964532 | NULL   |
| 1002 |  110 | 68592 | Garvit  | Mumbai    | 6378965403 | NULL   |
| 1003 |  105 | 68592 | Lalit   | Noida     | 7889760703 | NULL   |
| 1004 |  106 | 68592 | Preetam | Mumbai    | 8976584934 | NULL   |
| 1005 |  107 | 68592 | Lakshya | Manglore  | 9998706514 | NULL   |
| 1006 |  108 | 50200 | Aasha   | Benguluru | 7678899801 | NULL   |
| 1007 |  109 | 40700 | Gagan   | Delhi     | 7889965640 | NULL   |
| 1008 |  111 | 30217 | Raghav  | Kolkata   | 9956764320 | NULL   |
| 1009 |  101 | 30864 | Raman   | Mumbai    | 6378968965 | NULL   |
| 1010 |  106 | 20034 | Rihan   | Chennai   | 7677086201 | NULL   |
| 1012 |  102 | 50047 | Mohit   | Surat     | 8873096234 | NULL   |
| 1019 |  103 | 40802 | Gaurav M| Manglore  | 9897656701 | NULL   |
| 1021 |  104 | 68592 | Sam     | Benguluru | 9901970483 | NULL   |
+------+------+-------+---------+-----------+------------+--------+
13 rows in set (0.00 sec)
```

c) Fetch the doctors who do not have any patients.

```
mysql> select *
    -> from Doctors natural left join Patient
    -> where d_id not in (select d_id from Patient) ;
+-------+---------+--------+---------------+------+------+--------+------+---------+--------+
| d_id  | name    | salary | specification | p_id | r_id | p_name | city | contact | p_date |
+-------+---------+--------+---------------+------+------+--------+------+---------+--------+
| 33815 | Sumitra |  30000 | Nurse         | NULL | NULL | NULL   | NULL | NULL    | NULL   |
| 50600 | Akshar  |  15000 | Normal-Dieses | NULL | NULL | NULL   | NULL | NULL    | NULL   |
+-------+---------+--------+---------------+------+------+--------+------+---------+--------+
2 rows in set (0.00 sec)
```

d) Display doctors salary in ascending order.

```
mysql> select name,salary
    -> from Doctors
    -> order by salary asc ;
+----------------+--------+
| name           | salary |
+----------------+--------+
| Akshar         |  15000 |
| Bhargav        |  28000 |
| Sumitra        |  30000 |
| Pooja          |  35000 |
| Vaibhav Sharma |  50000 |
| Raghav Shetty  |  55000 |
| Karim          |  60000 |
| Anuj Agrawal   |  65000 |
| Shravan Kumar  | 100000 |
| Himanshu       | 100000 |
+----------------+--------+
10 rows in set (0.00 sec)
```

e) Display the each patient details through diagd_details.

```
mysql> select *
    -> from Patient
    -> where p_id in (select distinct p_id from Test_Diagnosis) ;
+-------+-------+-------+----------+-----------+------------+------------+
| p_id  | r_id  | d_id  | p_name   | city      | contact    | p_date     |
+-------+-------+-------+----------+-----------+------------+------------+
| 1001  |  100  | 20034 | Saif     | HYD       | 6380964532 | 2017-09-01 |
| 1002  |  110  | 68592 | Garvit   | Mumbai    | 6378965403 | 2017-09-26 |
| 1003  |  105  | 68592 | Lalit    | Noida     | 7889760703 | 2017-09-01 |
| 1004  |  106  | 68592 | Preetam  | Mumbai    | 8976584934 | 2017-09-01 |
| 1005  |  107  | 68592 | Lakshya  | Manglore  | 9998706514 | 2017-01-26 |
| 1006  |  108  | 50200 | Aasha    | Benguluru | 7678899801 | 2017-09-01 |
| 1007  |  109  | 40700 | Gagan    | Delhi     | 7889965640 | 2017-09-01 |
| 1008  |  111  | 30217 | Raghav   | Kolkata   | 9956764320 | 2017-09-01 |
| 1009  |  101  | 30864 | Raman    | Mumbai    | 6378968965 | 2017-09-01 |
| 1010  |  106  | 20034 | Rihan    | Chennai   | 7677086201 | 2018-05-16 |
| 1012  |  102  | 50047 | Mohit    | Surat     | 8873096234 | 2017-08-15 |
| 1019  |  103  | 40802 | Gaurav M | Manglore  | 9897656701 | 2017-09-01 |
| 1021  |  104  | 68592 | Sam      | Benguluru | 9901970483 | 2017-11-05 |
+-------+-------+-------+----------+-----------+------------+------------+
13 rows in set (0.00 sec)
```

f) Display the number of patients for each doctor. Only include doctors with more than 3 patients.

```
mysql> select* from Doctors where d_id in (select d_id from Patient group by d_i
d having count(*) > 3);
+-------+----------+--------+---------------+
| d_id  | name     | salary | specification |
+-------+----------+--------+---------------+
| 68592 | Himanshu | 100000 | Brain S       |
+-------+----------+--------+---------------+
1 row in set (0.00 sec)
```

g) Display the doctors who are treating patients from r_id 102 to 105.

```
mysql> select name,d_id,salary,specification
    -> from Patient natural join Doctors
    -> where r_id between 102 and 105 ;
+----------------+-------+--------+----------------+
| name           | d_id  | salary | specification  |
+----------------+-------+--------+----------------+
| Himanshu       | 68592 | 100000 | Brain S        |
| Raghav Shetty  | 50047 |  55000 | Physician      |
| Shravan Kumar  | 40802 | 100000 | Neuro          |
| Himanshu       | 68592 | 100000 | Brain S        |
+----------------+-------+--------+----------------+
4 rows in set (0.00 sec)
```

h) Display the patients details according to their joining dates.

```
mysql> select p_id,r_id,d_id,p_name,city,contact
    -> from Patient
    -> where p_date = '2017-09-01' ;
+------+------+-------+---------+-----------+------------+
| p_id | r_id | d_id  | p_name  | city      | contact    |
+------+------+-------+---------+-----------+------------+
| 1001 |  100 | 20034 | Saif    | HYD       | 6380964532 |
| 1003 |  105 | 68592 | Lalit   | Noida     | 7889760703 |
| 1004 |  106 | 68592 | Preetam | Mumbai    | 8976584934 |
| 1006 |  108 | 50200 | Aasha   | Benguluru | 7678899801 |
| 1007 |  109 | 40700 | Gagan   | Delhi     | 7889965640 |
| 1008 |  111 | 30217 | Raghav  | Kolkata   | 9956764320 |
| 1009 |  101 | 30864 | Raman   | Mumbai    | 6378968965 |
| 1019 |  103 | 40802 | Gaurav M | Manglore | 9897656701 |
+------+------+-------+---------+-----------+------------+
8 rows in set (0.00 sec)
```

i) Count the patients who took deluxe rooms.

```
mysql> select count(room_type) as No_of_Patient_having_deluxe_room
    -> from Room
    -> where room_type = 'deluxe' ;
+----------------------------------+
| No_of_Patient_having_deluxe_room |
+----------------------------------+
|                                4 |
+----------------------------------+
1 row in set (0.00 sec)
```

j) Display name of the doctor with salary less than 40000.

```
mysql> select name as Name,salary
    -> from Doctors
    -> where salary < 40000 ;
+---------+--------+
| Name    | salary |
+---------+--------+
| Sumitra |  30000 |
| Bhargav |  28000 |
| Akshar  |  15000 |
| Pooja   |  35000 |
+---------+--------+
4 rows in set (0.00 sec)
```

k) Display the patients joined before 10.10.2017.

```
mysql> select p_id,p_name,p_date
    -> from Patient
    -> where strcmp('2017-10-10',p_date) = 1 ;
+------+----------+------------+
| p_id | p_name   | p_date     |
+------+----------+------------+
| 1001 | Saif     | 2017-09-01 |
| 1002 | Garvit   | 2017-09-26 |
| 1003 | Lalit    | 2017-09-01 |
| 1004 | Preetam  | 2017-09-01 |
| 1005 | Lakshya  | 2017-01-26 |
| 1006 | Aasha    | 2017-09-01 |
| 1007 | Gagan    | 2017-09-01 |
| 1008 | Raghav   | 2017-09-01 |
| 1009 | Raman    | 2017-09-01 |
| 1012 | Mohit    | 2017-08-15 |
| 1019 | Gaurav M | 2017-09-01 |
+------+----------+------------+
11 rows in set (0.00 sec)
```

Q3)

Initial tables :

BOOK :

```
mysql> select *
    -> from BOOK ;
+---------+--------------------------------+-------------------------+------------+
| Book_id | Title                          | Publisher_Name          | Pub_date   |
+---------+--------------------------------+-------------------------+------------+
|       1 | Wings of Fire                  | Universities Press      | 1999-07-15 |
|       2 | Kitne Pakistan                 | Rajpal & Sons           | 2000-06-27 |
|       3 | Maila Aanchal                  | Rajhansh_i              | 1954-02-26 |
|       4 | Harry Potter Chamber of Secrets| Bloomsbury              | 1998-07-02 |
|       5 | A Clash of Kings               | Voyager Books           | 1998-03-20 |
|       6 | Bag of Bone's                  | Scribner                | 1998-03-20 |
|       7 | The Vampire Armand             | Knopf                   | 1998-03-20 |
|       8 | With This Ring                 | BDD publishing Group inc| 1998-03-20 |
|       9 | The God of Small Things        | Penguin Books           | 1997-03-15 |
|      10 | Gunaho ka Devta                | Bhartiya Jnanpith       | 1949-01-13 |
|      11 | The Ink Black Heart            | Sphere Books            | 2022-08-30 |
|      12 | DBMS                           | McGraw Hill             | 1997-04-01 |
+---------+--------------------------------+-------------------------+------------+
12 rows in set (0.00 sec)
```

BOOK_AUTHOR :

```
mysql> select *
    -> from BOOK_AUTHOR ;
+---------+----------------------+
| Book_id | Author_Name          |
+---------+----------------------+
|       1 | Dr A.P.J Abdul Kalam |
|       2 | Kamleshwar           |
|       3 | Fanishwar Nath Renu  |
|       4 | J.K Rowling          |
|       6 | Stephen King         |
|       7 | Anne Rice            |
|       8 | Amanda Quick         |
|       9 | Arundhati Roy        |
|      10 | Dharamvir Bharti     |
|      11 | J.K Rowling          |
|      12 | Silberschatz         |
|       5 | George R.R Martin    |
+---------+----------------------+
12 rows in set (0.00 sec)
```

PUBLISHER :

```
mysql> select *
    -> from PUBLISHER ;
+------------------+-----------+---------+--------------+
| FName            | LName     | Address | Phone        |
+------------------+-----------+---------+--------------+
| Rajhansh_i       | NULL      | INDIA   | 7876556401   |
| Bloomsbury       | NULL      | UK      | 07786754389  |
| Scribner         | NULL      | US      | 202-776-6678 |
| Knopf            | NULL      | US      | 201-786-7096 |
| Universities     | Press     | INDIA   | 7897564320   |
| Rajpal           | & Sons    | INDIA   | 6307689534   |
| Voyager          | Books     | UK      | 07577666430  |
| BDD publishing   | Group inc | US      | 234-790-5976 |
| Penguin          | Books     | INDIA   | 8870654098   |
| Bhartiya         | Jnanpith  | INDIA   | 9998765043   |
| Sphere           | Books     | UK      | 07587695343  |
| McGraw           | Hill      | US      | 201-789-4573 |
+------------------+-----------+---------+--------------+
12 rows in set (0.00 sec)
```

BOOK_COPIES :

```
mysql> select *
    -> from BOOK_COPIES ;
+---------+--------------+--------------+
| Book_id | Programme_id | No_of_Copies |
+---------+--------------+--------------+
|       1 |          201 |           10 |
|       2 |          202 |           15 |
|       3 |          203 |           30 |
|       4 |          204 |           45 |
|       6 |          206 |           35 |
|       7 |          207 |           47 |
|       8 |          208 |          100 |
|       9 |          209 |           78 |
|      10 |          210 |           62 |
|      11 |          211 |           89 |
|      12 |          212 |           70 |
|       5 |          205 |           47 |
+---------+--------------+--------------+
12 rows in set (0.00 sec)
```

BOOK_LENDING :

```
mysql> select *
    -> from BOOK_LENDING ;
+---------+--------------+---------+------------+------------+
| Book_id | Programme_id | Card_no | Date_Out   | Due_Date   |
+---------+--------------+---------+------------+------------+
|       1 |          201 |  512011 | 2023-03-10 | 2023-03-25 |
|       2 |          202 |  512015 | 2023-01-05 | 2023-01-26 |
|       3 |          203 |  512017 | 2017-01-02 | 2017-03-15 |
|       4 |          204 |  512020 | 2018-07-14 | 2018-08-12 |
|       3 |          203 |  512030 | 2017-01-26 | 2017-03-01 |
|       7 |          207 |  512014 | 2016-09-12 | 2016-09-23 |
|       6 |          206 |  512046 | 2017-01-17 | 2017-03-09 |
|       8 |          208 |  512048 | 2023-09-19 | 2023-12-30 |
+---------+--------------+---------+------------+------------+
8 rows in set (0.00 sec)
```

a) Retrieve details of all books in the library – id, title, name of publisher.

```
mysql> select Book_id ,Title,Publisher_Name
    -> from BOOK ;
+---------+------------------------------+------------------------+
| Book_id | Title                        | Publisher_Name         |
+---------+------------------------------+------------------------+
|       1 | Wings of Fire                | Universities Press     |
|       2 | Kitne Pakistan               | Rajpal & Sons          |
|       3 | Maila Aanchal                | Rajhansh_i             |
|       4 | Harry Potter Chamber of Secrets | Bloomsbury          |
|       5 | A Clash of Kings             | Voyager Books          |
|       6 | Bag of Bone's                | Scribner               |
|       7 | The Vampire Armand           | Knopf                  |
|       8 | With This Ring               | BDD publishing Group inc |
|       9 | The God of Small Things      | Penguin Books          |
|      10 | Gunaho ka Devta              | Bhartiya Jnanpith      |
|      11 | The Ink Black Heart          | Sphere Books           |
|      12 | DBMS                         | McGraw Hill            |
+---------+------------------------------+------------------------+
12 rows in set (0.00 sec)
```

b) Retrieve the books which have been borrowed from Jan 2017 to March 2017.

```
mysql> select Title,Card_no,Date_Out,Due_Date
    -> from BOOK natural join BOOK_LENDING
    -> where year(Date_Out) = 2017 and month(Date_Out) = 1
    -> and year(Due_Date) = 2017 and month(Due_Date) = 3 ;
+---------------+---------+------------+------------+
| Title         | Card_no | Date_Out   | Due_Date   |
+---------------+---------+------------+------------+
| Maila Aanchal |  512017 | 2017-01-02 | 2017-03-15 |
| Maila Aanchal |  512030 | 2017-01-26 | 2017-03-01 |
| Bag of Bone's |  512046 | 2017-01-17 | 2017-03-09 |
+---------------+---------+------------+------------+
3 rows in set (0.00 sec)
```

c) Delete a book in the BOOK table. Update the contents of other tables to reflect this data manipulation operation.

Query :

```
mysql> delete from BOOK
    -> where Book_id = 5 ;
Query OK, 1 row affected (0.00 sec)
```

Now BOOK table:

```
mysql> select *
    -> from BOOK ;
+---------+------------------------------+-------------------------+------------+
| Book_id | Title                        | Publisher_Name          | Pub_date   |
+---------+------------------------------+-------------------------+------------+
|       1 | Wings of Fire                | Universities Press      | 1999-07-15 |
|       2 | Kitne Pakistan               | Rajpal & Sons           | 2000-06-27 |
|       3 | Maila Aanchal                | Rajhansh_i              | 1954-02-26 |
|       4 | Harry Potter Chamber of Secrets | Bloomsbury           | 1998-07-02 |
|       6 | Bag of Bone's                | Scribner                | 1998-03-20 |
|       7 | The Vampire Armand           | Knopf                   | 1998-03-20 |
|       8 | With This Ring               | BDD publishing Group inc | 1998-03-20 |
|       9 | The God of Small Things      | Penguin Books           | 1997-03-15 |
|      10 | Gunaho ka Devta              | Bhartiya Jnanpith       | 1949-01-13 |
|      11 | The Ink Black Heart          | Sphere Books            | 2022-08-30 |
|      12 | DBMS                         | McGraw Hill             | 1997-04-01 |
+---------+------------------------------+-------------------------+------------+
11 rows in set (0.00 sec)
```

Since we have foreign key constraint in our schema on delete it will cascade

But no foreign key in PUBLISHER table

So we have to update there manually.

Query :

```
mysql> delete from PUBLISHER
    -> where if(LName = NULL,concat(FName,''),concat(FName,' ',LName))
    -> not in (select Publisher_Name from BOOK) ;
Query OK, 1 row affected (0.01 sec)
```

Output :

```
mysql> select *
    -> from PUBLISHER ;
+----------------+-----------+---------+--------------+
| FName          | LName     | Address | Phone        |
+----------------+-----------+---------+--------------+
| Rajhansh_i     | NULL      | INDIA   | 7876556401   |
| Bloomsbury     | NULL      | UK      | 07786754389  |
| Scribner       | NULL      | US      | 202-776-6678 |
| Knopf          | NULL      | US      | 201-786-7096 |
| Universities   | Press     | INDIA   | 7897564320   |
| Rajpal         | & Sons    | INDIA   | 6307689534   |
| BDD publishing | Group inc | US      | 234-790-5976 |
| Penguin        | Books     | INDIA   | 8870654098   |
| Bhartiya       | Jnanpith  | INDIA   | 9998765043   |
| Sphere         | Books     | UK      | 07587695343  |
| McGraw         | Hill      | US      | 201-789-4573 |
+----------------+-----------+---------+--------------+
11 rows in set (0.00 sec)
```

Now all tables are updated :

BOOK_AUTHOR :

```
mysql> select *
    -> from BOOK_AUTHOR ;
+---------+----------------------+
| Book_id | Author_Name          |
+---------+----------------------+
|       1 | Dr A.P.J Abdul Kalam |
|       2 | Kamleshwar           |
|       3 | Fanishwar Nath Renu  |
|       4 | J.K Rowling          |
|       6 | Stephen King         |
|       7 | Anne Rice            |
|       8 | Amanda Quick         |
|       9 | Arundhati Roy        |
|      10 | Dharamvir Bharti     |
|      11 | J.K Rowling          |
|      12 | Silberschatz         |
+---------+----------------------+
11 rows in set (0.00 sec)
```

BOOK_COPIES :

```
mysql> select *
    -> from BOOK_COPIES ;
+---------+--------------+--------------+
| Book_id | Programme_id | No_of_Copies |
+---------+--------------+--------------+
|       1 |          201 |           10 |
|       2 |          202 |           15 |
|       3 |          203 |           30 |
|       4 |          204 |           45 |
|       6 |          206 |           35 |
|       7 |          207 |           47 |
|       8 |          208 |          100 |
|       9 |          209 |           78 |
|      10 |          210 |           62 |
|      11 |          211 |           89 |
|      12 |          212 |           70 |
+---------+--------------+--------------+
11 rows in set (0.00 sec)
```

d) Retrieve the details of the books(id, title, publisher name, year) published on the date 20-03-1998.

```
mysql> select Book_id,Title,Publisher_Name,year(Pub_date) as year
    -> from BOOK
    -> where Pub_date = '1998-03-20' ;
+---------+--------------------+------------------------+------+
| Book_id | Title              | Publisher_Name         | year |
+---------+--------------------+------------------------+------+
|       6 | Bag of Bone's      | Scribner               | 1998 |
|       7 | The Vampire Armand | Knopf                  | 1998 |
|       8 | With This Ring     | BDD publishing Group inc | 1998 |
+---------+--------------------+------------------------+------+
3 rows in set (0.00 sec)
```

e) Retrieve the books published by a particular author.

```
mysql> select Title,Author_Name as Author
    -> from BOOK natural join BOOK_AUTHOR
    -> where Author_Name = 'J.K Rowling' ;
+------------------------------+-------------+
| Title                        | Author      |
+------------------------------+-------------+
| Harry Potter Chamber of Secrets | J.K Rowling |
| The Ink Black Heart          | J.K Rowling |
+------------------------------+-------------+
2 rows in set (0.00 sec)
```

f) Create a new column 'name' in the Publishers table. Combine FName and LName and print it in column name.

```
mysql> select *, ifnull(concat(FName,' ',LName),FName) as name
    -> from PUBLISHER ;
+----------------+-----------+---------+--------------+-------------------------+
| FName          | LName     | Address | Phone        | name                    |
+----------------+-----------+---------+--------------+-------------------------+
| Rajhansh_i     | NULL      | INDIA   | 7876556401   | Rajhansh_i              |
| Bloomsbury     | NULL      | UK      | 07786754389  | Bloomsbury              |
| Scribner       | NULL      | US      | 202-776-6678 | Scribner                |
| Knopf          | NULL      | US      | 201-786-7096 | Knopf                   |
| Universities   | Press     | INDIA   | 7897564320   | Universities Press      |
| Rajpal         | & Sons    | INDIA   | 6307689534   | Rajpal & Sons           |
| BDD publishing | Group inc | US      | 234-790-5976 | BDD publishing Group inc |
| Penguin        | Books     | INDIA   | 8870654098   | Penguin Books           |
| Bhartiya       | Jnanpith  | INDIA   | 9998765043   | Bhartiya Jnanpith       |
| Sphere         | Books     | UK      | 07587695343  | Sphere Books            |
| McGraw         | Hill      | US      | 201-789-4573 | McGraw Hill             |
+----------------+-----------+---------+--------------+-------------------------+
11 rows in set (0.00 sec)
```

g) Write a query to display the first day of the month (in datetime format) two months before the current month from the date of publication of the book "DBMS".

```
mysql> select dayname(insert(adddate(Pub_date,interval -2 month),9,2,'01')) as First_day_of_Month
    -> from BOOK
    -> where Title = 'DBMS' ;
+--------------------+
| First_day_of_Month |
+--------------------+
| Saturday           |
+--------------------+
1 row in set (0.00 sec)
```

Verification :

```
mysql> select adddate(Pub_date,interval -2 month) as Date_2_Month_ago
    -> from BOOK
    -> where Title = 'DBMS ' ;
+------------------+
| Date_2_Month_ago |
+------------------+
| 1997-02-17       |
+------------------+
1 row in set (0.00 sec)
```

Since we need first day we set day to 1 .

```
mysql> select dayname('1997-02-01') ;
+-----------------------+
| dayname('1997-02-01') |
+-----------------------+
| Saturday              |
+-----------------------+
1 row in set (0.00 sec)
```

h) Write a query to get the years in which more than 3 books were published.

```
mysql> select year(Pub_date) as year
    -> from BOOK
    -> group by year(Pub_date)
    -> having count(*) > 3 ;
+------+
| year |
+------+
| 1998 |
+------+
1 row in set (0.00 sec)
```

i) Print the number of copies of a particular book.

```
mysql> select Title,No_of_Copies
    -> from BOOK natural join BOOK_COPIES
    -> where Title = 'Wings of Fire' ;
+---------------+--------------+
| Title         | No_of_Copies |
+---------------+--------------+
| Wings of Fire |           10 |
+---------------+--------------+
1 row in set (0.00 sec)
```