CSE2004 – Database Management Systems Lab
Cycle Sheet Submission

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RDBMS used : MYSQL

Cycle Sheet No. : 02

Questions:
DDL statements (ALTER, CONSTRAINT etc):

1> Modify Hospital_Bill by adding an attribute consulting_physician and add foreign key constraint for that attribute. Use constraint name for foreign key constraint.

Query:

```
alter table hospital_bill add consulting_physician varchar(255) ;

alter table hospital_bill add CONSTRAINT c1 FOREIGN key (consulting_physician) REFERENCES doctor(doc_id);
```

```
mysql> alter table hospital_bill add consulting_physician varchar(255) ;
Query OK, 0 rows affected (0.16 sec)
Records: 0  Duplicates: 0  Warnings: 0

mysql> alter table hospital_bill add CONSTRAINT c1 FOREIGN key (consulting_physician) REFERENCES doctor(doc_id);
Query OK, 4 rows affected (0.13 sec)
Records: 4  Duplicates: 0  Warnings: 0
```

2> In Patient table, replace address with three attributes namely street, city and pincode.

Query:

```
alter table patient drop column address;

alter table patient add street varchar(30);

alter table patient add city varchar(40);

alter table patient add pincode int;
```

```
mysql> alter table patient add street varchar(30);
Query OK, 0 rows affected (0.07 sec)
Records: 0  Duplicates: 0  Warnings: 0

mysql> alter table patient add city varchar(40);
Query OK, 0 rows affected (0.03 sec)
Records: 0  Duplicates: 0  Warnings: 0

mysql> alter table patient add pincode int;
Query OK, 0 rows affected (0.05 sec)
Records: 0  Duplicates: 0  Warnings: 0
```

```
mysql> alter table patient drop column address;
Query OK, 0 rows affected (0.10 sec)
Records: 0  Duplicates: 0  Warnings: 0
```

3> Add an attribute Test_Time which can accept only two values “Before food” and “After food” with proper constraint name.

Query:

```
alter table lab_tests add Test_Time varchar(30) not null;

alter table lab_tests add constraint c1 check (Test_Time="Before food" or Test_Time = "After food");
```

```
mysql> alter table lab_tests add Test_Time varchar(30) not null;
Query OK, 0 rows affected (0.04 sec)
Records: 0  Duplicates: 0  Warnings: 0

mysql> alter table lab_tests add constraint c1 check (Test_Time="Before food" or Test_Time = "After food");
Query OK, 0 rows affected (0.12 sec)
Records: 0  Duplicates: 0  Warnings: 0
```

4> Remove the constraint only from test_time attribute.

Query:

```
alter table lab_tests drop constraint c1;
```

```
mysql> alter table lab_tests drop constraint c1;
Query OK, 0 rows affected (0.03 sec)
Records: 0  Duplicates: 0  Warnings: 0
```

5> Drop address attribute from staff table and add attributes door_no, street, city, and pincode.

Query:

```
alter table staff drop column address;

alter table staff add door_no int;

alter table staff add street varchar(30);

alter table staff add city varchar(30);

alter table staff add pincode int;
```

```
mysql> alter table staff drop column address;
Query OK, 0 rows affected (0.08 sec)
Records: 0  Duplicates: 0  Warnings: 0

mysql> alter table staff add door_no int;
Query OK, 0 rows affected (0.03 sec)
Records: 0  Duplicates: 0  Warnings: 0

mysql> alter table staff add street varchar(30);
Query OK, 0 rows affected (0.03 sec)
Records: 0  Duplicates: 0  Warnings: 0

mysql> alter table staff add city varchar(30);
Query OK, 0 rows affected (0.03 sec)
Records: 0  Duplicates: 0  Warnings: 0

mysql> alter table staff add pincode int;
Query OK, 0 rows affected (0.07 sec)
Records: 0  Duplicates: 0  Warnings: 0
```

6> Create a table Medicines with schema medicines=(med_name, brand, dosage, manu_date, exp_date). Ensure that manu_date should not be later than exp_date. Create an appropriate constraint to ensure this.

Query:

```
create table medicines(
   med_name varchar(255) not null,
   brand varchar(50),
   dosage varchar(40),
   manu_date date,
   exp_date date,
   constraint c1 check (manu_date<=exp_date),
   primary key (med_name)
);
```

```
mysql> create table medicines(
    ->     med_name varchar(255) not null,
    ->     brand varchar(50),
    ->     dosage varchar(40),
    ->     manu_date date,
    ->     exp_date date,
    ->     constraint c1 check (manu_date<=exp_date),
    ->     primary key (med_name)
    -> );
Query OK, 0 rows affected (0.05 sec)
```

7> Remove the attributes dosage and brand from Prescribed_Medicines and alter the medicine_name attribute as a foreign key referencing the new table Medicines.

Query:

alter table prescribed_medicines drop column dosage;

alter table prescribed_medicines drop column brand;

alter table prescribed_medicines add constraint fk foreign key (medicine_name) references medicines(med_name);

```
mysql> alter table prescribed_medicines drop column dosage;
Query OK, 0 rows affected (0.12 sec)
Records: 0  Duplicates: 0  Warnings: 0

mysql> alter table prescribed_medicines drop column brand;
Query OK, 0 rows affected (0.06 sec)
Records: 0  Duplicates: 0  Warnings: 0
```

```
mysql> alter table prescribed_medicines add constraint fk foreign key (medicine_name) references medicines(med_name);
Query OK, 2 rows affected (0.16 sec)
Records: 2  Duplicates: 0  Warnings: 0
```

8> Create a view for doctors who are specialized in ‘Cardiology’ from Doctor table with attributes doc_id, doc_name and gender.

Query:

select doc_id,doc_name,gender from Doctor where specialist = "Cardiology";

```
mysql> select doc_id,doc_name,gender from Doctor where specialist = "Cardiology";
+--------+-------------+--------+
| doc_id | doc_name    | gender |
+--------+-------------+--------+
| D0003  | Kulvir Singh | M      |
+--------+-------------+--------+
1 row in set (0.00 sec)
```

9> Add an attribute No_of_staff in Department table and create a constraint with constraint name to make sure the number is >0.

Query:

alter table department add No_of_staff int ;

alter table department add constraint c2 check (No_of_staff>0);

```
mysql> alter table department add No_of_staff int ;
Query OK, 0 rows affected (0.05 sec)
Records: 0  Duplicates: 0  Warnings: 0
```

```
mysql> alter table department add constraint c1 check (No_of_staff>0);
Query OK, 3 rows affected (0.18 sec)
Records: 3  Duplicates: 0  Warnings: 0
```

10> Add an attribute with In_Patient_prescription to store the Room_Type which can store the values “AC” and “Non-AC”.

Query:

alter table In_Patient_Prescription add Room_Type varchar(23) not null ;

update In_Patient_Prescription set Room_Type = "AC" where pat_id="P0001";

alter table In_Patient_Prescription add constraint c3 check (Room_Type="AC"or Room_Type="Non-AC");

```
mysql> alter table In_Patient_Prescription add Room_Type varchar(23) not null ;
Query OK, 0 rows affected (0.04 sec)
Records: 0  Duplicates: 0  Warnings: 0

mysql> update In_Patient_Prescription set Room_Type = "AC" where pat_id="P0001";
Query OK, 1 row affected (0.01 sec)
Rows matched: 1  Changed: 1  Warnings: 0

mysql> alter table In_Patient_Prescription add constraint c3 check (Room_Type="AC"or Room_Type="Non-AC");
Query OK, 1 row affected (0.13 sec)
Records: 1  Duplicates: 0  Warnings: 0
```

SQL queries with JOIN operation

1> Find the HOD of doctor ‘Raghavan’ (Hint: you need to join the tables DOCTOR and DEPARTMENT)

Query:

```
select department.hod from doctor
inner join department on doctor.specialist=department.dept_name where doc_name="Raghavan";
```

```
mysql> select department.hod from doctor
    -> inner join department on doctor.specialist=department.dept_name where doc_name="Raghavan";
+-------+
| hod   |
+-------+
| D0002 |
+-------+
1 row in set (0.00 sec)
```

2> Find the list of all patients who were admitted in bed number ‘B101’

Query:

```
select patient.pat_name,patient.pat_id,patient.DOB,patient.Gender,patient.contact from patient join in_patient on in_patient.bed_no=101 and patient.pat_id=in_patient.pat_id;
```

```
mysql> select patient.pat_name,patient.pat_id,patient.DOB,patient.Gender,patient.contact from patient join in_patient on in_patient.bed_no=101 and patient.pat_id=in_patient
.pat_id;
+----------+--------+------------+--------+-----------+
| pat_name | pat_id | DOB        | Gender | contact   |
+----------+--------+------------+--------+-----------+
| Falcone  | P0002  | 11-Dec-2000 | M      | 9878987890 |
+----------+--------+------------+--------+-----------+
1 row in set (0.00 sec)
```

3> Display all the prescribed medicines of patient with Pat_ID ‘P101’

Query:

```
select prescribed_medicines.medicine_name from appointment
inner join prescription on appointment.app_id = prescription.app_id
inner join prescribed_medicines on prescription.pres_id=prescribed_medicines.pres_id where pat_id="P101";
```

```
mysql> select prescribed_medicines.medicine_name from appointment
    -> inner join prescription on appointment.app_id = prescription.app_id
    -> inner join prescribed_medicines on prescription.pres_id=prescribed_medicines.pres_id where pat_id="P101";
+---------------+
| medicine_name |
+---------------+
| Combiflam     |
+---------------+
1 row in set (0.01 sec)
```

4> Display the test results of patient ‘Mani’

Query:

```
select test_results.result from patient inner join lab_tests on patient.pat_id = lab_tests.pat_id
inner join test_results on test_results.test_id=lab_tests.test_id where pat_name="Mani";
```

```
mysql> select test_results.result from patient inner join lab_tests on patient.pat_id = lab_tests.pat_id
    -> inner join test_results on test_results.test_id=lab_tests.test_id where pat_name="Mani";
+----------+
| result   |
+----------+
| Negative |
+----------+
1 row in set (0.00 sec)
```

5>

Query: Display all bills of bill amount more than 10000 rupees and paid by the patient ‘Steve’.

```
select hospital_bill.inv_no,hospital_bill.inv_date,hospital_bill.bill_amount,hospital_bill.payment_type from patient
inner join hospital_bill on hospital_bill.pat_id=patient.pat_id where hospital_bill.bill_amount>1000 and pat_name="Steve";
```

```
mysql> select hospital_bill.inv_no,hospital_bill.inv_date,hospital_bill.bill_amount,hospital_bill.payment_type from patient
    -> inner join hospital_bill on hospital_bill.pat_id=patient.pat_id where hospital_bill.bill_amount>1000 and pat_name="Steve";
+--------+-------------+-------------+--------------+
| inv_no | inv_date    | bill_amount | payment_type |
+--------+-------------+-------------+--------------+
|      2 | 11-Jan-2019 |        1300 | cash         |
|      3 | 11-Jan-2019 |        1200 | card         |
+--------+-------------+-------------+--------------+
2 rows in set (0.00 sec)
```

6> Find the category and address of the nurse who attended the patient with pat_no ‘P220’.

Query:

```
select staff.category,staff.address from appointment inner join staff on appointment.nurse_id=staff.staff_id where pat_id="P220";
```

```
mysql> select staff.category,staff.address from appointment inner join staff on appointment.nurse_id=staff.staff_id where pat_id="P220";
+----------+--------------+
| category | address      |
+----------+--------------+
| nurse    | 33 Blue Mount |
+----------+--------------+
1 row in set (0.00 sec)
```

7> Find the list of doctors who worked in the department which is started on or after ’10-May-2018’.

Query:

select doctor.doc_name,doctor.doc_id from department

inner join doctor on doctor.specialist=department.Dept_name where estd_date>="10-May2018";

```
mysql> select doctor.doc_name,doctor.doc_id from department
    -> inner join doctor on doctor.specialist=department.Dept_name where estd_date>="10-May2018";
+--------------+--------+
| doc_name     | doc_id |
+--------------+--------+
| CS Sahil     | D0001  |
| Robin Tooney | D0002  |
| Kulvir Singh | D0003  |
| Raghavan     | D0004  |
+--------------+--------+
4 rows in set (0.00 sec)
```

8> Get the name of technicians who tests blood glucose level.

Query:

select staff.staff_name from test_types

inner join staff on test_types.technician=staff.staff_id where description = "Blood Test";

```
mysql> select staff.staff_name from test_types
    -> inner join staff on test_types.technician=staff.staff_id where description = "Blood Test";
+------------+
| staff_name |
+------------+
| Ben        |
+------------+
1 row in set (0.00 sec)
```

9> Display the details of all patients who were hospitalized between ’10-Mar-2017’ and ’10-Apr-2017’

Query:

select patient.pat_id,patient.pat_name,patient.DOB,patient.gender,patient.contact from In_Patient

inner join patient on patient.pat_id=in_patient.pat_id where start_time>="10-Mar-2017" and end_time<="10-Apr-2017";

```
mysql> select patient.pat_id,patient.pat_name,patient.DOB,patient.gender,patient.contact from In_Patient
    -> inner join patient on patient.pat_id=in_patient.pat_id where start_time>="10-Mar-2017" and end_time<="10-Apr-2017";
Empty set (0.00 sec)
```

10> Display the in-patient prescription of the patient whose name is ‘Gayle’.

Query:

select In_Patient_Prescription.pat_id,In_Patient_Prescription.pres_id,In_Patient_Prescription.diagnosis_detail, In_Patient_Prescription.Room_Type

from patient inner join In_Patient_Prescription on In_Patient_Prescription.pat_id=patient.pat_id where pat_name="Gayle";

```
mysql> select In_Patient_Prescription.pat_id,In_Patient_Prescription.pres_id,In_Patient_Prescription.diagnosis_detail,In_Patient_Prescription.Room_Type
    -> from patient inner join In_Patient_Prescription on In_Patient_Prescription.pat_id=patient.pat_id where pat_name="Gayle";
+--------+---------+------------------+-----------+
| pat_id | pres_id | diagnosis_detail | Room_Type |
+--------+---------+------------------+-----------+
| P220   | PR0004  | Pneumonia        | AC        |
+--------+---------+------------------+-----------+
1 row in set (0.00 sec)
```

Aggregate functions

1> Find the number of doctors who are working in the department ‘D101’

Query:

select count(doc_id) from doctor where dept_no="D101";

```
mysql> select count(doc_id) from doctor where dept_no="D101";
+---------------+
| count(doc_id) |
+---------------+
|             1 |
+---------------+
1 row in set (0.01 sec)
```

2> Count the number of male patients who are treated by the doctor with doctor id ‘D101’

Query:

select count(pat_id) from appointment where doc_id="D0001";

```
mysql> select count(pat_id) from appointment where doc_id="D0001";
+---------------+
| count(pat_id) |
+---------------+
|             2 |
+---------------+
1 row in set (0.01 sec)
```

3> Find the total bill paid by the patient ‘Karthik’

Query:

```
select sum(hospital_bill.bill_amount) from patient inner join hospital_bill on hospital_bill.pat_id = patient.pat_id where pat_name="Steve";
```

```
mysql> select sum(hospital_bill.bill_amount) from patient inner join hospital_bill on hospital_bill.pat_id = patient.pat_id where pat_name="Steve";
+------------------------------+
| sum(hospital_bill.bill_amount) |
+------------------------------+
|                         2500 |
+------------------------------+
1 row in set (0.00 sec)
```

4> Find the name and address of the patient who paid the highest bill of all patients.

Query:

```
select patient.pat_name,patient.address from hospital_bill inner join patient on patient.pat_id=hospital_bill.pat_id

order by bill_amount limit 1;
```

```
mysql> select patient.pat_name,patient.address from hospital_bill inner join patient on patient.pat_id=hospital_bill.pat_id
    -> order by bill_amount limit 1;
+----------+-------------+
| pat_name | address     |
+----------+-------------+
| Falcone  | 91 Salt Lake |
+----------+-------------+
1 row in set (0.01 sec)
```

5> Get the specialization of doctors whose name start with the letter ‘M’

Query:

```
select specialist from doctor where (substr(doc_name,1,1)="M");
```

```
mysql> select specialist from doctor where (substr(doc_name,1,1)="M");
+------------+
| specialist |
+------------+
| Neurology  |
| Cardiology |
+------------+
2 rows in set (0.00 sec)
```

6> Find the all the patients details whose name is exactly 5 characters long

Query:

```
select * from patient where (char_length(pat_name) = 5 );
```

```
mysql> select * from patient where (char_length(pat_name) = 5 );
+--------+----------+-------------+--------+------------+---------------+
| Pat_ID | Pat_Name | DOB         | Gender | Contact    | Address       |
+--------+----------+-------------+--------+------------+---------------+
| P0001  | Emily    | 18-Jun-2001 | F      | 7777766666 | 7 Salt Lake   |
| P101   | Steve    | 19-Aug-1965 | M      | 8768918612 | 17 cable town |
| P220   | Gayle    | 19-Aug-1980 | M      | 9877898780 | Green park 12 |
+--------+----------+-------------+--------+------------+---------------+
3 rows in set (0.01 sec)
```

7> Display the department names in ascending order

Query:

```
select dept_name from department order by dept_name asc;
```

```
mysql> select dept_name from department order by dept_name asc;
+----------------------------+
| dept_name                  |
+----------------------------+
| Cardiology                 |
| Nuerology                  |
| Obstetrics and Gynaecology |
+----------------------------+
3 rows in set (0.00 sec)
```

8> Get the gender wise count of patients.

Query:

```
select gender,count(*)total from patient group by gender;
```

```
mysql> select gender,count(*)total from patient group by gender;
+--------+-------+
| gender | total |
+--------+-------+
| F      |     1 |
| M      |     4 |
| T      |     1 |
+--------+-------+
3 rows in set (0.00 sec)
```

9> Get the count of doctors for each specialization.

Query:

```
select specialist,count(*)total_doctors from doctor group by specialist;
```

```
mysql> select specialist,count(*)total_doctors from doctor group by specialist;
+---------------------------+---------------+
| specialist                | total_doctors |
+---------------------------+---------------+
| Obstetrics and Gynaecology |             1 |
| neurology                 |             2 |
| Cardiology                |             3 |
+---------------------------+---------------+
3 rows in set (0.01 sec)
```

10> Get the total number tests conducted in any particular date.

Query:

```
select date,count(*)test_count from lab_tests group by date;
```

```
mysql> select date,count(*)test_count from lab_tests group by date;
+-------------+------------+
| date        | test_count |
+-------------+------------+
| 11-Jan-2020 |          2 |
+-------------+------------+
1 row in set (0.00 sec)
```

SQL queries - Nested subqueries

1> All of the queries in “SQL queries with JOIN operation” section can be tried with subqueries concept.

Query:

select hod from department where dept_no in (select dept_no from doctor where doc_name = "Raghavan");

```
mysql> select hod from department where dept_no in (select dept_no from doctor where doc_name = "Raghavan");
+-------+
| hod   |
+-------+
| D0002 |
+-------+
1 row in set (0.00 sec)
```

Query:

select pat_id,pat_name,dob,gender from patient where pat_id in (select pat_id from in_patient where bed_no=101);

```
mysql> select pat_id,pat_name,dob,gender from patient where pat_id in (select pat_id from in_patient where bed_no=101);
+--------+----------+-------------+--------+
| pat_id | pat_name | dob         | gender |
+--------+----------+-------------+--------+
| P0002  | Falcone  | 11-Dec-2000 | M      |
+--------+----------+-------------+--------+
1 row in set (0.00 sec)
```

Query:

select medicine_name from prescribed_medicines where pres_id in (select pres_id from prescription where app_id in

(select app_id from appointment where pat_id="P101"));

```
mysql> select medicine_name from prescribed_medicines where pres_id in (select pres_id from prescription where app_id in
    ->  (select app_id from appointment where pat_id="P101"));
+---------------+
| medicine_name |
+---------------+
| Combiflam     |
+---------------+
1 row in set (0.00 sec)
```

Query:

select result from test_results where test_id in (select test_id from lab_tests where pat_id in

(select pat_id from patient where pat_name="Mani"));

```
mysql> select result from test_results where test_id in (select test_id from lab_tests where pat_id in
    ->  (select pat_id from patient where pat_name="Mani"));
+----------+
| result   |
+----------+
| Negative |
+----------+
1 row in set (0.00 sec)
```

Query:

select bill_amount from hospital_bill where pat_id in (select pat_id from patient where pat_name="Steve") and bill_amount>1000;

```
mysql>  select bill_amount from hospital_bill where pat_id in (select pat_id from patient where pat_name="Steve") and bill_amount>1000;
+-------------+
| bill_amount |
+-------------+
|        1300 |
|        1200 |
+-------------+
2 rows in set (0.00 sec)
```

Query:

select category,address from staff where staff_id in (select nurse_id from appointment where pat_id="P220");

```
mysql>  select category,address from staff where staff_id in (select nurse_id from appointment where pat_id="P220");
+----------+---------------+
| category | address       |
+----------+---------------+
| nurse    | 33 Blue Mount |
+----------+---------------+
1 row in set (0.00 sec)
```

Query:

select doc_id,doc_name from doctor where dept_no in (select dept_no from department where estd_date>="10-May-2018");

```
mysql>  select doc_id,doc_name from doctor where dept_no in (select dept_no from department where estd_date>="10-May-2018");
+--------+-------------+
| doc_id | doc_name    |
+--------+-------------+
| D0002  | Robin Tooney |
| D0005  | Marley Mi    |
| D0003  | Kulvir Singh |
| D0004  | Raghavan     |
| D0006  | Mason Mount  |
| D0001  | CS Sahil     |
+--------+-------------+
6 rows in set (0.00 sec)
```

Query:

select staff_name from staff where staff_id in (select technician from test_types where description = "Blood Test");

```
mysql>  select staff_name from staff where staff_id in (select technician from test_types where description = "Blood Test" );
+------------+
| staff_name |
+------------+
| Ben        |
+------------+
1 row in set (0.00 sec)
```

Query:

select * from patient where pat_id in (select pat_id from in_patient where start_time>="10-Mar-2017" and end_time<="10-Apr-2017");

```
mysql>  select * from patient where pat_id in (select pat_id from in_patient where start_time>="10-Mar-2017" and end_time<="10-Apr-2017");
Empty set (0.00 sec)
```

Query:

select * from In_Patient_Prescription where pat_id in (select pat_id from patient where pat_name="Gayle");

```
mysql>  select * from In_Patient_Prescription where pat_id in (select pat_id from patient where pat_name="Gayle");
+--------+---------+------------------+-----------+
| Pat_ID | Pres_ID | diagnosis_detail | Room_Type |
+--------+---------+------------------+-----------+
| P220   | PR0004  | Pneumonia        | AC        |
+--------+---------+------------------+-----------+
1 row in set (0.00 sec)
```

3> Find the name and id of all patients who are older than all the doctors in the entire ‘cardiology’ department. Use subqueries and ALL operator.

Query:

select pat_name,pat_id from patient where dob = all(select dob from doctor);

```
mysql> select pat_name,pat_id from patient where dob = all(select dob from doctor);
Empty set (0.00 sec)
```

4> Find the prescription ids of all prescription that included a medicine from the brand ‘Ranbaxy’ using nested subqueries.

Query:

select pres_id from prescription where pres_id in (select pres_id from prescribed_medicines where brand="Ranbaxy");

```
mysql> select pres_id from prescription where pres_id in (select pres_id from prescribed_medicines where brand="Ranbaxy");
Empty set (0.00 sec)
```

5> Find the list of patients who paid their bill through either ‘credit card’ or ‘debit card’ using subquery.

Query:

```
select pat_name,pat_id from patient where pat_id in (select pat_id from hospital_bill where payment_type="credit card" or payment_type="debit card");
```

```
mysql> select pat_name,pat_id from patient where pat_id in (select pat_id from hospital_bill where payment_type="credit card" or payment_type="debit card");
+----------+--------+
| pat_name | pat_id |
+----------+--------+
| Emily    | P0001  |
+----------+--------+
1 row in set (0.00 sec)
```

SQL queries using other functions

1>Display the current time

Query:

```
select curtime();
```

```
mysql> select curtime();
+-----------+
| curtime() |
+-----------+
| 01:10:50  |
+-----------+
1 row in set (0.00 sec)
```

2>Display the current date

Query:

```
select current_date();
```

```
mysql> select current_date();
+----------------+
| current_date() |
+----------------+
| 2020-09-07     |
+----------------+
1 row in set (0.00 sec)
```

3> Display the average bill for the hospital database

Query:

select avg(bill_amount) from hospital_bill;

```
mysql> select avg(bill_amount) from hospital_bill;
+------------------+
| avg(bill_amount) |
+------------------+
|       13250.0000 |
+------------------+
1 row in set (0.00 sec)
```

4> Display the minimum bill paid to the hospital

Query:

select min(bill_amount) from hospital_bill;

```
mysql> select min(bill_amount) from hospital_bill;
+------------------+
| min(bill_amount) |
+------------------+
|              500 |
+------------------+
1 row in set (0.00 sec)
```

5> Display the length of the name of the doctors

Query:

select doc_name,length(doc_name) as lengthofname from doctor;

```
mysql> select doc_name,length(doc_name) as lengthofname from doctor;
+-------------+--------------+
| doc_name    | lengthofname |
+-------------+--------------+
| CS Sahil    |            8 |
| Robin Tooney |           12 |
| Kulvir Singh |           12 |
| Raghavan    |            8 |
| Marley Mi   |            9 |
| Mason Mount |           11 |
+-------------+--------------+
6 rows in set (0.00 sec)
```

6> Display the doctor names in lower their case and specialization in uppercase

Query:

```
select lower(doc_name),upper(specialist) from doctor;
```

```
mysql> select lower(doc_name),upper(specialist) from doctor;
+-----------------+----------------------------+
| lower(doc_name) | upper(specialist)          |
+-----------------+----------------------------+
| cs sahil        | OBSTETRICS AND GYNAECOLOGY |
| robin tooney    | NEUROLOGY                  |
| kulvir singh    | CARDIOLOGY                 |
| raghavan        | CARDIOLOGY                 |
| marley mi       | NEUROLOGY                  |
| mason mount     | CARDIOLOGY                 |
+-----------------+----------------------------+
6 rows in set (0.00 sec)
```