

Expt No.: 2
Date: 09/08/2020

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CYCLE SHEET 2

Aim:

To solve the given problems by implementing in SQL.

Hospital Database

Doctor (Doc_ID, Doc_Name, Gender, DOB, Specialist, Qualification, Contact, Address, Dept_No)

Department (Dept_No, Dept_Name, Room_No, Floor, HOD, Estd_Date)

Staff (Staff_ID, Staff_Name, Category(nurse, lab technician, cashier, security), Designation, DOB, Contact, Address, Dept_No)

Patient (Pat_ID, Pat_Name, DOB, Gender, Contact, Address)

In_Patient (Pat_ID, Date Of Admission, Bed_No, Start_Time, End_Time)

In_Patient_Prescription(Pat_ID, Pres_ID)

Appointment (App_ID, Pat_ID, Doc_ID, Nurse_ID, Consult_Room_No, Date, Time)

Prescription (Pres_ID, App_ID, Date, Time, Diagnosis_Detail)

Prescribed_Medicines (Pres_ID, Medicine_Name, Dosage, Brand)

Hospital_Bill (Inv_No, Inv Date, Pat_ID, Bill_Amount, Payment_Type (cash/credit card/debit card), discount)

Lab_Tests (Test_ID, Pat_ID, Date, Time)

Test_Results (Test_ID, TT_ID, Result)

Test_Types (TT_ID, Description, Low_Value, High_Value, Test_Method, Technician)

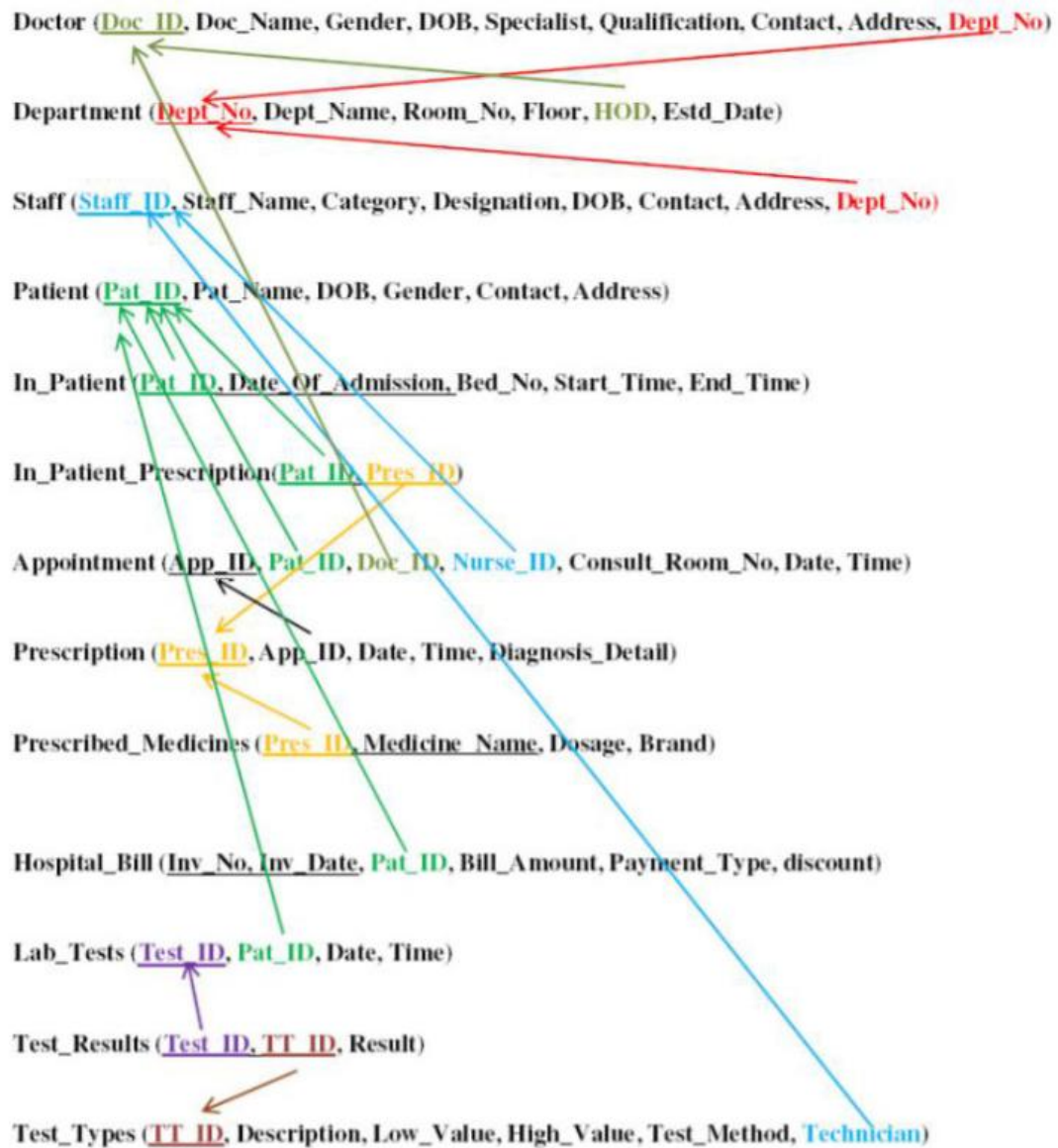


Figure 1: Primary key and foreign keys

RECAP

```
Run SQL Command Line
SQL> connect
Enter user-name: system
Enter password:
Connected.
SQL> set line 1000;
SQL> select * from Doctor;

DOC_ID DOC_NAME      GE DOB      SPECIALIST  QUALIFICAT  CONTACT ADDRESS      DEPT_NO
-----
D0001 Rajeev Maseen      M 31-JUL-90 Cardiology  MBBS MDS    8986754309 Yerawada, Pune      102
D0002 Shahiza Ibrahim   F 30-JUN-89 Gynaecology MDS         8690563412 Dhayari, Pune      118
D0003 Vishal Patrawalla M 12-FEB-80 Cardiology  MDS         9768523410 Prabhat Rd., Pune      102
D0004 Avani Zanwar    F 24-OCT-91 Neurology   MBBS MDS    8696857435 Kalyaninagar, Pune      190

SQL> select * from Department;

DEPT_NO DEPT_NAME      ROOM_N FLOOR_NO HOD      ESTD_DATE
-----
102 Cardiology      R-102      1 D0003 12-JAN-11
118 Gynaecology      R-118      2 D0002 10-JAN-10
190 Neurology      R-190      3 D0004 21-JUN-13

SQL> select * from Staff;

STAFF_ STAFF_NAME      CATEGORY      DESIGNATION  DOB      CONTACT ADDRESS      DEPT_NO
-----
S0001 Chaitanya Babu      Junior        Nurse        12-MAR-98 9999999999 Sadashiv peth      102
S0003 Asmita Rao        Senior        Technician    13-OCT-90 8769054321 Yerawada, Pune      190
S0002 Reyna Ramirez   Junior        Junior attender 26-JUN-95 7066227686 Prabhat Rd, Pune      190

SQL> select * from Patient;

PAT_ID PAT_NAME      DOB      GE CONTACT ADDRESS      SYMPTOMS
-----
P-01-001 Nina Torev      12-JUN-10 F 8897889709 Ring rd, Pune      Chest congestion
P-01-002 Kalyani Shah  14-JUL-01 F 9878987890 MG Rd, Pune      Loose motions
P-01-003 Ajit Adani    25-DEC-70 M 8976567890 Kalyaninagar, Pune      Cold and weakness

SQL>
```

```
Run SQL Command Line
P-01-002 Kalyani Shah  14-JUL-01 F 9878987890 MG Rd, Pune      Loose motions
P-01-003 Ajit Adani    25-DEC-70 M 8976567890 Kalyaninagar, Pune      Cold and weakness

SQL> select * from In_Patient;

PAT_ID DATE_OF_A      BED_NO START_TIME      END_TIME
-----
P-01-001 30-JUN-20      117 30-JUN-20 07.45.48.00 AM      14-JUL-20 08.00.00.00 AM
Pneumonia
P-01-002 01-MAY-20      100 01-MAY-20 11.59.45.00 AM      13-MAY-20 10.45.34.00 AM
Stomach infection
P-01-003 13-JUL-20      145 13-JUL-20 09.00.00.00 AM      15-JUL-20 10.00.00.00 AM
Influenza

SQL> select * from In_Patient_Prescription;

PAT_ID PRES_ID TEST_ID
-----
P-01-001 PR00012 TP-01-001
P-01-002 PR00045 TP-01-002
P-01-003 PR00028 TP-01-003

SQL> select * from Appointment;

APP_ID PAT_ID DOC_ID NURSE_ CONSUL APP_DATE APP_TIME
-----
PA-0000001 P-01-001 D0001 S0001 R-111 11-JAN-20 11-JAN-20 10.10.10.000000 AM
PA-0000002 P-01-002 D0001 S0001 R-111 11-JAN-20 11-JAN-20 12.00.00.000000 AM
PA-0000003 P-01-003 D0004 S0001 R-213 13-MAR-20 13-MAR-20 11.00.00.000000 AM

SQL> select * from Prescription;

PRES_ID APP_ID PRES_DATE PRES_TIME      DIAGNOSIS_DETAIL
-----
PR00012 PA-0000001 11-JAN-20 11-JAN-20 11.30.45.000000 AM      Pneumonia
PR00045 PA-0000002 11-JAN-20 11-JAN-20 01.00.00.000000 PM      Stomach infection
PR00028 PA-0000003 13-MAR-20 13-MAR-20 11.30.00.000000 AM      Influenza

SQL>
```

```

Run SQL Command Line
PR00045 PA-0000002 11-JAN-20 11-JAN-20 01.00.00.000000 PM Stomach infection
PR00028 PA-0000003 13-MAR-20 13-MAR-20 11.30.00.000000 AM Influenza

SQL> select * from prescribed_medicines;

PRES_ID MEDICINE_NAME DOSAGE BRAND DAYS_OF_DOSE
-----
PR00028 Xofluza 3 times a day ABC 5

SQL> select * from hospital_bill;

INV_NO INV_DATE PAT_ID BILL_AMOUNT PAYMENT_TY DISCOUNT
-----
1001000101 14-JUL-20 P-01-001 100500 Cheque 15
1001000201 13-MAY-20 P-01-002 101546 Transfer 25
1001000301 15-JUL-20 P-01-003 13450 Card 15

SQL> select * from lab_tests;

TEST_ID PAT_ID TEST_DATE TEST_TIME
-----
TP-01-001 P-01-001 14-FEB-20 14-FEB-20 08.03.23.000000 AM
TP-01-002 P-01-002 29-FEB-20 29-FEB-20 04.05.45.000000 PM
TP-01-003 P-01-003 01-JUL-20 01-JUL-20 09.00.00.000000 AM

SQL> select * from test_results;

TEST_ID TT_ID TEST_RES
-----
TP-01-003 T-1657 Negative

SQL> select * from Test_types;

TT_ID DESCRIPTION LOW_VALUE HIGH_VALUE TEST_METHOD TECHNI
-----
T-1020 Blood Test 30 50 Test the blood S0003
T-1123 Stool test 13 30 fecal blood test S0003
T-1657 RIDT 45 60 Antigen check S0003
T-1228 Urine Test 10 30 Test the urine S0003

SQL>

```

DDL QUERIES

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.

Code:

```
SQL> alter table hospital_bill add consulting_physician varchar2(6);
Table altered.
```

```
SQL> select * from hospital_bill;
```

INV_NO	INV_DATE	PAT_ID	BILL_AMOUNT	PAYMENT_TY	DISCOUNT	CONSUL
1001000101	14-JUL-20	P-01-001	100500	Cheque	15	
1001000201	13-MAY-20	P-01-002	101546	Transfer	25	
1001000301	15-JUL-20	P-01-003	13450	Card	15	

```
SQL> update hospital_bill set consulting_physician = 'D0001' where pat_id = 'P-01-001';
1 row updated.
```

```
SQL> update hospital_bill set consulting_physician = 'D0001' where pat_id = 'P-01-002';
1 row updated.
```

```
SQL> update hospital_bill set consulting_physician = 'D0004' where pat_id = 'P-01-003';
1 row updated.
```

```
SQL> alter table hospital_bill add constraint con_phys_fk foreign key(consulting_physician) references
Doctor(doc_id);
```

```
Table altered.
```

```
SQL> select * from hospital_bill;
```

INV_NO	INV_DATE	PAT_ID	BILL_AMOUNT	PAYMENT_TY	DISCOUNT	CONSUL
1001000101	14-JUL-20	P-01-001	100500	Cheque	15	D0001
1001000201	13-MAY-20	P-01-002	101546	Transfer	25	D0001
1001000301	15-JUL-20	P-01-003	13450	Card	15	D0004

Output:

```
Run SQL Command Line
SQL> alter table hospital_bill add consulting_physician varchar2(6);
Table altered.
SQL> select * from hospital_bill;
  INV_NO INV_DATE PAT_ID BILL_AMOUNT PAYMENT_TY DISCOUNT CONSUL
-----
1001000101 14-JUL-20 P-01-001      100500  Cheque          15
1001000201 13-MAY-20 P-01-002      101546  Transfer         25
1001000301 15-JUL-20 P-01-003       13450   Card            15
SQL> update table hospital_bill set consulting_physician = 'D0001' where pat_id = 'P-01-001';
update table hospital_bill set consulting_physician = 'D0001' where pat_id = 'P-01-001'
*
ERROR at line 1:
ORA-00903: invalid table name

SQL> update hospital_bill set consulting_physician = 'D0001' where pat_id = 'P-01-001';
1 row updated.

SQL> update hospital_bill set consulting_physician = 'D0001' where pat_id = 'P-01-002';
1 row updated.

SQL> update hospital_bill set consulting_physician = 'D0004' where pat_id = 'P-01-003';
1 row updated.

SQL> select * from hospital_bill;
  INV_NO INV_DATE PAT_ID BILL_AMOUNT PAYMENT_TY DISCOUNT CONSUL
-----
1001000101 14-JUL-20 P-01-001      100500  Cheque          15 D0001
1001000201 13-MAY-20 P-01-002      101546  Transfer         25 D0001
1001000301 15-JUL-20 P-01-003       13450   Card            15 D0004
SQL>
```

```
Run SQL Command Line
1001000201 13-MAY-20 P-01-002      101546  Transfer         25 D0001
1001000301 15-JUL-20 P-01-003       13450   Card            15 D0004
SQL> alter table hospital_bill add constraint con_phys_fk foreign key(consulting_physician) references Doctor(doc_id);
Table altered.
SQL> select * from hospital_bill;
  INV_NO INV_DATE PAT_ID BILL_AMOUNT PAYMENT_TY DISCOUNT CONSUL
-----
1001000101 14-JUL-20 P-01-001      100500  Cheque          15 D0001
1001000201 13-MAY-20 P-01-002      101546  Transfer         25 D0001
1001000301 15-JUL-20 P-01-003       13450   Card            15 D0004
SQL>
```


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

Code:

```
SQL> alter table patient drop column address;  
Table altered.
```

```
SQL> alter table Patient add street varchar2(15);  
Table altered.
```

```
SQL> alter table Patient add city varchar2(10);  
Table altered.
```

```
SQL> alter table Patient add pincode number(10);  
Table altered.
```

```
SQL> update patient set street = 'Tilak Rd.', city = 'Pune', pincode = 411030 where pat_id = 'P-01-001';  
1 row updated.
```

```
SQL> update patient set street = 'MG Rd.', city = 'Pune', pincode = 411001 where pat_id = 'P-01-002';  
1 row updated.
```

```
SQL> update patient set street = 'Kalyaninagar', city = 'Pune', pincode = 411006 where pat_id = 'P-01-003';  
1 row updated.
```

```
SQL> select * from Patient;
```

PAT_ID	PAT_NAME	DOB	GE	CONTACT	SYMPTOMS	STREET	CITY	PINCODE
P-01-001	Nina Torev	12-JUN-10	F	8897889709	Chest congestion	Tilak Rd.	Pune	411030
P-01-002	Kalyani Shah	14-JUL-01	F	9878987890	Loose motions	MG Rd.	Pune	411001
P-01-003	Ajit Adani	25-DEC-70	M	8976567890	Cold and weakness	Kalyaninagar	Pune	411006

Output:

```
Run SQL Command Line  
SQL> alter table add street varchar2(15);  
alter table add street varchar2(15)  
*  
ERROR at line 1:  
ORA-00903: invalid table name  
  
SQL> alter table Patient add street varchar2(15);  
Table altered.  
  
SQL> alter table Patient add city varchar2(10);  
Table altered.  
  
SQL> alter table Patient add pincode number(10);  
Table altered.  
  
SQL> update patient set street = 'Tilak Rd.', city = 'Pune', pincode = 411030 where pat_id = 'P-01-001';  
1 row updated.  
  
SQL> update patient set street = 'MG Rd.', city = 'Pune', pincode = 411001 where pat_id = 'P-01-002';  
1 row updated.  
  
SQL> update patient set street = 'Kalyaninagar', city = 'Pune', pincode = 411006 where pat_id = 'P-01-003';  
1 row updated.  
  
SQL> select * from Patient;  
  
PAT_ID  PAT_NAME  DOB      GE  CONTACT SYMPTOMS  STREET  CITY  PINCODE  
-----  
P-01-001 Nina Torev 12-JUN-10 F 8897889709 Chest congestion Tilak Rd. Pune 411030  
P-01-002 Kalyani Shah 14-JUL-01 F 9878987890 Loose motions MG Rd. Pune 411001  
P-01-003 Ajit Adani 25-DEC-70 M 8976567890 Cold and weakness Kalyaninagar Pune 411006  
  
SQL>
```

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

Code:

```
SQL> alter table lab_tests add test_time1 varchar2(15) constraint test_time1_check check(test_time1 in ('Before Food', 'After Food'));
Table altered.
```

```
SQL> update lab_tests set test_time1 = 'Before Food' where pat_id = 'P-01-001';
1 row updated.
```

```
SQL> update lab_tests set test_time1 = 'Before Food' where pat_id = 'P-01-002';
1 row updated.
```

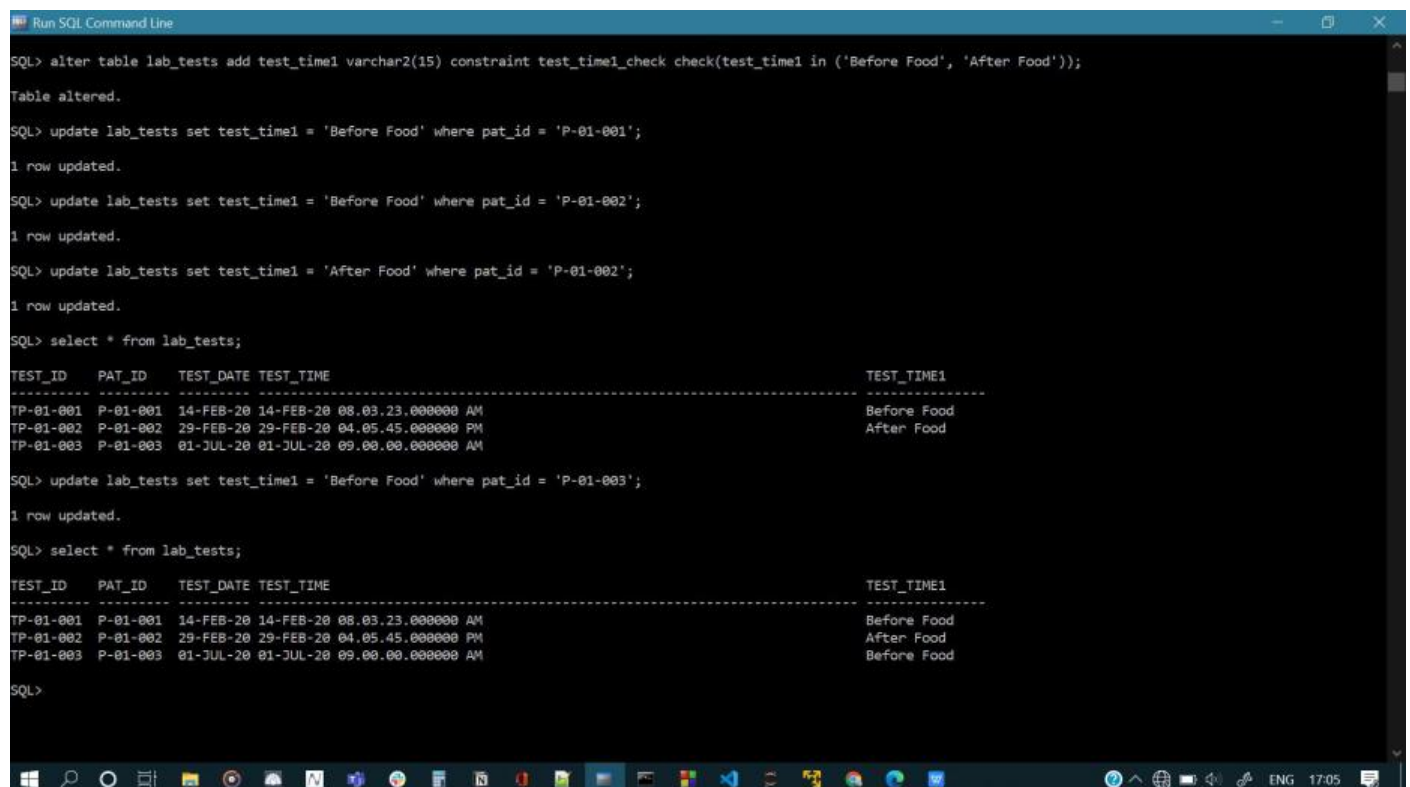
```
SQL> update lab_tests set test_time1 = 'After Food' where pat_id = 'P-01-002';
1 row updated.
```

```
SQL> update lab_tests set test_time1 = 'Before Food' where pat_id = 'P-01-003';
1 row updated.
```

```
SQL> select * from lab_tests;
```

TEST_ID	PAT_ID	TEST_DATE	TEST_TIME	TEST_TIME1
TP-01-001	P-01-001	14-FEB-20	14-FEB-20 08.03.23.000000 AM	Before Food
TP-01-002	P-01-002	29-FEB-20	29-FEB-20 04.05.45.000000 PM	After Food
TP-01-003	P-01-003	01-JUL-20	01-JUL-20 09.00.00.000000 AM	Before Food

Output:



```
Run SQL Command Line

SQL> alter table lab_tests add test_time1 varchar2(15) constraint test_time1_check check(test_time1 in ('Before Food', 'After Food'));
Table altered.

SQL> update lab_tests set test_time1 = 'Before Food' where pat_id = 'P-01-001';
1 row updated.

SQL> update lab_tests set test_time1 = 'Before Food' where pat_id = 'P-01-002';
1 row updated.

SQL> update lab_tests set test_time1 = 'After Food' where pat_id = 'P-01-002';
1 row updated.

SQL> select * from lab_tests;

TEST_ID  PAT_ID  TEST_DATE TEST_TIME                                TEST_TIME1
-----
TP-01-001 P-01-001 14-FEB-20 14-FEB-20 08.03.23.000000 AM      Before Food
TP-01-002 P-01-002 29-FEB-20 29-FEB-20 04.05.45.000000 PM      After Food
TP-01-003 P-01-003 01-JUL-20 01-JUL-20 09.00.00.000000 AM      Before Food

SQL> update lab_tests set test_time1 = 'Before Food' where pat_id = 'P-01-003';
1 row updated.

SQL> select * from lab_tests;

TEST_ID  PAT_ID  TEST_DATE TEST_TIME                                TEST_TIME1
-----
TP-01-001 P-01-001 14-FEB-20 14-FEB-20 08.03.23.000000 AM      Before Food
TP-01-002 P-01-002 29-FEB-20 29-FEB-20 04.05.45.000000 PM      After Food
TP-01-003 P-01-003 01-JUL-20 01-JUL-20 09.00.00.000000 AM      Before Food

SQL>
```

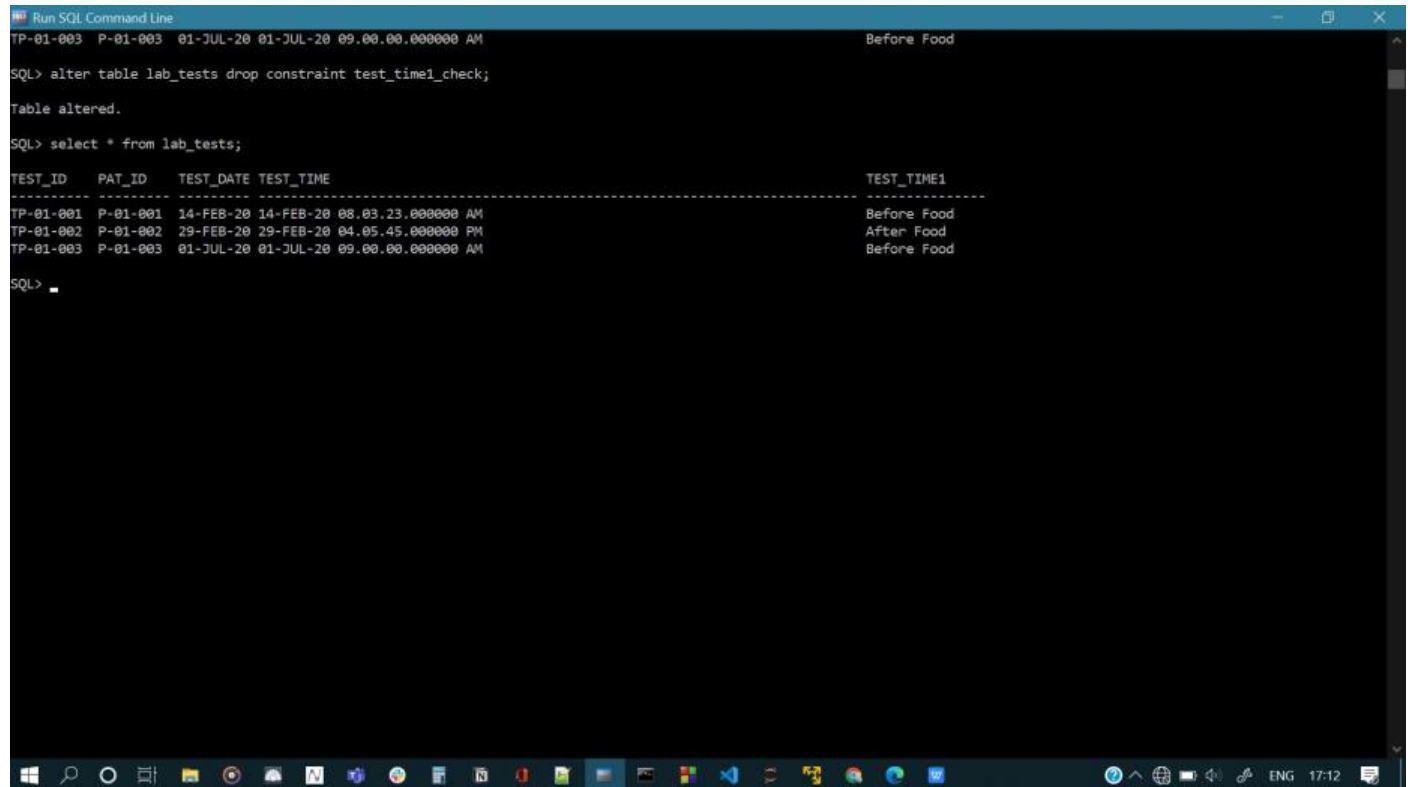
4. Remove the constraint only from test_time attribute.

Code:

```
SQL> alter table lab_tests drop constraint test_time1_check;
```

Table altered.

Output:



```
Run SQL Command Line
TP-01-003 P-01-003 01-JUL-20 01-JUL-20 09.00.00.000000 AM Before Food
SQL> alter table lab_tests drop constraint test_time1_check;
Table altered.
SQL> select * from lab_tests;
TEST_ID PAT_ID TEST_DATE TEST_TIME TEST_TIME1
-----
TP-01-001 P-01-001 14-FEB-20 14-FEB-20 08.03.23.000000 AM Before Food
TP-01-002 P-01-002 29-FEB-20 29-FEB-20 04.05.45.000000 PM After Food
TP-01-003 P-01-003 01-JUL-20 01-JUL-20 09.00.00.000000 AM Before Food
SQL> _
```

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

Code:

```
SQL> alter table staff drop column address;
```

Table altered.

```
SQL> alter table staff add door_no number(3);
```

Table altered.

```
SQL> alter table staff add street varchar2(15);
```

Table altered.

```
SQL> alter table staff add city varchar2(10);
```


Table altered.

```
SQL> alter table staff add pincode number(10);
```

Table altered.

```
SQL> update staff set door_no = 1, street = 'Tilak Rd.', city = 'Pune', pincode = 411030 where staff_id = 'S0001';
```

1 row updated.

```
SQL> update staff set door_no = 2, street = 'Yerawada', city = 'Pune', pincode = 411006 where staff_id = 'S0003';
```

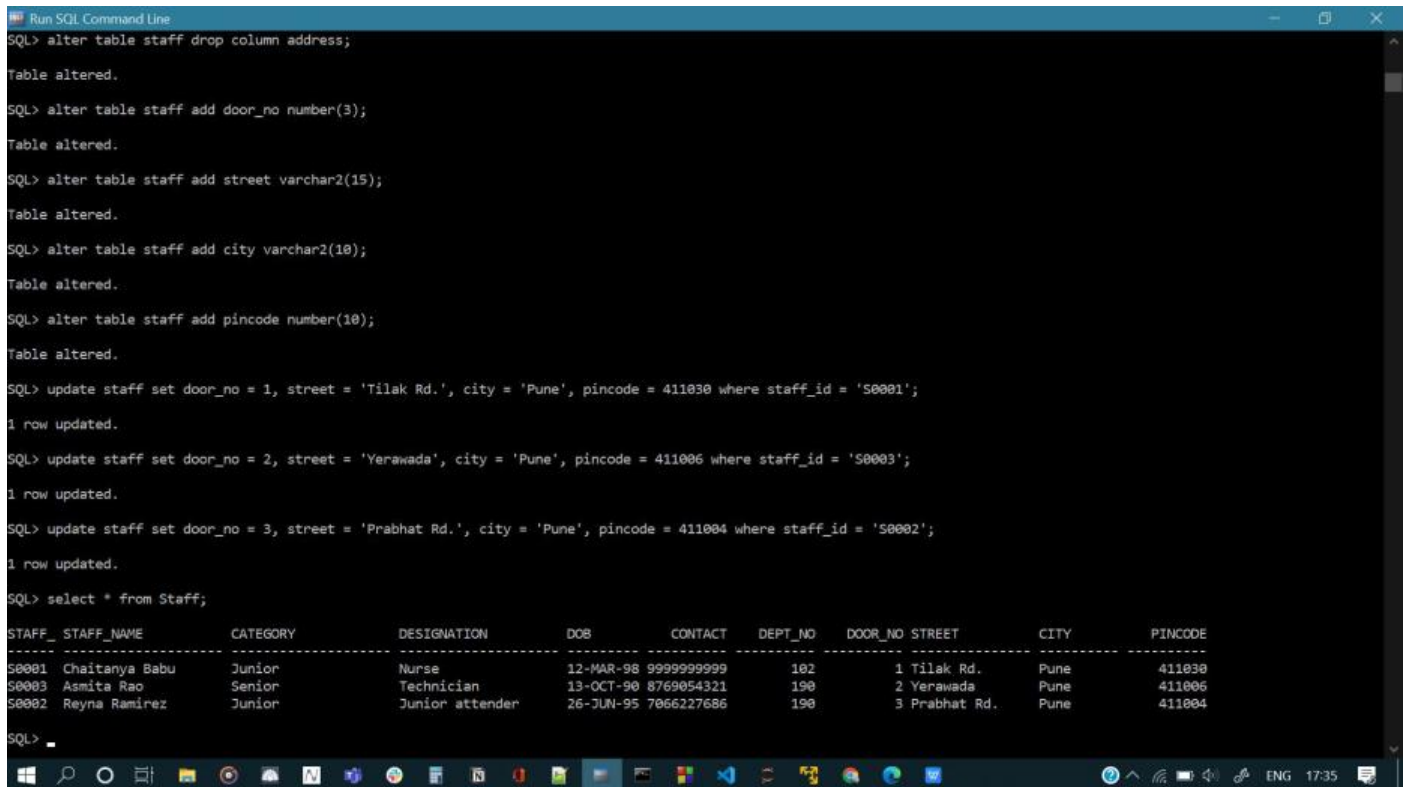
1 row updated.

```
SQL> update staff set door_no = 3, street = 'Prabhat Rd.', city = 'Pune', pincode = 411004 where staff_id = 'S0002';
```

1 row updated.

```
SQL> select * from Staff;
```

Output:



```
Run SQL Command Line
SQL> alter table staff drop column address;
Table altered.
SQL> alter table staff add door_no number(3);
Table altered.
SQL> alter table staff add street varchar2(15);
Table altered.
SQL> alter table staff add city varchar2(10);
Table altered.
SQL> alter table staff add pincode number(10);
Table altered.
SQL> update staff set door_no = 1, street = 'Tilak Rd.', city = 'Pune', pincode = 411030 where staff_id = 'S0001';
1 row updated.
SQL> update staff set door_no = 2, street = 'Yerawada', city = 'Pune', pincode = 411006 where staff_id = 'S0003';
1 row updated.
SQL> update staff set door_no = 3, street = 'Prabhat Rd.', city = 'Pune', pincode = 411004 where staff_id = 'S0002';
1 row updated.
SQL> select * from Staff;
```

STAFF_ID	STAFF_NAME	CATEGORY	DESIGNATION	DOB	CONTACT	DEPT_NO	DOOR_NO	STREET	CITY	PINCODE
S0001	Chaitanya Babu	Junior	Nurse	12-MAR-98	9999999999	102	1	Tilak Rd.	Pune	411030
S0003	Asmita Rao	Senior	Technician	13-OCT-90	8769054321	190	2	Yerawada	Pune	411006
S0002	Reyna Ramirez	Junior	Junior attender	26-JUN-95	7066227686	190	3	Prabhat Rd.	Pune	411004

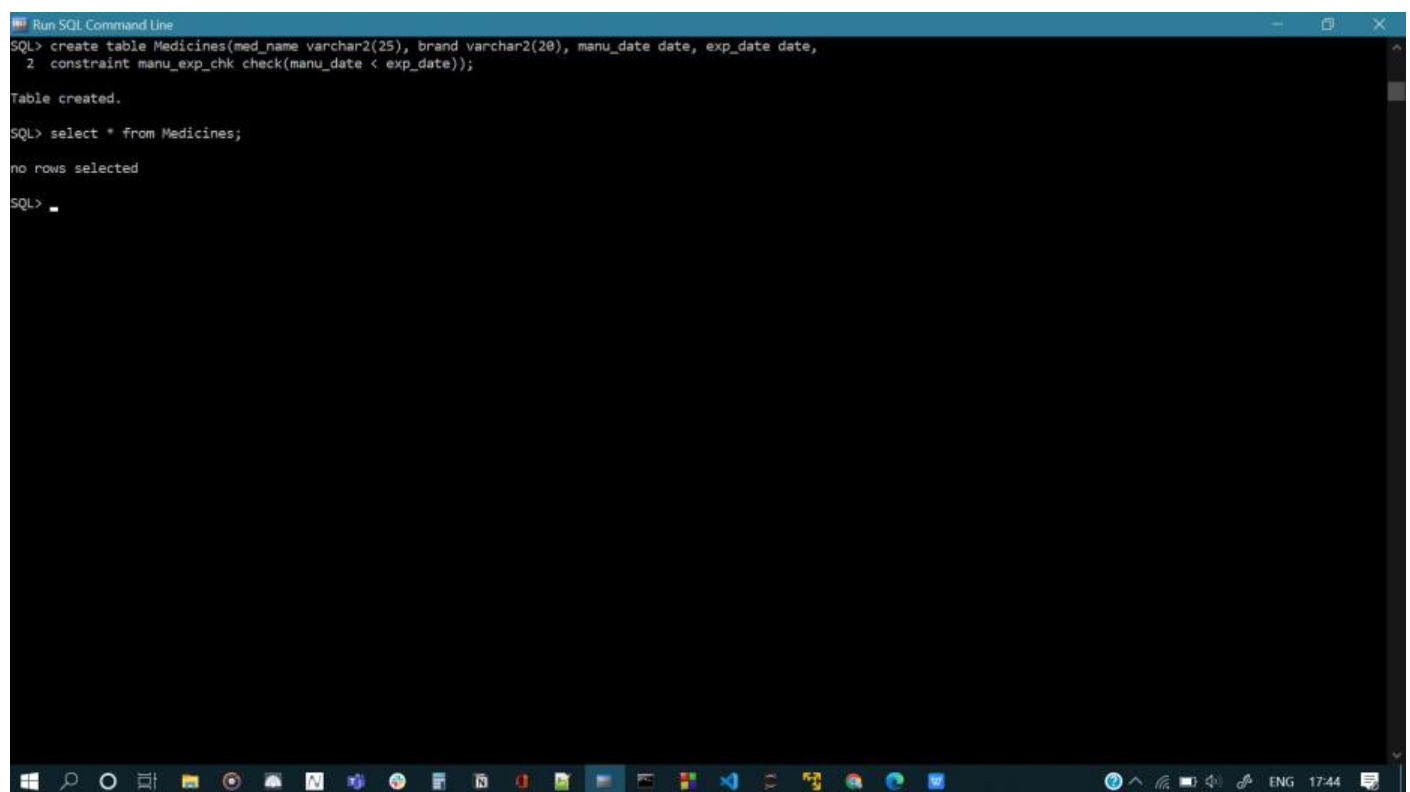
```
SQL>
```

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.

Code:

```
SQL> create table Medicines(med_name varchar2(25),
brand varchar2(20),
manu_date date,
exp_date date,
constraint manu_exp_chk check(manu_date < exp_date));
```

Output:



```
Run SQL Command Line
SQL> create table Medicines(med_name varchar2(25), brand varchar2(20), manu_date date, exp_date date,
2 constraint manu_exp_chk check(manu_date < exp_date));
Table created.
SQL> select * from Medicines;
no rows selected
SQL>
```

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.

Code:

```
SQL> alter table prescribed_medicines drop column dosage;
Table altered.
```

```
SQL> alter table prescribed_medicines drop column brand;
Table altered.
```

```
SQL> select * from prescribed_medicines;
```

PRES_ID	MEDICINE_NAME	DAYS_OF_DOSE
PR00028	Xofluza	5

```
SQL> alter table medicines add constraint med_name_pk primary key(med_name);
```

Table altered.

```
SQL> alter table prescribed_medicines add constraint med_name_fk foreign key(medicine_name) references medicines(med_name);
```

Table altered.

Output:

```
Run SQL Command Line
Enter value for manu_date: 20-SEP-2020
Enter value for exp_date: 20-SEP-2021
old 1: insert into medicines values('&med_name', '&brand', '&manu_date', '&exp_date')
new 1: insert into medicines values('Crocin 500', 'Crocin', '20-SEP-2020', '20-SEP-2021')

1 row created.

SQL> /
Enter value for med_name: Nurofen
Enter value for brand: Benckiser
Enter value for manu_date: 21-AUG-2020
Enter value for exp_date: 21-SEP-2020
old 1: insert into medicines values('&med_name', '&brand', '&manu_date', '&exp_date')
new 1: insert into medicines values('Nurofen', 'Benckiser', '21-AUG-2020', '21-SEP-2020')

1 row created.

SQL> /
Enter value for med_name: Qvar
Enter value for brand: XYZ
Enter value for manu_date: 23-JUL-2020
Enter value for exp_date: 29-NOV-2020
old 1: insert into medicines values('&med_name', '&brand', '&manu_date', '&exp_date')
new 1: insert into medicines values('Qvar', 'XYZ', '23-JUL-2020', '29-NOV-2020')

1 row created.

SQL> select * from medicines;

MED_NAME          BRAND          MANU_DATE  EXP_DATE
-----
Xofluza            ABC            12-JUL-20  30-JUL-20
Lamotrigine        PHARMAC        07-AUG-20  07-SEP-20
Levothyroxine      Eltroxin       08-AUG-20  18-SEP-21
Crocin 500         Crocin         20-SEP-20  20-SEP-21
Nurofen            Benckiser      21-AUG-20  21-SEP-20
Qvar               XYZ            23-JUL-20  29-NOV-20

6 rows selected.

SQL>
```

```
Run SQL Command Line

SQL> alter table prescribed_medicines drop column dosage;
Table altered.

SQL> alter table prescribed_medicines drop column brand;
Table altered.

SQL> select * from prescribed_medicines;

PRES_ID  MEDICINE_NAME  DAYS_OF_DOSE
-----
PR00028  Xofluza        5

SQL> alter table prescribed_medicines add constraint med_name_fk foreign key(medicine_name) references medicines(med_name);
alter table prescribed_medicines add constraint med_name_fk foreign key(medicine_name) references medicines(med_name)
*
ERROR at line 1:
ORA-02270: no matching unique or primary key for this column-list

SQL> alter table medicines add constraint med_name_pk primary key(med_name);
Table altered.

SQL> alter table prescribed_medicines add constraint med_name_fk foreign key(medicine_name) references medicines(med_name);
Table altered.

SQL>
```

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

Code:

```
SQL> select * from Doctor;
```

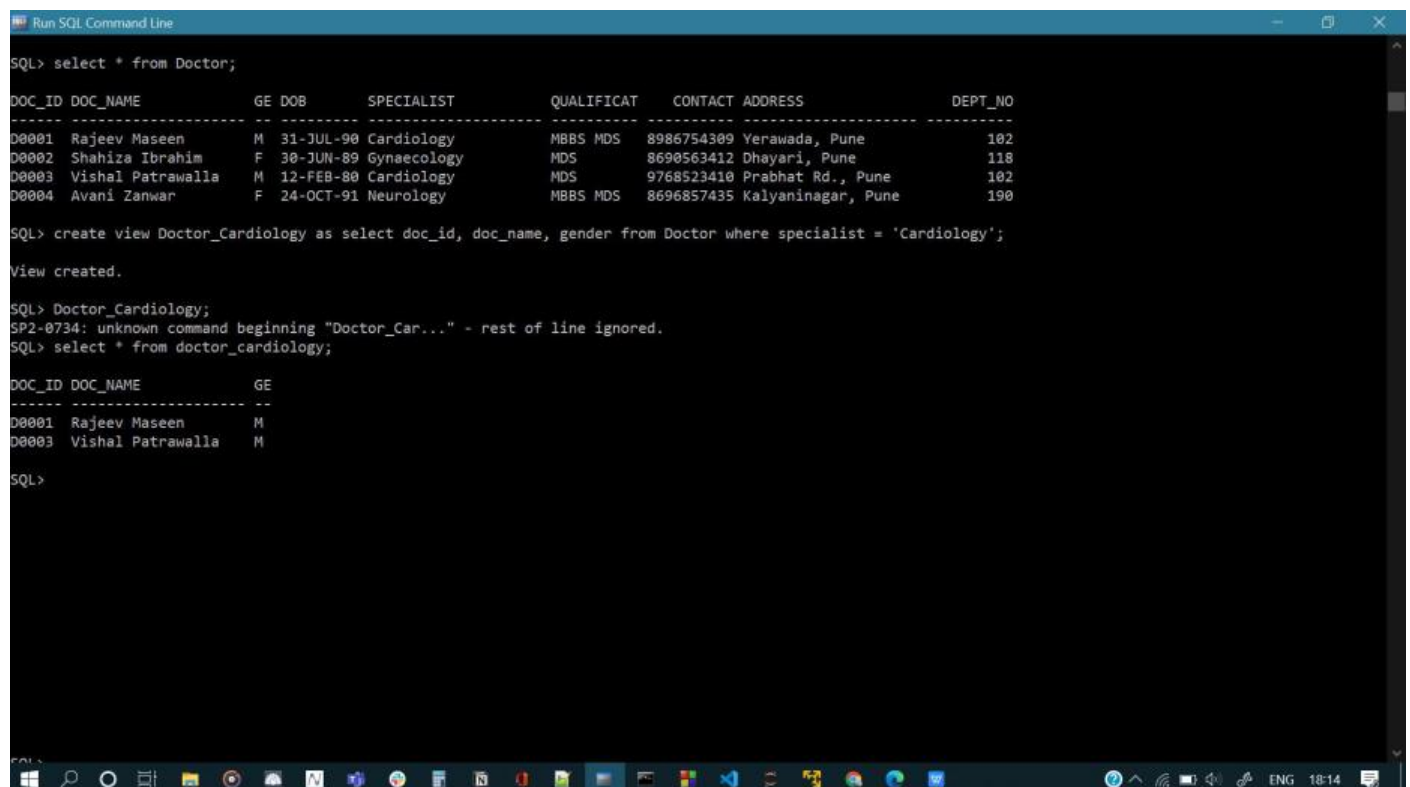
DOC_ID	DOC_NAME	GE	DOB	SPECIALIST	QUALIFICAT	CONTACT	ADDRESS	DEPT_NO
D0001	Rajeev Maseen	M	31-JUL-90	Cardiology	MBBS MDS	8986754309	Yerawada, Pune	102
D0002	Shahiza Ibrahim	F	30-JUN-89	Gynaecology	MDS	8690563412	Dhayari, Pune	118
D0003	Vishal Patrawalla	M	12-FEB-80	Cardiology	MDS	9768523410	Prabhat Rd., Pune	102
D0004	Avani Zanwar	F	24-OCT-91	Neurology	MBBS MDS	8696857435	Kalyaninagar, Pune	190

```
SQL> create view Doctor_Cardiology as select doc_id, doc_name, gender from Doctor where specialist = 'Cardiology';
View created.
```

```
SQL> select * from doctor_cardiology;
```

DOC_ID	DOC_NAME	GE
D0001	Rajeev Maseen	M
D0003	Vishal Patrawalla	M

Output:



```
Run SQL Command Line

SQL> select * from Doctor;

DOC_ID DOC_NAME      GE DOB      SPECIALIST  QUALIFICAT  CONTACT ADDRESS      DEPT_NO
-----
D0001  Rajeev Maseen      M 31-JUL-90 Cardiology  MBBS MDS    8986754309 Yerawada, Pune 102
D0002  Shahiza Ibrahim    F 30-JUN-89 Gynaecology MDS         8690563412 Dhayari, Pune 118
D0003  Vishal Patrawalla  M 12-FEB-80 Cardiology  MDS         9768523410 Prabhat Rd., Pune 102
D0004  Avani Zanwar       F 24-OCT-91 Neurology  MBBS MDS    8696857435 Kalyaninagar, Pune 190

SQL> create view Doctor_Cardiology as select doc_id, doc_name, gender from Doctor where specialist = 'Cardiology';
View created.

SQL> Doctor_Cardiology;
SP2-0734: unknown command beginning "Doctor_Car..." - rest of line ignored.
SQL> select * from doctor_cardiology;

DOC_ID DOC_NAME      GE
-----
D0001  Rajeev Maseen      M
D0003  Vishal Patrawalla  M

SQL>
```

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

Code:

```
SQL> alter table department add no_of_staff number(6) constraint no_staff_chk check(no_of_staff > 0);  
Table altered.
```

```
SQL> update department set no_of_staff = 50 where dept_no = 102;  
1 row updated.
```

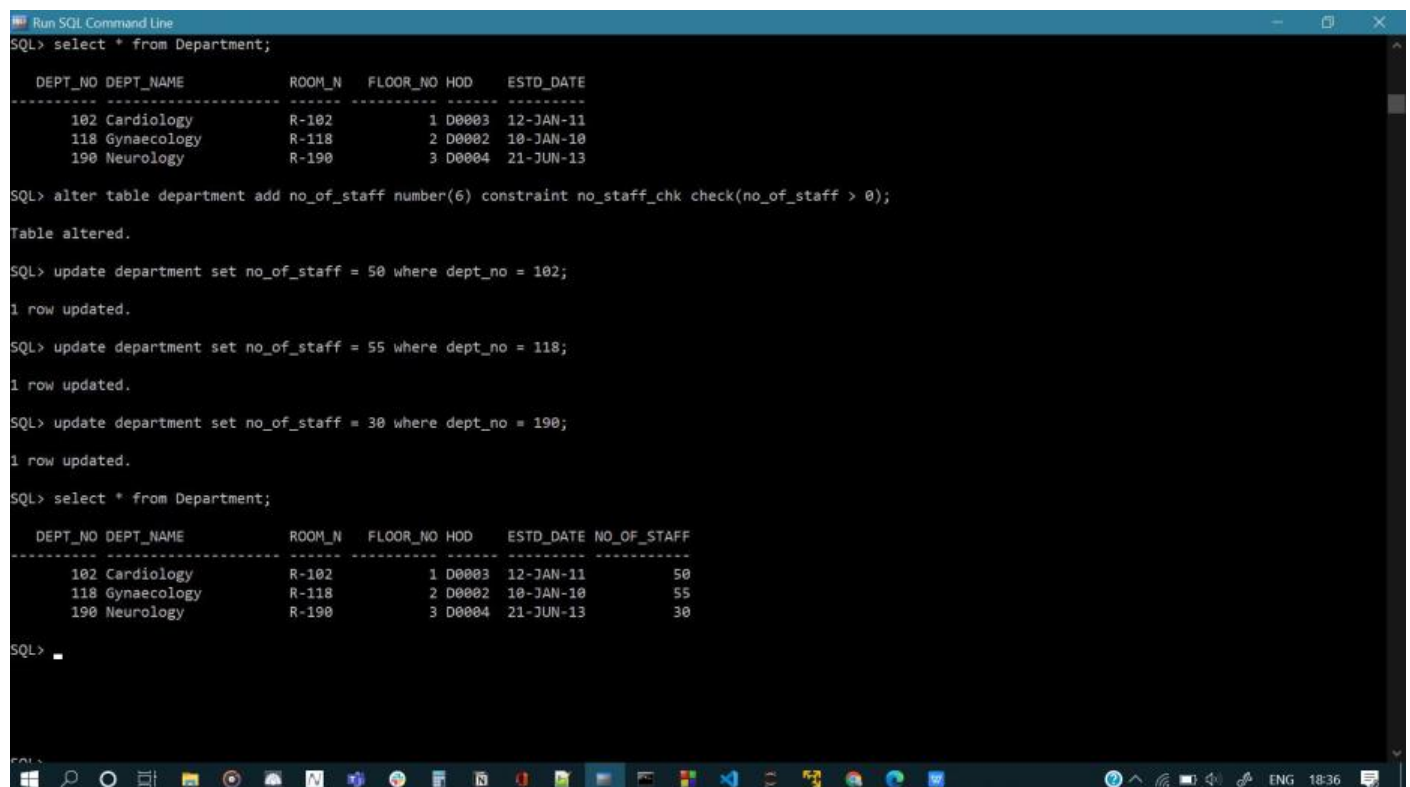
```
SQL> update department set no_of_staff = 55 where dept_no = 118;  
1 row updated.
```

```
SQL> update department set no_of_staff = 30 where dept_no = 190;  
1 row updated.
```

```
SQL> select * from Department;
```

DEPT_NO	DEPT_NAME	ROOM_N	FLOOR_NO	HOD	ESTD_DATE	NO_OF_STAFF
102	Cardiology	R-102	1	D0003	12-JAN-11	50
118	Gynaecology	R-118	2	D0002	10-JAN-10	55
190	Neurology	R-190	3	D0004	21-JUN-13	30

Output:



```
Run SQL Command Line
SQL> select * from Department;

DEPT_NO DEPT_NAME      ROOM_N  FLOOR_NO  HOD    ESTD_DATE
-----
102 Cardiology        R-102    1    D0003  12-JAN-11
118 Gynaecology       R-118    2    D0002  10-JAN-10
190 Neurology         R-190    3    D0004  21-JUN-13

SQL> alter table department add no_of_staff number(6) constraint no_staff_chk check(no_of_staff > 0);
Table altered.

SQL> update department set no_of_staff = 50 where dept_no = 102;
1 row updated.

SQL> update department set no_of_staff = 55 where dept_no = 118;
1 row updated.

SQL> update department set no_of_staff = 30 where dept_no = 190;
1 row updated.

SQL> select * from Department;

DEPT_NO DEPT_NAME      ROOM_N  FLOOR_NO  HOD    ESTD_DATE NO_OF_STAFF
-----
102 Cardiology        R-102    1    D0003  12-JAN-11      50
118 Gynaecology       R-118    2    D0002  10-JAN-10      55
190 Neurology         R-190    3    D0004  21-JUN-13      30

SQL>
```


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

Code:

```
SQL> alter table in_patient_prescription add room_type varchar2(10) constraint  
room_type_check check(room_type in ('AC', 'Non-AC'));
```

Table altered.

```
SQL> update in_patient_prescription set room_type = 'AC' where pat_id = 'P-01-001';
```

1 row updated.

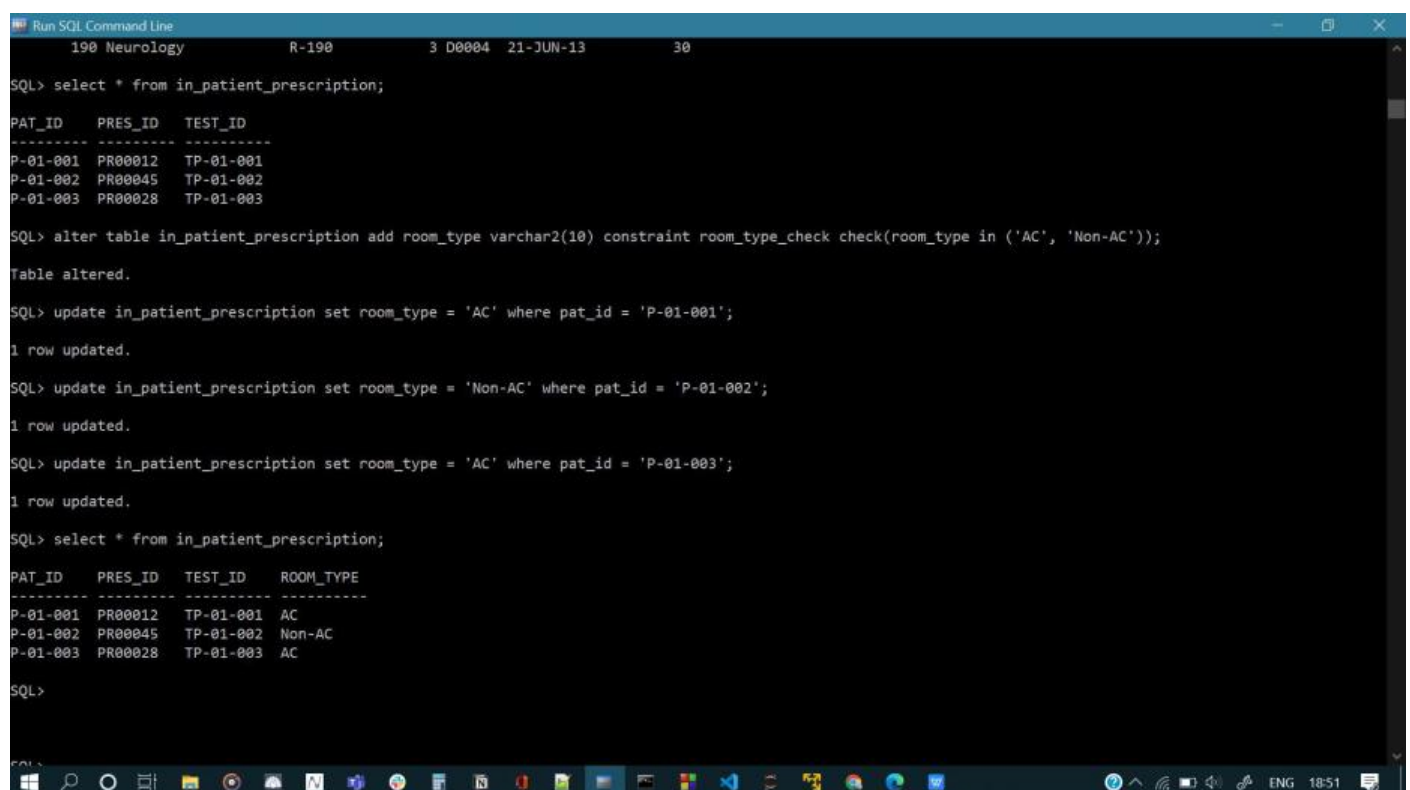
```
SQL> update in_patient_prescription set room_type = 'Non-AC' where pat_id = 'P-01-002';
```

1 row updated.

```
SQL> update in_patient_prescription set room_type = 'AC' where pat_id = 'P-01-003';
```

1 row updated.

Output:



```
Run SQL Command Line
190 Neurology      R-190      3 D0004  21-JUN-13      30

SQL> select * from in_patient_prescription;

PAT_ID  PRES_ID  TEST_ID
-----
P-01-001 PR00012  TP-01-001
P-01-002 PR00045  TP-01-002
P-01-003 PR00028  TP-01-003

SQL> alter table in_patient_prescription add room_type varchar2(10) constraint room_type_check check(room_type in ('AC', 'Non-AC'));

Table altered.

SQL> update in_patient_prescription set room_type = 'AC' where pat_id = 'P-01-001';

1 row updated.

SQL> update in_patient_prescription set room_type = 'Non-AC' where pat_id = 'P-01-002';

1 row updated.

SQL> update in_patient_prescription set room_type = 'AC' where pat_id = 'P-01-003';

1 row updated.

SQL> select * from in_patient_prescription;

PAT_ID  PRES_ID  TEST_ID  ROOM_TYPE
-----
P-01-001 PR00012  TP-01-001  AC
P-01-002 PR00045  TP-01-002  Non-AC
P-01-003 PR00028  TP-01-003  AC

SQL>
```

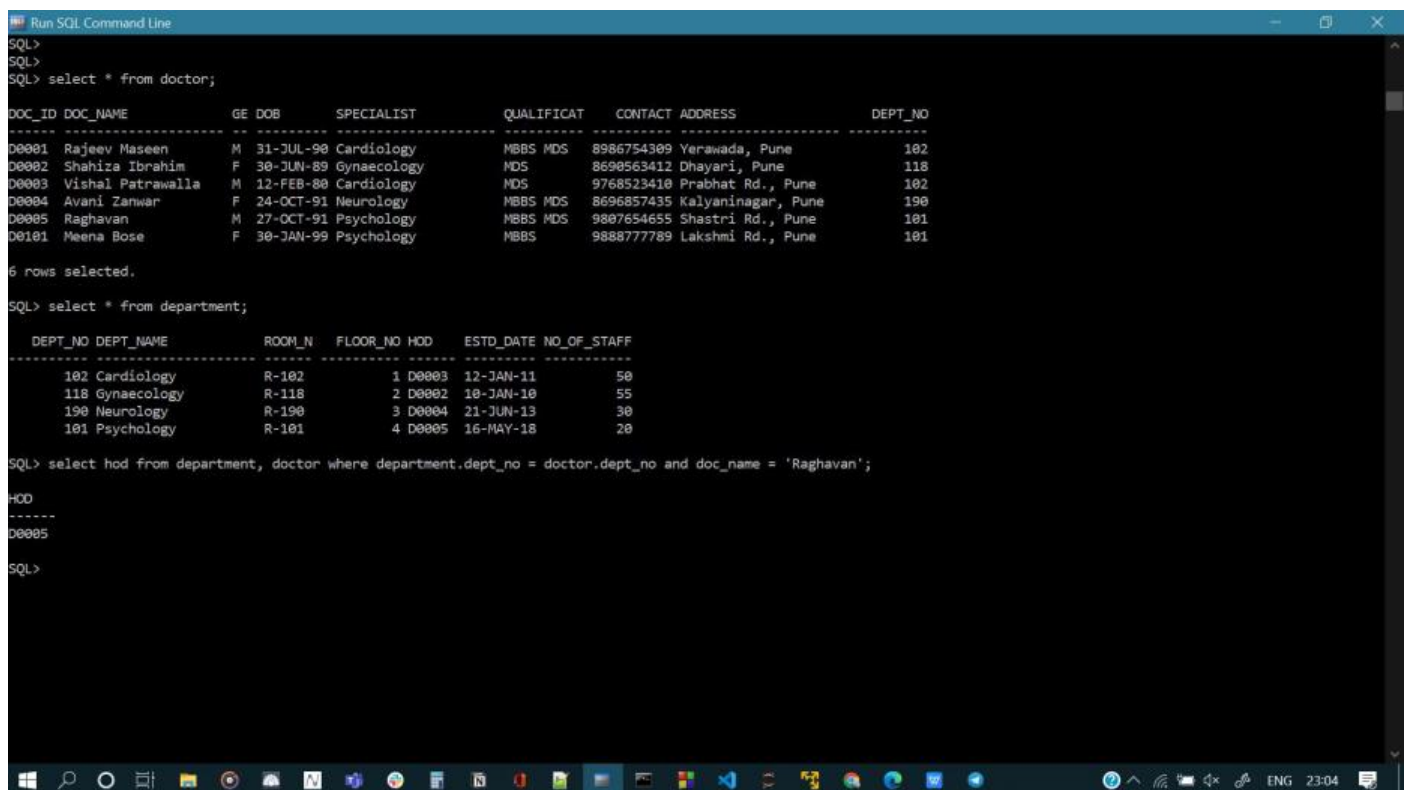
SQL Queries with Join Operation

1. Find the HOD of doctor 'Raghavan' (Hint: you need to join the tables DOCTOR and DEPARTMENT)

Code:

SQL > select hod from department, doctor where department.dept_no = doctor.dept_no and doc_name = 'Raghavan';

Output:



```
Run SQL Command Line
SQL>
SQL>
SQL> select * from doctor;
-----
DOC_ID DOC_NAME      GE DOB      SPECIALIST  QUALIFICAT  CONTACT ADDRESS      DEPT_NO
-----
D0001 Rajeev Maseen      M 31-JUL-90 Cardiology  MBBS MDS  8986754309 Yerawade, Pune  102
D0002 Shahiza Ibrahim    F 30-JUN-89 Gynaecology MDS  8690563412 Dhayari, Pune  118
D0003 Vishal Patrawalla M 12-FEB-80 Cardiology  MDS  9768523410 Prabhat Rd., Pune  102
D0004 Avani Zanwar     F 24-OCT-91 Neurology  MBBS MDS  8696857435 Kalyaninagar, Pune  190
D0005 Raghavan        M 27-OCT-91 Psychology MBBS MDS  9807654655 Shastri Rd., Pune  101
D0101 Meena Bose      F 30-JAN-99 Psychology MBBS  9888777789 Lakshmi Rd., Pune  101

6 rows selected.

SQL> select * from department;
-----
DEPT_NO DEPT_NAME      ROOM_N  FLOOR_NO HOD      ESTD_DATE NO_OF_STAFF
-----
102 Cardiology    R-102   1 D0003 12-JAN-11 50
118 Gynaecology    R-118   2 D0002 10-JAN-10 55
190 Neurology    R-190   3 D0004 21-JUN-13 30
101 Psychology    R-101   4 D0005 16-MAY-18 20

SQL> select hod from department, doctor where department.dept_no = doctor.dept_no and doc_name = 'Raghavan';
HOD
-----
D0005
SQL>
```

2. Find the list of all patients who were admitted in bed number 101

Code:

SQL> select * from patient natural join in_patient;

SQL> select pat_id, pat_name, gender, diagnosis from patient natural join in_patient where bed_no = 101;

PAT_ID	PAT_NAME	GE	DIAGNOSIS
P-03-004	Gayle	M	Influenza
P-01-101	Mani	F	Influenza

Output:

```
Run SQL Command Line

SQL> select * from patient natural join in_patient;

PAT_ID    PAT_NAME    DOB    GE    CONTACT SYMPTOMS    STREET    CITY    PINCODE    DATE_OF_A    BED_NO    START_TIME
          END_TIME    DIAGNOSIS
-----
P-01-001  Nina Torev  12-JUN-10 F  8897889709 Chest congestion  Tilak Rd.  Pune    411030  30-JUN-20  117  30-JUN-20 07.45.48.00 AM
          14-JUL-20 08.00.00.00 AM  Pneumonia
P-01-002  Kalyani Shah  14-JUL-01 F  9878987890 Loose motions  MG Rd.    Pune    411001  01-MAY-20  100  01-MAY-20 11.59.45.00 AM
          13-MAY-20 10.45.34.00 AM  Stomach infection
P-01-003  Ajit Adani  25-DEC-70 M  8976567890 Cold and weakness  Kalyaninagar  Pune    411006  13-JUL-20  145  13-JUL-20 09.00.00.00 AM
          15-JUL-20 10.00.00.00 AM  Influenza
P-03-004  Gayle  01-JAN-01 M  9990009990 Cold and weakness  Lakshmi Rd.  Pune    411030  15-MAR-17  101  15-MAR-17 09.00.00.00 AM
          25-MAR-17 09.00.00.00 AM  Influenza
P-01-101  Mani  01-JAN-02 F  9991009990 Cold and weakness  Lakshmi Rd.  Pune    411030  18-AUG-20  101  18-AUG-20 09.00.00.00 AM
          28-AUG-20 09.00.00.00 AM  Influenza

SQL> select pat_id, pat_name, gender, diagnosis from patient natural join in_patient where bed_no = 101;

PAT_ID    PAT_NAME    GE    DIAGNOSIS
-----
P-03-004  Gayle  M  Influenza
P-01-101  Mani  F  Influenza

SQL>
```

3. Display all the prescribed medicines of patient with Pat_ID 'P101'

Code:

```
SQL> select * from in_patient_prescription natural join prescribed_medicines where pat_id = 'P-01-101';
```

Output:

```
Run SQL Command Line

SQL> select * from in_patient_prescription natural join prescribed_medicines;

PRES_ID    PAT_ID    TEST_ID    ROOM_TYPE    MEDICINE_NAME    DAYS_OF_DOSE
-----
PR00028  P-01-003  TP-01-003             Xofluza  5
PR00022  P-03-004             Ranbaxy  7
PR00067  P-01-101             Ranbaxy  7

SQL> select * from in_patient_prescription natural join prescribed_medicines where pat_id = 'P-01-101';

PRES_ID    PAT_ID    TEST_ID    ROOM_TYPE    MEDICINE_NAME    DAYS_OF_DOSE
-----
PR00067  P-01-101             Ranbaxy  7

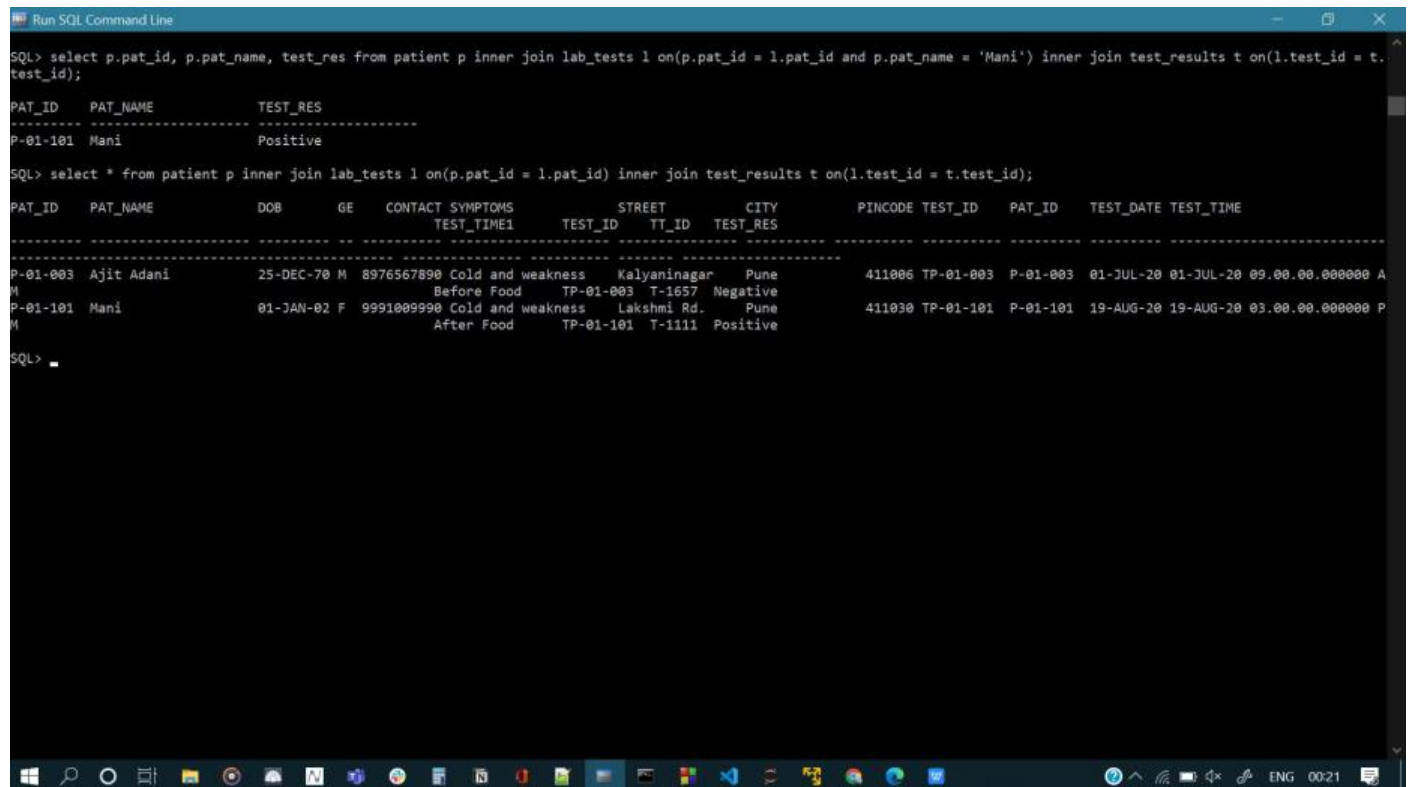
SQL>
```

4. Display the test results of patient 'Mani'

Code:

```
SQL> select p.pat_id, p.pat_name, test_res from patient p inner join lab_tests l on(p.pat_id = l.pat_id and p.pat_name = 'Mani') inner join test_results t on(l.test_id = t.test_id);
```

Output:



```
SQL> select p.pat_id, p.pat_name, test_res from patient p inner join lab_tests l on(p.pat_id = l.pat_id and p.pat_name = 'Mani') inner join test_results t on(l.test_id = t.test_id);
```

PAT_ID	PAT_NAME	TEST_RES
P-01-101	Mani	Positive

```
SQL> select * from patient p inner join lab_tests l on(p.pat_id = l.pat_id) inner join test_results t on(l.test_id = t.test_id);
```

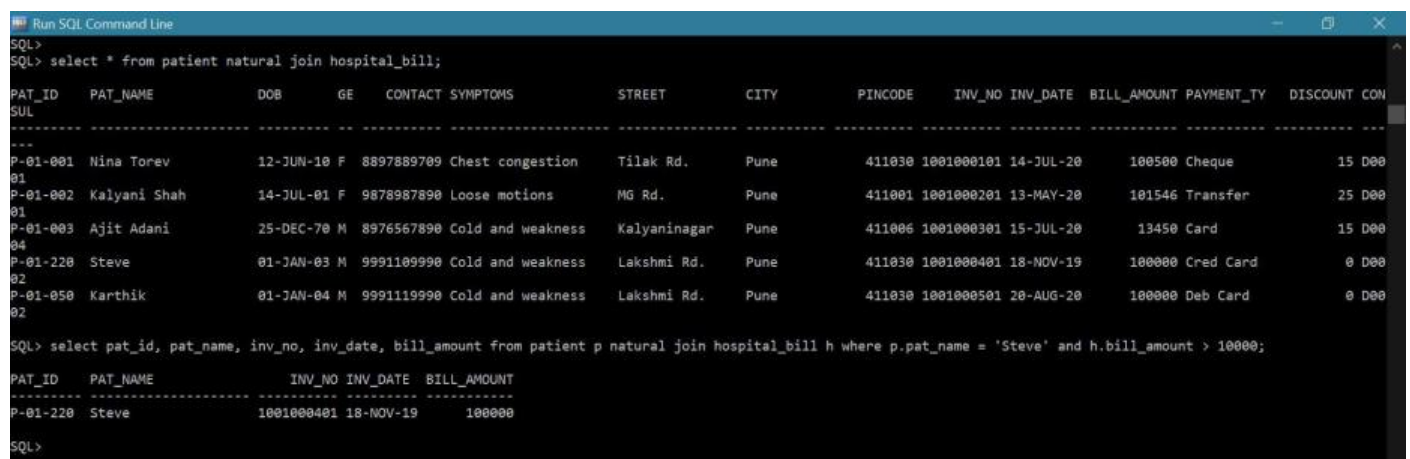
PAT_ID	PAT_NAME	DOB	GE	CONTACT SYMPTOMS	TEST_ID	TT_ID	TEST_RES	PINCODE	TEST_ID	PAT_ID	TEST_DATE	TEST_TIME
P-01-003	Ajit Adani	25-DEC-70	M	8976567890 Cold and weakness Before Food	TP-01-003	T-1657	Negative	411006	TP-01-003	P-01-003	01-JUL-20	01-JUL-20 09.00.000000 A
P-01-101	Mani	01-JAN-02	F	9991009990 Cold and weakness After Food	TP-01-101	T-1111	Positive	411030	TP-01-101	P-01-101	19-AUG-20	19-AUG-20 03.00.000000 P

5. Display all bills of bill amount more than 10000 rupees and paid by the patient 'Steve'.

Code:

```
select pat_id, pat_name, inv_no, inv_date, bill_amount from patient p natural join hospital_bill h where p.pat_name = 'Steve' and h.bill_amount > 10000;
```

Output:



```
SQL> select * from patient natural join hospital_bill;
```

PAT_ID	PAT_NAME	DOB	GE	CONTACT SYMPTOMS	STREET	CITY	PINCODE	INV_NO	INV_DATE	BILL_AMOUNT	PAYMENT_TY	DISCOUNT	CON
P-01-001	Nina Torev	12-JUN-10	F	8897889709 Chest congestion	Tilak Rd.	Pune	411030	1001000101	14-JUL-20	100500	Cheque	15	D00
P-01-002	Kalyani Shah	14-JUL-01	F	9878987890 Loose motions	MG Rd.	Pune	411001	1001000201	13-MAY-20	101546	Transfer	25	D00
P-01-003	Ajit Adani	25-DEC-70	M	8976567890 Cold and weakness	Kalyaninagar	Pune	411006	1001000301	15-JUL-20	13450	Card	15	D00
P-01-220	Steve	01-JAN-03	M	9991109990 Cold and weakness	Lakshmi Rd.	Pune	411030	1001000401	18-NOV-19	100000	Cred Card	0	D00
P-01-050	Karthik	01-JAN-04	M	9991119990 Cold and weakness	Lakshmi Rd.	Pune	411030	1001000501	20-AUG-20	100000	Deb Card	0	D00

```
SQL> select pat_id, pat_name, inv_no, inv_date, bill_amount from patient p natural join hospital_bill h where p.pat_name = 'Steve' and h.bill_amount > 10000;
```

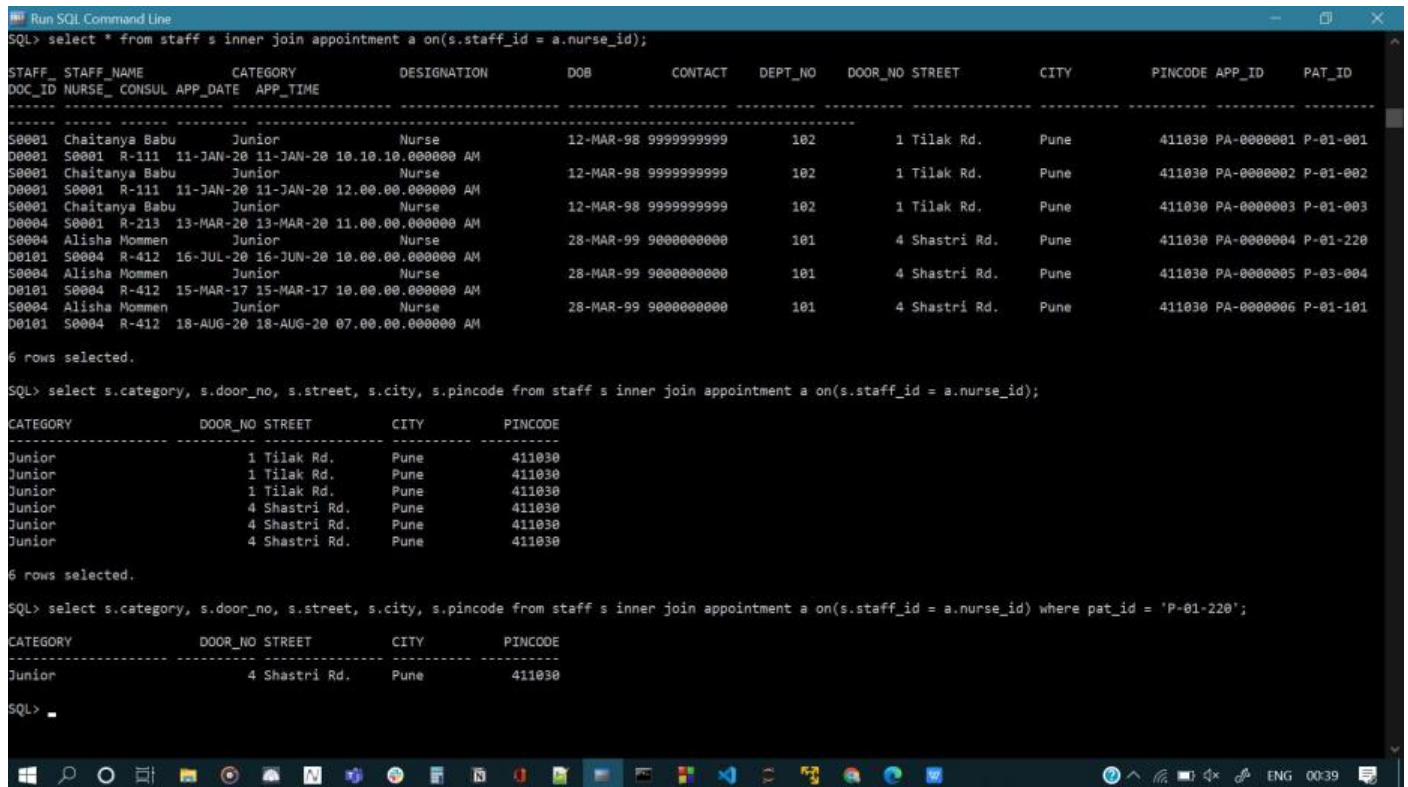
PAT_ID	PAT_NAME	INV_NO	INV_DATE	BILL_AMOUNT
P-01-220	Steve	1001000401	18-NOV-19	100000

6. Find the category and address of the nurse who attended the patient with pat_no '220'.

Code:

```
SQL> select s.category, s.door_no, s.street, s.city, s.pincod from staff s inner join appointment a on(s.staff_id = a.nurse_id) where pat_id = 'P-01-220';
```

Output:



```
Run SQL Command Line
SQL> select * from staff s inner join appointment a on(s.staff_id = a.nurse_id);
STAFF_ STAFF_NAME   CATEGORY   DESIGNATION   DOB      CONTACT   DEPT_NO   DOOR_NO STREET      CITY      PINCODE APP_ID   PAT_ID
-----
S0001  Chaitanya Babu    Junior     Nurse         12-MAR-98 9999999999 102       1 Tilak Rd.  Pune     411030 PA-0000001 P-01-001
D0001  S0001 R-111 11-JAN-20 11-JAN-20 10.10.10.000000 AM
S0001  Chaitanya Babu    Junior     Nurse         12-MAR-98 9999999999 102       1 Tilak Rd.  Pune     411030 PA-0000002 P-01-002
D0001  S0001 R-111 11-JAN-20 11-JAN-20 12.00.00.000000 AM
S0001  Chaitanya Babu    Junior     Nurse         12-MAR-98 9999999999 102       1 Tilak Rd.  Pune     411030 PA-0000003 P-01-003
D0004  S0001 R-213 13-MAR-20 13-MAR-20 11.00.00.000000 AM
S0004  Alisha Mommen     Junior     Nurse         28-MAR-99 9000000000 101       4 Shastri Rd. Pune     411030 PA-0000004 P-01-220
D0101  S0004 R-412 16-JUL-20 16-JUN-20 10.00.00.000000 AM
S0004  Alisha Mommen     Junior     Nurse         28-MAR-99 9000000000 101       4 Shastri Rd. Pune     411030 PA-0000005 P-03-004
D0101  S0004 R-412 15-MAR-17 15-MAR-17 10.00.00.000000 AM
S0004  Alisha Mommen     Junior     Nurse         28-MAR-99 9000000000 101       4 Shastri Rd. Pune     411030 PA-0000006 P-01-101
D0101  S0004 R-412 18-AUG-20 18-AUG-20 07.00.00.000000 AM
6 rows selected.

SQL> select s.category, s.door_no, s.street, s.city, s.pincod from staff s inner join appointment a on(s.staff_id = a.nurse_id);
CATEGORY   DOOR_NO STREET      CITY      PINCODE
-----
Junior     1 Tilak Rd.  Pune     411030
Junior     1 Tilak Rd.  Pune     411030
Junior     1 Tilak Rd.  Pune     411030
Junior     4 Shastri Rd. Pune     411030
Junior     4 Shastri Rd. Pune     411030
Junior     4 Shastri Rd. Pune     411030
6 rows selected.

SQL> select s.category, s.door_no, s.street, s.city, s.pincod from staff s inner join appointment a on(s.staff_id = a.nurse_id) where pat_id = 'P-01-220';
CATEGORY   DOOR_NO STREET      CITY      PINCODE
-----
Junior     4 Shastri Rd. Pune     411030

SQL>
```

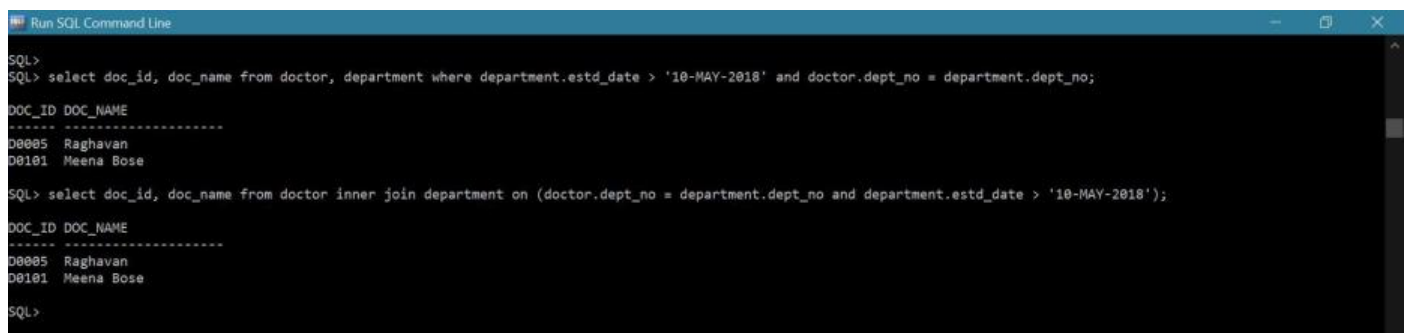
7. Find the list of doctors who worked in the department which is started on or after '10-May-2018'.

Code:

```
SQL> select doc_id, doc_name from doctor, department where department.estd_date > '10-MAY-2018' and doctor.dept_no = department.dept_no;
```

```
SQL> select doc_id, doc_name from doctor inner join department on (doctor.dept_no = department.dept_no and department.estd_date > '10-MAY-2018');
```

Output:



```
Run SQL Command Line
SQL>
SQL> select doc_id, doc_name from doctor, department where department.estd_date > '10-MAY-2018' and doctor.dept_no = department.dept_no;
DOC_ID DOC_NAME
-----
D0005  Raghavan
D0101  Meena Bose

SQL> select doc_id, doc_name from doctor inner join department on (doctor.dept_no = department.dept_no and department.estd_date > '10-MAY-2018');
DOC_ID DOC_NAME
-----
D0005  Raghavan
D0101  Meena Bose

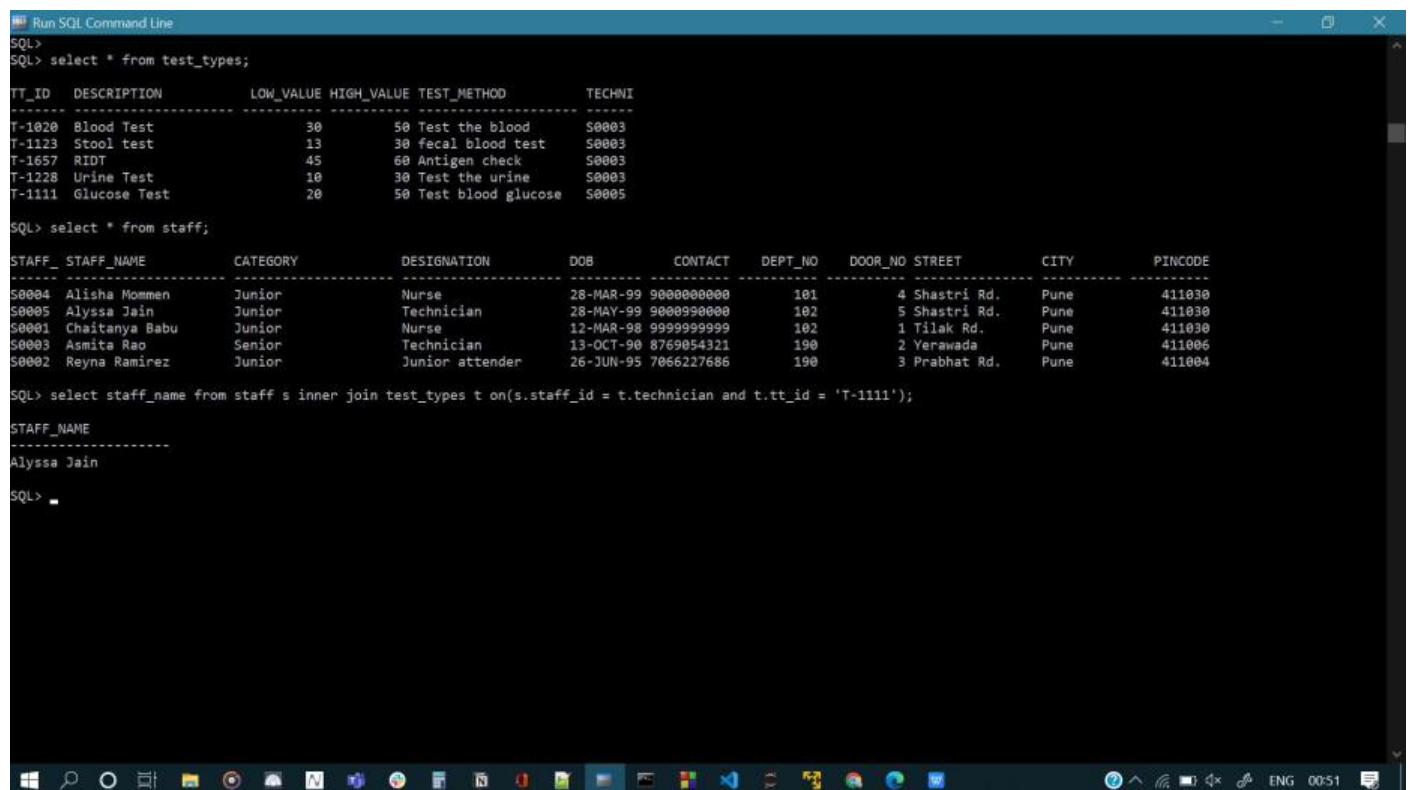
SQL>
```


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

Code:

```
SQL> select staff_name from staff s inner join test_types t on(s.staff_id = t.technician and t.tt_id = 'T-1111');
```

Output:



```
Run SQL Command Line
SQL>
SQL> select * from test_types;

TT_ID  DESCRIPTION  LOW_VALUE  HIGH_VALUE  TEST_METHOD  TECHNI
-----
T-1020  Blood Test   30         50         Test the blood  S0003
T-1123  Stool test   13         30         fecal blood test S0003
T-1657  RIDT         45         60         Antigen check  S0003
T-1228  Urine Test   10         30         Test the urine  S0003
T-1111  Glucose Test 20         50         Test blood glucose S0005

SQL> select * from staff;

STAFF_ STAFF_NAME  CATEGORY  DESIGNATION  DOB        CONTACT  DEPT_NO  DOOR_NO  STREET  CITY  PINCODE
-----
S0004  Alisha Mommen  Junior    Nurse        28-MAR-99  9000000000 101      4 Shastri Rd.  Pune  411030
S0005  Alyssa Jain    Junior    Technician   28-MAY-99  9000990000 102      5 Shastri Rd.  Pune  411030
S0001  Chaitanya Babu  Junior    Nurse        12-MAR-98  9999999999 102      1 Tilak Rd.   Pune  411030
S0003  Asmita Rao     Senior    Technician   13-OCT-90  8769054321 190      2 Yerawade    Pune  411006
S0002  Reyna Ramirez  Junior    Junior attender 26-JUN-95  7066227686 190      3 Prabhat Rd.  Pune  411004

SQL> select staff_name from staff s inner join test_types t on(s.staff_id = t.technician and t.tt_id = 'T-1111');

STAFF_NAME
-----
Alyssa Jain

SQL> .
```

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

Code:

```
SQL> select pat_id, pat_name, dob, gender, contact, symptoms, street, city, pincode from patient natural join in_patient where date_of_admission > '10-MAR-2017' and date_of_admission < '10-APR-2017';
```

Output:

```
Run SQL Command Line
SQL>
SQL> select * from patient;

PAT_ID   PAT_NAME   DOB      GE   CONTACT SYMPTOMS   STREET   CITY   PINCODE
-----
P-01-001 Nina Torev 12-JUN-10 F 8897889709 Chest congestion Tilak Rd. Pune 411030
P-01-002 Kalyani Shah 14-JUL-01 F 9878987890 Loose motions MG Rd. Pune 411001
P-01-003 Ajit Adani 25-DEC-70 M 8976567890 Cold and weakness Kalyaninagar Pune 411006
P-03-004 Gayle 01-JAN-01 M 9990009990 Cold and weakness Lakshmi Rd. Pune 411030
P-01-101 Mani 01-JAN-02 F 9991009990 Cold and weakness Lakshmi Rd. Pune 411030
P-01-220 Steve 01-JAN-03 M 9991109990 Cold and weakness Lakshmi Rd. Pune 411030
P-01-050 Karthik 01-JAN-04 M 9991119990 Cold and weakness Lakshmi Rd. Pune 411030

7 rows selected.

SQL> select * from in_patient;

PAT_ID   DATE_OF_A   BED_NO   START_TIME   END_TIME
-----
DIAGNOSIS
P-01-001 30-JUN-20 117 30-JUN-20 07.45.48.00 AM 14-JUL-20 08.00.00.00 AM
Pneumonia
P-01-002 01-MAY-20 100 01-MAY-20 11.59.45.00 AM 13-MAY-20 10.45.34.00 AM
Stomach infection
P-01-003 13-JUL-20 145 13-JUL-20 09.00.00.00 AM 15-JUL-20 10.00.00.00 AM
Influenza
P-03-004 15-MAR-17 101 15-MAR-17 09.00.00.00 AM 25-MAR-17 09.00.00.00 AM
Influenza
P-01-101 18-AUG-20 101 18-AUG-20 09.00.00.00 AM 28-AUG-20 09.00.00.00 AM
Influenza

SQL> select pat_id, pat_name, dob, gender, contact, symptoms, street, city, pincode from patient natural join in_patient where date_of_admission > '10-MAR-2017' and date_of_admission < '10-APR-2017';

PAT_ID   PAT_NAME   DOB      GE   CONTACT SYMPTOMS   STREET   CITY   PINCODE
-----
P-03-004 Gayle 01-JAN-01 M 9990009990 Cold and weakness Lakshmi Rd. Pune 411030

SQL>
```

10. Display the in-patient prescription of the patient whose name is 'Gayle'.

Code:

```
SQL> select medicine_name, days_of_dose from patient natural join in_patient_prescription natural join prescribed_medicines where pat_name = 'Gayle';
```

Output:

```
Run SQL Command Line
SQL>
SQL> select * from patient;

PAT_ID   PAT_NAME   DOB      GE   CONTACT SYMPTOMS   STREET   CITY   PINCODE
-----
P-01-001 Nina Torev 12-JUN-10 F 8897889709 Chest congestion Tilak Rd. Pune 411030
P-01-002 Kalyani Shah 14-JUL-01 F 9878987890 Loose motions MG Rd. Pune 411001
P-01-003 Ajit Adani 25-DEC-70 M 8976567890 Cold and weakness Kalyaninagar Pune 411006
P-03-004 Gayle 01-JAN-01 M 9990009990 Cold and weakness Lakshmi Rd. Pune 411030
P-01-101 Mani 01-JAN-02 F 9991009990 Cold and weakness Lakshmi Rd. Pune 411030
P-01-220 Steve 01-JAN-03 M 9991109990 Cold and weakness Lakshmi Rd. Pune 411030
P-01-050 Karthik 01-JAN-04 M 9991119990 Cold and weakness Lakshmi Rd. Pune 411030

7 rows selected.

SQL> select * from prescribed_medicines;

PRES_ID   MEDICINE_NAME   DAYS_OF_DOSE
-----
PR00022 Ranbaxy 7
PR00067 Ranbaxy 7
PR00028 Xofluza 5

SQL> select * from in_patient_prescription;

PAT_ID   PRES_ID   TEST_ID   ROOM_TYPE
-----
P-01-001 PR00012 TP-01-001
P-01-002 PR00045 TP-01-002
P-01-003 PR00028 TP-01-003
P-03-004 PR00022
P-01-101 PR00067

SQL> select medicine_name, days_of_dose from patient natural join in_patient_prescription natural join prescribed_medicines where pat_name = 'Gayle';

MEDICINE_NAME   DAYS_OF_DOSE
-----
Ranbaxy 7

SQL>
```

SQL Queries with AGGREGATE and CHAR functions

1. Find the number of doctors who are working in the department 101.

Code:

```
SQL> select count(*) from doctor where dept_no = 101;
```

Output:



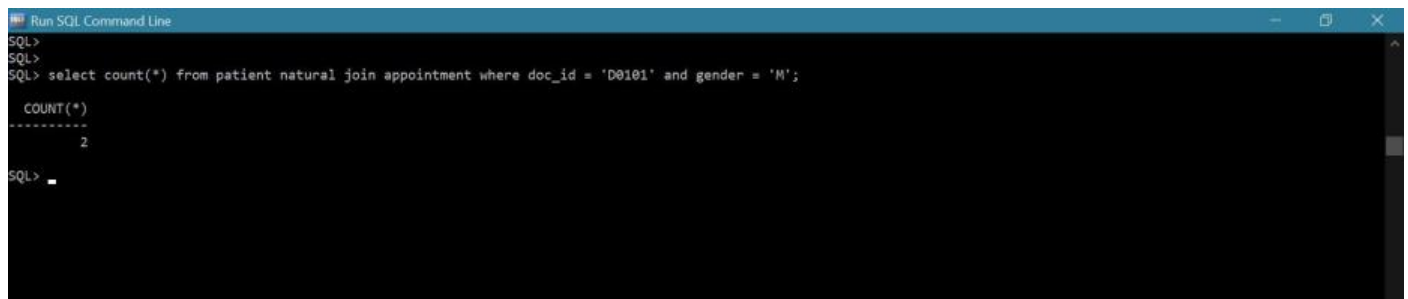
```
Run SQL Command Line
SQL> select count(*) from doctor where dept_no = 101;
COUNT(*)
-----
2
SQL>
```

2. Count the number of male patients who are treated by the doctor with doctor id 'D0101'

Code:

```
SQL> select count(*) from patient natural join appointment where doc_id = 'D0101' and gender = 'M';
```

Output:



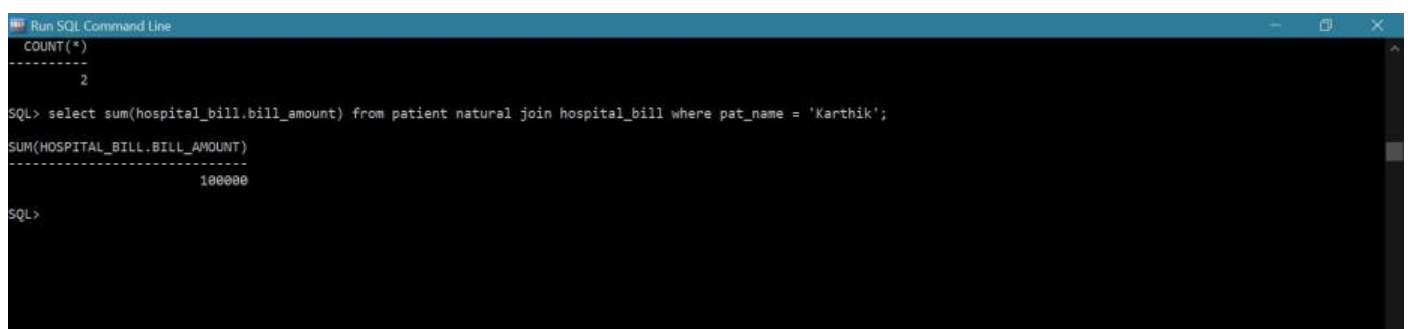
```
Run SQL Command Line
SQL>
SQL>
SQL> select count(*) from patient natural join appointment where doc_id = 'D0101' and gender = 'M';
COUNT(*)
-----
2
SQL>
```

3. Find the total bill paid by the patient 'Karthik'

Code:

```
SQL> select sum(hospital_bill.bill_amount) from patient natural join hospital_bill where pat_name = 'Karthik';
```

Output:



```
Run SQL Command Line
COUNT(*)
-----
2

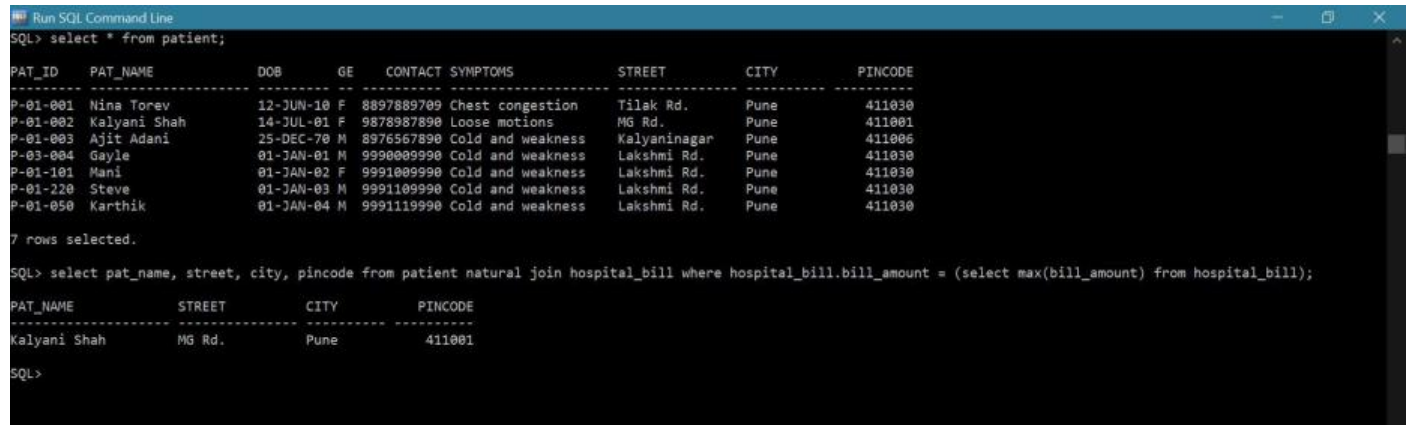
SQL> select sum(hospital_bill.bill_amount) from patient natural join hospital_bill where pat_name = 'Karthik';
SUM(HOSPITAL_BILL.BILL_AMOUNT)
-----
100000
SQL>
```

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

Code:

```
SQL> select pat_name, street, city, pincode from patient natural join hospital_bill where hospital_bill.bill_amount = (select max(bill_amount) from hospital_bill);
```

Output:



```
Run SQL Command Line
SQL> select * from patient;

PAT_ID  PAT_NAME  DOB      GE  CONTACT SYMPTOMS  STREET  CITY  PINCODE
-----
P-01-001 Nina Torev 12-JUN-10 F 8897889709 Chest congestion Tilak Rd. Pune 411030
P-01-002 Kalyani Shah 14-JUL-01 F 9878987890 Loose motions MG Rd. Pune 411001
P-01-003 Ajit Adani 25-DEC-70 M 8976567890 Cold and weakness Kalyaninagar Pune 411006
P-03-004 Gayle 01-JAN-01 M 9990009990 Cold and weakness Lakshmi Rd. Pune 411030
P-01-101 Mani 01-JAN-02 F 9991009990 Cold and weakness Lakshmi Rd. Pune 411030
P-01-220 Steve 01-JAN-03 M 9991109990 Cold and weakness Lakshmi Rd. Pune 411030
P-01-050 Karthik 01-JAN-04 M 9991119990 Cold and weakness Lakshmi Rd. Pune 411030

7 rows selected.

SQL> select pat_name, street, city, pincode from patient natural join hospital_bill where hospital_bill.bill_amount = (select max(bill_amount) from hospital_bill);

PAT_NAME  STREET  CITY  PINCODE
-----
Kalyani Shah  MG Rd.  Pune  411001

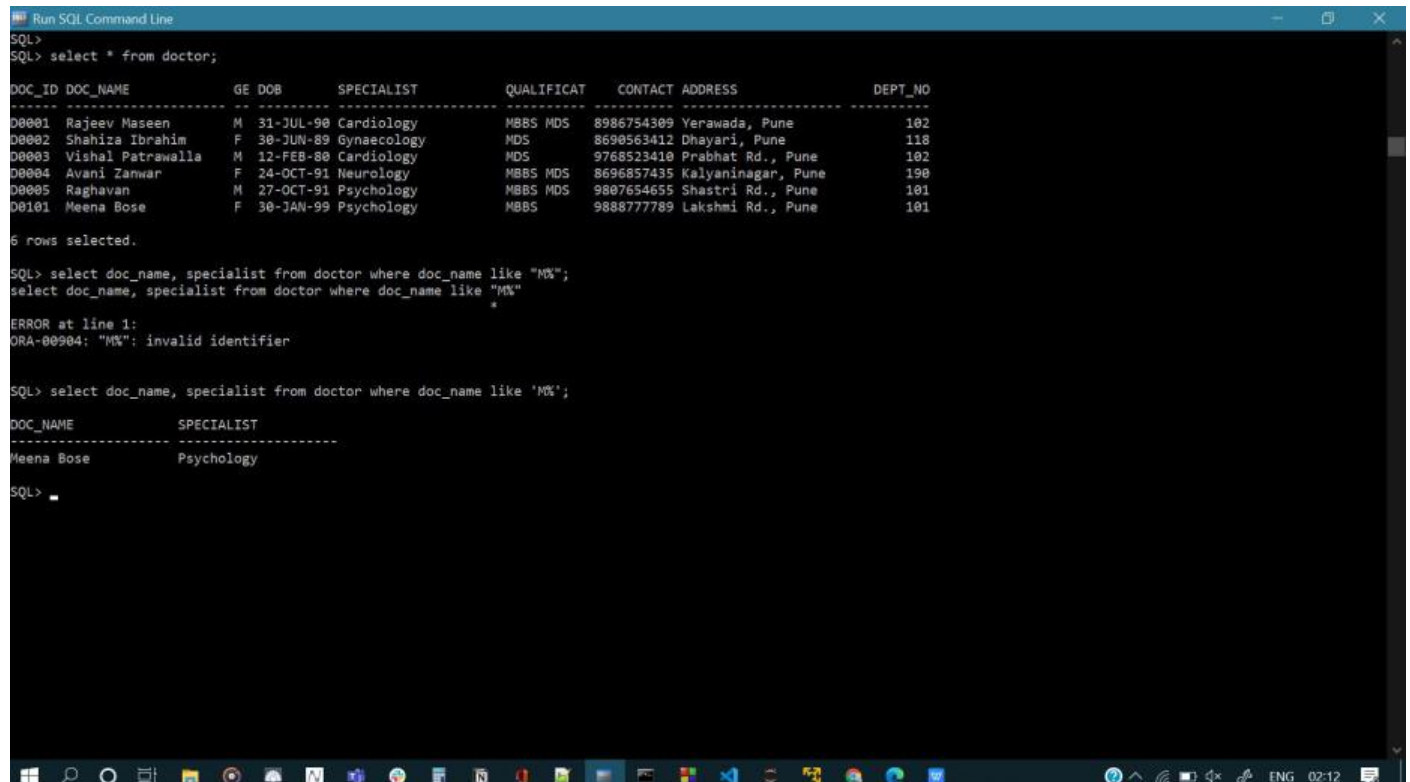
SQL>
```

5. Get the specialization of doctors whose name start with the letter 'M'

Code:

```
SQL> select doc_name, specialist from doctor where doc_name like 'M%';
```

Output:



```
Run SQL Command Line
SQL>
SQL> select * from doctor;

DOC_ID  DOC_NAME  GE  DOB      SPECIALIST  QUALIFICAT  CONTACT ADDRESS  DEPT_NO
-----
D0001  Rajeev Maseen  M  31-JUL-90 Cardiology  MBBS MDS  8986754309 Yerawade, Pune 102
D0002  Shahiza Ibrahim  F  30-JUN-89 Gynaecology  MDS  8690563412 Dhayari, Pune 118
D0003  Vishal Patrawalla  M  12-FEB-80 Cardiology  MDS  9768523410 Prabhat Rd., Pune 102
D0004  Avani Zamwar  F  24-OCT-91 Neurology  MBBS MDS  8696857435 Kalyaninagar, Pune 190
D0005  Raghavan  M  27-OCT-91 Psychology  MBBS MDS  9807654655 Shastri Rd., Pune 101
D0101  Meena Bose  F  30-JAN-99 Psychology  MBBS  9888777789 Lakshmi Rd., Pune 101

6 rows selected.

SQL> select doc_name, specialist from doctor where doc_name like "M%";
select doc_name, specialist from doctor where doc_name like "M%"
*
ERROR at line 1:
ORA-00904: "M%": invalid identifier

SQL> select doc_name, specialist from doctor where doc_name like 'M%';

DOC_NAME  SPECIALIST
-----
Meena Bose  Psychology

SQL>
```

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

Code:

```
SQL> select * from Patient where pat_name like '_____';
```

Output:

```
Run SQL Command Line
SQL>
SQL>
SQL> select * from Patient;

PAT_ID   PAT_NAME   DOB      GE   CONTACT SYMPTOMS   STREET   CITY   PINCODE
-----
P-01-001 Nina Torev 12-JUN-10 F 8897889709 Chest congestion  Tilak Rd.  Pune  411030
P-01-002 Kalyani Shah 14-JUL-01 F 9878987890 Loose motions   MG Rd.    Pune  411001
P-01-003 Ajit Adani  25-DEC-70 M 8976567890 Cold and weakness Kalyaninagar Pune  411006
P-03-004 Gayle    01-JAN-01 M 9990000990 Cold and weakness Lakshmi Rd.  Pune  411030
P-01-101 Mani     01-JAN-02 F 9991009990 Cold and weakness Lakshmi Rd.  Pune  411030
P-01-220 Steve    01-JAN-03 M 9991109990 Cold and weakness Lakshmi Rd.  Pune  411030
P-01-050 Karthik   01-JAN-04 M 9991119990 Cold and weakness Lakshmi Rd.  Pune  411030

7 rows selected.

SQL> select * from Patient where pat_name like '_____';

PAT_ID   PAT_NAME   DOB      GE   CONTACT SYMPTOMS   STREET   CITY   PINCODE
-----
P-03-004 Gayle    01-JAN-01 M 9990000990 Cold and weakness Lakshmi Rd.  Pune  411030
P-01-220 Steve    01-JAN-03 M 9991109990 Cold and weakness Lakshmi Rd.  Pune  411030

SQL>
```

7. Display the department names in ascending order

Code:

```
SQL> select dept_name from Department order by dept_name asc;
```

Output:

```
Run SQL Command Line

DEPT_NO DEPT_NAME   ROOM_N   FLOOR_NO HOD   ESTD_DATE NO_OF_STAFF
-----
102 Cardiology  R-102    1 D0003 12-JAN-11 50
118 Gynaecology R-118    2 D0002 10-JAN-10 55
190 Neurology  R-190    3 D0004 21-JUN-13 30
101 Psychology R-101    4 D0005 16-MAY-18 20

SQL> select dept_name from Department order by dept_name asc;

DEPT_NAME
-----
Cardiology
Gynaecology
Neurology
Psychology

SQL>
```


8. Get the gender wise count of patients.

Code:

```
SQL> select count(gender) from Patient where gender = 'M';
SQL> select count(gender) from Patient where gender = 'F';
SQL> select count(gender) from Patient where gender = 'T';
```

Output:



```
Run SQL Command Line
SQL>
SQL> select count(gender) from Patient where gender = 'M';

COUNT(GENDER)
-----
4

SQL> select count(gender) from Patient where gender = 'F';

COUNT(GENDER)
-----
3

SQL> select count(gender) from Patient where gender = 'T';

COUNT(GENDER)
-----
0

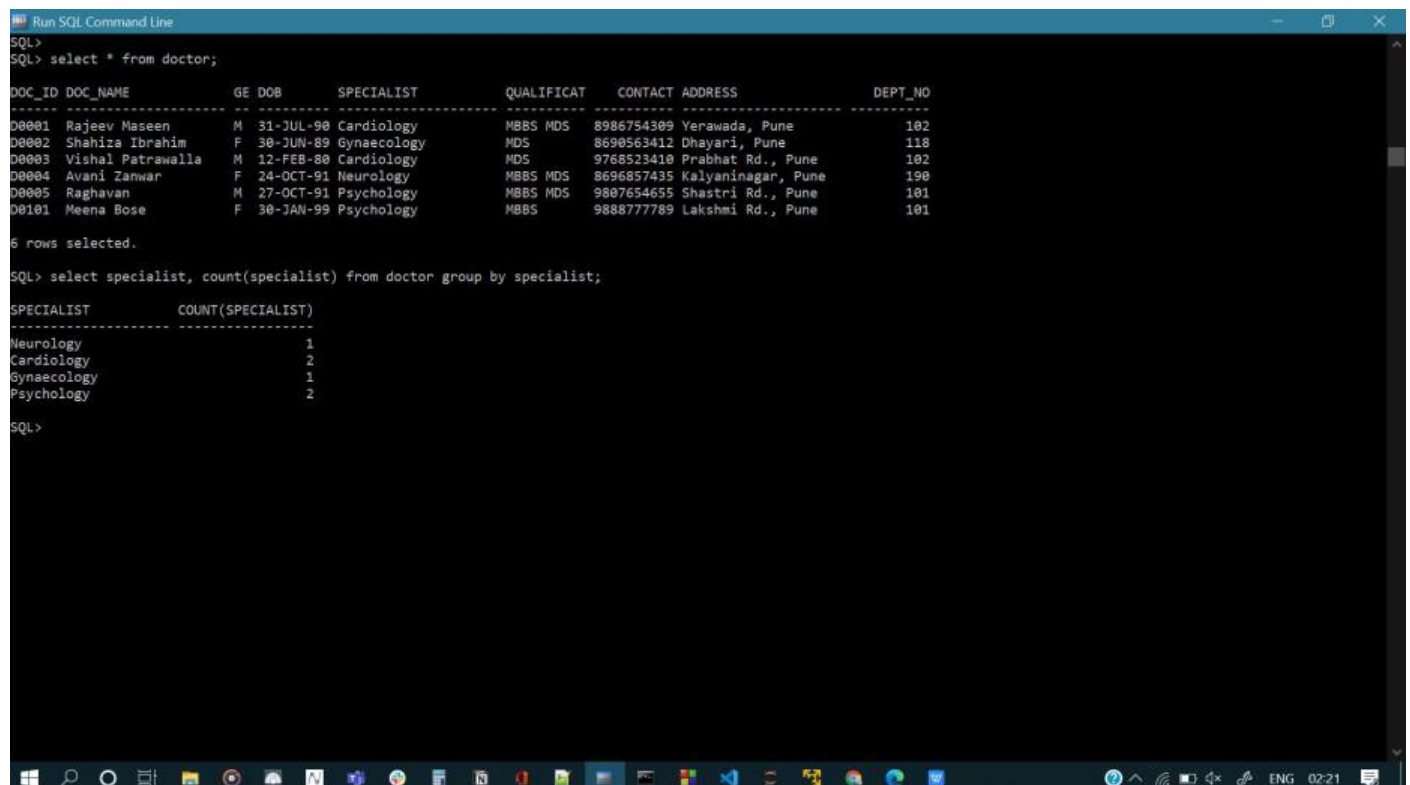
SQL> _
```

9. Get the count of doctors for each specialization.

Code:

```
SQL> select specialist, count(specialist) from doctor group by specialist;
```

Output:



```
Run SQL Command Line
SQL>
SQL> select * from doctor;

DOC_ID DOC_NAME      GE DOB      SPECIALIST  QUALIFICAT  CONTACT ADDRESS      DEPT_NO
-----
D0001  Rajeev Maseen      M  31-JUL-90  Cardiology  MBBS MDS    8986754309 Yerawade, Pune  102
D0002  Shahiza Ibrahim    F  30-JUN-89  Gynaecology MDS         8690563412 Dhayari, Pune  118
D0003  Vishal Patrawalla  M  12-FEB-80  Cardiology  MDS         9768523410 Prabhat Rd., Pune  102
D0004  Avani Zamwar       F  24-OCT-91  Neurology  MBBS MDS    8696857435 Kalyaninagar, Pune  100
D0005  Raghavan           M  27-OCT-91  Psychology MBBS MDS    9807654655 Shastri Rd., Pune  101
D0101  Meena Bose         F  30-JAN-99  Psychology MBBS        9888777789 Lakshmi Rd., Pune  101

6 rows selected.

SQL> select specialist, count(specialist) from doctor group by specialist;

SPECIALIST      COUNT(SPECIALIST)
-----
Neurology        1
Cardiology       2
Gynaecology      1
Psychology       2

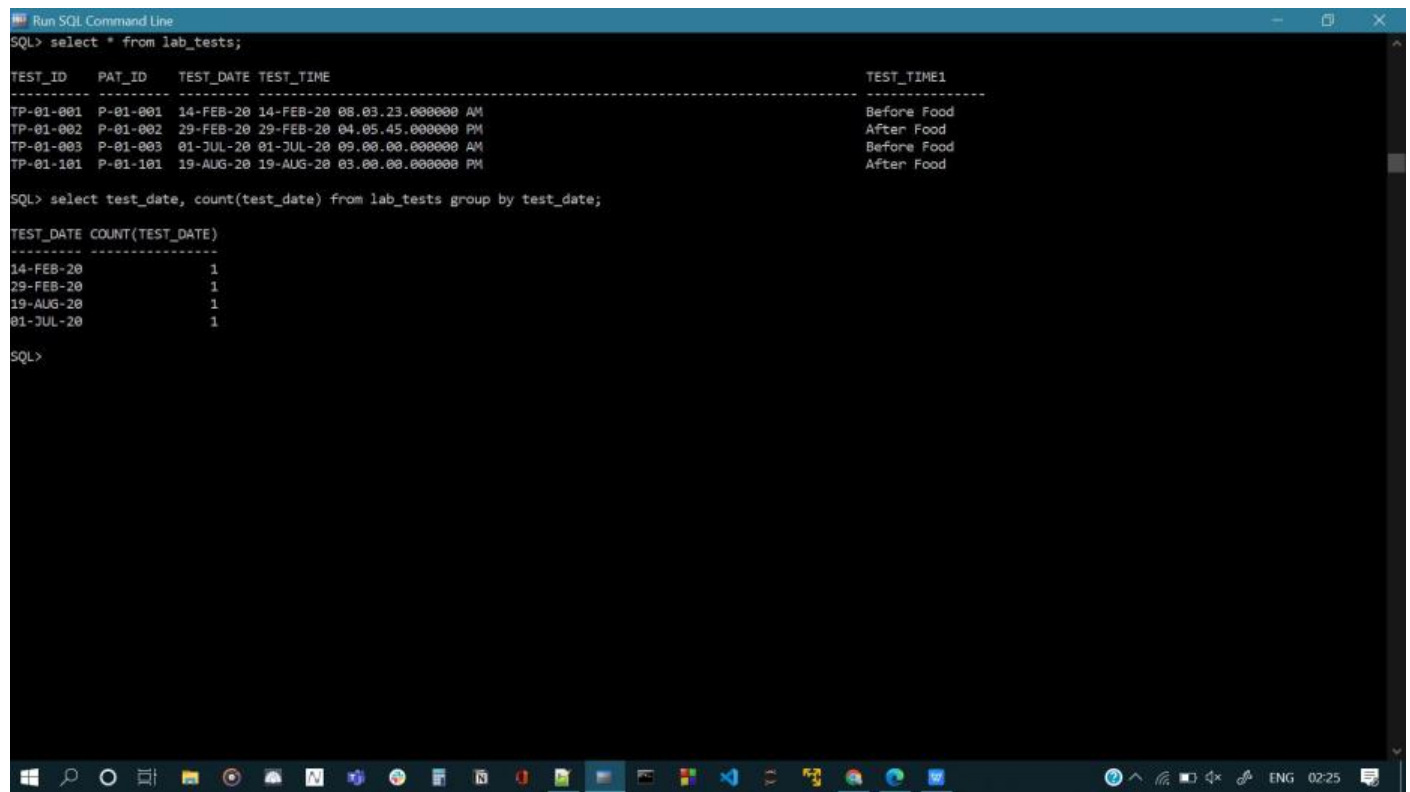
SQL>
```

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

Code:

```
SQL> select test_date, count(test_date) from lab_tests group by test_date;
```

Output:



```
Run SQL Command Line
SQL> select * from lab_tests;

TEST_ID  PAT_ID  TEST_DATE  TEST_TIME  TEST_TIME1
-----
TP-01-001 P-01-001 14-FEB-20 14-FEB-20 08.03.23.000000 AM Before Food
TP-01-002 P-01-002 29-FEB-20 29-FEB-20 04.05.45.000000 PM After Food
TP-01-003 P-01-003 01-JUL-20 01-JUL-20 09.00.00.000000 AM Before Food
TP-01-101 P-01-101 19-AUG-20 19-AUG-20 03.00.00.000000 PM After Food

SQL> select test_date, count(test_date) from lab_tests group by test_date;

TEST_DATE  COUNT(TEST_DATE)
-----
14-FEB-20          1
29-FEB-20          1
19-AUG-20          1
01-JUL-20          1

SQL>
```

SQL Queries - Nested Subqueries

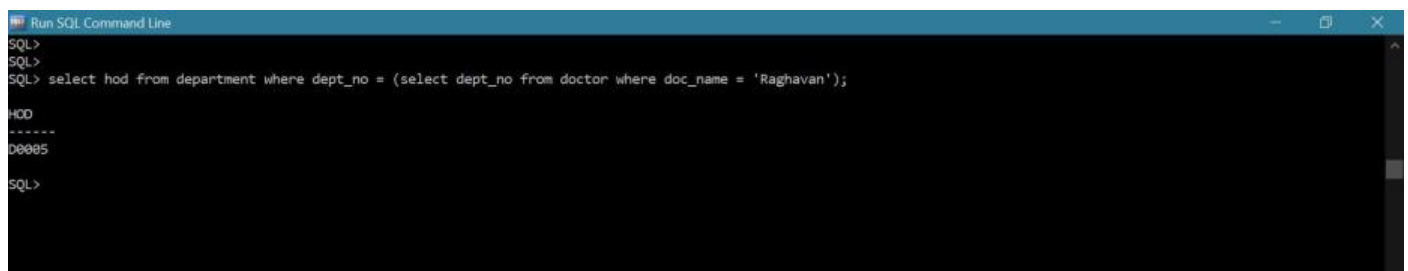
1. All of the queries in “SQL queries with JOIN operation” section can be tried with subqueries concept.

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

Code:

```
SQL> select hod from department where dept_no = (select dept_no from doctor where doc_name = 'Raghavan');
```

Output:



```
Run SQL Command Line
SQL>
SQL> select hod from department where dept_no = (select dept_no from doctor where doc_name = 'Raghavan');

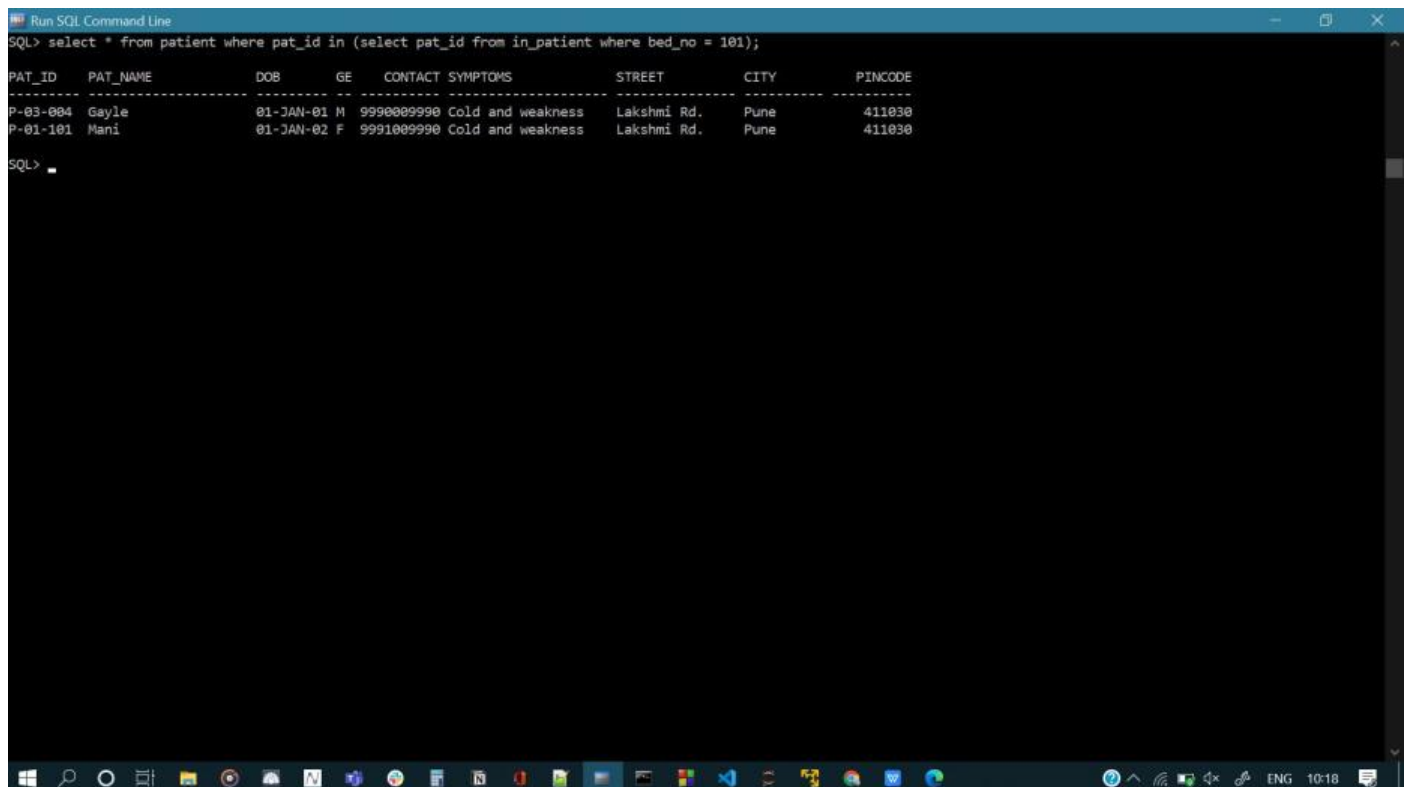
HOD
-----
D0005
SQL>
```

B. Find the list of all patients who were admitted in bed number 101

Code:

```
SQL> select * from patient where pat_id in (select pat_id from in_patient where bed_no = 101);
```

Output:



```
Run SQL Command Line
SQL> select * from patient where pat_id in (select pat_id from in_patient where bed_no = 101);

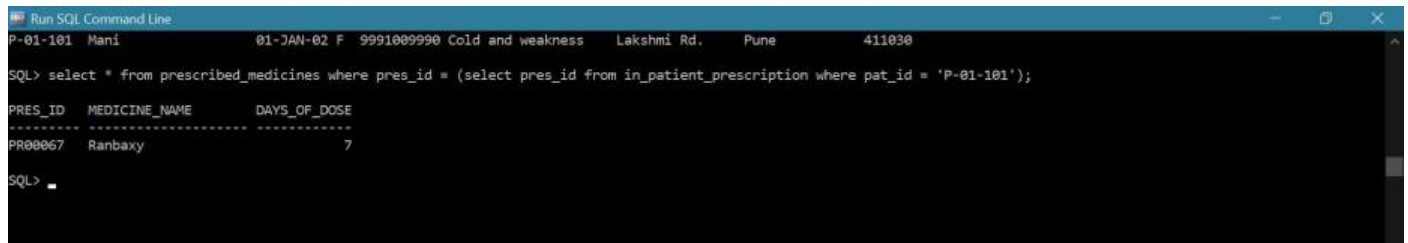
PAT_ID  PAT_NAME  DOB      GE  CONTACT SYMPTOMS  STREET  CITY  PINCODE
-----
P-03-004  Gayle     01-JAN-01 M  99900000000 Cold and weakness  Lakshmi Rd.  Pune  411030
P-01-101  Mani      01-JAN-02 F  99910000000 Cold and weakness  Lakshmi Rd.  Pune  411030
SQL>
```

C. Display all the prescribed medicines of patient with Pat_ID 'P101'

Code:

```
SQL> select * from prescribed_medicines where pres_id = (select pres_id from in_patient_prescription where pat_id = 'P-01-101');
```

Output:



```
Run SQL Command Line
P-01-101 Mani 01-JAN-02 F 9991009990 Cold and weakness Lakshmi Rd. Pune 411030

SQL> select * from prescribed_medicines where pres_id = (select pres_id from in_patient_prescription where pat_id = 'P-01-101');

PRES_ID  MEDICINE_NAME  DAYS_OF_DOSE
-----
PR00067  Ranbaxy        7

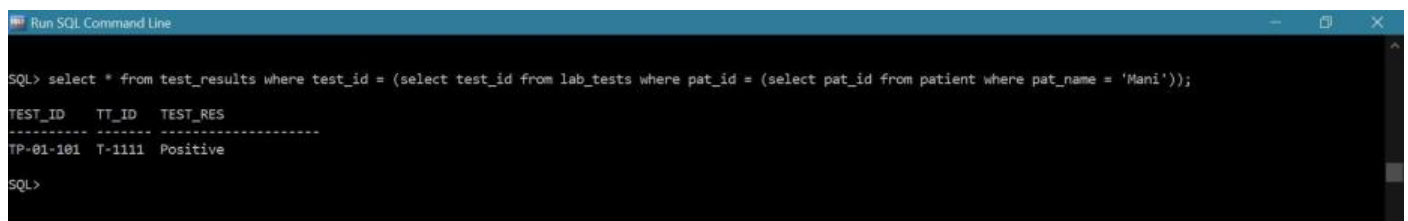
SQL>
```

D. Display the test results of patient 'Mani'

Code:

```
SQL> select * from test_results where test_id = (select test_id from lab_tests where pat_id = (select pat_id from patient where pat_name = 'Mani'));
```

Output:



```
Run SQL Command Line

SQL> select * from test_results where test_id = (select test_id from lab_tests where pat_id = (select pat_id from patient where pat_name = 'Mani'));

TEST_ID  TT_ID  TEST_RES
-----
TP-01-101 T-1111 Positive

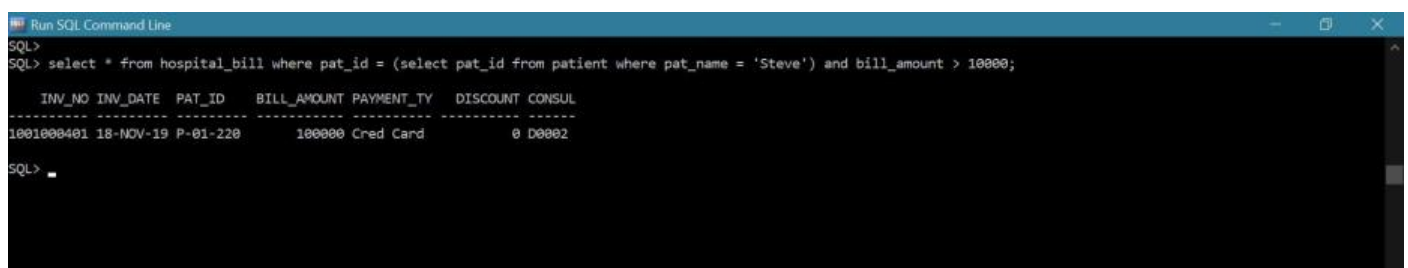
SQL>
```

E. Display all bills of bill amount more than 10000 rupees and paid by the patient 'Steve'.

Code:

```
SQL> select * from hospital_bill where pat_id = (select pat_id from patient where pat_name = 'Steve') and bill_amount > 10000;
```

Output:



```
Run SQL Command Line

SQL>
SQL> select * from hospital_bill where pat_id = (select pat_id from patient where pat_name = 'Steve') and bill_amount > 10000;

INV_NO  INV_DATE  PAT_ID  BILL_AMOUNT  PAYMENT_TY  DISCOUNT  CONSUL
-----
1001000401 18-NOV-19 P-01-220      100000 Cred Card          0 D0002

SQL>
```

F. Find the category and address of the nurse who attended the patient with pat_no 'P220'.

Code:

```
SQL> select category, door_no, street, city, pincode from staff where staff_id = (select nurse_id from appointment where pat_id = 'P-01-220');
```

Output:

```
Run SQL Command Line
SQL>
SQL> select * from staff;
STAFF_ID STAFF_NAME CATEGORY DESIGNATION DOB CONTACT DEPT_NO DOOR_NO STREET CITY PINCODE
-----
S0004 Alisha Momen Junior Nurse 28-MAR-99 9000000000 101 4 Shastri Rd. Pune 411030
S0005 Alyssa Jain Junior Technician 28-MAY-99 9000990000 102 5 Shastri Rd. Pune 411030
S0001 Chaitanya Babu Junior Nurse 12-MAR-98 9999999999 102 1 Tilak Rd. Pune 411030
S0003 Asmita Rao Senior Technician 13-OCT-90 8769054321 190 2 Yerawada Pune 411006
S0002 Reyna Ramirez Junior Junior attender 26-JUN-95 7066227686 190 3 Prabhat Rd. Pune 411004

SQL> select category, door_no, street, city, pincode from staff where staff_id = (select nurse_id from appointment where pat_id = 'P-01-220');
CATEGORY DOOR_NO STREET CITY PINCODE
-----
Junior 4 Shastri Rd. Pune 411030

SQL>
```

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

Code:

```
SQL> select doc_id, doc_name from doctor where dept_no in (select dept_no from department where estd_date >= '10-MAY-2018');
```

Output:

```
Run SQL Command Line
SQL>
SQL> select * from doctor;
DOC_ID DOC_NAME GE DOB SPECIALIST QUALIFICAT CONTACT ADDRESS DEPT_NO
-----
D0001 Rajeev Maseen M 31-JUL-90 Cardiology MBBS MDS 8986754309 Yerawada, Pune 102
D0002 Shahiza Ibrahim F 30-JUN-89 Gynaecology MDS 8690563412 Dhayari, Pune 118
D0003 Vishal Patrawalla M 12-FEB-80 Cardiology MDS 9768523410 Prabhat Rd., Pune 102
D0004 Avani Zanwar F 24-OCT-91 Neurology MBBS MDS 8696857435 Kalyaninagar, Pune 190
D0005 Raghavan M 27-OCT-91 Psychology MBBS MDS 9807654655 Shastri Rd., Pune 101
D0101 Meena Bose F 30-JAN-99 Psychology MBBS 9888777789 Lakshmi Rd., Pune 101

6 rows selected.

SQL> select doc_id, doc_name from doctor where dept_no in (select dept_no from department where estd_date >=
2 '10-MAY-2018');
DOC_ID DOC_NAME
-----
D0005 Raghavan
D0101 Meena Bose

SQL>
```

H. Get the name of technicians who tests blood glucose level.

Code:

```
SQL> select staff_name from staff where staff_id = (select technician from test_types where description = 'Glucose Test');
```


Output:

```
Run SQL Command Line
SQL> select * from test_types;

TT_ID  DESCRIPTION  LOW_VALUE  HIGH_VALUE  TEST_METHOD  TECHNI
-----
T-1020  Blood Test    30         50          Test the blood  S0003
T-1123  Stool test    13         30          fecal blood test S0003
T-1657  RIDT         45         60          Antigen check   S0003
T-1228  Urine Test    10         30          Test the urine   S0003
T-1111  Glucose Test  20         50          Test blood glucose S0005

SQL> select * from staff;

STAFF_ STAFF_NAME  CATEGORY  DESIGNATION  DOB        CONTACT  DEPT_NO  DOOR_NO  STREET  CITY  PINCODE
-----
S0004  Alisha Momen  Junior    Nurse        28-MAR-99  9000000000 101      4 Shastri Rd.  Pune  411030
S0005  Alyssa Jain    Junior    Technician   28-MAY-99  9000990000 102      5 Shastri Rd.  Pune  411030
S0001  Chaitanya Babu  Junior    Nurse        12-MAR-98  9999999999 102      1 Tilak Rd.    Pune  411030
S0003  Asmita Rao     Senior    Technician   13-OCT-90  8769054321 190      2 Yerawada     Pune  411006
S0002  Reyna Ramirez  Junior    Junior attender 26-JUN-95  7066227686 190      3 Prabhat Rd.  Pune  411004

SQL> select staff_name from staff where staff_id = (select technician from test_types where description = 'Glucose Test');

STAFF_NAME
-----
Alyssa Jain

SQL>
```

I. Display the details of all patients who were hospitalized between '10-Mar2017' and '10-Apr-2017'

Code:

```
SQL> select * from patient where pat_id = (select pat_id from in_patient where date_of_admission > '10-MAR-2017' and date_of_admission < '10-APR-2017');
```

Output:

```
Run SQL Command Line
ORA-00904: "DATE_OF_ADMISSION": invalid identifier

SQL> select * from patient where pat_id = (select pat_id from in_patient where date_of_admission > '10-MAR-2017' and date_of_admission < '10-APR-2017');

PAT_ID  PAT_NAME  DOB        GE  CONTACT SYMPTOMS  STREET  CITY  PINCODE
-----
P-03-004  Gayle     01-JAN-01 M  9990009990 Cold and weakness  Lakshmi Rd.  Pune  411030

SQL>
```

J. Display the in-patient prescription of the patient whose name is 'Gayle'.

Code:

```
SQL> select * from prescribed_medicines where pres_id = (select pres_id from in_patient_prescription where pat_id = (select pat_id from patient where pat_name = 'Gayle'));
```

Output:

```
Run SQL Command Line

PAT_ID  PAT_NAME  DOB        GE  CONTACT SYMPTOMS  STREET  CITY  PINCODE
-----
P-03-004  Gayle     01-JAN-01 M  9990009990 Cold and weakness  Lakshmi Rd.  Pune  411030

SQL> select * from prescribed_medicines where pres_id = (select pres_id from in_patient_prescription where pat_id = (select pat_id from patient where pat_name = 'Gayle'));

PRES_ID  MEDICINE_NAME  DAYS_OF_DOSE
-----
PR00022  Ranbaxy        7

SQL>
```

2. Display the list of doctors who are working in the department with more number of doctors using sub-query and IN operator.

Code:

SQL> select * from doctor where dept_no in (select dept_no from department);

Output:

```
Run SQL Command Line
SQL> select * from doctor where dept_no in (select dept_no from doctor);

DOC_ID DOC_NAME      GE DOB      SPECIALIST      QUALIFICAT      CONTACT ADDRESS      DEPT_NO
-----
D0003 Vishal Patrawalla  M 12-FEB-88 Cardiology      MDS             9768523410 Prabhat Rd., Pune 102
D0001 Rajeev Maseen     M 31-JUL-90 Cardiology      MBBS MDS        8986754309 Yerawada, Pune 102
D0002 Shahiza Ibrahim F 30-JUN-89 Gynaecology     MDS             8690563412 Dhayari, Pune 118
D0004 Avani Zanwar     F 24-OCT-91 Neurology       MBBS MDS        8696857435 Kalyaninagar, Pune 190
D0101 Meena Bose    F 30-JAN-99 Psychology     MBBS            9888777789 Lakshmi Rd., Pune 101
D0005 Raghavan      M 27-OCT-91 Psychology     MBBS MDS        9807654655 Shastri Rd., Pune 101

6 rows selected.

SQL> select * from doctor where dept_no in (select dept_no from department);

DOC_ID DOC_NAME      GE DOB      SPECIALIST      QUALIFICAT      CONTACT ADDRESS      DEPT_NO
-----
D0001 Rajeev Maseen     M 31-JUL-90 Cardiology      MBBS MDS        8986754309 Yerawada, Pune 102
D0002 Shahiza Ibrahim F 30-JUN-89 Gynaecology     MDS             8690563412 Dhayari, Pune 118
D0003 Vishal Patrawalla  M 12-FEB-88 Cardiology      MDS             9768523410 Prabhat Rd., Pune 102
D0004 Avani Zanwar     F 24-OCT-91 Neurology       MBBS MDS        8696857435 Kalyaninagar, Pune 190
D0005 Raghavan      M 27-OCT-91 Psychology     MBBS MDS        9807654655 Shastri Rd., Pune 101
D0101 Meena Bose    F 30-JAN-99 Psychology     MBBS            9888777789 Lakshmi Rd., Pune 101

6 rows selected.

SQL>
```

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.

Code:

SQL> select pat_id, pat_name from patient where dob < all(select dob from doctor where dept_no = 102);

Output:

```
Run SQL Command Line
SQL> select * from patient;

PAT_ID PAT_NAME      DOB      GE CONTACT SYMPTOMS      STREET      CITY      PINCODE
-----
P-01-001 Nina Torev     12-JUN-10 F 8897889709 Chest congestion      Tilak Rd.   Pune     411030
P-01-002 Kalyani Shah  14-JUL-01 F 9878987890 Loose motions         MG Rd.      Pune     411001
P-01-003 Ajit Adani    25-DEC-70 M 8976567890 Cold and weakness     Kalyaninagar Pune     411006
P-03-004 Gayle     01-JAN-01 M 9990009990 Cold and weakness     Lakshmi Rd. Pune     411030
P-01-101 Mani       01-JAN-02 F 9991009990 Cold and weakness     Lakshmi Rd. Pune     411030
P-01-220 Steve      01-JAN-03 M 9991109990 Cold and weakness     Lakshmi Rd. Pune     411030
P-01-050 Karthik    01-JAN-04 M 9991119990 Cold and weakness     Lakshmi Rd. Pune     411030

7 rows selected.

SQL> select * from doctor;

DOC_ID DOC_NAME      GE DOB      SPECIALIST      QUALIFICAT      CONTACT ADDRESS      DEPT_NO
-----
D0001 Rajeev Maseen     M 31-JUL-90 Cardiology      MBBS MDS        8986754309 Yerawada, Pune 102
D0002 Shahiza Ibrahim F 30-JUN-89 Gynaecology     MDS             8690563412 Dhayari, Pune 118
D0003 Vishal Patrawalla  M 12-FEB-88 Cardiology      MDS             9768523410 Prabhat Rd., Pune 102
D0004 Avani Zanwar     F 24-OCT-91 Neurology       MBBS MDS        8696857435 Kalyaninagar, Pune 190
D0005 Raghavan      M 27-OCT-91 Psychology     MBBS MDS        9807654655 Shastri Rd., Pune 101
D0101 Meena Bose    F 30-JAN-99 Psychology     MBBS            9888777789 Lakshmi Rd., Pune 101

6 rows selected.

SQL> select pat_id, pat_name where dob < all(select dob from doctor where dept_no = 102);
select pat_id, pat_name where dob < all(select dob from doctor where dept_no = 102)
*
ERROR at line 1:
ORA-00923: FROM keyword not found where expected

SQL> select pat_id, pat_name from patient where dob < all(select dob from doctor where dept_no = 102);

PAT_ID PAT_NAME
-----
P-01-003 Ajit Adani

SQL>
```

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

Code:

```
SQL> select pres_id from prescribed_medicines where medicine_name = (select med_name from medicines where brand = 'Ranbaxy');
```

Output:

```
Run SQL Command Line

SQL> select * from prescribed_medicines;

PRES_ID  MEDICINE_NAME  DAYS_OF_DOSE
-----
PR00022  Ranbaxy        7
PR00067  Ranbaxy        7
PR00028  Xofluza        5

SQL> select * from medicines;

MED_NAME  BRAND  MANU_DATE  EXP_DATE
-----
Xofluza    ABC    12-JUL-20  30-JUL-20
Lamotrigine PHARMAC 07-AUG-20  07-SEP-20
Levothyroxine Eltroxin 08-AUG-20  18-SEP-21
Crocin 500  Crocin  20-SEP-20  20-SEP-21
Nurofen    Benckiser 21-AUG-20  21-SEP-20
Qvar       XYZ       23-JUL-20  29-NOV-20
Ranbaxy    Ranbaxy   13-SEP-20  18-SEP-21

7 rows selected.

SQL> select pres_id from prescribed_medicines where medicine_name = (select med_name from medicines where brand = 'Ranbaxy');

PRES_ID
-----
PR00022
PR00067

SQL>
```

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

Code:

```
SQL> select pat_id, pat_name from patient where pat_id in (select pat_id from hospital_bill where payment_type = 'Cred Card' or payment_type = 'Deb Card');
```

Output:

```
Run SQL Command Line

SQL> select * from hospital_bill;

INV_NO  INV_DATE  PAT_ID  BILL_AMOUNT  PAYMENT_TY  DISCOUNT  CONSUL
-----
1001000101 14-JUL-20 P-01-001 100500  Cheque      15 D0001
1001000201 13-MAY-20 P-01-002 101546  Transfer    25 D0001
1001000301 15-JUL-20 P-01-003 13450   Card        15 D0004
1001000401 18-NOV-19 P-01-220 100000  Cred Card   0 D0002
1001000501 20-AUG-20 P-01-050 100000  Deb Card    0 D0002

SQL> select pat_id, pat_name from patient where pat_id = (select pat_id from hospital_bill where payment_type = 'Cred Card' or payment_type = 'Deb Card');
select pat_id, pat_name from patient where pat_id = (select pat_id from hospital_bill where payment_type = 'Cred Card' or payment_type = 'Deb Card')
*
ERROR at line 1:
ORA-01427: single-row subquery returns more than one row

SQL> select pat_id, pat_name from patient where pat_id in (select pat_id from hospital_bill where payment_type = 'Cred Card' or payment_type = 'Deb Card');

PAT_ID  PAT_NAME
-----
P-01-050  Karthik
P-01-220  Steve

SQL>
```

SQL queries using other functions

Practice queries using DATE, NUMERIC, and CHARACTER functions. Refer DBMS_Lab_Reference_Material.pdf file. Try to upload at least two queries from each function category.

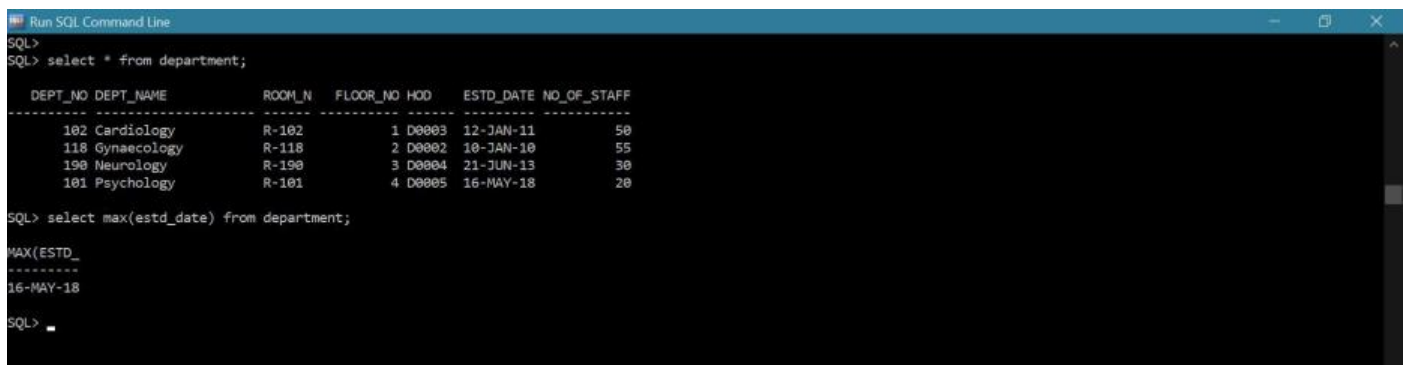
DATE FUNCTION QUERIES

1. Find the latest established department in the hospital.

Code:

```
SQL> select max(estd_date) from department;
```

Output:



```
Run SQL Command Line
SQL> select * from department;

DEPT_NO DEPT_NAME      ROOM_N  FLOOR_NO HOD      ESTD_DATE NO_OF_STAFF
-----
102 Cardiology      R-102   1 D0003  12-JAN-11 50
118 Gynaecology     R-118   2 D0002  10-JAN-10 55
190 Neurology       R-190   3 D0004  21-JUN-13 30
101 Psychology      R-101   4 D0005  16-MAY-18 20

SQL> select max(estd_date) from department;

MAX(ESTD_DATE)
-----
16-MAY-18

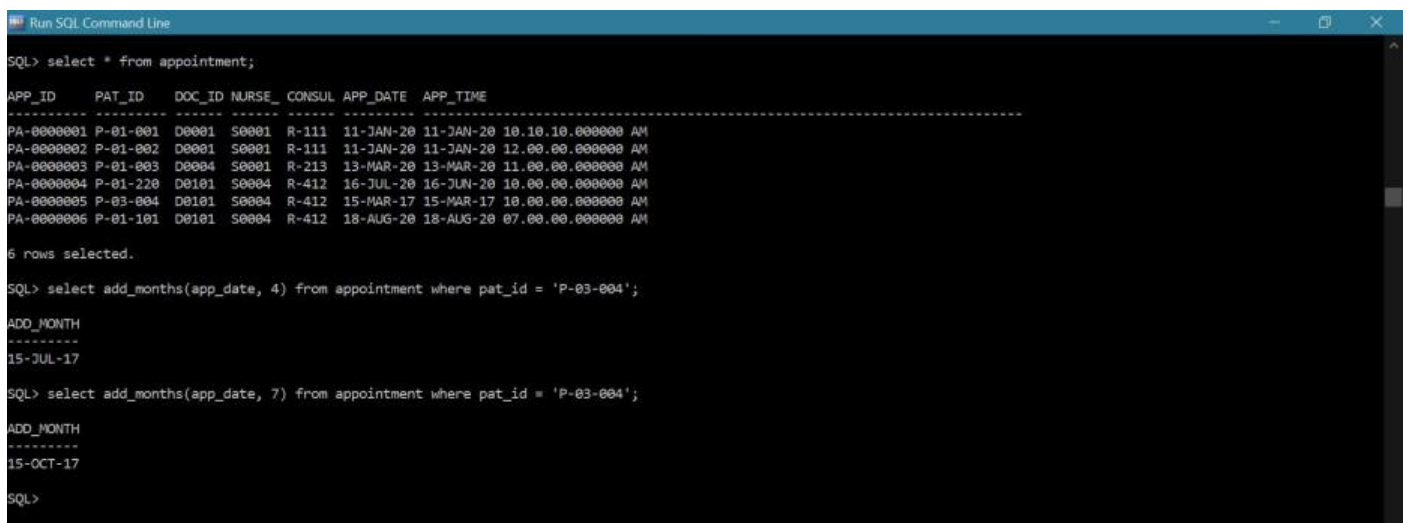
SQL>
```

2. Find the date after adding 7 months to appointment date of patient 'P-01-004'

Code:

```
SQL> select add_months(app_date, 7) from appointment where pat_id = 'P-03-004';
```

Output:



```
Run SQL Command Line
SQL> select * from appointment;

APP_ID  PAT_ID  DOC_ID  NURSE_  CONSUL  APP_DATE  APP_TIME
-----
PA-0000001 P-01-001 D0001  S0001  R-111  11-JAN-20 11-JAN-20 10.10.10.000000 AM
PA-0000002 P-01-002 D0001  S0001  R-111  11-JAN-20 11-JAN-20 12.00.00.000000 AM
PA-0000003 P-01-003 D0004  S0001  R-213  13-MAR-20 13-MAR-20 11.00.00.000000 AM
PA-0000004 P-01-220 D0101  S0004  R-412  16-JUL-20 16-JUN-20 10.00.00.000000 AM
PA-0000005 P-03-004 D0101  S0004  R-412  15-MAR-17 15-MAR-17 10.00.00.000000 AM
PA-0000006 P-01-101 D0101  S0004  R-412  18-AUG-20 18-AUG-20 07.00.00.000000 AM

6 rows selected.

SQL> select add_months(app_date, 4) from appointment where pat_id = 'P-03-004';

ADD_MONTH
-----
15-JUL-17

SQL> select add_months(app_date, 7) from appointment where pat_id = 'P-03-004';

ADD_MONTH
-----
15-OCT-17

SQL>
```

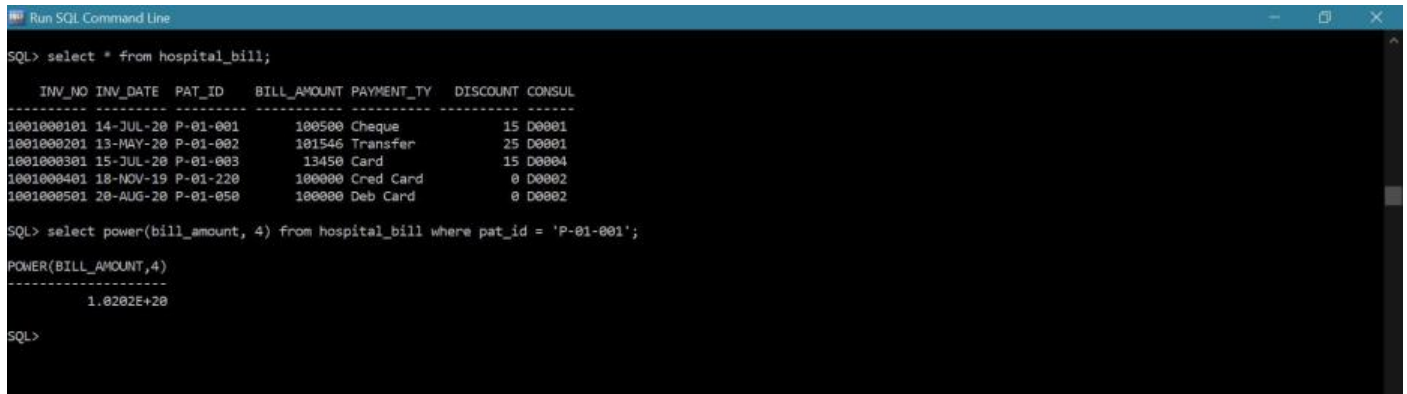
NUMERIC FUNCTION QUERIES

1. Find 4th power of bill amount of patient having patient id 'P-01-001'

Code:

SQL> select power(bill_amount, 4) from hospital_bill where pat_id = 'P-01-001';

Output:



```
Run SQL Command Line
SQL> select * from hospital_bill;
-----
INV_NO INV_DATE PAT_ID BILL_AMOUNT PAYMENT_TY DISCOUNT CONSUL
-----
1001000101 14-JUL-20 P-01-001 100500 Cheque 15 D0001
1001000201 13-MAY-20 P-01-002 101546 Transfer 25 D0001
1001000301 15-JUL-20 P-01-003 13450 Card 15 D0004
1001000401 18-NOV-19 P-01-220 100000 Cred Card 0 D0002
1001000501 20-AUG-20 P-01-050 100000 Deb Card 0 D0002

SQL> select power(bill_amount, 4) from hospital_bill where pat_id = 'P-01-001';

POWER(BILL_AMOUNT,4)
-----
1.0202E+20

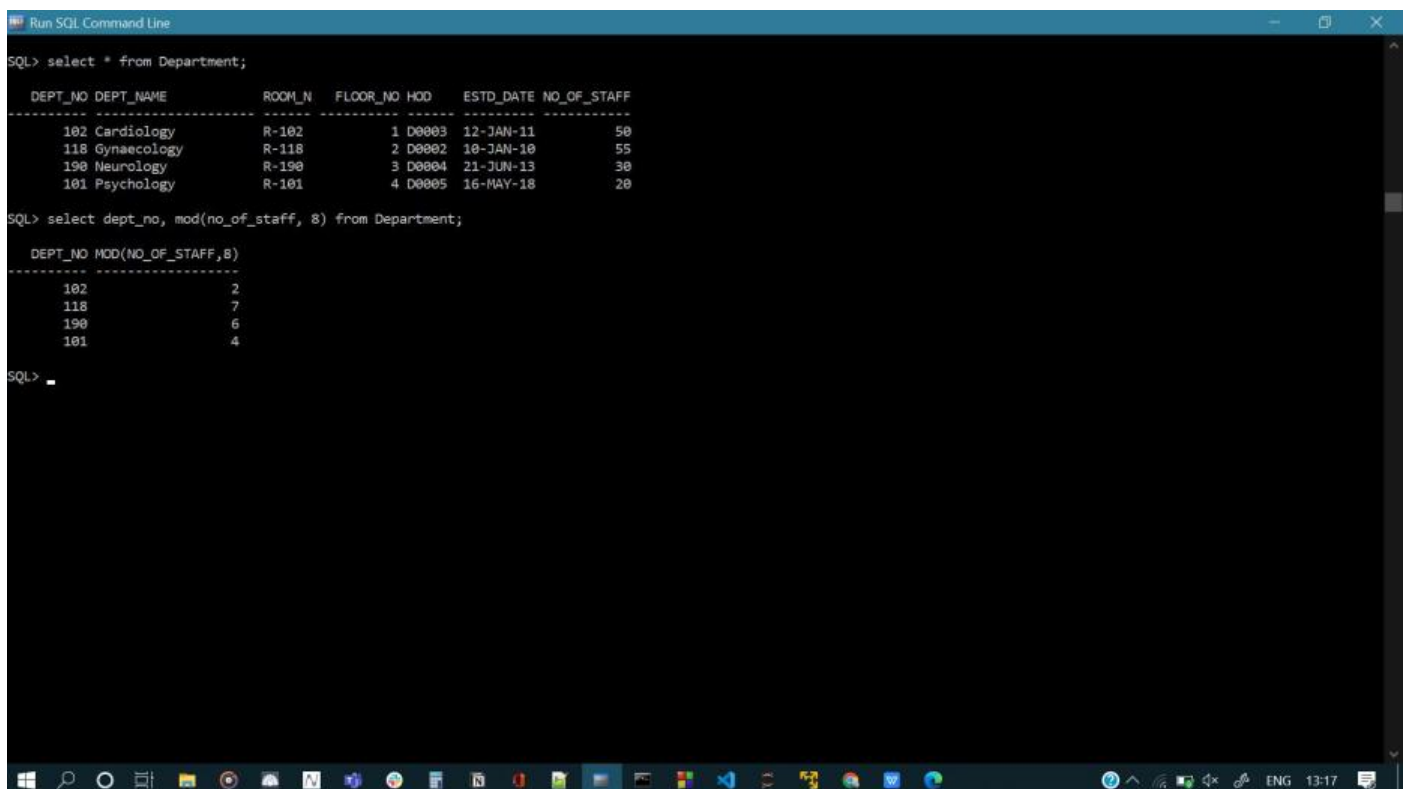
SQL>
```

2. Find no_of_staff (mod 8) of each department

Code:

SQL> select dept_no, mod(no_of_staff, 8) from Department;

Output:



```
Run SQL Command Line
SQL> select * from Department;
-----
DEPT_NO DEPT_NAME ROOM_N FLOOR_NO HOD ESTD_DATE NO_OF_STAFF
-----
102 Cardiology R-102 1 D0003 12-JAN-11 50
118 Gynaecology R-118 2 D0002 10-JAN-10 55
190 Neurology R-190 3 D0004 21-JUN-13 30
101 Psychology R-101 4 D0005 16-MAY-18 20

SQL> select dept_no, mod(no_of_staff, 8) from Department;

DEPT_NO MOD(NO_OF_STAFF,8)
-----
102 2
118 7
190 6
101 4

SQL>
```

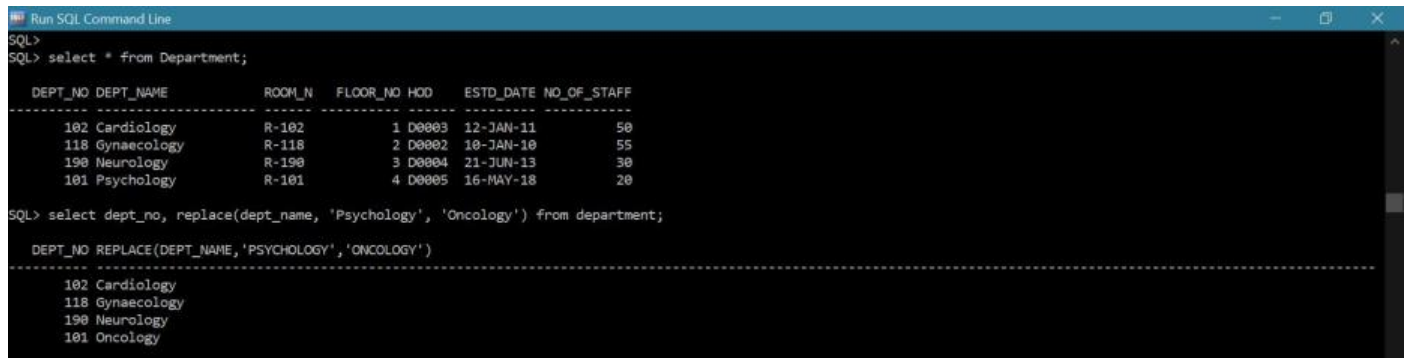
CHARACTER FUNCTIONS QUERIES

1. Make 'Psychology' department to 'Oncology' department.

Code:

```
SQL> select dept_no, replace(dept_name, 'Psychology', 'Oncology') from department;
```

Output:



```
Run SQL Command Line
SQL>
SQL> select * from Department;

DEPT_NO DEPT_NAME      ROOM_N  FLOOR_NO HOD      ESTD_DATE NO_OF_STAFF
-----
102 Cardiology         R-102   1 D0003  12-JAN-11 50
118 Gynaecology        R-118   2 D0002  10-JAN-10 55
190 Neurology          R-190   3 D0004  21-JUN-13 30
101 Psychology         R-101   4 D0005  16-MAY-18 20

SQL> select dept_no, replace(dept_name, 'Psychology', 'Oncology') from department;

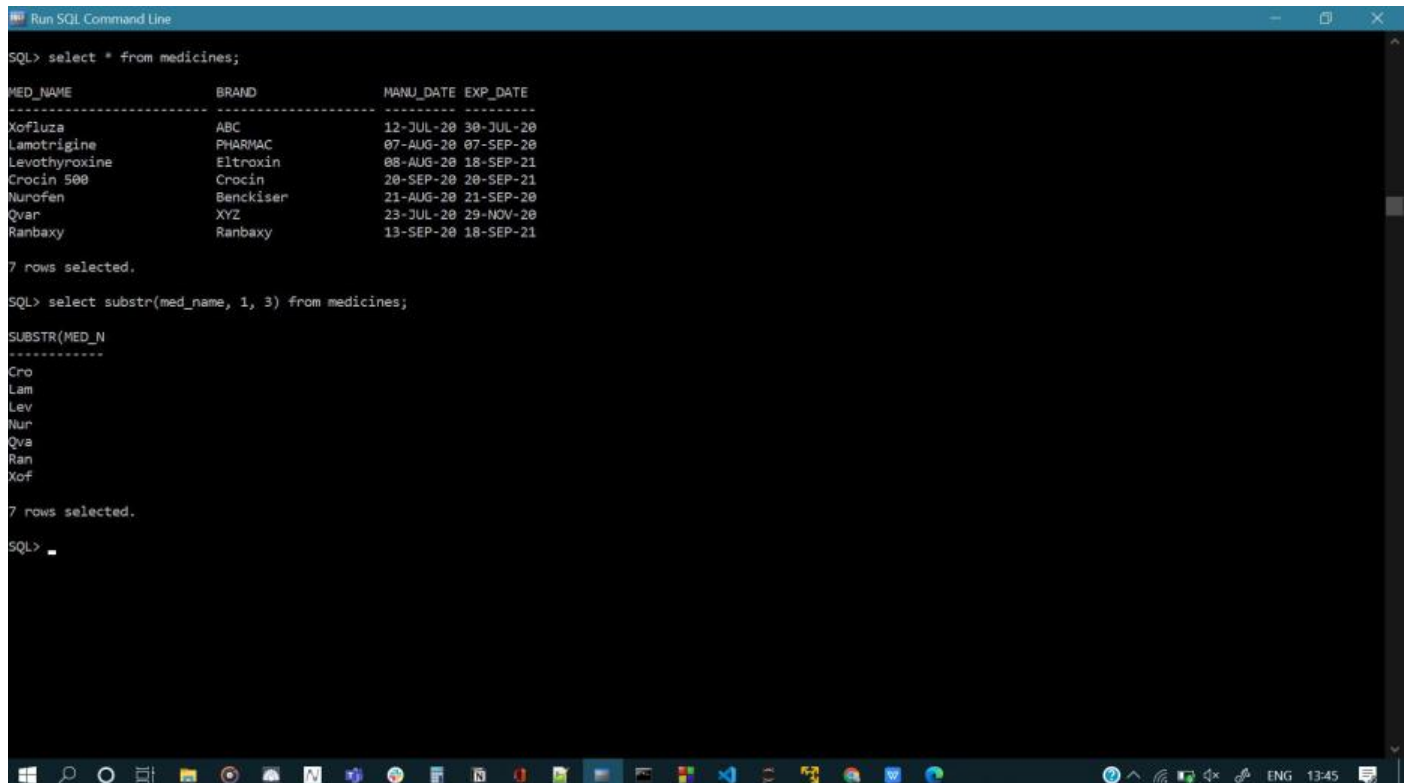
DEPT_NO REPLACE(DEPT_NAME,'PSYCHOLOGY','ONCOLOGY')
-----
102 Cardiology
118 Gynaecology
190 Neurology
101 Oncology
```

2. Display first 3 letters of all medicines.

Code:

```
SQL> select substr(med_name, 1, 3) from medicines;
```

Output:



```
Run SQL Command Line
SQL> select * from medicines;

MED_NAME      BRAND      MANU_DATE EXP_DATE
-----
Xofluza       ABC        12-JUL-20 30-JUL-20
Lamotrigine   PHARMAC    07-AUG-20 07-SEP-20
Levothyroxine Eltroxin   08-AUG-20 18-SEP-21
Crocin 500    Crocin     20-SEP-20 20-SEP-21
Nurofen       Benckiser  21-AUG-20 21-SEP-20
Qvar          XYZ        23-JUL-20 29-NOV-20
Ranbaxy       Ranbaxy    13-SEP-20 18-SEP-21

7 rows selected.

SQL> select substr(med_name, 1, 3) from medicines;

SUBSTR(MED_N
-----
Cro
Lam
Lev
Nur
Qva
Ran
Xof

7 rows selected.

SQL>
```