Exercise -1: -

Queries

create table Employee(first_name varchar(15), mid_name char(2), last_name varchar(15), ssn_number char(9), birthday DATE, address varchar(50), sex char(1), salary number(7), supervisor_ssn char(9), department_number number(5));

create table Project(project_name varchar(15), project_number number(15), project_location varchar(15), department_number number(5));

create table Department(department_name varchar(15), department_number number(5), manager_ssn char(9), manager_start_date date);

insert into employee values('Doug', 'E', 'Gilbert','5544332211', '09-JUN-60', '11 S 59 E, Salt Lake City, UT', 'M', 80000, NULL, 3);

insert into employee values('Jennifer', 'S', 'Wallace', '987654321', '20-JUN-31', '291 Berry, Bellaire, TX', 'F', 43000, '554433221', 4), ('John', 'B', 'Smith', '123456789', '09-JAN-55', '731 Fondren, Houston, TX', 'M', 30000,'333445555', 5), ('Ramesh', 'K', 'Narayan', '666884444', '15-SEP-52', '975 Fire Oak, Humble, TX', 'M', 38000, '3334455555', 5);

insert into employee values('Joyce','A', 'English', '453453453', '31-JUL-62', '5631 Rice, Houston, TX', 'F', 25000, '333445555', 5), ('James', 'E', 'Borg', '888665555', '10-NOV-27', '450 Stone, Houston, TX', 'M', 55000, '543216789', 1), ('Alicia', 'J', 'Zelaya', '999887777', '19-JUL-58', '3321 Castle, Spring, TX', 'F', 25000, '987654321', 4), ('Ahmad', 'V', 'Jabbar', '9879879857', '29-MAR-59', '980 Dallas, Houston, TX', 'M', 25000, '987654321', 4);

insert into Department values('Manufacture', 1, '888665555', '19-JUN-71'), ('Administration', 2, '543216789', '04-JAN-99'), ('Headquarter', 3, '554433221', '22-SEP-55'), ('Finance', 4, '987654321', '01-JAN-85'), ('Research', 5, '333445555', '22-MAY-78');

insert into project values('ProjectA', 3388, 'Houston', 1),('ProjectB', 1945, 'Salt Lake City', 3), ('ProjectC', 6688, 'Houston', 5), ('ProjectD', 2423, 'Bellaire', 4),('ProjectE', 7745, 'Sugarland', 5),('ProjectF', 1566, 'Salt Lake City', 3),('ProjectG', 1234, 'New York', 2),('ProjectH', 3467, 'Stafford', 4),('ProjectI', 4345, 'Chicago', 1),('ProjectJ', 2212, 'San Francisco', 2)

```
1  CREATE TABLE Employee(first_name varchar(15) ,
2                        mid_name char(2),
3                        last_name varchar(15) ,
4                        ssn_number char(9) ,
5                        birthday DATE,
6                        address varchar(50),
7                        sex char(1),
8                        salary number(7),
9                        supervisor_ssn char(9),
10                       department_number number(5)
11
12                       );
13 CREATE TABLE Project(project_name varchar(15) ,
14                      project_number number(15) ,
15                      project_location varchar(15),
16                      department_number number(5));
17 CREATE TABLE Department(department_name varchar(15) ,
18                         department_number number(5) ,
19                         manager_ssn char(9),
20                         manager_start_date date);
21 INSERT INTO employee VALUES('Doug', 'E', 'Gilbert','5544332211', '09-JUN-60', '11 S 59 E, Salt Lake City, UT', 'M', 80000, NULL, 3);
22 INSERT INTO employee VALUES('Jennifer', 'S', 'Wallace', '987654321', '20-JUN-31', '291 Berry, Bellaire, TX', 'F', 43000, '554433221', 4),
23 ('John', 'B', 'Smith', '123456789', '09-JAN-55', '731 Fondren, Houston, TX', 'M', 30000,'333445555', 5),
24 ('Ramesh', 'K', 'Narayan', '666884444', '15-SEP-52', '975 Fire Oak, Humble, TX', 'M', 38000, '3334455555', 5);
25 INSERT INTO employee VALUES('Joyce','A', 'English', '453453453', '31-JUL-62', '5631 Rice, Houston, TX', 'F', 25000, '333445555', 5),
26 ('James', 'E', 'Borg', '888665555', '10-NOV-27', '450 Stone, Houston, TX', 'M', 55000, '543216789', 1),
27 ('Alicia', 'J', 'Zelaya', '999887777', '19-JUL-58', '3321 Castle, Spring, TX', 'F', 25000, '987654321', 4),
28 ('Ahmad', 'V', 'Jabbar', '9879879857', '29-MAR-59', '980 Dallas, Houston, TX', 'M', 25000, '987654321', 4);
29 INSERT INTO Department VALUES('Manufacture', 1, '888665555', '19-JUN-71'),
30
```

Table

⊞ Department   ‹

⊞ **Employee**   ⌄

Column

▢ first_name varchar(…

▢ mid_name char(2)

▢ last_name varchar(…

▢ ssn_number char(9)

▢ birthday DATE

▢ address varchar(50)

▢ sex char(1)

▢ salary number(7)

▢ supervisor_ssn ch…

▢ department_numb…

⊞ Project   ‹

Table

⊞ **Department**   ⌄

Column

▢ department_name…

▢ department_numb…

▢ manager_ssn char(9)

▢ manager_start_da…

⊞ Employee   ‹

⊞ Project   ‹

Table

⊞ Department   ‹

⊞ Employee   ‹

⊞ **Project**   ⌄

Column

▢ project_name varc…

▢ project_number n…

▢ project_location v…

▢ department_numb…

2.

select * from project;

select * from department;

select * from employee;

```
1 SELECT * FROM project;
2 SELECT * FROM department;
3 SELECT * FROM employee;
4
```

project_name	project_number	project_location	department_number
ProjectA	3388	Houston	1
ProjectB	1945	Salt Lake City	3
ProjectC	6688	Houston	5
ProjectD	2423	Bellaire	4
ProjectE	7745	Sugarland	5
ProjectF	1566	Salt Lake City	3
ProjectG	1234	New York	2
ProjectH	3467	Stafford	4
ProjectI	4345	Chicago	1
ProjectJ	2212	San Francisco	2

```
1 SELECT * FROM project;
2 SELECT * FROM department;
3 SELECT * FROM employee;
4
```

department_name	department_number	manager_ssn	manager_start_date
Manufacture	1	888665555	19-JUN-71
Administration	2	543216789	04-JAN-99
Headquarter	3	554433221	22-SEP-55
Finance	4	987654321	01-JAN-85
Research	5	333445555	22-MAY-78

```
1 SELECT * FROM project;
2 SELECT * FROM department;
3 SELECT * FROM employee;
4
```

first_name	mid_name	last_name	ssn_number	birthday	address	sex	salary	supervisor_ssn	department_number
Doug	E	Gilbert	5544332211	09-JUN-60	11 S 59 E, Salt…	M	80000	NULL	3
Jennifer	S	Wallace	987654321	20-JUN-31	291 Berry, Bell…	F	43000	554433221	4
John	B	Smith	123456789	09-JAN-55	731 Fondren, …	M	30000	333445555	5
Ramesh	K	Narayan	666884444	15-SEP-52	975 Fire Oak, …	M	38000	3334455555	5
Joyce	A	English	453453453	31-JUL-62	5631 Rice, Ho…	F	25000	333445555	5
James	E	Borg	888665555	10-NOV-27	450 Stone, Ho…	M	55000	543216789	1
Alicia	J	Zelaya	999887777	19-JUL-58	3321 Castle, S…	F	25000	987654321	4
Ahmad	V	Jabbar	9879879857	29-MAR-59	980 Dallas, Ho…	M	25000	987654321	4

3.

select first_name, ssn_number, supervisor_ssn from employee;

```
1 SELECT first_name, ssn_number, supervisor_ssn FROM employee;
2
```

first_name	ssn_number	supervisor_ssn
Doug	5544332211	NULL
Jennifer	987654321	554433221
John	123456789	333445555
Ramesh	666884444	3334455555
Joyce	453453453	333445555
James	888665555	543216789
Alicia	999887777	987654321
Ahmad	9879879857	987654321

4.

select first_name, last_name from employee where birthday = '29-MAR-1959';

```
1 SELECT first_name, last_name FROM employee WHERE birthday = '29-MAR-1959';
2
```

5.

Select distinct salary from employee;

```
1 SELECT DISTINCT salary FROM employee;
```

salary
80000
43000
30000
38000
25000
55000

6.

select manager_ssn, manager_start_date from department;

```
1 SELECT manager_ssn, manager_start_date FROM department;
```

⋮ manager_ssn	manager_start_date
888665555	19-JUN-71
543216789	04-JAN-99
554433221	22-SEP-55
987654321	01-JAN-85
333445555	22-MAY-78

7

update employee set department_number = 5 where first_name='Joyce';

select first_name, last_name, department_number from employee where first_name='Joyce';

```
1 UPDATE employee SET department_number = 5 WHERE first_name='Joyce';
2 SELECT first_name, last_name, department_number FROM employee WHERE first_name='Joyce';
```

⋮ first_name	last_name	department_number
Joyce	English	5

8

alter table department add departmentPhoneNum Number;

update department set departmentPhoneNum=1111111111;

select * from department

```
1 ALTER TABLE department ADD departmentPhoneNum Number;
2 UPDATE department SET departmentPhoneNum=1111111111;
3 SELECT * FROM department
```

⋮ department_name	department_number	manager_ssn	manager_start_date	departmentPhoneNum
Manufacture	1	888665555	19-JUN-71	1111111111
Administration	2	543216789	04-JAN-99	1111111111
Headquarter	3	554433221	22-SEP-55	1111111111
Finance	4	987654321	01-JAN-85	1111111111
Research	5	333445555	22-MAY-78	1111111111

9)

alter table department modify departmentPhoneNum Number(15);

10

ALTER TABLE department

RENAME COLUMN DepartmentPhoneNum TO PhNo;

Update table

11

Query

ALTER TABLE Department

RENAME TO DEPT;

Screenshot

12

Screenshot
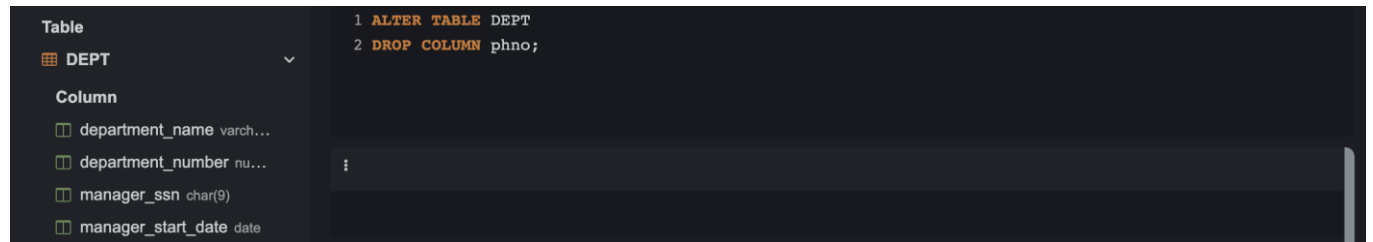
EXERCISE-2

1. Insert ('Robert', 'F', 'Scott', '943775543', '21-JUN-42', '2365 Newcastle Rd, Bellaire, TX', M, 58000, '888665555', 1) into EMPLOYEE.

☑ Autocommit Display 10 ▾   Save   Run

```
INSERT INTO EMPLOYEE
VALUES('Robert','F','Scott','943775543',TO_DATE('1942-06-21','YYYY-MM-DD'),'2365 Newcastle Rd,
Bellaire, TX','M',58000,'888665555',1);
```

2. Insert ('677678989', null, '40.0') into WORKS_ON.

ORACLE Database Express Edition

Home   Logout   Help

User: SYSTEM

☑ Autocommit Display 10 ▾   Save   Run

```
INSERT INTO WORKSON
VALUES('677678989',NULL,40.0);
```

Results Explain Describe Saved SQL History

ORA-02291: integrity constraint (SYSTEM.SYS_C004054) violated - parent key not found

For an insert statement, this ORA-02291 error is common when you are trying to insert a child without a matching parent, as defined by a foreign key constraint.

0.02 seconds

Results Explain Describe Saved SQL History

ORA-01400: cannot insert NULL into ("SYSTEM"."WORKSON"."PROJECTNUMBER")

0.00 seconds

3. Insert ('453453453', 'John', M, '12-DEC-60', 'SPOUSE') into DEPENDENT

☑ Autocommit Display 10 ⌄   Save   Run

```
INSERT INTO DEPENDENT
VALUES('453453453','John','M',TO_DATE('1960-12-12','YYYY-MM-DD'),'Spouse');
```

Results Explain Describe Saved SQL History

ORA-02291: integrity constraint (SYSTEM.SYS_C004079) violated - parent key not found

0.00 seconds

4. Delete the WORKS_ON tuples with ESSN= '333445555'.

☑ Autocommit Display 10 ⌄   Save   Run

```
DELETE FROM WORKSON WHERE employeessn = '333445555';
```

Results Explain Describe Saved SQL History

4 row(s) deleted.

0.03 seconds

5. Modify the MGRSSN and MGRSTARTDATE of the DEPARTMENT tuple with DNUMBER=5 to '123456789' and '01-OCT-88', respectively.

6) Add Foreign Keys using Alter Table [if not done earlier].

☑ Autocommit Display 10 ⌄   Save   Run

```
UPDATE DEPT
SET managerssn = '123456789'
SET managerstartdate = TO_DATE('1988-10-01','YYYY-MM-DD')
WHERE departmentnumber = 5;
```

Results Explain Describe Saved SQL History

ORA-02291: integrity constraint (SYSTEM.SYS_C004058) violated - parent key not found

0.01 seconds

- COMPLETED.

7) Drop Foreign key defined on SuperSSN and add it using Alter table command.

☑ Autocommit Display 10 ⌄   Save   Run

```
ALTER TABLE EMPLOYEE
DROP CONSTRAINT FOREIGN KEY supervisorssn;
```

☑ Autocommit Display 10 ⌄   Save   Run

```
ALTER TABLE EMPLOYEE
ADD CONSTRAINT FOREIGN KEY(supervisorssn) REFERENCES EMPLOYEE(ssnnum);
```

8) Make name of Project as Unique and sex of employee as not null.

☑ Autocommit   Display 10 ∨   Save   Run

```
ALTER TABLE PROJECT
MODIFY projectname UNIQUE;
```

Results   Explain   Describe   Saved SQL   History

Table altered.

0.06 seconds

☑ Autocommit   Display 10 ∨   Save   Run
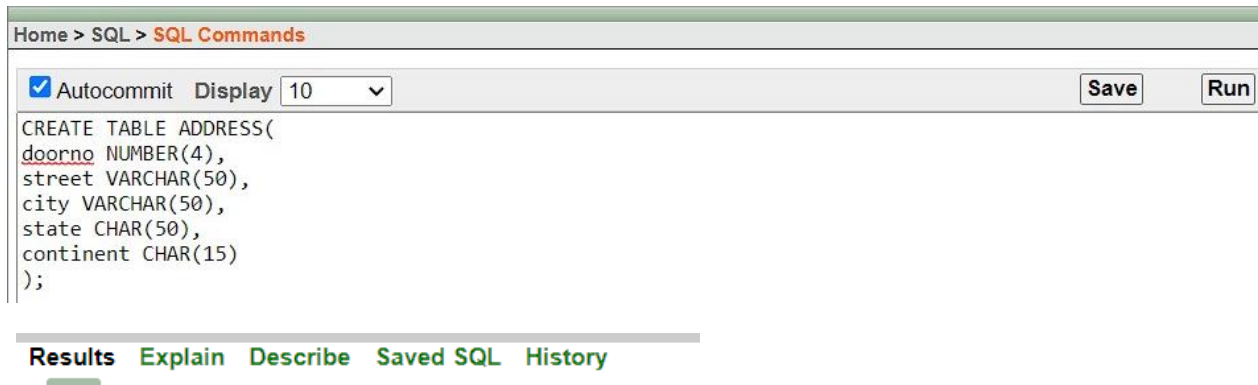
```
ALTER TABLE EMPLOYEE
MODIFY sex NOT NULL;
```

Results   Explain   Describe   Saved SQL   History

Table altered.

0.01 seconds

9) Make Address as a new type containing door no, street, city, State, Continent.
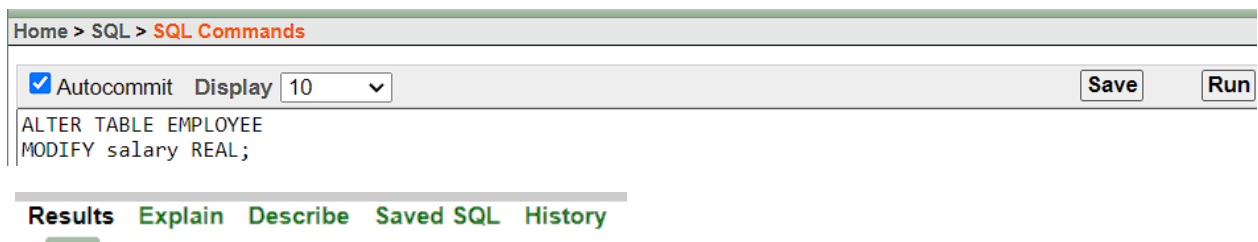
☑ Autocommit Display 10 ⌄   Save   Run

```
CREATE TABLE ADDRESS(
doorno NUMBER(4),
street VARCHAR(50),
city VARCHAR(50),
state CHAR(50),
continent CHAR(15)
);
```

Results Explain Describe Saved SQL History

Table created.

0.01 seconds

10) Make salary of employee to accept real values.

☑ Autocommit Display 10 ⌄   Save   Run

```
ALTER TABLE EMPLOYEE
MODIFY salary REAL;
```

Results Explain Describe Saved SQL History

Table altered.

0.01 seconds

FNAME	MNAME	LNAME	SSNNUM	BIRTHDAY	ADDRESS	SEX	SALARY	SUPERVISORSSN	DEPARTMENTNUMBER
Doug	E	Gilbert	554433221	09-JUN-60	11 S 59 E, Salt Lake City, UT	M	80000	-	3
Joyce	-	PAN	543216789	07-FEB-78	35 S 18 E, Salt Lake City, UT	F	70000	-	5
Frankin	T	Wong	333445555	08-DEC-45	638 Voss, Houston, TX	M	40000	554433221	5
Jennifer	S	Wallace	987654321	20-JUN-31	291 Berry, Bellaire, TX	F	43000	554433221	4
John	B	Smith	123456789	09-JAN-55	731 Fondren, Houston, TX	M	30000	333445555	5
Ramesh	K	Narayan	666884444	15-SEP-52	975 Fire Oak, Humble, TX	M	38000	333445555	5
Joyce	A	English	453453453	31-JUL-62	5631 Rice, Houston, TX	F	25000	333445555	5
James	E	Borg	888665555	10-NOV-27	450 Stone, Houston, TX	M	55000	543216789	1
Alicia	J	Zelaya	999887777	19-JUL-58	3321 Castle, Spring, TX	F	25000	987654321	4
Ahmad	V	Jabbar	987987987	29-MAR-59	980 Dallas, Houston, TX	M	25000	987654321	4

10 rows returned in 0.00 seconds   CSV Export

DEPARTMENTNAME	DEPARTMENTNUMBER	MANAGERSSN	MANAGERSTARTDATE
Headquarter	3	554433221	22-SEP-55
Manufacture	1	888665555	19-JUN-71
Administration	2	543216789	04-JAN-99
Finance	4	987654321	01-JAN-85
Research	5	333445555	22-MAY-78

5 rows returned in 0.00 seconds   CSV Export

DEPARTMENTNUMBER	DEPARTMENTLOCATION
1	Houston
1	Chicago
2	New York
2	San Francisco
3	Salt Lake City
4	Stafford
4	Bellaire
5	Sugarland
5	Houston

9 rows returned in 0.01 seconds   CSV Export

PROJECTNAME	PROJECTNUMBER	PROJECTLOCATION	DEPARTMENTNUMBER
ProjectA	3388	Houston	1
ProjectB	1945	Salt Lake City	3
ProjectC	6688	Houston	5
ProjectD	2423	Bellaire	4
ProjectE	7745	Sugarland	5
ProjectF	1566	Salt Lake City	3
ProjectG	1234	New York	2
ProjectH	3467	Stafford	4
ProjectI	4345	Chicago	1
ProjectJ	2212	San Francisco	2

10 rows returned in 0.00 seconds   CSV Export

EMPLOYEESSN	PROJECTNUMBER	HOURS
123456789	3388	32.5
123456789	1945	7.5
666884444	3388	40
453453453	77	20
453453453	22	20
999887777	1	11.5
999887777	12	13
543216789	22	17
554433221	1945	21.5

9 rows returned in 0.00 seconds   CSV Export

EMPLOYEE	DEPENDENTNAME	SEX	BIRTHDAY	RELATIONSHIP
333445555	Alice	F	05-APR-76	Daughter
333445555	theodore	M	25-OCT-73	Son
333445555	Joy	F	03-MAY-48	Spouse
987654321	Abner	M	29-FEB-32	Spouse
123456789	Alice	F	31-DEC-78	Daughter
123456789	Elizabeth	F	05-MAY-57	Spouse

6 rows returned in 0.00 seconds   CSV Export

Exercise-3: -

```
CREATE TABLE physician (
  employeeid INT PRIMARY KEY,
  name VARCHAR(255),
  position VARCHAR(100),
  ssn VARCHAR(20)
);


CREATE TABLE Department (
  departmentid INT PRIMARY KEY,
  name VARCHAR(255),
  head INT,
  FOREIGN KEY (head) REFERENCES Physician(employeeid)
);


CREATE TABLE works_with (
  physician INT,
  department INT,
  primaryaffiliation BOOLEAN,
  FOREIGN KEY (physician) REFERENCES Physician(employeeid),
  FOREIGN KEY (department) REFERENCES Department(departmentid)
);



CREATE TABLE Procedure (
  code INT PRIMARY KEY,
  name VARCHAR(255),
  cost DECIMAL(10, 2)
```

```sql
);


CREATE TABLE Patient (
  ssn VARCHAR(20) PRIMARY KEY,
  name VARCHAR(255),
  address VARCHAR(255),
  phone VARCHAR(20),
  insuranceid VARCHAR(50),
  pcp INT,
  FOREIGN KEY (pcp) REFERENCES Physician(employeeid)
);


CREATE TABLE Nurse (
  employeeid INT PRIMARY KEY,
  name VARCHAR(255),
  position VARCHAR(100),
  registered BOOLEAN,
  ssn VARCHAR(20)
);


CREATE TABLE Appointment (
  appointmentid INT PRIMARY KEY,
  patient VARCHAR(20),
  prepnurse INT,
  physician INT,
  date DATE,
  start_time TIME,
  end_time TIME,
  examinationroom VARCHAR(50),
```

FOREIGN KEY (patient) REFERENCES Patient(ssn),

    FOREIGN KEY (prepnurse) REFERENCES Nurse(employeeid),

    FOREIGN KEY (physician) REFERENCES Physician(employeeid)

);

1: -

INSERT INTO physician (employeeid, name, position, ssn)

VALUES

  (1, 'John Smith', 'Surgeon', '1234567890'),

  (2, 'Emily Johnson', 'Consultant', '0987654321'),

  (3, 'Michael Davis', 'Pediatrician', '5678901234'),

  (4, 'Sarah Anderson', 'Cardiologist', '4321098765'),

  (5, 'Christine Lee', 'Neurologist', '9876543210');

SELECT *

FROM physician;

employeeid	name	position	ssn
1	John Smith	Surgeon	1234567890
2	Emily Johnson	Consultant	0987654321
3	Michael Davis	Pediatrician	5678901234
4	Sarah Anderson	Cardiologist	4321098765
5	Christine Lee	Neurologist	9876543210

2: -

INSERT INTO procedure (code, name, cost)

VALUES

  (1, 'Physiotherapy', 150),

  (2, 'Gastric problem', 200),

  (3, 'Orthopedic surgery', 500),

(4, 'Dental cleaning', 100),

  (5, 'Colonoscopy', 300);

SELECT cost

FROM procedure

WHERE name IN ('Physiotherapy', 'Gastric problem');

cost
150
200

3: -

SELECT *

FROM Physician

WHERE employeeid NOT IN (SELECT physician FROM works_with);

employeeid	name	position	ssn
1	John Smith	Surgeon	1234567890
2	Emily Johnson	Consultant	0987654321
3	Michael Davis	Pediatrician	5678901234
4	Sarah Anderson	Cardiologist	4321098765
5	Christine Lee	Neurologist	9876543210

4: -

SELECT employeeid, name, ssn

FROM (

  SELECT employeeid, name, ssn

  FROM Physician

  WHERE name LIKE 'C%'

UNION ALL

SELECT employeeid, name, ssn

FROM Nurse

WHERE name LIKE 'C%'

) AS EmployeesWithNameC;

employeeid	name	ssn
5	Christine Lee	9876543210

5:-

SELECT *

FROM Patient

WHERE ssn IN (

   SELECT patient

   FROM Appointment

   WHERE DATE(date) = '2023-05-26' -- Replace with the desired date

    AND TIME(start_time) > '12:30:00'

);

Output

SQL query successfully executed. However, the result set is empty.