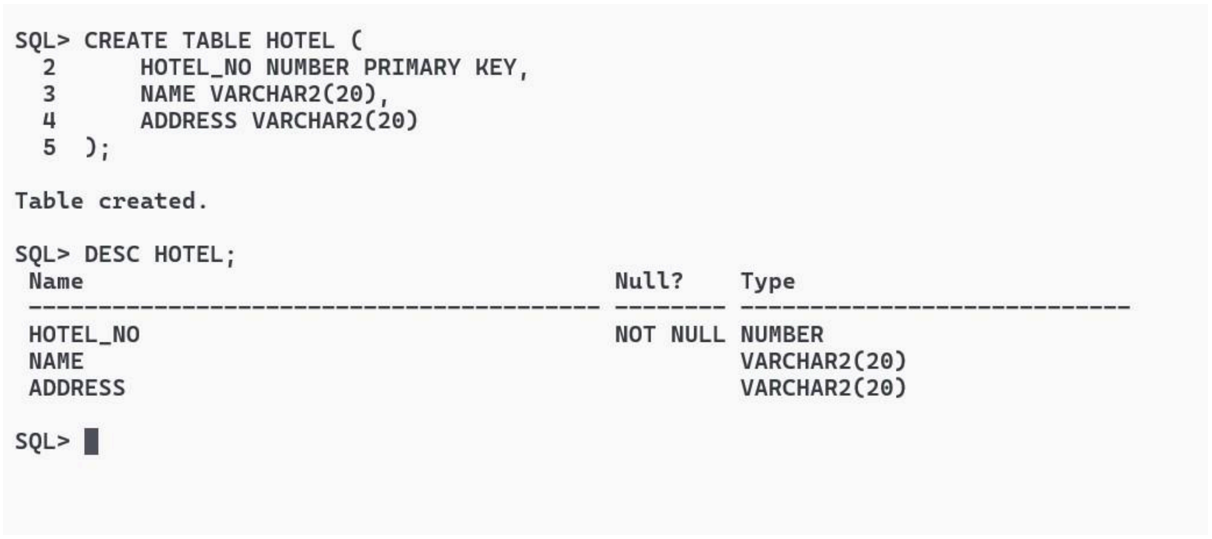
ASSIGNMENT 12

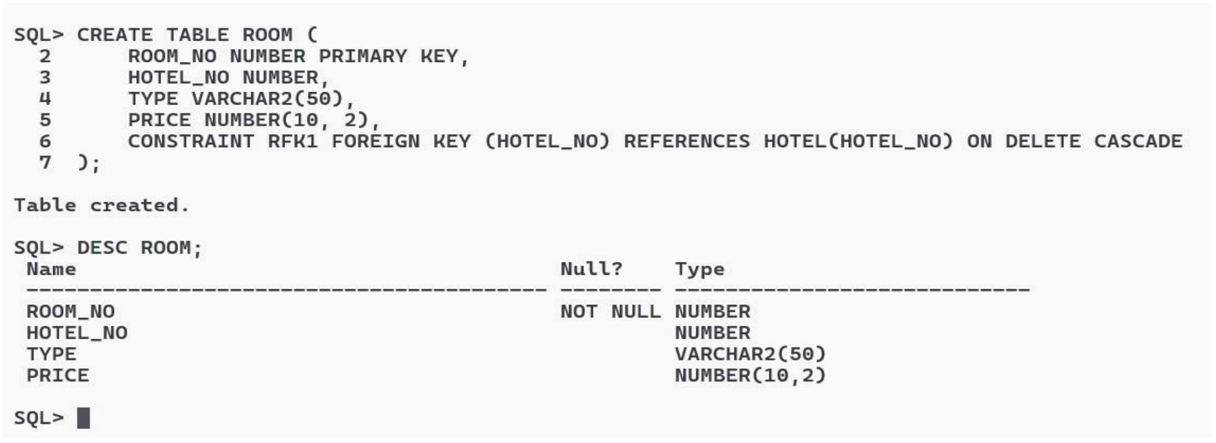
Hotel (Hotel_No, Name, Address)
Room (Room_No, Hotel_No, Type, Price)
Booking (Hotel_No, Guest_No, Date_From, Date_To, Room_No)
Guest (Guest_No, Name, Address)

```
CREATE TABLE HOTEL (
   HOTEL_NO NUMBER PRIMARY KEY,
   NAME VARCHAR2(20),
   ADDRESS VARCHAR2(20)
);
```



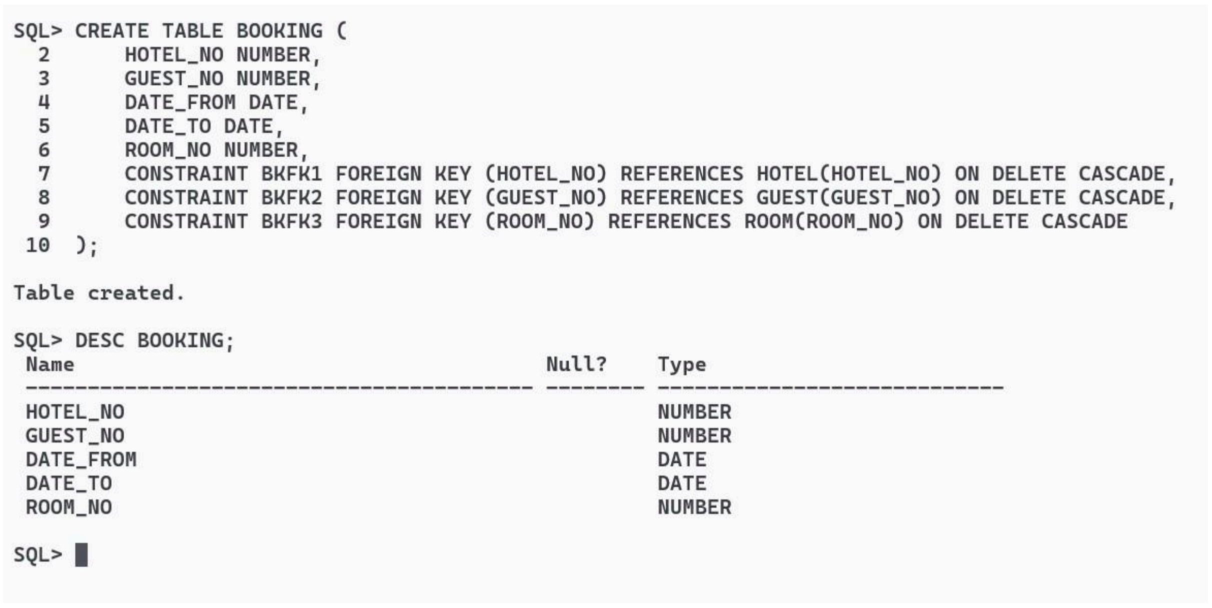
```
SQL> CREATE TABLE HOTEL (
  2      HOTEL_NO NUMBER PRIMARY KEY,
  3      NAME VARCHAR2(20),
  4      ADDRESS VARCHAR2(20)
  5  );

Table created.

SQL> DESC HOTEL;
 Name                                      Null?    Type
 ----------------------------------------- -------- ----------------------------
 HOTEL_NO                                  NOT NULL NUMBER
 NAME                                               VARCHAR2(20)
 ADDRESS                                            VARCHAR2(20)

SQL>
```

```
CREATE TABLE ROOM (
   ROOM_NO NUMBER PRIMARY KEY,
   HOTEL_NO NUMBER,
   TYPE VARCHAR2(50),
   PRICE NUMBER(10, 2),
        CONSTRAINT RFK1 FOREIGN KEY (HOTEL_NO) REFERENCES
HOTEL(HOTEL_NO) ON DELETE CASCADE
);
```



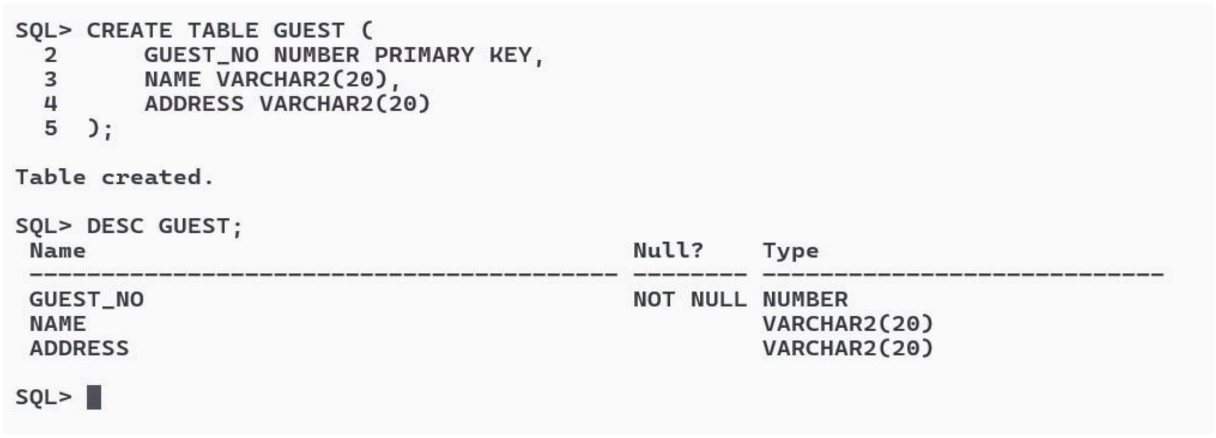
```
SQL> CREATE TABLE ROOM (
  2      ROOM_NO NUMBER PRIMARY KEY,
  3      HOTEL_NO NUMBER,
  4      TYPE VARCHAR2(50),
  5      PRICE NUMBER(10, 2),
  6      CONSTRAINT RFK1 FOREIGN KEY (HOTEL_NO) REFERENCES HOTEL(HOTEL_NO) ON DELETE CASCADE
  7  );

Table created.

SQL> DESC ROOM;
 Name                                      Null?    Type
 ----------------------------------------- -------- ----------------------------
 ROOM_NO                                   NOT NULL NUMBER
 HOTEL_NO                                           NUMBER
 TYPE                                               VARCHAR2(50)
 PRICE                                              NUMBER(10,2)

SQL>
```

```
CREATE TABLE BOOKING (
   HOTEL_NO NUMBER,
   GUEST_NO NUMBER,
   DATE_FROM DATE,
   DATE_TO DATE,
   ROOM_NO NUMBER,
          CONSTRAINT BKFK1 FOREIGN KEY (HOTEL_NO) REFERENCES
HOTEL(HOTEL_NO) ON DELETE CASCADE,
          CONSTRAINT BKFK2 FOREIGN KEY (GUEST_NO) REFERENCES
GUEST(GUEST_NO) ON DELETE CASCADE,
          CONSTRAINT BKFK3 FOREIGN KEY (ROOM_NO) REFERENCES
ROOM(ROOM_NO) ON DELETE CASCADE
);
```



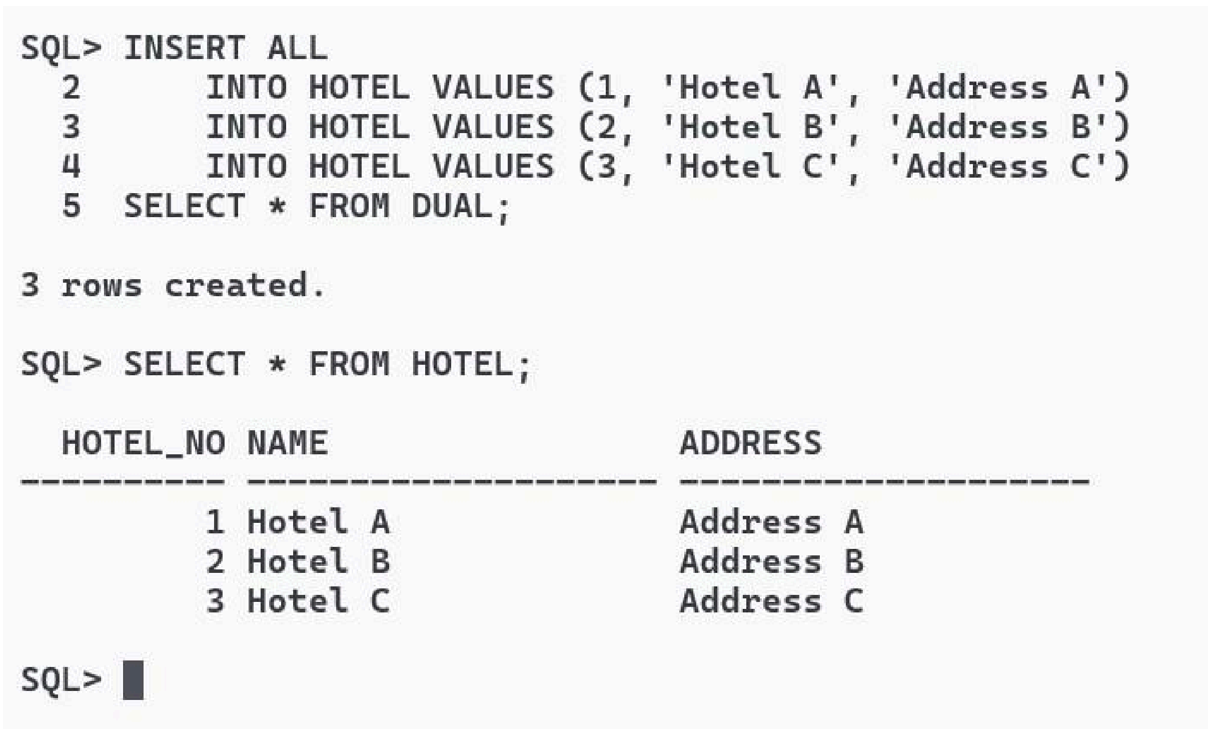
```
SQL> CREATE TABLE BOOKING (
  2      HOTEL_NO NUMBER,
  3      GUEST_NO NUMBER,
  4      DATE_FROM DATE,
  5      DATE_TO DATE,
  6      ROOM_NO NUMBER,
  7      CONSTRAINT BKFK1 FOREIGN KEY (HOTEL_NO) REFERENCES HOTEL(HOTEL_NO) ON DELETE CASCADE,
  8      CONSTRAINT BKFK2 FOREIGN KEY (GUEST_NO) REFERENCES GUEST(GUEST_NO) ON DELETE CASCADE,
  9      CONSTRAINT BKFK3 FOREIGN KEY (ROOM_NO) REFERENCES ROOM(ROOM_NO) ON DELETE CASCADE
 10  );

Table created.

SQL> DESC BOOKING;
 Name                                      Null?    Type
 ----------------------------------------- -------- ----------------------------
 HOTEL_NO                                           NUMBER
 GUEST_NO                                           NUMBER
 DATE_FROM                                          DATE
 DATE_TO                                            DATE
 ROOM_NO                                            NUMBER

SQL>
```

```
CREATE TABLE GUEST (
   GUEST_NO NUMBER PRIMARY KEY,
   NAME VARCHAR2(20),
   ADDRESS VARCHAR2(20)
);
```



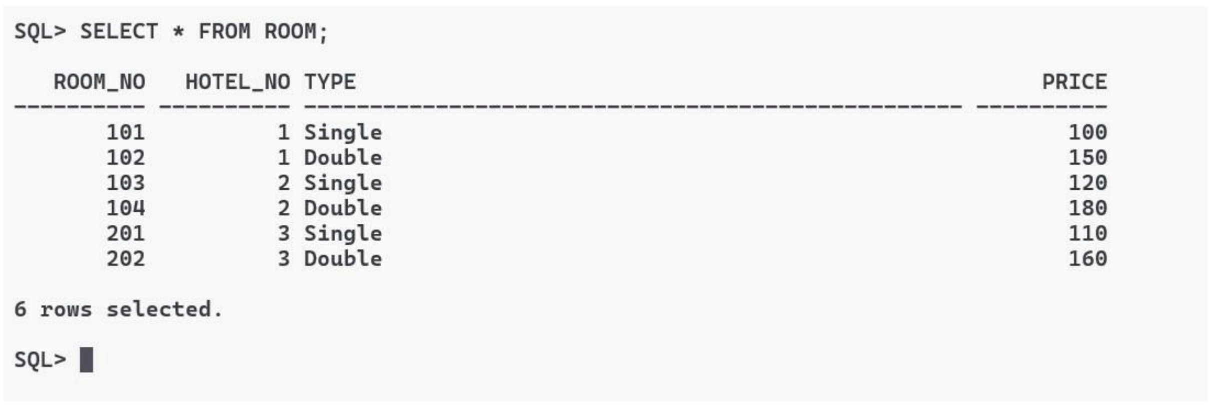
```
SQL> CREATE TABLE GUEST (
  2      GUEST_NO NUMBER PRIMARY KEY,
  3      NAME VARCHAR2(20),
  4      ADDRESS VARCHAR2(20)
  5  );

Table created.

SQL> DESC GUEST;
 Name                                      Null?    Type
 ----------------------------------------- -------- ----------------------------
 GUEST_NO                                  NOT NULL NUMBER
 NAME                                               VARCHAR2(20)
 ADDRESS                                            VARCHAR2(20)

SQL>
```

```
INSERT ALL
   INTO HOTEL VALUES (1, 'Hotel A', 'Address A')
   INTO HOTEL VALUES (2, 'Hotel B', 'Address B')
   INTO HOTEL VALUES (3, 'Hotel C', 'Address C')
SELECT * FROM DUAL;
```



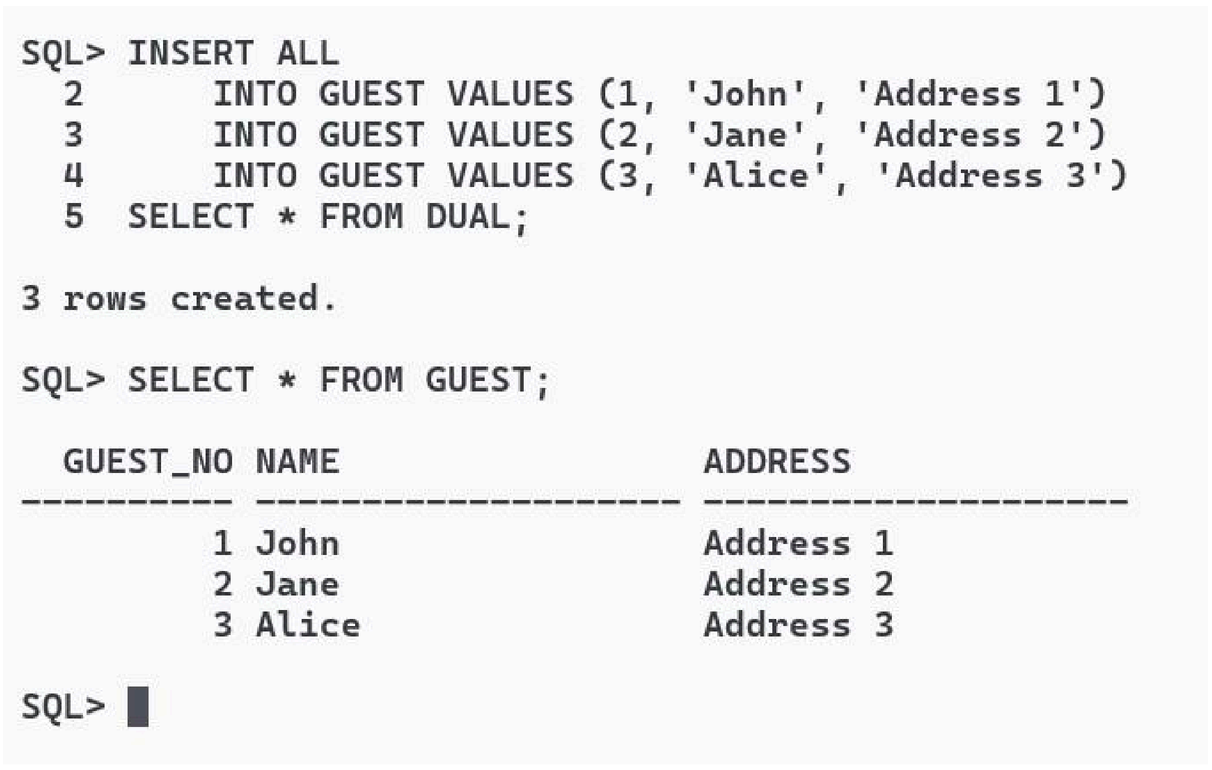
```
SQL> INSERT ALL
  2      INTO HOTEL VALUES (1, 'Hotel A', 'Address A')
  3      INTO HOTEL VALUES (2, 'Hotel B', 'Address B')
  4      INTO HOTEL VALUES (3, 'Hotel C', 'Address C')
  5  SELECT * FROM DUAL;

3 rows created.

SQL> SELECT * FROM HOTEL;

  HOTEL_NO NAME                 ADDRESS
---------- -------------------- --------------------
         1 Hotel A              Address A
         2 Hotel B              Address B
         3 Hotel C              Address C

SQL>
```

```
INSERT ALL
   INTO ROOM VALUES (101, 1, 'Single', 100.00)
   INTO ROOM VALUES (102, 1, 'Double', 150.00)
   INTO ROOM VALUES (103, 2, 'Single', 120.00)
   INTO ROOM VALUES (104, 2, 'Double', 180.00)
   INTO ROOM VALUES (201, 3, 'Single', 110.00)
   INTO ROOM VALUES (202, 3, 'Double', 160.00)
SELECT * FROM DUAL;
```



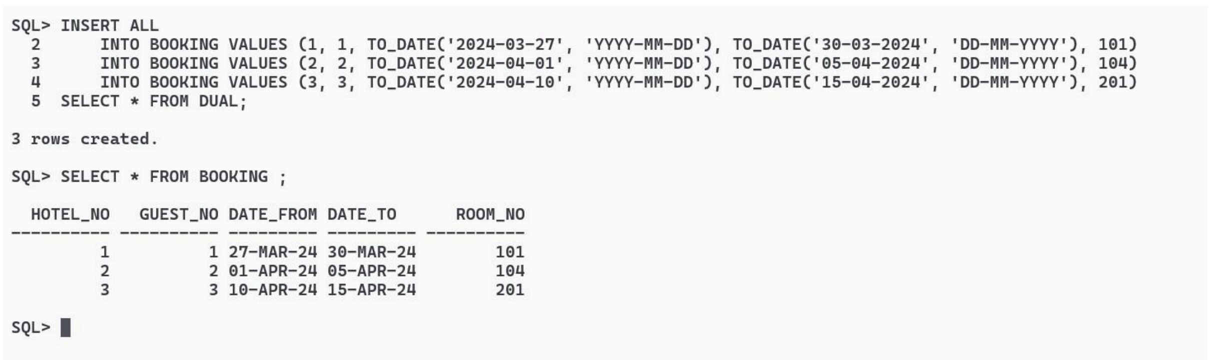
```
SQL> SELECT * FROM ROOM;

   ROOM_NO   HOTEL_NO TYPE                                                    PRICE
---------- ---------- -------------------------------------------------- ----------
       101          1 Single                                                    100
       102          1 Double                                                    150
       103          2 Single                                                    120
       104          2 Double                                                    180
       201          3 Single                                                    110
       202          3 Double                                                    160

6 rows selected.

SQL>
```

```
INSERT ALL
   INTO GUEST VALUES (1, 'John', 'Address 1')
   INTO GUEST VALUES (2, 'Jane', 'Address 2')
   INTO GUEST VALUES (3, 'Alice', 'Address 3')
SELECT * FROM DUAL;
```



```
SQL> INSERT ALL
  2      INTO GUEST VALUES (1, 'John', 'Address 1')
  3      INTO GUEST VALUES (2, 'Jane', 'Address 2')
  4      INTO GUEST VALUES (3, 'Alice', 'Address 3')
  5  SELECT * FROM DUAL;

3 rows created.

SQL> SELECT * FROM GUEST;

  GUEST_NO NAME                 ADDRESS
---------- -------------------- --------------------
         1 John                 Address 1
         2 Jane                 Address 2
         3 Alice                Address 3

SQL> 
```

```
INSERT ALL
       INTO BOOKING VALUES (1, 1, TO_DATE('2024-03-27', 'YYYY-MM-DD'), TO_DATE('30-03-2024', 'DD-MM-YYYY'), 101)
       INTO BOOKING VALUES (2, 2, TO_DATE('2024-04-01', 'YYYY-MM-DD'), TO_DATE('05-04-2024', 'DD-MM-YYYY'), 104)
       INTO BOOKING VALUES (3, 3, TO_DATE('2024-04-10', 'YYYY-MM-DD'), TO_DATE('15-04-2024', 'DD-MM-YYYY'), 201)
SELECT * FROM DUAL;
```

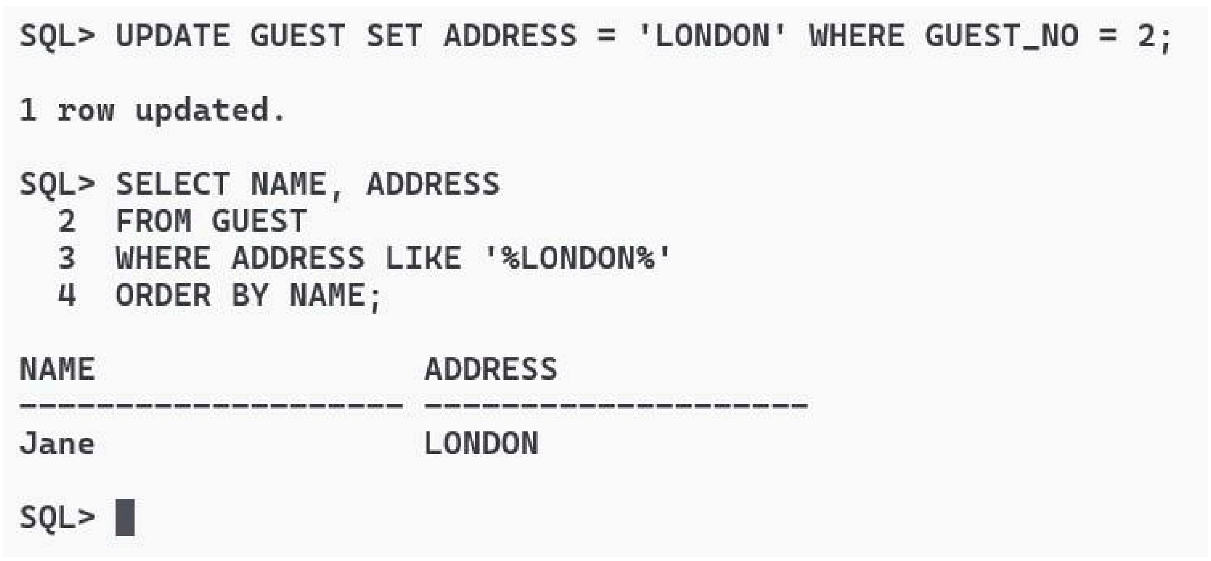


```
SQL> INSERT ALL
  2      INTO BOOKING VALUES (1, 1, TO_DATE('2024-03-27', 'YYYY-MM-DD'), TO_DATE('30-03-2024', 'DD-MM-YYYY'), 101)
  3      INTO BOOKING VALUES (2, 2, TO_DATE('2024-04-01', 'YYYY-MM-DD'), TO_DATE('05-04-2024', 'DD-MM-YYYY'), 104)
  4      INTO BOOKING VALUES (3, 3, TO_DATE('2024-04-10', 'YYYY-MM-DD'), TO_DATE('15-04-2024', 'DD-MM-YYYY'), 201)
  5  SELECT * FROM DUAL;

3 rows created.

SQL> SELECT * FROM BOOKING ;

  HOTEL_NO   GUEST_NO DATE_FROM DATE_TO      ROOM_NO
---------- ---------- --------- --------- ----------
         1          1 27-MAR-24 30-MAR-24        101
         2          2 01-APR-24 05-APR-24        104
         3          3 10-APR-24 15-APR-24        201

SQL> 
```

Populate the tables Answer the following query using SQL.

1.List the names and addresses of all guests in London, alphabetically ordered by name

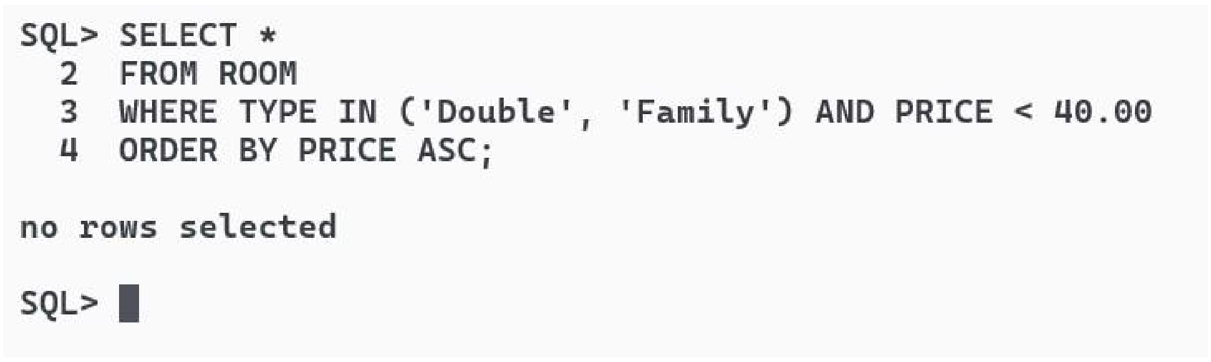
SELECT NAME, ADDRESS FROM GUEST WHERE ADDRESS LIKE '%LONDON%' ORDER BY NAME;



```
SQL> UPDATE GUEST SET ADDRESS = 'LONDON' WHERE GUEST_NO = 2;

1 row updated.

SQL> SELECT NAME, ADDRESS
  2  FROM GUEST
  3  WHERE ADDRESS LIKE '%LONDON%'
  4  ORDER BY NAME;

NAME                 ADDRESS
-------------------- --------------------
Jane                 LONDON

SQL>
```

2.List all double or family rooms with a price below £40.00 per night, in ascending order of price.

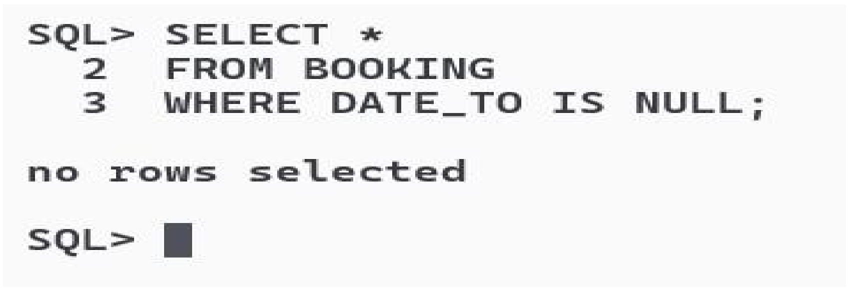
SELECT * FROM ROOM WHERE TYPE IN ('Double', 'Family') AND PRICE < 40.00 ORDER BY PRICE ASC;



```
SQL> SELECT *
  2  FROM ROOM
  3  WHERE TYPE IN ('Double', 'Family') AND PRICE < 40.00
  4  ORDER BY PRICE ASC;

no rows selected

SQL>
```

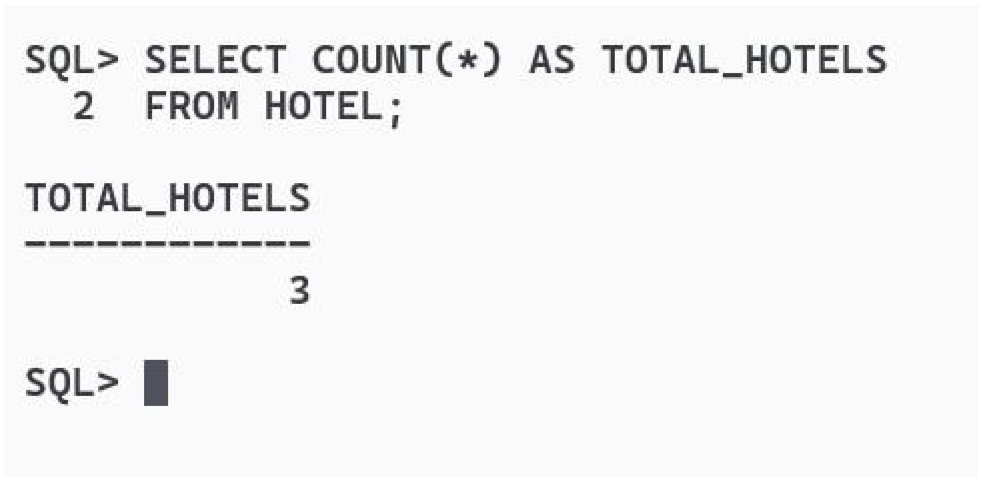
3.List the bookings for which no date_to has been specified.

SELECT * FROM BOOKING WHERE DATE_TO IS NULL;



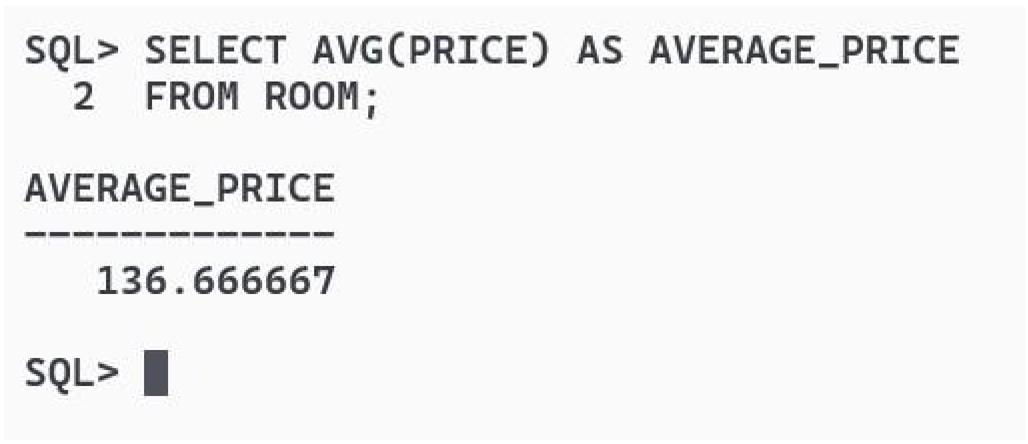
```
SQL> SELECT *
  2  FROM BOOKING
  3  WHERE DATE_TO IS NULL;

no rows selected

SQL>
```

4.How many hotels are there?
SELECT COUNT(*) AS TOTAL_HOTELS FROM HOTEL;



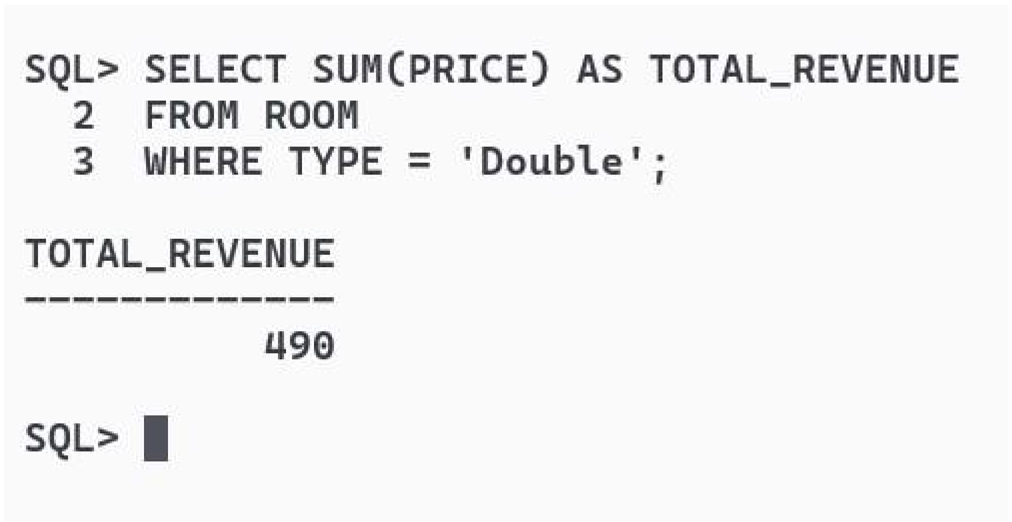
```
SQL> SELECT COUNT(*) AS TOTAL_HOTELS
  2  FROM HOTEL;

TOTAL_HOTELS
------------
           3

SQL> 
```

5.What is the average price of a room?
SELECT AVG(PRICE) AS AVERAGE_PRICE FROM ROOM;



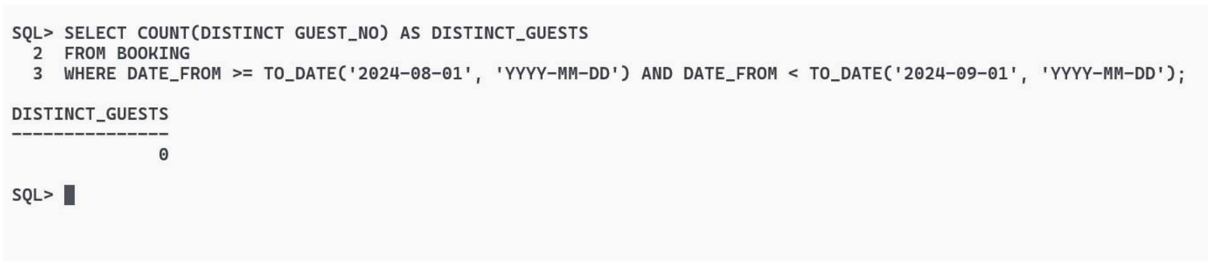
```
SQL> SELECT AVG(PRICE) AS AVERAGE_PRICE
  2  FROM ROOM;

AVERAGE_PRICE
-------------
   136.666667

SQL> 
```

6.What is the total revenue per night from all double rooms?
SELECT SUM(PRICE) AS TOTAL_REVENUE FROM ROOM WHERE TYPE = 'Double';



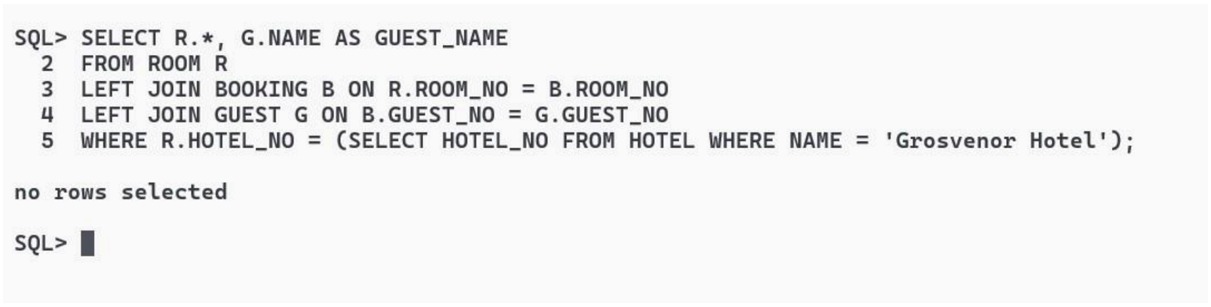
```
SQL> SELECT SUM(PRICE) AS TOTAL_REVENUE
  2  FROM ROOM
  3  WHERE TYPE = 'Double';

TOTAL_REVENUE
-------------
          490

SQL> 
```

7.How many different guests have made bookings for August?
SELECT COUNT(DISTINCT GUEST_NO) AS DISTINCT_GUESTS FROM BOOKING WHERE DATE_FROM >= TO_DATE('2024-08-01', 'YYYY-MM-DD') AND DATE_FROM < TO_DATE('2024-09-01', 'YYYY-MM-DD');



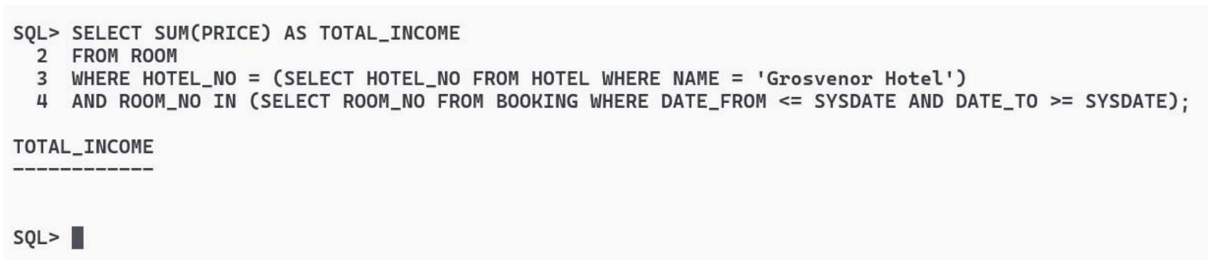
```
SQL> SELECT COUNT(DISTINCT GUEST_NO) AS DISTINCT_GUESTS
  2  FROM BOOKING
  3  WHERE DATE_FROM >= TO_DATE('2024-08-01', 'YYYY-MM-DD') AND DATE_FROM < TO_DATE('2024-09-01', 'YYYY-MM-DD');

DISTINCT_GUESTS
---------------
              0

SQL>
```

8.List the details of all rooms at the Grosvenor Hotel, including the name of the guest staying in the room, if the room is occupied.
SELECT R.*, G.NAME AS GUEST_NAME FROM ROOM R LEFT JOIN BOOKING B ON R.ROOM_NO = B.ROOM_NO LEFT JOIN GUEST G ON B.GUEST_NO = G.GUEST_NO WHERE R.HOTEL_NO = (SELECT HOTEL_NO FROM HOTEL WHERE NAME = 'Grosvenor Hotel');



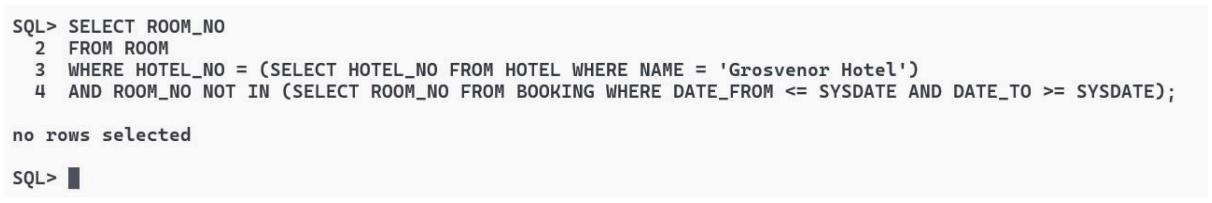
```
SQL> SELECT R.*, G.NAME AS GUEST_NAME
  2  FROM ROOM R
  3  LEFT JOIN BOOKING B ON R.ROOM_NO = B.ROOM_NO
  4  LEFT JOIN GUEST G ON B.GUEST_NO = G.GUEST_NO
  5  WHERE R.HOTEL_NO = (SELECT HOTEL_NO FROM HOTEL WHERE NAME = 'Grosvenor Hotel');

no rows selected

SQL>
```

9.What is the total income from bookings for the Grosvenor Hotel today?
SELECT SUM(PRICE) AS TOTAL_INCOME FROM ROOM
WHERE HOTEL_NO = (SELECT HOTEL_NO FROM HOTEL WHERE NAME = 'Grosvenor Hotel') AND ROOM_NO IN (SELECT ROOM_NO FROM BOOKING WHERE DATE_FROM <= SYSDATE AND DATE_TO >= SYSDATE);



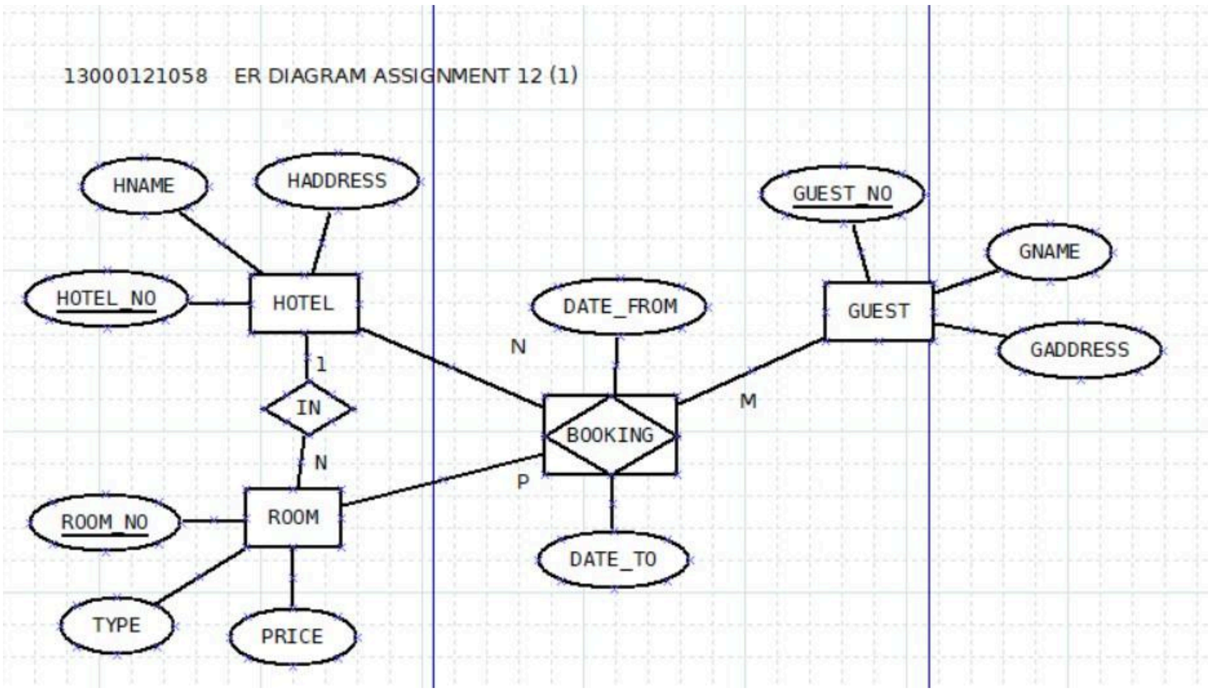
```
SQL> SELECT SUM(PRICE) AS TOTAL_INCOME
  2  FROM ROOM
  3  WHERE HOTEL_NO = (SELECT HOTEL_NO FROM HOTEL WHERE NAME = 'Grosvenor Hotel')
  4  AND ROOM_NO IN (SELECT ROOM_NO FROM BOOKING WHERE DATE_FROM <= SYSDATE AND DATE_TO >= SYSDATE);

TOTAL_INCOME
------------


SQL>
```

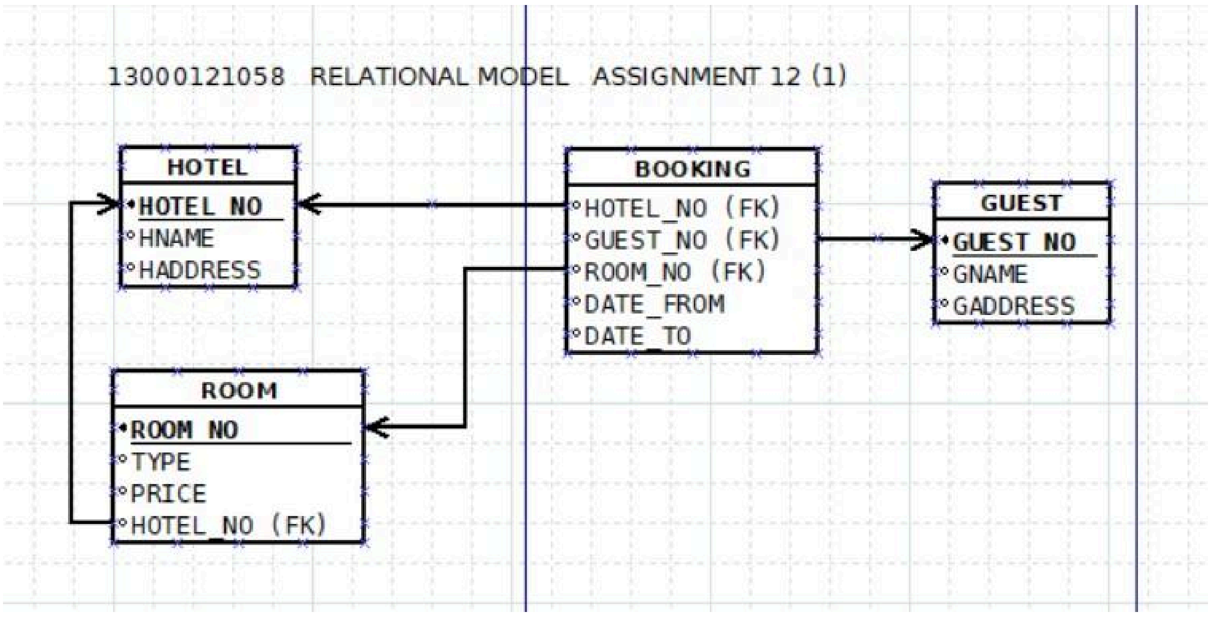
10.List the rooms that are currently unoccupied at the Grosvenor Hotel.
SELECT ROOM_NO FROM ROOM WHERE HOTEL_NO = (SELECT HOTEL_NO FROM HOTEL WHERE NAME = 'Grosvenor Hotel') AND ROOM_NO NOT IN (SELECT ROOM_NO FROM BOOKING WHERE DATE_FROM <= SYSDATE AND DATE_TO >= SYSDATE);



```
SQL> SELECT ROOM_NO
  2  FROM ROOM
  3  WHERE HOTEL_NO = (SELECT HOTEL_NO FROM HOTEL WHERE NAME = 'Grosvenor Hotel')
  4  AND ROOM_NO NOT IN (SELECT ROOM_NO FROM BOOKING WHERE DATE_FROM <= SYSDATE AND DATE_TO >= SYSDATE);

no rows selected

SQL> █
```

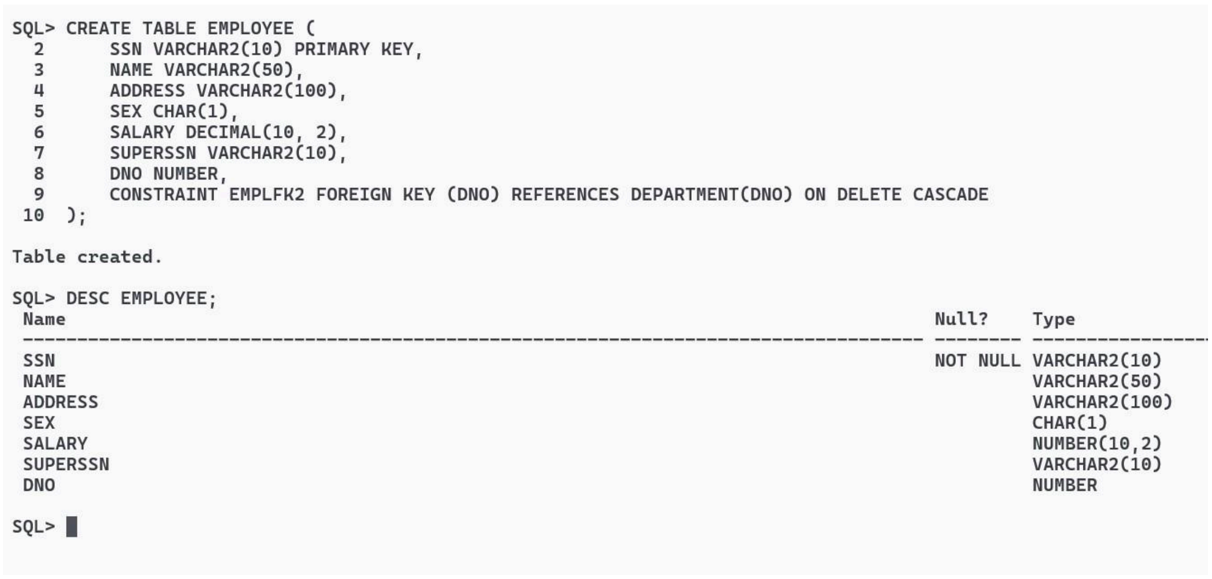
Design an ER Model for an application where hotels are booked by guests wanting to go on aholiday in India or abroad. Your design should meet all requirements. Map into a relationalmodel.





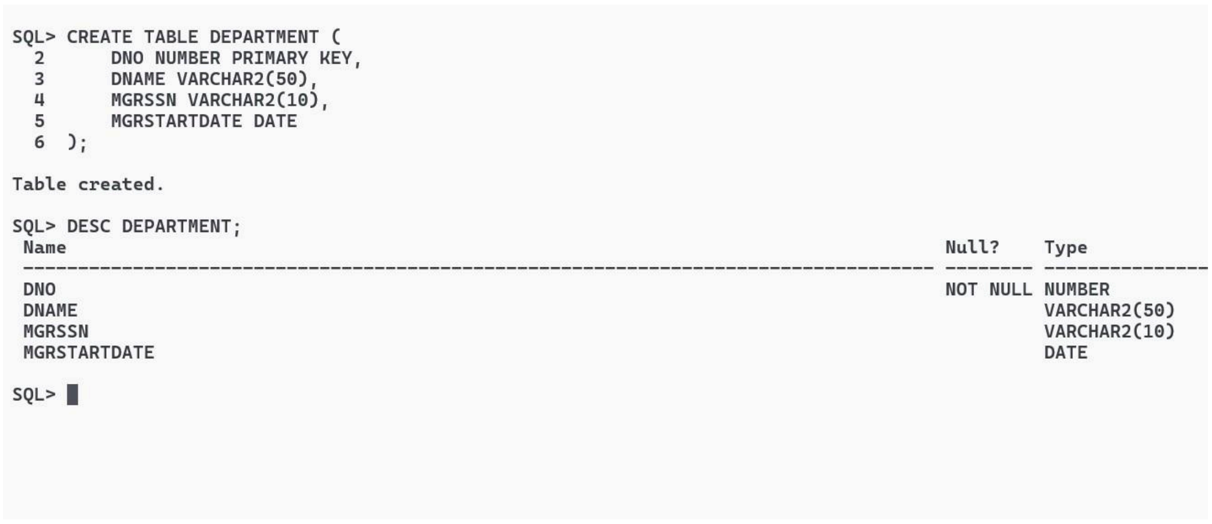
EMPLOYEE (SSN, Name, Address, Sex, Salary, SuperSSN, DNo)
DEPARTMENT (DNo, DName, MgrSSN, MgrStartDate)
DLOCATION (DNo,DLoc)
PROJECT (PNo, PName, PLocation, DNo)
WORKS_ON (SSN, PNo, Hours)

CREATE TABLE EMPLOYEE (SSN VARCHAR2(10) PRIMARY KEY, NAME VARCHAR2(50), ADDRESS VARCHAR2(100), SEX CHAR(1), SALARY DECIMAL(10, 2), SUPERSSN VARCHAR2(10), DNO NUMBER, CONSTRAINT EMPLFK2 FOREIGN KEY (DNO) REFERENCES DEPARTMENT(DNO) ON DELETE CASCADE);



```
SQL> CREATE TABLE EMPLOYEE (
         SSN VARCHAR2(10) PRIMARY KEY,
         NAME VARCHAR2(50),
         ADDRESS VARCHAR2(100),
         SEX CHAR(1),
         SALARY DECIMAL(10, 2),
         SUPERSSN VARCHAR2(10),
         DNO NUMBER,
         CONSTRAINT EMPLFK2 FOREIGN KEY (DNO) REFERENCES DEPARTMENT(DNO) ON DELETE CASCADE
     );

Table created.

SQL> DESC EMPLOYEE;
 Name                                                                              Null?    Type
 --------------------------------------------------------------------------------- -------- -----------------
 SSN                                                                               NOT NULL VARCHAR2(10)
 NAME                                                                                       VARCHAR2(50)
 ADDRESS                                                                                    VARCHAR2(100)
 SEX                                                                                        CHAR(1)
 SALARY                                                                                     NUMBER(10,2)
 SUPERSSN                                                                                   VARCHAR2(10)
 DNO                                                                                        NUMBER

SQL> █
```

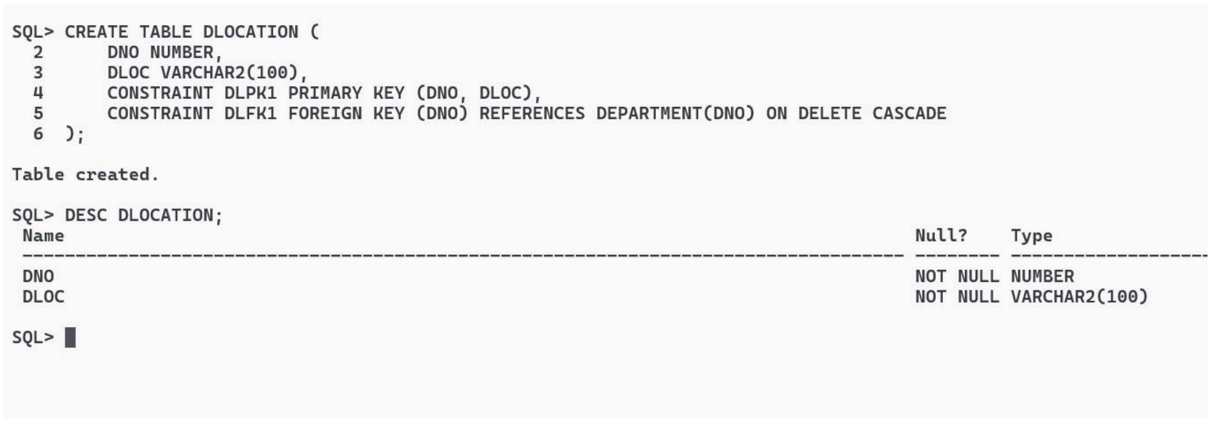
CREATE TABLE DEPARTMENT (DNO NUMBER PRIMARY KEY, DNAME VARCHAR2(50), MGRSSN VARCHAR2(10), MGRSTARTDATE DATE);



```
SQL> CREATE TABLE DEPARTMENT (
         DNO NUMBER PRIMARY KEY,
         DNAME VARCHAR2(50),
         MGRSSN VARCHAR2(10),
         MGRSTARTDATE DATE
     );

Table created.

SQL> DESC DEPARTMENT;
 Name                                                                              Null?    Type
 --------------------------------------------------------------------------------- -------- ---------------
 DNO                                                                               NOT NULL NUMBER
 DNAME                                                                                      VARCHAR2(50)
 MGRSSN                                                                                     VARCHAR2(10)
 MGRSTARTDATE                                                                               DATE

SQL> █
```

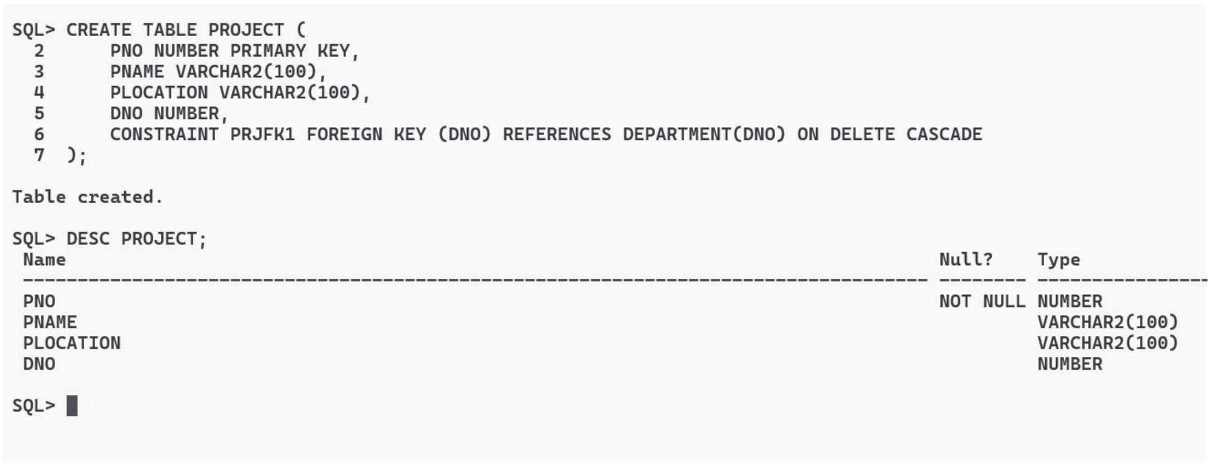
CREATE TABLE DLOCATION (DNO NUMBER, DLOC VARCHAR2(100), CONSTRAINT DLPK1 PRIMARY KEY (DNO, DLOC), CONSTRAINT DLFK1

FOREIGN KEY (DNO) REFERENCES DEPARTMENT(DNO) ON DELETE CASCADE);



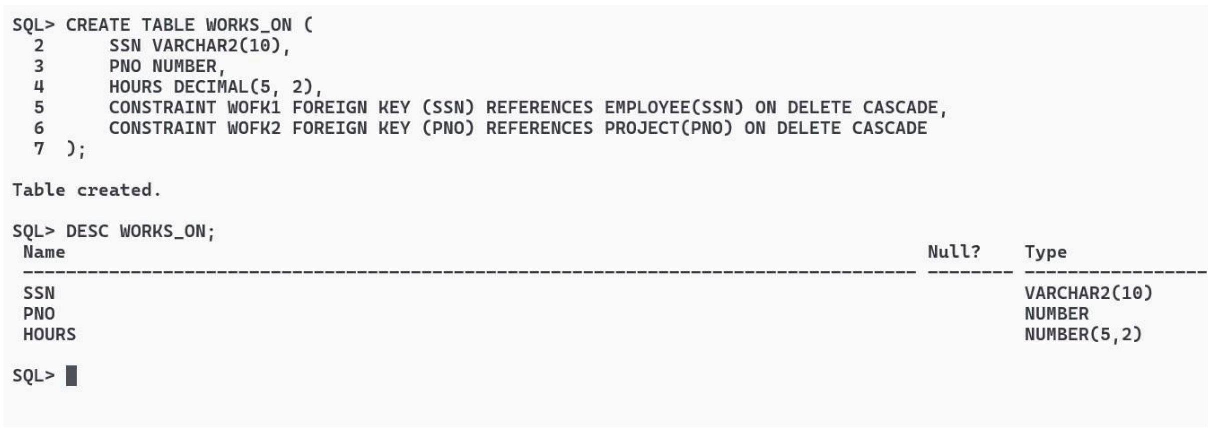
```
SQL> CREATE TABLE DLOCATION (
        DNO NUMBER,
        DLOC VARCHAR2(100),
        CONSTRAINT DLPK1 PRIMARY KEY (DNO, DLOC),
        CONSTRAINT DLFK1 FOREIGN KEY (DNO) REFERENCES DEPARTMENT(DNO) ON DELETE CASCADE
    );

Table created.

SQL> DESC DLOCATION;
 Name                                                                                   Null?    Type
 -------------------------------------------------------------------------------------- -------- ------------------
 DNO                                                                                    NOT NULL NUMBER
 DLOC                                                                                   NOT NULL VARCHAR2(100)

SQL>
```

CREATE TABLE PROJECT (PNO NUMBER PRIMARY KEY, PNAME VARCHAR2(100), PLOCATION VARCHAR2(100), DNO NUMBER, CONSTRAINT PRJFK1 FOREIGN KEY (DNO) REFERENCES DEPARTMENT(DNO) ON DELETE CASCADE);



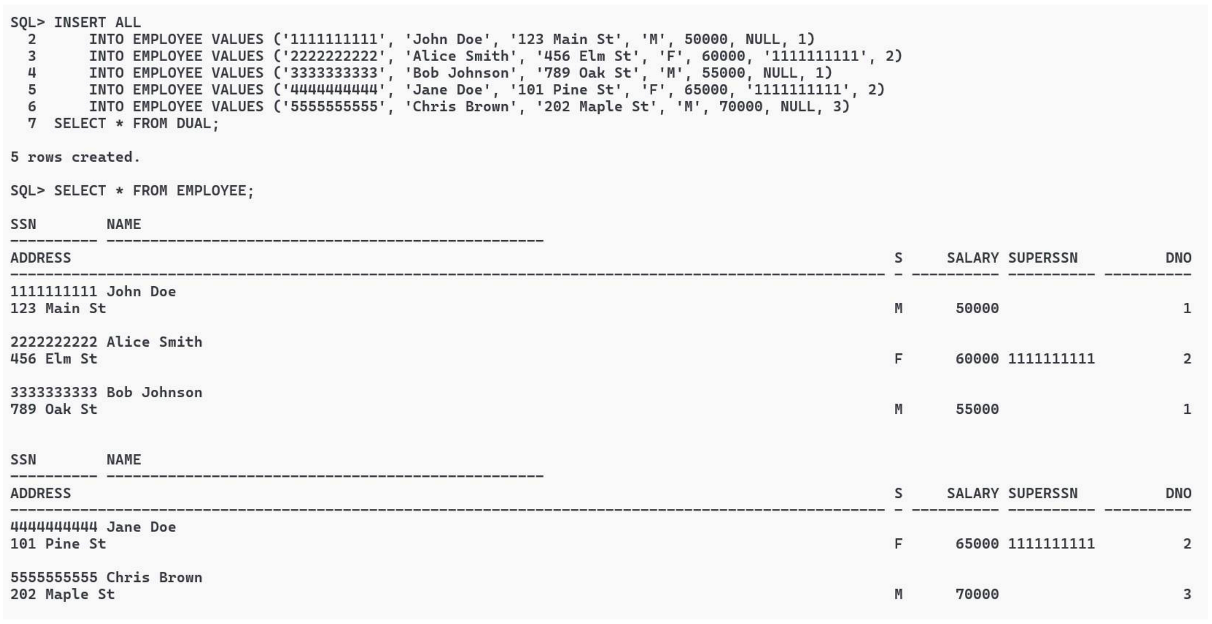
```
SQL> CREATE TABLE PROJECT (
        PNO NUMBER PRIMARY KEY,
        PNAME VARCHAR2(100),
        PLOCATION VARCHAR2(100),
        DNO NUMBER,
        CONSTRAINT PRJFK1 FOREIGN KEY (DNO) REFERENCES DEPARTMENT(DNO) ON DELETE CASCADE
    );

Table created.

SQL> DESC PROJECT;
 Name                                                                                   Null?    Type
 -------------------------------------------------------------------------------------- -------- ----------------
 PNO                                                                                    NOT NULL NUMBER
 PNAME                                                                                           VARCHAR2(100)
 PLOCATION                                                                                       VARCHAR2(100)
 DNO                                                                                             NUMBER

SQL>
```

CREATE TABLE WORKS_ON (SSN VARCHAR2(10), PNO NUMBER, HOURS DECIMAL(5, 2), CONSTRAINT WOFK1 FOREIGN KEY (SSN) REFERENCES EMPLOYEE(SSN) ON DELETE CASCADE, CONSTRAINT WOFK2 FOREIGN KEY (PNO) REFERENCES PROJECT(PNO) ON DELETE CASCADE);



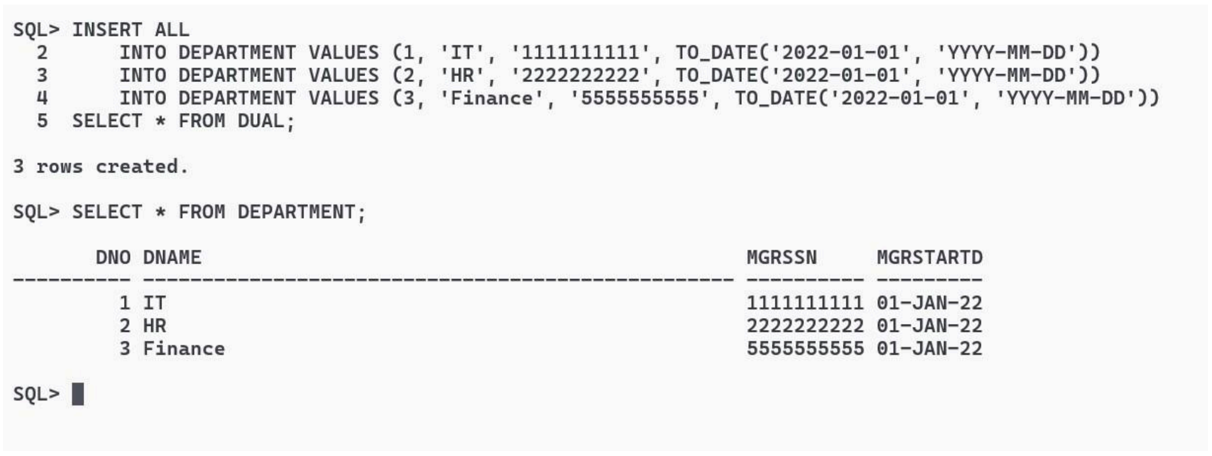
```
SQL> CREATE TABLE WORKS_ON (
        SSN VARCHAR2(10),
        PNO NUMBER,
        HOURS DECIMAL(5, 2),
        CONSTRAINT WOFK1 FOREIGN KEY (SSN) REFERENCES EMPLOYEE(SSN) ON DELETE CASCADE,
        CONSTRAINT WOFK2 FOREIGN KEY (PNO) REFERENCES PROJECT(PNO) ON DELETE CASCADE
    );

Table created.

SQL> DESC WORKS_ON;
 Name                                                                                   Null?    Type
 -------------------------------------------------------------------------------------- -------- ----------------
 SSN                                                                                             VARCHAR2(10)
 PNO                                                                                             NUMBER
 HOURS                                                                                           NUMBER(5,2)

SQL>
```

```
INSERT ALL
     INTO EMPLOYEE VALUES ('1111111111', 'John Doe', '123 Main St', 'M', 50000, NULL, 1)
     INTO EMPLOYEE VALUES ('2222222222', 'Alice Smith', '456 Elm St', 'F', 60000, '1111111111', 2)
     INTO EMPLOYEE VALUES ('3333333333', 'Bob Johnson', '789 Oak St', 'M', 55000, NULL, 1)
     INTO EMPLOYEE VALUES ('4444444444', 'Jane Doe', '101 Pine St', 'F', 65000, '1111111111', 2)
     INTO EMPLOYEE VALUES ('5555555555', 'Chris Brown', '202 Maple St', 'M', 70000, NULL, 3)
SELECT * FROM DUAL;
```



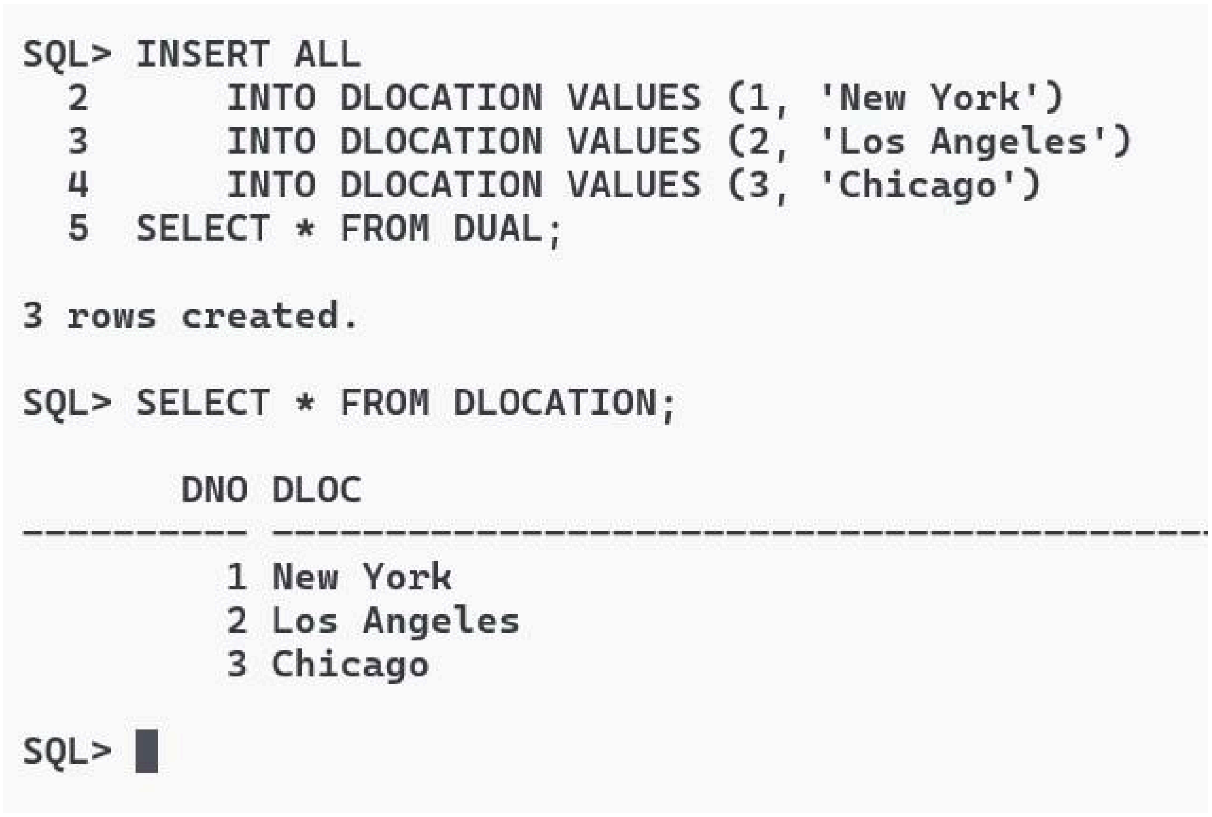
```
SQL> INSERT ALL
         INTO EMPLOYEE VALUES ('1111111111', 'John Doe', '123 Main St', 'M', 50000, NULL, 1)
         INTO EMPLOYEE VALUES ('2222222222', 'Alice Smith', '456 Elm St', 'F', 60000, '1111111111', 2)
         INTO EMPLOYEE VALUES ('3333333333', 'Bob Johnson', '789 Oak St', 'M', 55000, NULL, 1)
         INTO EMPLOYEE VALUES ('4444444444', 'Jane Doe', '101 Pine St', 'F', 65000, '1111111111', 2)
         INTO EMPLOYEE VALUES ('5555555555', 'Chris Brown', '202 Maple St', 'M', 70000, NULL, 3)
     SELECT * FROM DUAL;

5 rows created.

SQL> SELECT * FROM EMPLOYEE;

SSN        NAME
---------- --------------------------------------------------
ADDRESS                                                                                              S     SALARY SUPERSSN          DNO
---------------------------------------------------------------------------------------------------- - ---------- ---------- ----------
1111111111 John Doe
123 Main St                                                                                          M      50000                     1

2222222222 Alice Smith
456 Elm St                                                                                           F      60000 1111111111          2

3333333333 Bob Johnson
789 Oak St                                                                                           M      55000                     1


SSN        NAME
---------- --------------------------------------------------
ADDRESS                                                                                              S     SALARY SUPERSSN          DNO
---------------------------------------------------------------------------------------------------- - ---------- ---------- ----------
4444444444 Jane Doe
101 Pine St                                                                                          F      65000 1111111111          2

5555555555 Chris Brown
202 Maple St                                                                                         M      70000                     3
```

```
INSERT ALL
     INTO DEPARTMENT VALUES (1, 'IT', '1111111111', TO_DATE('2022-01-01', 'YYYY-MM-DD'))
     INTO DEPARTMENT VALUES (2, 'HR', '2222222222', TO_DATE('2022-01-01', 'YYYY-MM-DD'))
     INTO DEPARTMENT VALUES (3, 'Finance', '5555555555', TO_DATE('2022-01-01', 'YYYY-MM-DD'))
SELECT * FROM DUAL;
```



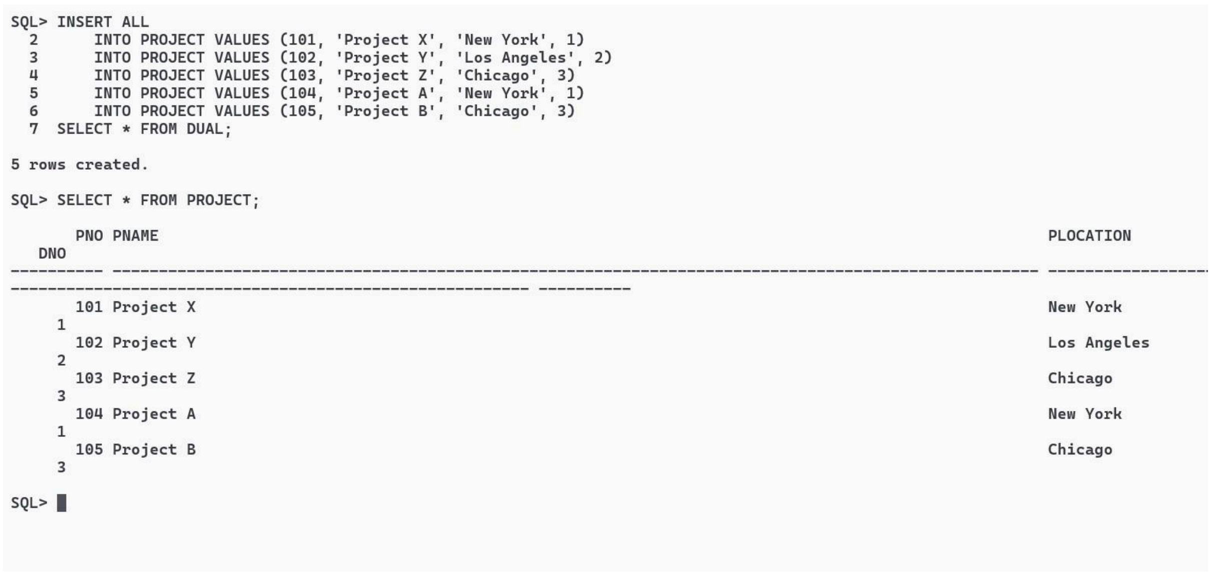
```
SQL> INSERT ALL
  2      INTO DEPARTMENT VALUES (1, 'IT', '1111111111', TO_DATE('2022-01-01', 'YYYY-MM-DD'))
  3      INTO DEPARTMENT VALUES (2, 'HR', '2222222222', TO_DATE('2022-01-01', 'YYYY-MM-DD'))
  4      INTO DEPARTMENT VALUES (3, 'Finance', '5555555555', TO_DATE('2022-01-01', 'YYYY-MM-DD'))
  5  SELECT * FROM DUAL;

3 rows created.

SQL> SELECT * FROM DEPARTMENT;

       DNO DNAME                                              MGRSSN     MGRSTARTD
---------- -------------------------------------------------- ---------- ---------
         1 IT                                                 1111111111 01-JAN-22
         2 HR                                                 2222222222 01-JAN-22
         3 Finance                                            5555555555 01-JAN-22

SQL>
```

```
INSERT ALL
   INTO DLOCATION VALUES (1, 'New York')
   INTO DLOCATION VALUES (2, 'Los Angeles')
   INTO DLOCATION VALUES (3, 'Chicago')
SELECT * FROM DUAL;
```



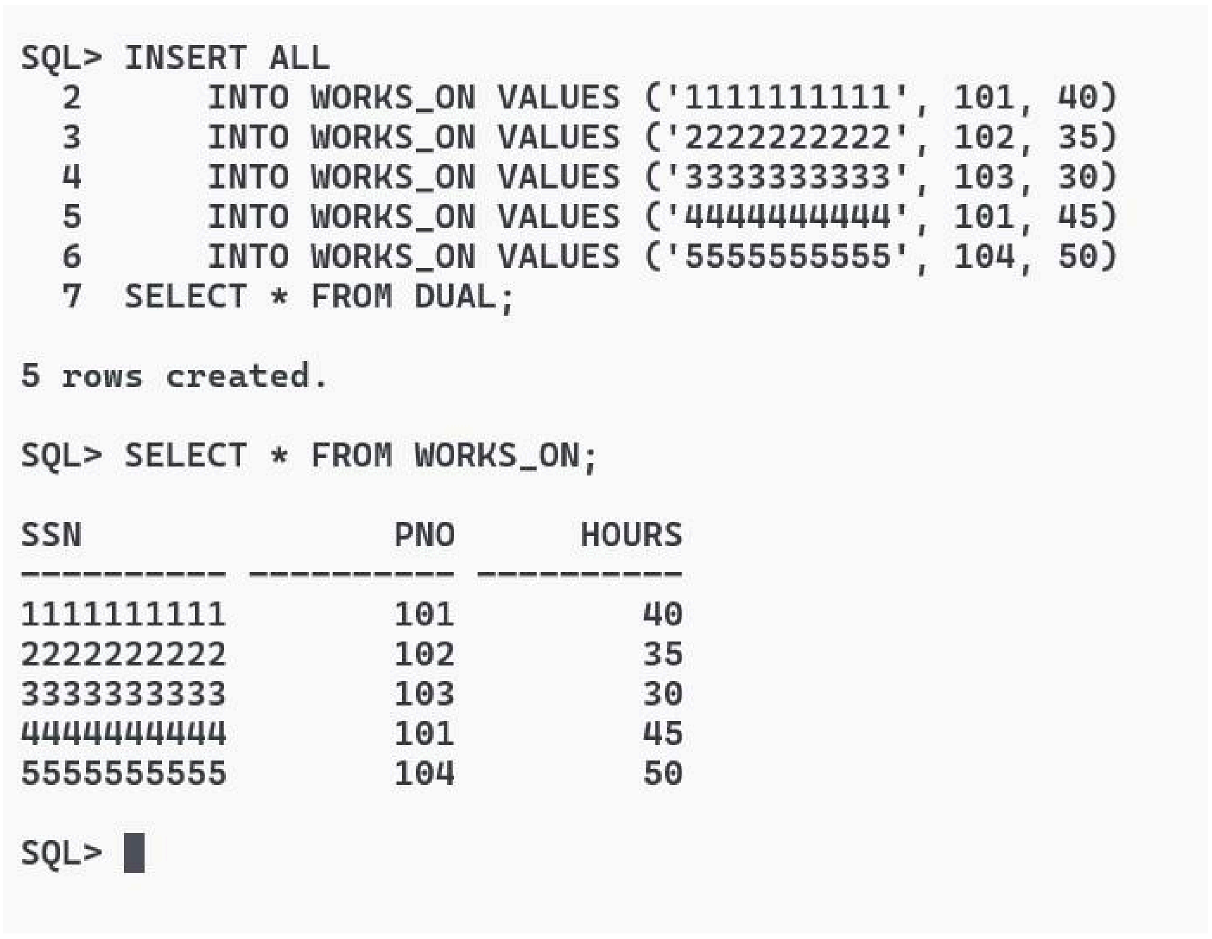
```
SQL> INSERT ALL
  2      INTO DLOCATION VALUES (1, 'New York')
  3      INTO DLOCATION VALUES (2, 'Los Angeles')
  4      INTO DLOCATION VALUES (3, 'Chicago')
  5  SELECT * FROM DUAL;

3 rows created.

SQL> SELECT * FROM DLOCATION;

       DNO DLOC
---------- ------------------------------------------
         1 New York
         2 Los Angeles
         3 Chicago

SQL>
```

```
INSERT ALL
   INTO PROJECT VALUES (101, 'Project X', 'New York', 1)
   INTO PROJECT VALUES (102, 'Project Y', 'Los Angeles', 2)
   INTO PROJECT VALUES (103, 'Project Z', 'Chicago', 3)
   INTO PROJECT VALUES (104, 'Project A', 'New York', 1)
   INTO PROJECT VALUES (105, 'Project B', 'Chicago', 3)
SELECT * FROM DUAL;
```



```
SQL> INSERT ALL
         INTO PROJECT VALUES (101, 'Project X', 'New York', 1)
         INTO PROJECT VALUES (102, 'Project Y', 'Los Angeles', 2)
         INTO PROJECT VALUES (103, 'Project Z', 'Chicago', 3)
         INTO PROJECT VALUES (104, 'Project A', 'New York', 1)
         INTO PROJECT VALUES (105, 'Project B', 'Chicago', 3)
     SELECT * FROM DUAL;

5 rows created.

SQL> SELECT * FROM PROJECT;

       PNO PNAME                                                                                                PLOCATION
   DNO
---------- ---------------------------------------------------------------------------------------------------- -----------------
-------------------------------------------------- ----------
       101 Project X                                                                                            New York
     1
       102 Project Y                                                                                            Los Angeles
     2
       103 Project Z                                                                                            Chicago
     3
       104 Project A                                                                                            New York
     1
       105 Project B                                                                                            Chicago
     3

SQL>
```

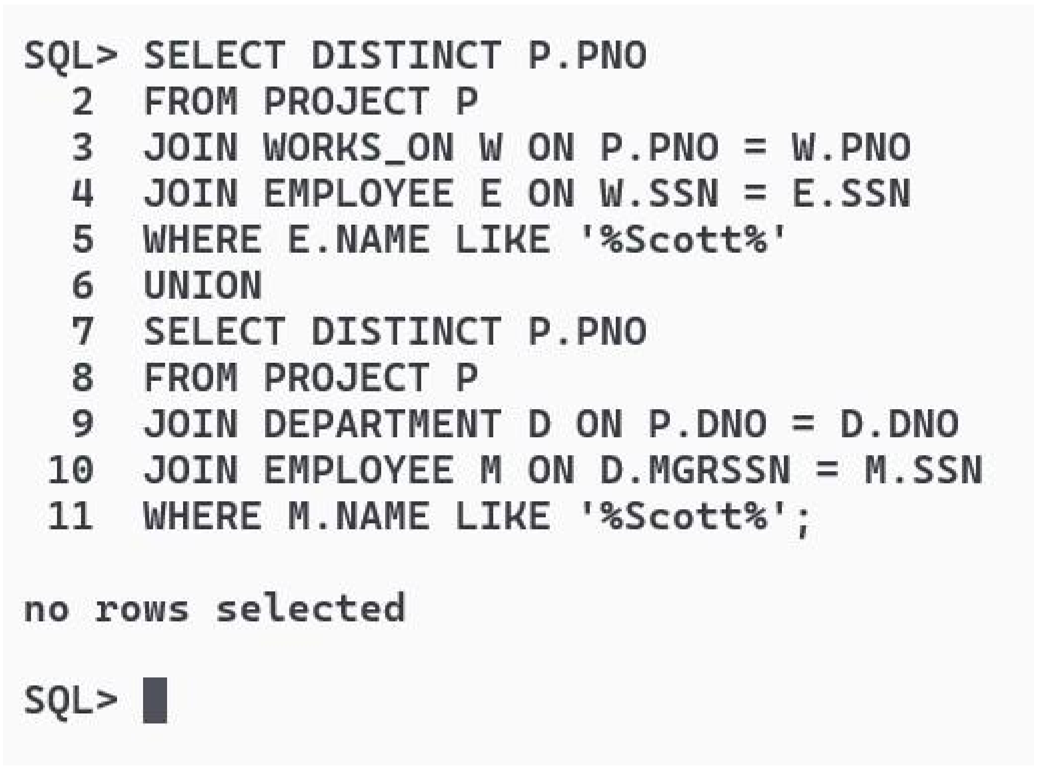
```
INSERT ALL
    INTO WORKS_ON VALUES ('1111111111', 101, 40)
    INTO WORKS_ON VALUES ('2222222222', 102, 35)
    INTO WORKS_ON VALUES ('3333333333', 103, 30)
    INTO WORKS_ON VALUES ('4444444444', 101, 45)
    INTO WORKS_ON VALUES ('5555555555', 104, 50)
SELECT * FROM DUAL;
```



```
SQL> INSERT ALL
         INTO WORKS_ON VALUES ('1111111111', 101, 40)
         INTO WORKS_ON VALUES ('2222222222', 102, 35)
         INTO WORKS_ON VALUES ('3333333333', 103, 30)
         INTO WORKS_ON VALUES ('4444444444', 101, 45)
         INTO WORKS_ON VALUES ('5555555555', 104, 50)
     SELECT * FROM DUAL;

5 rows created.

SQL> SELECT * FROM WORKS_ON;

SSN               PNO      HOURS
---------- ---------- ----------
1111111111        101         40
2222222222        102         35
3333333333        103         30
4444444444        101         45
5555555555        104         50

SQL>
```

Write SQL queries to ....
1.Make a list of all project numbers for projects that involve an employee whose last name is ‘Scott’, either as a worker or as a manager of the department that controls the project.

```
SELECT DISTINCT P.PNO
FROM PROJECT P
JOIN WORKS_ON W ON P.PNO = W.PNO
JOIN EMPLOYEE E ON W.SSN = E.SSN
WHERE E.NAME LIKE '%Scott%'
UNION
SELECT DISTINCT P.PNO
FROM PROJECT P
JOIN DEPARTMENT D ON P.DNO = D.DNO
JOIN EMPLOYEE M ON D.MGRSSN = M.SSN
WHERE M.NAME LIKE '%Scott%';
```

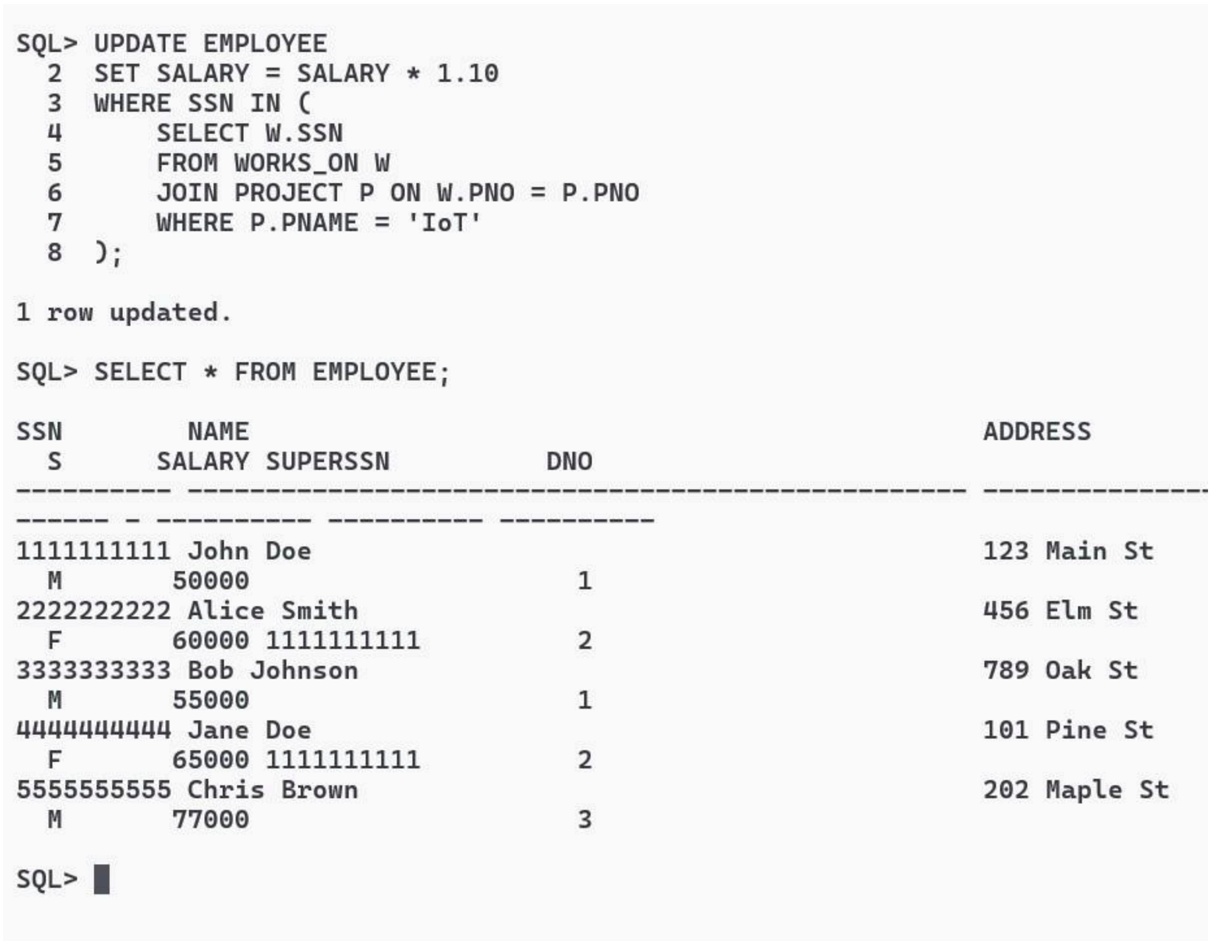


```
SQL> SELECT DISTINCT P.PNO
  2  FROM PROJECT P
  3  JOIN WORKS_ON W ON P.PNO = W.PNO
  4  JOIN EMPLOYEE E ON W.SSN = E.SSN
  5  WHERE E.NAME LIKE '%Scott%'
  6  UNION
  7  SELECT DISTINCT P.PNO
  8  FROM PROJECT P
  9  JOIN DEPARTMENT D ON P.DNO = D.DNO
 10  JOIN EMPLOYEE M ON D.MGRSSN = M.SSN
 11  WHERE M.NAME LIKE '%Scott%';

no rows selected

SQL>
```

2.Show the resulting salaries if every employee working on the ‘IoT’ project is given a 10 percent raise.

```
UPDATE PROJECT SET PNAME = 'IoT' WHERE PNO = 104;

UPDATE EMPLOYEE
```

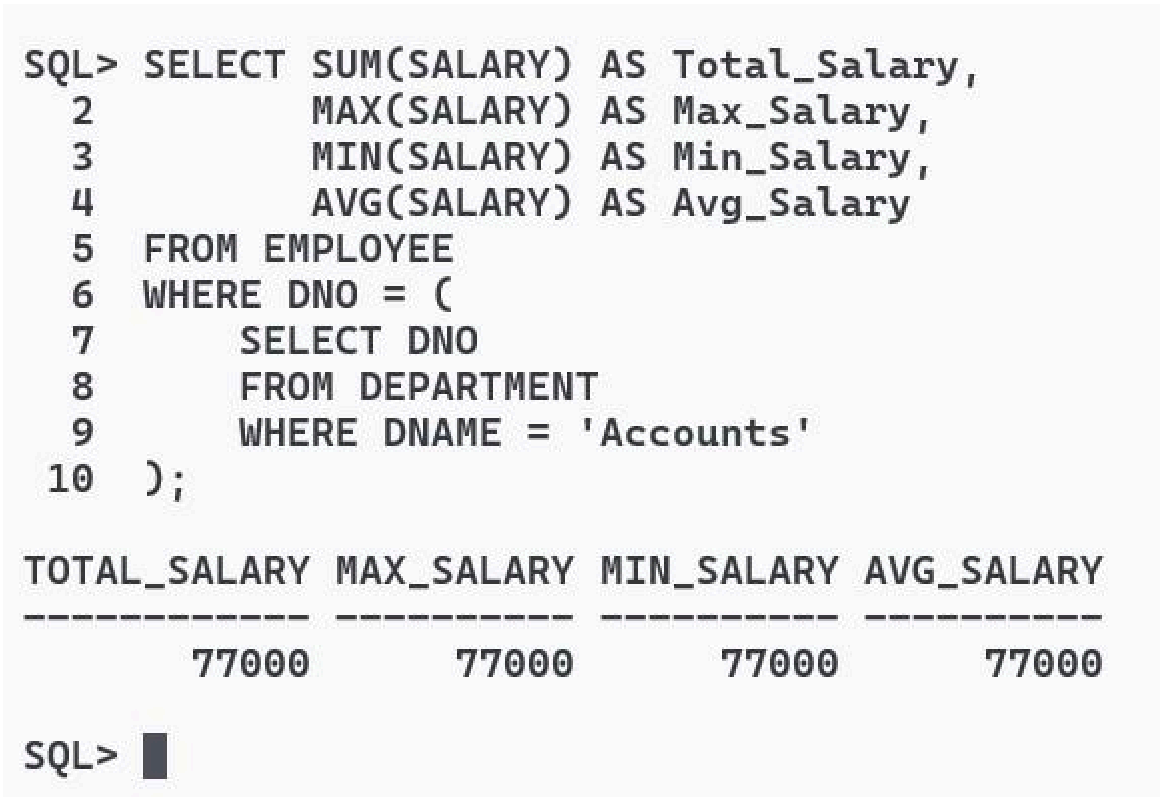
```
SET SALARY = SALARY * 1.10
WHERE SSN IN (
   SELECT W.SSN
   FROM WORKS_ON W
   JOIN PROJECT P ON W.PNO = P.PNO
   WHERE P.PNAME = 'IoT'
);
```



```
SQL> UPDATE EMPLOYEE
     SET SALARY = SALARY * 1.10
     WHERE SSN IN (
         SELECT W.SSN
         FROM WORKS_ON W
         JOIN PROJECT P ON W.PNO = P.PNO
         WHERE P.PNAME = 'IoT'
     );

1 row updated.

SQL> SELECT * FROM EMPLOYEE;

SSN        NAME                                                ADDRESS
  S      SALARY SUPERSSN          DNO
---------- -------------------------------------------------- ---------------
------ - ---------- ---------- ----------
1111111111 John Doe                                           123 Main St
  M       50000                     1
2222222222 Alice Smith                                        456 Elm St
  F       60000 1111111111          2
3333333333 Bob Johnson                                        789 Oak St
  M       55000                     1
4444444444 Jane Doe                                           101 Pine St
  F       65000 1111111111          2
5555555555 Chris Brown                                        202 Maple St
  M       77000                     3

SQL> █
```

3.Find the sum of the salaries of all employees of the ‘Accounts’ department, as well as the maximum salary, the minimum salary, and the average salary in this department

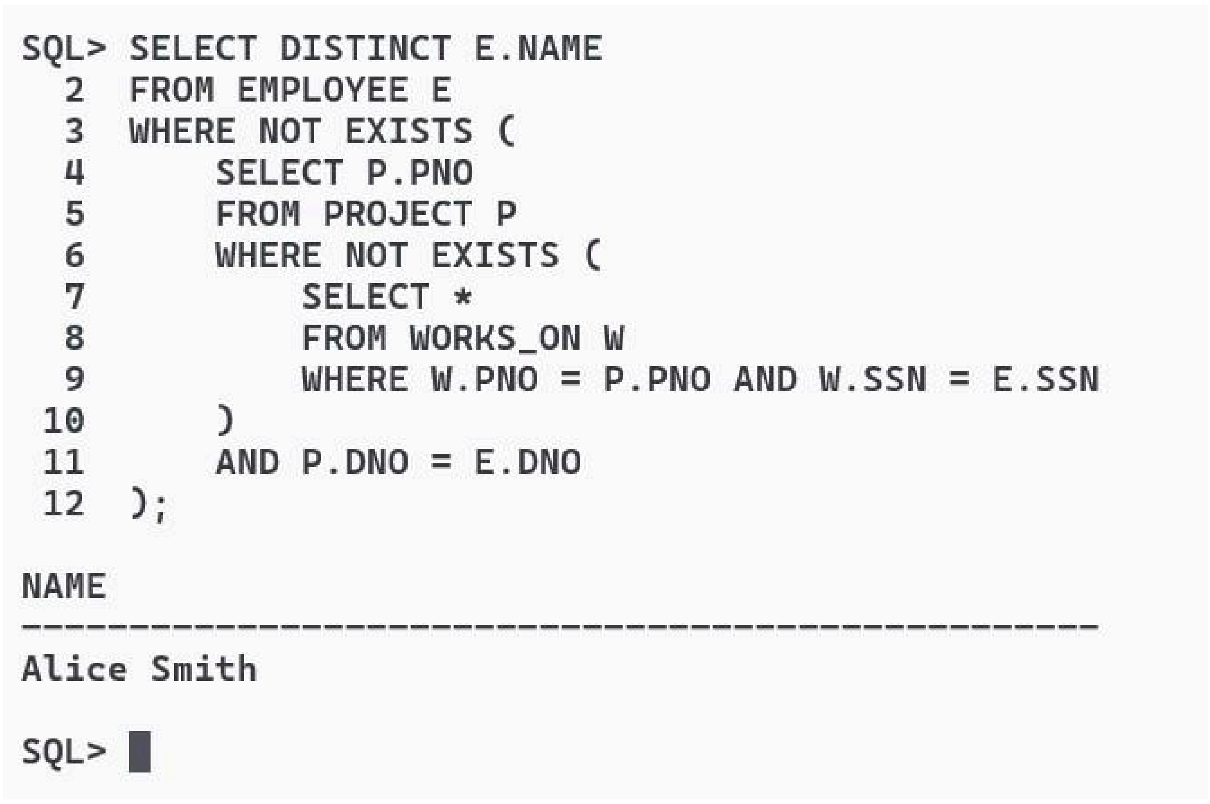
```
UPDATE DEPARTMENT SET DNAME = 'Accounts' WHERE DNO = 3;

SELECT SUM(SALARY) AS Total_Salary,
       MAX(SALARY) AS Max_Salary,
       MIN(SALARY) AS Min_Salary,
       AVG(SALARY) AS Avg_Salary
FROM EMPLOYEE
WHERE DNO = (
   SELECT DNO
   FROM DEPARTMENT
   WHERE DNAME = 'Accounts'
);
```



```
SQL> SELECT SUM(SALARY) AS Total_Salary,
            MAX(SALARY) AS Max_Salary,
            MIN(SALARY) AS Min_Salary,
            AVG(SALARY) AS Avg_Salary
     FROM EMPLOYEE
     WHERE DNO = (
         SELECT DNO
         FROM DEPARTMENT
         WHERE DNAME = 'Accounts'
     );

TOTAL_SALARY MAX_SALARY MIN_SALARY AVG_SALARY
------------ ---------- ---------- ----------
       77000      77000      77000      77000

SQL>
```

4.Retrieve the name of each employee who works on all the projects controlled by department number

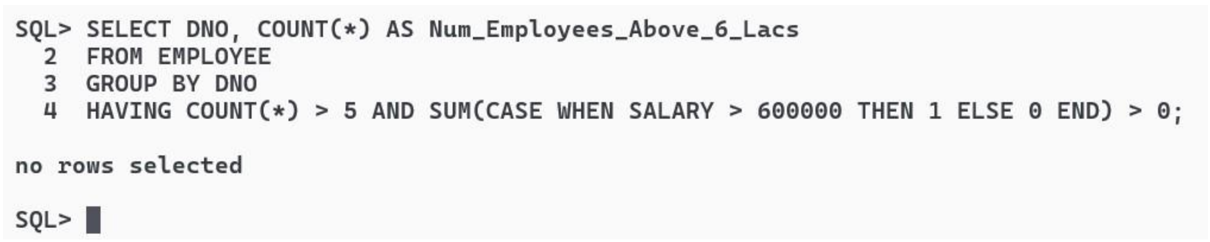
```
SELECT DISTINCT E.NAME
FROM EMPLOYEE E
WHERE NOT EXISTS (
   SELECT P.PNO
   FROM PROJECT P
   WHERE NOT EXISTS (
      SELECT *
      FROM WORKS_ON W
      WHERE W.PNO = P.PNO AND W.SSN = E.SSN
   )
   AND P.DNO = E.DNO
);
```



```
SQL> SELECT DISTINCT E.NAME
     FROM EMPLOYEE E
     WHERE NOT EXISTS (
         SELECT P.PNO
         FROM PROJECT P
         WHERE NOT EXISTS (
             SELECT *
             FROM WORKS_ON W
             WHERE W.PNO = P.PNO AND W.SSN = E.SSN
         )
         AND P.DNO = E.DNO
     );

NAME
--------------------------------------------------
Alice Smith

SQL>
```

5 (use NOT EXISTS operator).
5.For each department that has more than five employees, retrieve the department number and the number of its employees who are making more than Rs. 6,00,000.

```
SELECT DNO, COUNT(*) AS Num_Employees_Above_6_Lacs
FROM EMPLOYEE
GROUP BY DNO
HAVING COUNT(*) > 5 AND SUM(CASE WHEN SALARY > 600000 THEN 1 ELSE
0 END) > 0;
```

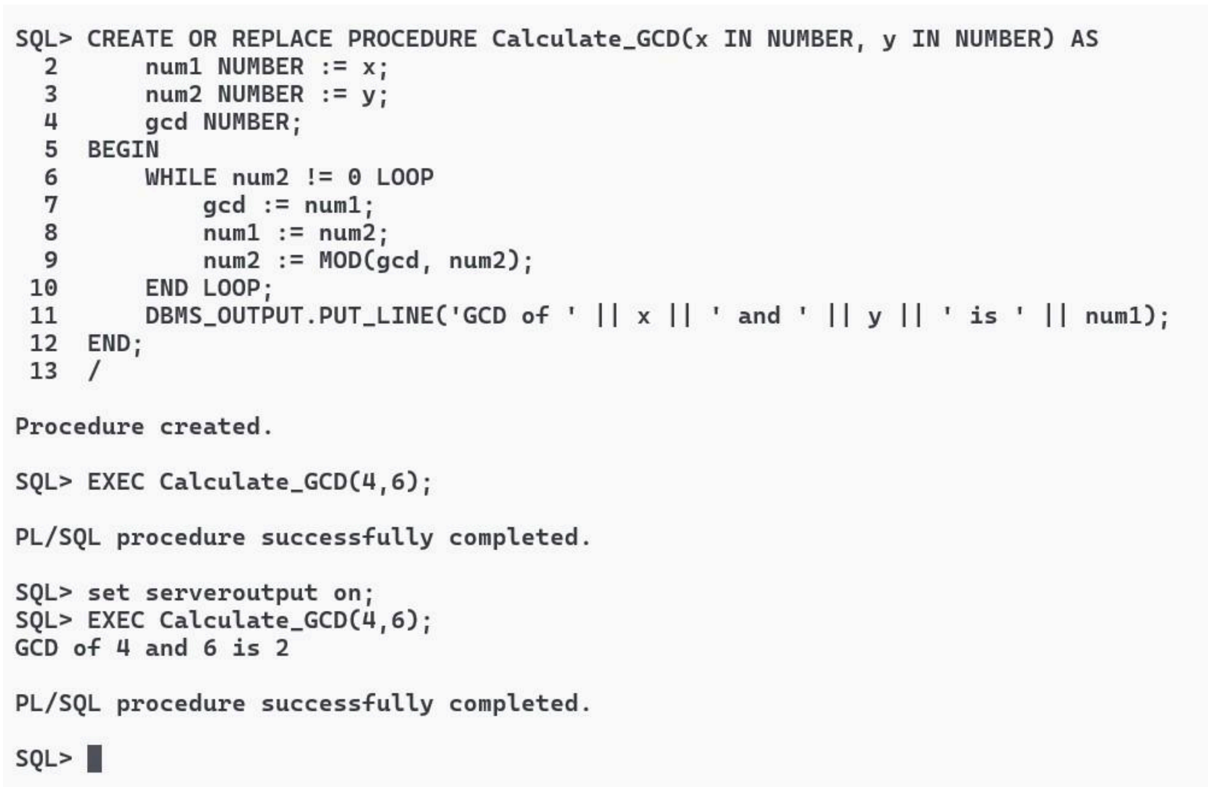


```
SQL> SELECT DNO, COUNT(*) AS Num_Employees_Above_6_Lacs
     FROM EMPLOYEE
     GROUP BY DNO
     HAVING COUNT(*) > 5 AND SUM(CASE WHEN SALARY > 600000 THEN 1 ELSE 0 END) > 0;

no rows selected

SQL>
```

B. Write a program in PL/SQL to create a procedure to displays the GCD of nos.

```
CREATE OR REPLACE PROCEDURE Calculate_GCD(x IN NUMBER, y IN
NUMBER) AS
   num1 NUMBER := x;
   num2 NUMBER := y;
   gcd NUMBER;
BEGIN
```

```
   WHILE num2 != 0 LOOP
      gcd := num1;
      num1 := num2;
      num2 := MOD(gcd, num2);
   END LOOP;
   DBMS_OUTPUT.PUT_LINE('GCD of ' || x || ' and ' || y || ' is ' || num1);
END;
/
```

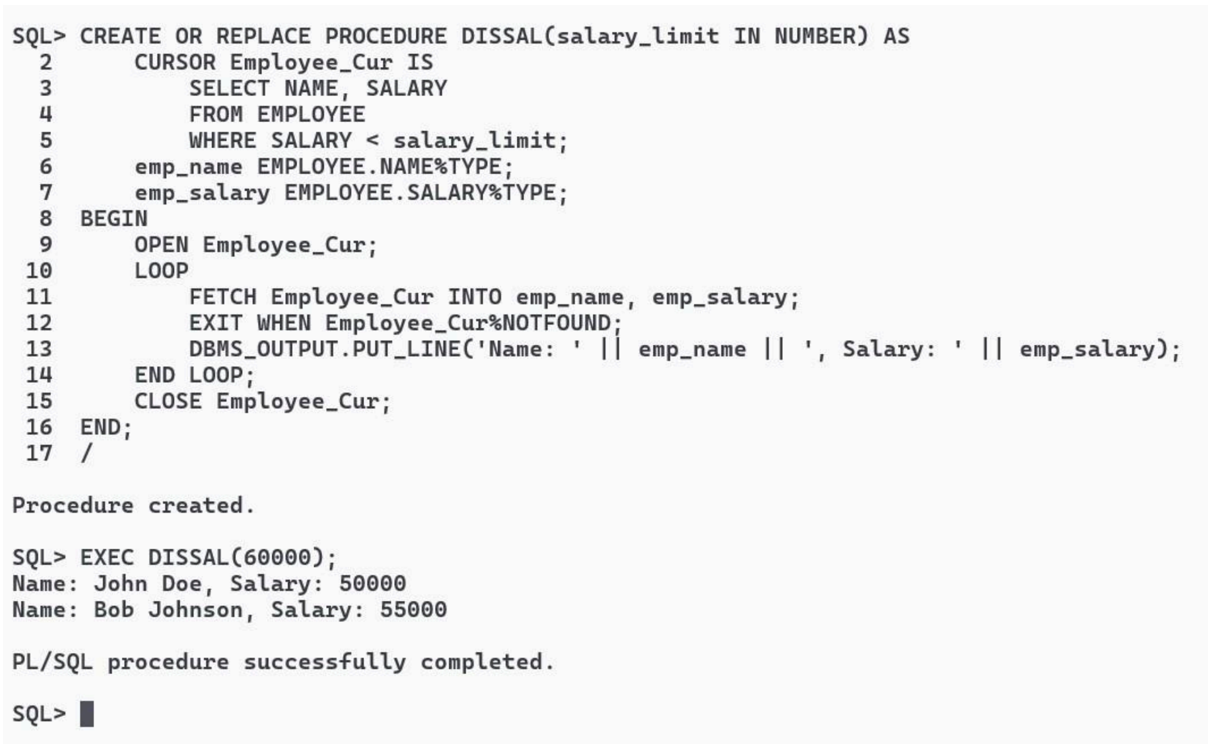


```
SQL> CREATE OR REPLACE PROCEDURE Calculate_GCD(x IN NUMBER, y IN NUMBER) AS
  2      num1 NUMBER := x;
  3      num2 NUMBER := y;
  4      gcd NUMBER;
  5  BEGIN
  6      WHILE num2 != 0 LOOP
  7          gcd := num1;
  8          num1 := num2;
  9          num2 := MOD(gcd, num2);
 10      END LOOP;
 11      DBMS_OUTPUT.PUT_LINE('GCD of ' || x || ' and ' || y || ' is ' || num1);
 12  END;
 13  /

Procedure created.

SQL> EXEC Calculate_GCD(4,6);

PL/SQL procedure successfully completed.

SQL> set serveroutput on;
SQL> EXEC Calculate_GCD(4,6);
GCD of 4 and 6 is 2

PL/SQL procedure successfully completed.

SQL>
```

C.Write a program in PL/SQL to create a cursor displays the name and salary of each employee in the EMPLOYEES table whose salary is less than that specified by a passed-in parameter value.

```
CREATE OR REPLACE PROCEDURE DISSAL(salary_limit IN NUMBER) AS
   CURSOR Employee_Cur IS
      SELECT NAME, SALARY
      FROM EMPLOYEE
      WHERE SALARY < salary_limit;
   emp_name EMPLOYEE.NAME%TYPE;
   emp_salary EMPLOYEE.SALARY%TYPE;
BEGIN
   OPEN Employee_Cur;
   LOOP
      FETCH Employee_Cur INTO emp_name, emp_salary;
      EXIT WHEN Employee_Cur%NOTFOUND;
```

```
        DBMS_OUTPUT.PUT_LINE('Name: ' || emp_name || ', Salary: ' || emp_salary);
    END LOOP;
    CLOSE Employee_Cur;
END;
/
```



```
SQL> CREATE OR REPLACE PROCEDURE DISSAL(salary_limit IN NUMBER) AS
         CURSOR Employee_Cur IS
             SELECT NAME, SALARY
             FROM EMPLOYEE
             WHERE SALARY < salary_limit;
         emp_name EMPLOYEE.NAME%TYPE;
         emp_salary EMPLOYEE.SALARY%TYPE;
     BEGIN
         OPEN Employee_Cur;
         LOOP
             FETCH Employee_Cur INTO emp_name, emp_salary;
             EXIT WHEN Employee_Cur%NOTFOUND;
             DBMS_OUTPUT.PUT_LINE('Name: ' || emp_name || ', Salary: ' || emp_salary);
         END LOOP;
         CLOSE Employee_Cur;
     END;
     /

Procedure created.

SQL> EXEC DISSAL(60000);
Name: John Doe, Salary: 50000
Name: Bob Johnson, Salary: 55000

PL/SQL procedure successfully completed.

SQL>
```