CSE2007 : Database Management Systems

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Lab Cycle-I (SQL)

(Questions from 11 to 20)

Creation of General Hardware Database (GHD), Insertion of data into GHD and writing and executing queries for the questions.

I. General Hardware Database:

SalesPerson(SalesPersonNumber, SalesPersonName, CommPercentage, YearHire, OfficeNumber)

Customer (CustomerNumber, CustomerName, SalesPersonNumber, HeadQuarterCity)

CustomerEmployee (CustomerNumber, EmployeeNumber, EmployeeName, Title)

Product (ProductNumber, ProductName, UnitPrice)

Sales (SalesPersonNumber, ProductNumber, Quantity)

Office (OfficeNumber, Telephone, Size)

```
Run SQL Command Line

SQL> CREATE TABLE SalesPerson(SalesPersonNumber number(10) not null, SalesPersonName varchar2(15), CommPercentage number(5), YearHire n
umber(5), OfficeNumber number(10), PRIMARY KEY(SalesPersonNumber));

Table created.

SQL> CREATE TABLE Customer(CustomerNumber number(10) not null, CustomerName varchar2(15), SalesPersonNumber number(10), HeadQuaterCity
varchar2(15), PRIMARY KEY(CustomerNumber), FOREIGN KEY(SalesPersonNumber) REFERENCES SalesPerson);

Table created.

SQL> CREATE TABLE CustomerEmployee(CustomerNumber number(10), EmployeeNumber number(10) not null, EmployeeName varchar2(15), Title varc
har2(15), PRIMARY KEY(EmployeeNumber), FOREIGN KEY(CustomerNumber) REFERENCES Customer);

Table created.

SQL> CREATE TABLE Product(ProductNumber number(10) not null, ProductName varchar2(15), UnitPrice number(5), PRIMARY KEY(ProductNumber))
;

Table created.

SQL> CREATE TABLE Sales(SalesPersonNumber number(10), ProductNumber number(10), Quantity number(10), FOREIGN KEY(SalesPersonNumber) REF
ERENCES SalesPerson, FOREIGN KEY(ProductNumber) REFERENCES Product);

Table created.

SQL> CREATE TABLE Office(OfficeNumber number(10), Telephone number(10), officeSize number(10), FOREIGN KEY(OfficeNumber) REFERENCES Sal
esPerson);

Table created.

SQL> commit;

Commit complete.

SQL>
```

Tables Description :

> DESC SalesPerson;

> DESC Customer;

> DESC CustomerEmployee;

> DESC Product;

> DESC Sales;

> DESC Office;

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```
Run SQL Command Line

SQL> DESC SalesPerson;
 Name                                      Null?    Type
 ----------------------------------------- -------- ----------------------------
 SALESPERSONNUMBER                         NOT NULL NUMBER(10)
 SALESPERSONNAME                                    VARCHAR2(15)
 COMMPERCENTAGE                                     NUMBER(5)
 YEARHIRE                                           NUMBER(5)
 OFFICENUMBER                                       NUMBER(10)

SQL> DESC Customer;
 Name                                      Null?    Type
 ----------------------------------------- -------- ----------------------------
 CUSTOMERNUMBER                            NOT NULL NUMBER(10)
 CUSTOMERNAME                                       VARCHAR2(15)
 SALESPERSONNUMBER                                  NUMBER(10)
 HEADQUATERCITY                                     VARCHAR2(15)

SQL> DESC CustomerEmployee;
 Name                                      Null?    Type
 ----------------------------------------- -------- ----------------------------
 CUSTOMERNUMBER                                     NUMBER(10)
 EMPLOYEENUMBER                            NOT NULL NUMBER(10)
 EMPLOYEENAME                                       VARCHAR2(15)
 TITLE                                              VARCHAR2(15)

SQL> DESC Product;
 Name                                      Null?    Type
 ----------------------------------------- -------- ----------------------------
 PRODUCTNUMBER                             NOT NULL NUMBER(10)
 PRODUCTNAME                                        VARCHAR2(15)
 UNITPRICE                                          NUMBER(5)

SQL> DESC Sales;
 Name                                      Null?    Type
 ----------------------------------------- -------- ----------------------------
 SALESPERSONNUMBER                                  NUMBER(10)
 PRODUCTNUMBER                                      NUMBER(10)
 QUANTITY                                           NUMBER(10)

SQL> DESC Office;
 Name                                      Null?    Type
 ----------------------------------------- -------- ----------------------------
 OFFICENUMBER                                       NUMBER(10)
 TELEPHONE                                          NUMBER(10)
 OFFICESIZE                                         NUMBER(10)

SQL>
```

Inserting Values :

SalesPerson Table

```
Run SQL Command Line

SQL> INSERT INTO SalesPerson VALUES(146,'gudi',10,2000,1);

1 row created.

SQL> INSERT INTO SalesPerson VALUES(186,'vara',7,2001,2);

1 row created.

SQL> INSERT INTO SalesPerson VALUES(176,'prasad',3,2002,3);

1 row created.

SQL> INSERT INTO SalesPerson VALUES(137,'prasad',14,2003,4);

1 row created.

SQL> INSERT INTO SalesPerson VALUES(203,'devgudi',10,2004,5);

1 row created.

SQL> INSERT INTO SalesPerson VALUES(227,'cryptokid',1,2005,6);

1 row created.

SQL> SELECT * FROM SalesPerson;

SALESPERSONNUMBER SALESPERSONNAME COMMPERCENTAGE   YEARHIRE OFFICENUMBER
----------------- --------------- -------------- ---------- ------------
              146 gudi                        10       2000            1
              186 vara                         7       2001            2
              176 prasad                       3       2002            3
              137 prasad                      14       2003            4
              203 devgudi                     10       2004            5
              227 cryptokid                    1       2005            6

6 rows selected.

SQL>
```

Customer Table

Run SQL Command Line

```
SQL> INSERT INTO Customer VALUES(1533, 'idug', 146, 'atlanta');

1 row created.

SQL> INSERT INTO Customer VALUES(1733, 'arav', 186, 'newyork');

1 row created.

SQL> INSERT INTO Customer VALUES(2131, 'dasarp', 176, 'arizona');

1 row created.

SQL> INSERT INTO Customer VALUES(1041, 'dasarpg', 137, 'mexico');

1 row created.

SQL> INSERT INTO Customer VALUES(1551, 'idugved', 203, 'dallas');

1 row created.

SQL> INSERT INTO Customer VALUES(1244, 'dikotpyrc', 227, 'washington');

1 row created.

SQL> SELECT * FROM Customer;

CUSTOMERNUMBER CUSTOMERNAME    SALESPERSONNUMBER HEADQUATERCITY
-------------- --------------- ----------------- ---------------
          1533 idug                          146 atlanta
          1733 arav                          186 newyork
          2131 dasarp                        176 arizona
          1041 dasarpg                       137 mexico
          1551 idugved                       203 dallas
          1244 dikotpyrc                     227 washington

6 rows selected.

SQL>
```

CustomerEmployee

Run SQL Command Line

```
SQL> INSERT INTO CustomerEmployee VALUES(1533, 7048, 'idug1', 'dbms');

1 row created.

SQL> INSERT INTO CustomerEmployee VALUES(1733, 7049, 'arav1', 'crypto');

1 row created.

SQL> INSERT INTO CustomerEmployee VALUES(2131, 7050, 'dasarp1', 'oops');

1 row created.

SQL> INSERT INTO CustomerEmployee VALUES(1041, 7051, 'dasarpg1', 'ececoa');

1 row created.

SQL> INSERT INTO CustomerEmployee VALUES(1551, 7052, 'idugved1', 'french');

1 row created.

SQL> INSERT INTO CustomerEmployee VALUES(1244, 7053, 'dikotpyrc1', 'softskills');

1 row created.

SQL> SELECT * FROM CustomerEmployee;

CUSTOMERNUMBER EMPLOYEENUMBER EMPLOYEENAME    TITLE
-------------- -------------- --------------- ---------------
          1533           7048 idug1           dbms
          1733           7049 arav1           crypto
          2131           7050 dasarp1         oops
          1041           7051 dasarpg1        ececoa
          1551           7052 idugved1        french
          1244           7053 dikotpyrc1      softskills

6 rows selected.

SQL>
```


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Product Table

```
Run SQL Command Line

SQL> INSERT INTO Product VALUES(21765, 'gudi1', 40);

1 row created.

SQL> INSERT INTO Product VALUES(21565, 'vara1', 50);

1 row created.

SQL> INSERT INTO Product VALUES(21465, 'prasad1', 60);

1 row created.

SQL> INSERT INTO Product VALUES(21365, 'prasadg1', 70);

1 row created.

SQL> INSERT INTO Product VALUES(21665, 'devgudi1', 80);

1 row created.

SQL> INSERT INTO Product VALUES(21265, 'cryptokid1', 30);

1 row created.

SQL> SELECT * FROM Product;

PRODUCTNUMBER PRODUCTNAME      UNITPRICE
------------- --------------- ----------
        21765 gudi1                   40
        21565 vara1                   50
        21465 prasad1                 60
        21365 prasadg1                70
        21665 devgudi1                80
        21265 cryptokid1              30

6 rows selected.

SQL>
```

Sales Table

```
Run SQL Command Line

SQL> INSERT INTO Sales VALUES(146, 21765, 3261);

1 row created.

SQL> INSERT INTO Sales VALUES(186, 21565, 1869);

1 row created.

SQL> INSERT INTO Sales VALUES(176, 21465, 2332);

1 row created.

SQL> INSERT INTO Sales VALUES(176, 21365, 4500);

1 row created.

SQL> INSERT INTO Sales VALUES(203, 21665, 1600);

1 row created.

SQL> INSERT INTO Sales VALUES(176, 21265, 2500);

1 row created.

SQL> SELECT * FROM Sales;

SALESPERSONNUMBER PRODUCTNUMBER   QUANTITY
----------------- ------------- ----------
              146         21765       3261
              186         21565       1869
              176         21465       2332
              176         21365       4500
              203         21665       1600
              176         21265       2500

6 rows selected.

SQL>
```

Office Table

```
Run SQL Command Line

SQL> INSERT INTO Office VALUES(146, 1234, 11);

1 row created.

SQL> INSERT INTO Office VALUES(186, 1234, 20);

1 row created.

SQL> INSERT INTO Office VALUES(176, 1888, 10);

1 row created.

SQL> INSERT INTO Office VALUES(137, 2033, 28);

1 row created.

SQL> INSERT INTO Office VALUES(227, 5211, 33);

1 row created.

SQL> INSERT INTO Office VALUES(203, 7251, 93);

1 row created.

SQL> SELECT * FROM Office;

OFFICENUMBER  TELEPHONE OFFICESIZE
------------ ---------- ----------
         146       1234         11
         186       1234         20
         176       1888         10
         137       2033         28
         227       5211         33
         203       7251         93

6 rows selected.

SQL>
```

Answer the following queries :

11. Find the average number of units of the different products that Salesperson 176 sold (i.e., the average of the quantity values in the first three records of the SALES table).

```
SQL> SELECT * FROM Sales;

SALESPERSONNUMBER PRODUCTNUMBER   QUANTITY
----------------- ------------- ----------
              146         21765       3261
              186         21565       1869
              176         21465       2332
              176         21365       4500
              203         21665       1600
              176         21265       2500

6 rows selected.

SQL> SELECT AVG(QUANTITY) FROM Sales WHERE SALESPERSONNUMBER = 176;

AVG(QUANTITY)
-------------
   3110.66667
```


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12. What is the largest number of units of Product Number 21765 that any individual salesperson has sold?

```
SQL> SELECT MAX(QUANTITY) FROM Sales WHERE PRODUCTNUMBER = 21765;

MAX(QUANTITY)
-------------
         3261
```

13. How many salespersons have sold Product Number 21765?

```
SQL> SELECT COUNT(QUANTITY) FROM Sales WHERE PRODUCTNUMBER = 21765;

COUNT(QUANTITY)
---------------
              1
```

14. Find the total number of units of all products sold by each salesperson.

```
SQL> SELECT SUM(QUANTITY) FROM Sales;

SUM(QUANTITY)
-------------
        16062
```

15. Find the total number of units of all products sold by each salesperson whose salesperson number is at least 150.

```
SQL> SELECT SUM(QUANTITY) FROM Sales WHERE SALESPERSONNUMBER > 150;

SUM(QUANTITY)
-------------
        12801
```

16. Find the total number of units of all products sold by each salesperson whose salesperson number is at least 150.

```
SQL> SELECT SUM(QUANTITY) FROM Sales WHERE SALESPERSONNUMBER > 150;

SUM(QUANTITY)
-------------
        12801
```

17. Find the total number of units of all products sold by each salesperson whose salesperson number is at least 150. Include only salespersons whose total number of units sold is at least 5000.

```
SQL> SELECT * FROM Sales;

SALESPERSONNUMBER PRODUCTNUMBER   QUANTITY
----------------- ------------- ----------
              146         21765       3261
              186         21565       1869
              176         21465       2332
              176         21365       4500
              203         21665       1600
              176         21265       2500

6 rows selected.

SQL> SELECT SUM(QUANTITY) FROM Sales WHERE SALESPERSONNUMBER > 150 AND QUANTITY > 5000;

SUM(QUANTITY)
-------------
```

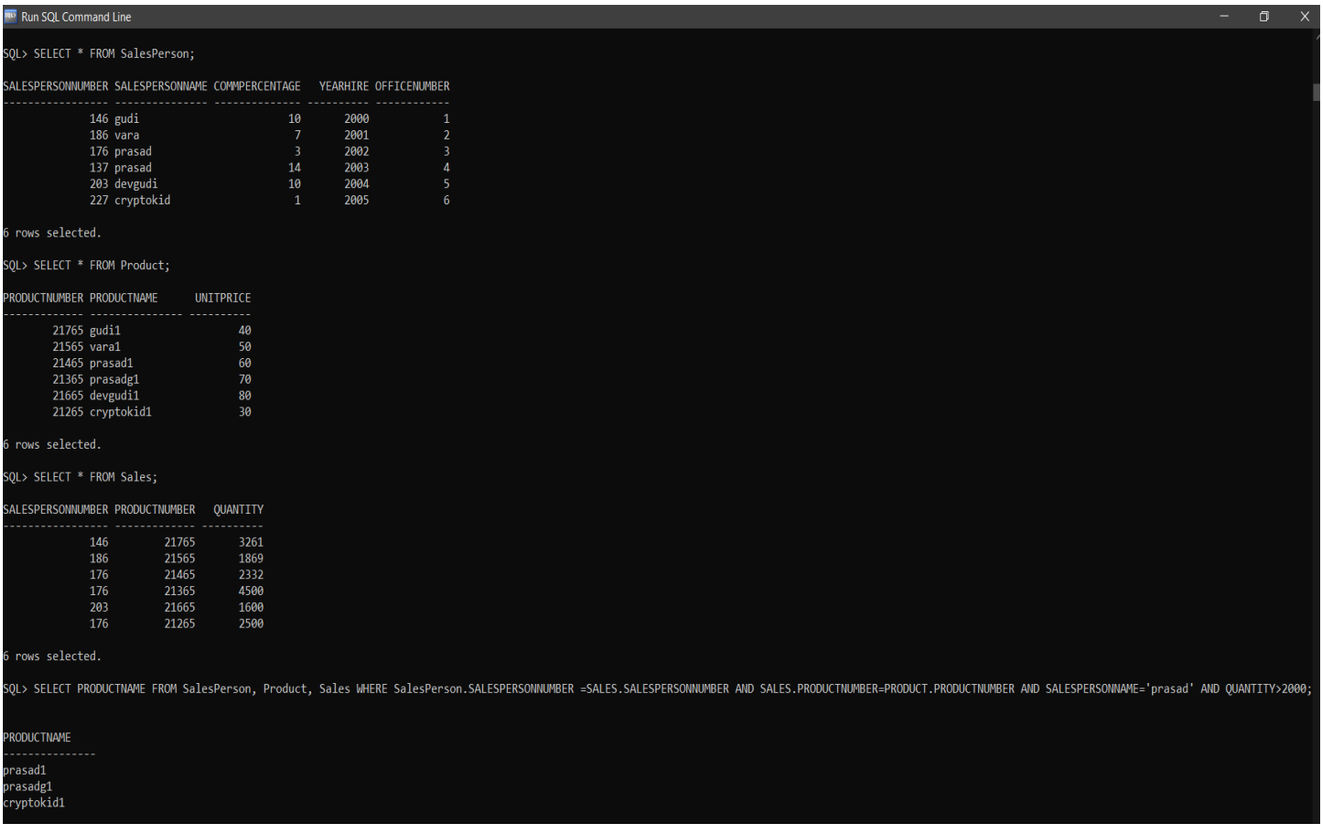
18. Find the name of the salesperson responsible for Customer Number 1533.

SELECT SALESPERSONNAME FROM SalesPerson, Customer WHERE SalesPerson. SALESPERSONNUMBER=Customer. SALESPERSONNUMBER AND CUSTOMERNUMBER =1533;

```
Run SQL Command Line

SALESPERSONNUMBER SALESPERSONNAME COMMPERCENTAGE   YEARHIRE OFFICENUMBER
----------------- --------------- -------------- ---------- ------------
              146 gudi                        10       2000            1
              186 vara                         7       2001            2
              176 prasad                       3       2002            3
              137 prasad                      14       2003            4
              203 devgudi                     10       2004            5
              227 cryptokid                    1       2005            6

6 rows selected.

SQL> SELECT * FROM Customer;

CUSTOMERNUMBER CUSTOMERNAME    SALESPERSONNUMBER HEADQUATERCITY
-------------- --------------- ----------------- ---------------
          1533 idug                         146 atlanta
          1733 arav                         186 newyork
          2131 dasarp                       176 arizona
          1041 dasarpg                      137 mexico
          1551 idugved                      203 dallas
          1244 dikotpyrc                    227 washington

6 rows selected.

SQL> SELECT SALESPERSONNAME FROM SalesPerson, Customer WHERE SalesPerson. SALESPERSONNUMBER=Customer. SALESPERSONNUMBER AND CUSTOMERNUMBER =1533;

SALESPERSONNAME
---------------
gudi
```

19. List the names of the products of which salesperson ‘prasad’ has sold more than 2000 units.

SELECT PRODUCTNAME FROM SalesPerson, Product, Sales WHERE SalesPerson.SALESPERSONNUMBER =SALES.SALESPERSONNUMBER AND SALES.PRODUCTNUMBER=PRODUCT.PRODUCTNUMBER AND SALESPERSONNAME=’prasad’ AND QUANTITY>2000;



20. Which salespersons with salesperson numbers greater than 200 have the lowest commission percentage? (We'll identify salespersons by their salesperson number.)

SELECT * FROM SalesPerson WHERE SALESPERSONNUMBER >200 AND COMMPERCENTAGE = (SELECT MIN(COMMPERCENTAGE) FROM SALESPERSON);

```
SQL> SELECT * FROM SalesPerson;

SALESPERSONNUMBER SALESPERSONNAME COMMPERCENTAGE   YEARHIRE OFFICENUMBER
----------------- --------------- -------------- ---------- ------------
              146 gudi                        10       2000            1
              186 vara                         7       2001            2
              176 prasad                       3       2002            3
              137 prasad                      14       2003            4
              203 devgudi                     10       2004            5
              227 cryptokid                    1       2005            6

6 rows selected.

SQL> SELECT * FROM SalesPerson WHERE SALESPERSONNUMBER >200 AND COMMPERCENTAGE = (SELECT MIN(COMMPERCENTAGE) FROM SALESPERSON);

SALESPERSONNUMBER SALESPERSONNAME COMMPERCENTAGE   YEARHIRE OFFICENUMBER
----------------- --------------- -------------- ---------- ------------
              227 cryptokid                    1       2005            6
```
