DBS LAB ENDSEM EXAM

TABLE CREATION WITH GIVEN CONSTRAINTS AND INSERTING VALUES

Table creation:

```
create table Part(
PartNo integer primary key,
PartName varchar(10),
VehicleType char(2) check (VehicleType in
('V1','V2','V3','V4','V5')),
UnitPrice number(4,0) check (UnitPrice>0),
SalesPrice number(4,0) check (SalesPrice>0)
);

create table Service(
ServiceNo integer,
PartNo integer,
ServiceDate Date,
CustomerNo varchar(10),
Qty number(4),
primary key(ServiceNo,PartNo),
foreign key(PartNo) references Part on delete cascade

);
```

Output:

```
SQL> desc part;
 Name                                      Null?    Type
 ----------------------------------------- -------- ----------------------------
 PARTNO                                    NOT NULL NUMBER(38)
 PARTNAME                                           VARCHAR2(10)
 VEHICLETYPE                                        CHAR(2)
 UNITPRICE                                          NUMBER(4)
 SALESPRICE                                         NUMBER(4)

SQL> desc service;
 Name                                      Null?    Type
 ----------------------------------------- -------- ----------------------------
 SERVICENO                                 NOT NULL NUMBER(38)
 PARTNO                                    NOT NULL NUMBER(38)
 SERVICEDATE                                        DATE
 CUSTOMERNO                                         VARCHAR2(10)
 QTY                                                NUMBER(4)
```

Value insertion:

```
insert into part values (1,'P1', 'V1', '10','12');
insert into part values (2,'P2', 'V2', '100','110');
insert into part values (3,'P3', 'V1', '150','175');
insert into part values (4,'P4', 'V3', '200','250');
insert into part values (5,'P5', 'V2', '75','90');

insert into service values ( 1, 1, '01-Jan-17', 'C1','5');
insert into service values ( 1, 3, '01-Jan-17', 'C1','4');
insert into service values ( 2, 3, '05-Feb-18', 'C2','10');
insert into service values ( 3, 1, '15-May-18', 'C3','9');
insert into service values ( 4, 1, '03-Jun-19', 'C1','5');
```

Output:

```
SQL> insert into part values (1,'P1', 'V1', '10','12');

1 row created.

SQL> insert into part values (2,'P2', 'V2', '100','110');

1 row created.

SQL> insert into part values (3,'P3', 'V1', '150','175');

1 row created.

SQL> insert into part values (4,'P4', 'V3', '200','250');

1 row created.

SQL> insert into part values (5,'P5', 'V2', '75','90');

1 row created.

SQL> insert into service values ( 1, 1, '01-Jan-17', 'C1','5');

1 row created.

SQL> insert into service values ( 1, 3, '01-Jan-17', 'C1','4');

1 row created.

SQL> insert into service values ( 2, 3, '05-Feb-18', 'C2','10');

1 row created.

SQL> insert into service values ( 3, 1, '15-May-18', 'C3','9');

1 row created.

SQL> insert into service values ( 4, 1, '03-Jun-19', 'C1','5');

1 row created.

SQL>
```

Value retrieval:

```
select * from part;
select * from service:
```

Output

```
SQL> select * from part;

    PARTNO PARTNAME   VE  UNITPRICE SALESPRICE
---------- ---------- -- ---------- ----------
         1 P1         V1         10         12
         2 P2         V2        100        110
         3 P3         V1        150        175
         4 P4         V3        200        250
         5 P5         V2         75         90

SQL> select * from service
  2  ;

 SERVICENO     PARTNO SERVICEDA CUSTOMERNO        QTY
---------- ---------- --------- ---------- ----------
         1          1 01-JAN-17 C1                  5
         1          3 01-JAN-17 C1                  4
         2          3 05-FEB-18 C2                 10
         3          1 15-MAY-18 C3                  9
         4          1 03-JUN-19 C1                  5

SQL>
```

PART-A: WRITE THE FOLLOWING QUERIES IN SQL:

i.List the Part Names which are not used to service the vehicle of any customer. (2M)

Query:

```
SELECT PartName FROM Part WHERE PartNo NOT IN(SELECT PartNo FROM Service);
```

Output:

```
SQL> SELECT PartName FROM Part WHERE PartNo NOT IN(SELECT PartNo FROM Service);

PARTNAME
----------
P5
P4
P2

SQL>
```

ii.List the customer number who has got his vehicle serviced maximum number of times. (4M)

Query:

```
with c as
      (select serviceno, partno, customerno from part natural
      join service)
      select count(*) cntCustomer, customerno from c group by
      customerno having
      count(*)>=all(select count(*) cntCustomer from c group by
      customerno);
```

Output:

```
SQL> with c as
  2  (select serviceno, partno, customerno from part natural join service)
  3  select count(*) cntCustomer, customerno from c group by customerno having
  4  count(*)>=all(select count(*) cntCustomer from c group by customerno);

CNTCUSTOMER CUSTOMERNO
----------- ----------
          3 C1

SQL>
```

iii.List the customer number whose vehicle service used all the parts of vehicle type V1. (2M)

Query:

```
select distinct CustomerNo from Service s1 where NOT EXISTS
    ((select PartNo from Part where VehicleType = 'V1')
    minus (select distinct PartNo from Service s2 where
    s1.CustomerNo = s2.CustomerNo));
```

Output:

```
SQL> select distinct CustomerNo from Service s1 where NOT EXISTS
  2  ((select PartNo from Part where VehicleType = 'V1')
  3  minus (select distinct PartNo from Service s2 where
  4  s1.CustomerNo = s2.CustomerNo));

CUSTOMERNO
----------
C1

SQL>
```

PART-B: WRITE A PL/SQL PROGRAM TO:

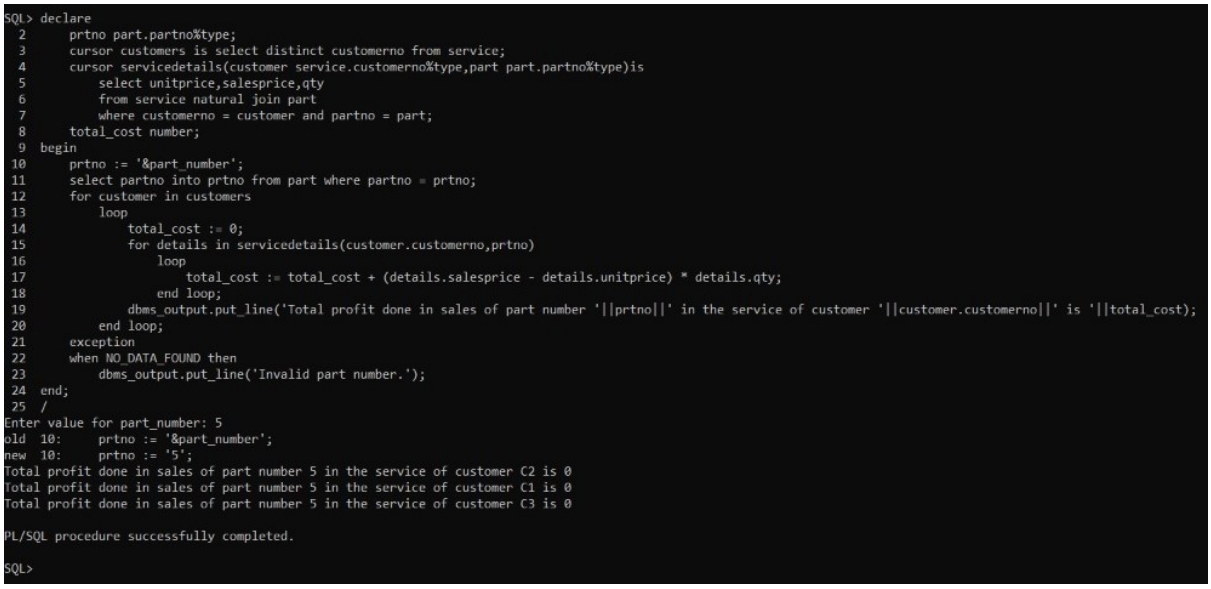
Find the total profit done in the sales of a given part number in the service of different customer vehicles. Raise an exception for invalid part number. (8M)

Query:

```
declare
    prtno part.partno%type;
       cursor customers is select distinct customerno from service;
          cursor servicedetails(customer service.customerno%type,part part.partno%type)is
        select unitprice,salesprice,qty
        from service natural join part
        where customerno = customer and partno = part;
    total_cost number;
    total_profit number;
begin
    prtno := '&part_number';
    total_profit := 0;
    select partno into prtno from part where partno = prtno;
    for customer in customers
        loop
            total_cost := 0;
                                        for details in servicedetails(customer.customerno,prtno)
                loop
                                    total_cost := total_cost + (details.salesprice - details.unitprice) * details.qty;
                end loop;
              dbms_output.put_line('Total profit done in sales of part number '||prtno||' in the service of customer '||customer.customerno||' is '||total_cost);
            total_profit := total_profit + total_cost;
        end loop;
          dbms_output.put_line('Total profit done in sales of part number '||prtno||' is '||total_profit);
    exception
```

```
    when NO_DATA_FOUND then
        dbms_output.put_line('Invalid part number.');
end;
/
```

Output:



```
SQL> declare
  2      prtno part.partno%type;
  3      cursor customers is select distinct customerno from service;
  4      cursor servicedetails(customer service.customerno%type,part part.partno%type)is
  5          select unitprice,salesprice,qty
  6          from service natural join part
  7          where customerno = customer and partno = part;
  8      total_cost number;
  9  begin
 10      prtno := '&part_number';
 11      select partno into prtno from part where partno = prtno;
 12      for customer in customers
 13          loop
 14              total_cost := 0;
 15              for details in servicedetails(customer.customerno,prtno)
 16                  loop
 17                      total_cost := total_cost + (details.salesprice - details.unitprice) * details.qty;
 18                  end loop;
 19              dbms_output.put_line('Total profit done in sales of part number '||prtno||' in the service of customer '||customer.customerno||' is '||total_cost);
 20          end loop;
 21      exception
 22      when NO_DATA_FOUND then
 23          dbms_output.put_line('Invalid part number.');
 24  end;
 25  /
Enter value for part_number: 5
old  10:      prtno := '&part_number';
new  10:      prtno := '5';
Total profit done in sales of part number 5 in the service of customer C2 is 0
Total profit done in sales of part number 5 in the service of customer C1 is 0
Total profit done in sales of part number 5 in the service of customer C3 is 0

PL/SQL procedure successfully completed.

SQL>
```