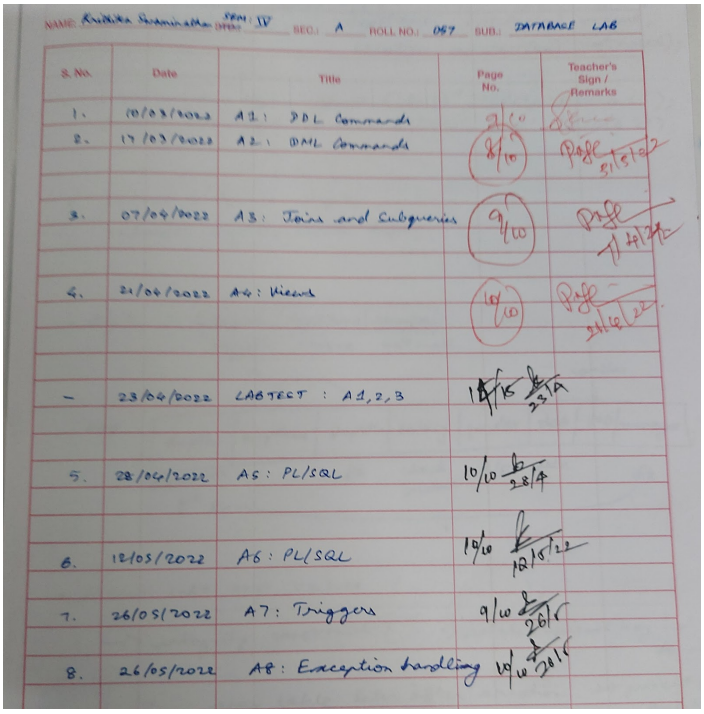
Assignment 7 – Triggers

Validation:



S.No.	Date	Title	Page No.	Teacher's Sign / Remarks
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3.	07/04/2022	A3: Joins and Subqueries	9/10	Page 1,11,12
4.	21/04/2022	A4: Views	10/10	Page 21,22
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5.	28/04/2022	A5: PL/SQL	10/10 28/4	
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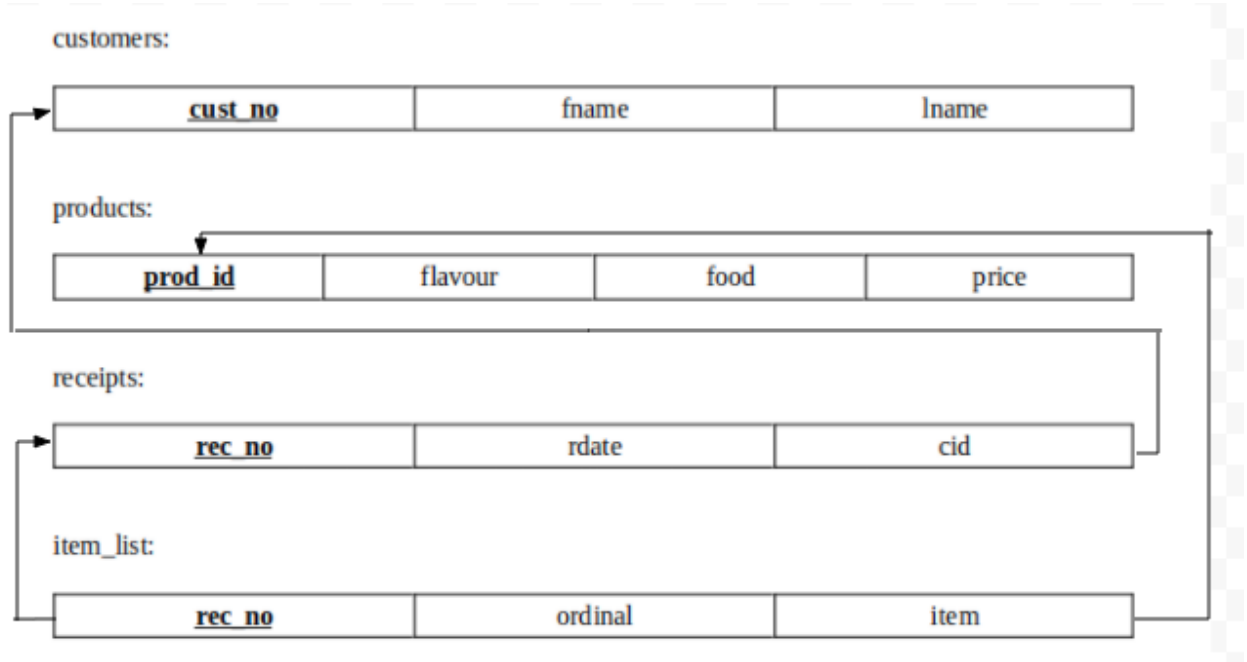
Schema diagram:



Data file:

```
SQL> @C:/Krithika/DBL/a7data.sql;
SQL> REM Population of Bakery Database

SQL> drop table item_list;
Table dropped.

SQL> drop table receipts;
Table dropped.

SQL> drop table products;
Table dropped.

SQL> drop table customers;
Table dropped.

SQL>
SQL> create table customers(
  2         cust_no number(2) constraint c_pk primary key,
  3         lname varchar2(20),
  4         fname varchar2(20)
  5         );

Table created.

SQL>
SQL> insert into customers values(1, 'LOGAN', 'JULIET');
1 row created.
.
.
.
SQL> insert into customers values(21, 'JOHN', 'DAVID');
1 row created.

SQL> create table products(
  2         prod_id varchar2(20) constraint prod_pk primary key,
  3         flavour varchar2(20),
  4         food varchar2(20),
  5         price number
  6         );

Table created.

SQL>
SQL> insert into products values('20-BC-C-10','Chocolate','Cake',8.95);
1 row created.
.
.
.
```

```
SQL> insert into products values('51-BLU','Blueberry','Danish',1.15);
1 row created.

SQL> create table receipts(
  2         rec_no number(5) constraint rec_pk primary key,
  3         rdate date,
  4         cid number(2) constraint rec_fk references customers(cust_no)
  5         );

Table created.

SQL>
SQL> INSERT INTO Receipts values(18129, '28-Oct-2007', 15);
1 row created.
.
.
.
SQL> INSERT INTO Receipts values(34378, '23-Oct-2007', 6);
1 row created.

SQL> create table item_list(
  2         rec_no number(5) constraint it_fk1 references receipts(rec_no),
  3         ordinal number(2),
  4         item varchar2(20) constraint it_fk2 references products(prod_id),
  5         constraint item_pk primary key(rec_no,ordinal)
  6         );

Table created.

SQL>
SQL> insert into item_list values(18129, 1,  '70-TU');
1 row created.
.
.
.
SQL> insert into item_list values(34378, 2,  '45-VA');
1 row created.

SQL>
SQL> REM *** End of database population ***

SQL>
SQL> REM ********************* END OF DATA FILE ************************
```

Script file:

```
SQL> @z:/a7triggers.sql;
SQL> REM Assignment 7
SQL>
SQL> REM ------------------------------------------------------------------------
> REM *** ASSIGNMENT QUESTIONS ***
SQL> REM ------------------------------------------------------------------------
> REM Consider the schema used in Assignment 3.
SQL>
SQL> REM **Updating the Bakery Database**
SQL>
SQL> alter table receipts add amount number;

Table altered.

SQL>
SQL> update receipts r set amount = (
  2          select sum(price)
  3          from receipts join item_list using (rec_no) join products on (prod_id = item)
  4          group by rec_no having rec_no = r.rec_no);

200 rows updated.

SQL>
SQL>
SQL> REM **_____Write a PL/SQL Trigger for the following:_____**
SQL>
SQL> REM 1. The combination of Flavor and Food determines the product id. Hence, while
SQL> REM inserting a new instance into the Products relation, ensure that the same combination
SQL> REM of Flavor and Food is not already available.
SQL>
SQL> create or replace trigger check_combo
  2  BEFORE INSERT ON Products FOR EACH ROW
  3  declare
  4    flag number:=0;
  5    cursor c1 is select * from products where food=:NEW.food and flavour=:NEW.flavour;
  6    record c1%rowtype;
  7  begin
  8    open c1;
  9    fetch c1 into record;
 10    if c1%NOTFOUND then
 11        flag:=1;
 12    end if;
 13    close c1;
 14    if (flag=0) then
 15        raise_application_error(-20000,'The combination already exists.');
 16    end if;
 17  end;
 18  /
```

```
Trigger created.

SQL>
SQL> savepoint q1;

Savepoint created.

SQL>
SQL> REM Validations:
SQL>
SQL> insert into products values ('11-1','Vanilla','Tart',4);

1 row created.

SQL> insert into products values ('11-2','Vanilla','Tart',2);
insert into products values ('11-2','Vanilla','Tart',2)
            *
ERROR at line 1:
ORA-20000: The combination already exists.
ORA-06512: at "1057.CHECK_COMBO", line 13
ORA-04088: error during execution of trigger '1057.CHECK_COMBO'


SQL> select * from products where prod_id='11-1';

PROD_ID              FLAVOUR              FOOD                    PRICE
-------------------- -------------------- -------------------- ----------
11-1                 Vanilla              Tart                         4

SQL> select * from products where flavour='Lemon' and food='Meringue';

no rows selected

SQL>
SQL> rollback to q1;

Rollback complete.

SQL>
SQL>
SQL> REM 2. While entering an item into the item_list relation, update the amount in Receipts
with
SQL> REM the total amount for that receipt number.
SQL>
SQL> create or replace trigger update_amt
  2  BEFORE INSERT ON item_list FOR EACH ROW
  3  declare
  4    total number;
  5    pr products.price%type;
```

```
  6  begin
  7    select price into pr from products where prod_id=:NEW.item;
  8    select sum(price) into total from item_list, products where item=prod_id and
rec_no=:NEW.rec_no;
  9    total:=total+pr;
 10    update receipts set amount = total where rec_no=:NEW.rec_no;
 11  end;
 12  /

Trigger created.

SQL>
SQL> REM Checking items for receipt number 13355
SQL>
SQL> select * from receipts where rec_no = 13355;

    REC_NO RDATE           CID     AMOUNT
---------- --------- ---------- ----------
     13355 19-OCT-07          7      30.23

SQL> select * from item_list where rec_no = 13355 order by ordinal asc;

    REC_NO    ORDINAL ITEM
---------- ---------- --------------------
     13355          1 24-8x10
     13355          2 70-LEM
     13355          3 46-11

SQL>
SQL> insert into item_list values(13355,4,'51-BLU');

1 row created.

SQL>
SQL> select * from receipts where rec_no = 13355;

    REC_NO RDATE           CID     AMOUNT
---------- --------- ---------- ----------
     13355 19-OCT-07          7      31.38

SQL> select * from item_list where rec_no = 13355 order by ordinal asc;

    REC_NO    ORDINAL ITEM
---------- ---------- --------------------
     13355          1 24-8x10
     13355          2 70-LEM
     13355          3 46-11
     13355          4 51-BLU

SQL>
```

```
SQL>
SQL> REM 3. Implement the following constraints for Item_list relation:
SQL> REM a. A receipt can contain a maximum of five items only.
SQL> REM b. A receipt should not allow an item to be purchased more than thrice.
SQL>
SQL> create or replace trigger check_receipts
  2  BEFORE INSERT ON item_list FOR EACH ROW
  3  declare
  4    cursor c1 is  select count(*) as cnt1 from item_list where rec_no=:NEW.rec_no;
  5    cursor c2 is  select count(*) as cnt2 from item_list where rec_no=:NEW.rec_no and
item=:NEW.item;
  6    record1 c1%rowtype;
  7    record2 c2%rowtype;
  8  begin
  9    open c1;
 10    open c2;
 11    fetch c1 into record1;
 12    fetch c2 into record2;
 13    if record1.cnt1>=5 and record2.cnt2>=3 then
 14        raise_application_error(-20000,'The receipt has five items. The item has been purchased
thrice.');
 15    elsif record1.cnt1>=5 then
 16        raise_application_error(-20001,'The receipt already has five items.');
 17    elsif record2.cnt2>=3 then
 18        raise_application_error(-20002,'The item to be purchased has already been purchased
thrice.');
 19    end if;
 20    close c2;
 21    close c1;
 22  end;
 23  /

Trigger created.

SQL>
SQL> REM Validations:
SQL>
SQL> savepoint q3;

Savepoint created.

SQL>
SQL> select * from item_list where rec_no = 44798 order by ordinal asc;

    REC_NO    ORDINAL ITEM
---------- ---------- --------------------
     44798          1 90-APR-PF
     44798          2 90-CH-PF
     44798          3 90-APIE-10
     44798          4 90-APP-11
```

```
    44798         5 25-STR-9

SQL> insert into item_list values (44798,6,'51-BC');
insert into item_list values (44798,6,'51-BC')
            *
ERROR at line 1:
ORA-20001: The receipt already has five items.
ORA-06512: at "1057.CHECK_RECEIPTS", line 14
ORA-04088: error during execution of trigger '1057.CHECK_RECEIPTS'


SQL> select * from item_list where rec_no = 44798 order by ordinal asc;

   REC_NO    ORDINAL ITEM
---------- ---------- --------------------
    44798         1 90-APR-PF
    44798         2 90-CH-PF
    44798         3 90-APIE-10
    44798         4 90-APP-11
    44798         5 25-STR-9

SQL>
SQL> select * from item_list where rec_no = 53240 order by ordinal asc;

   REC_NO    ORDINAL ITEM
---------- ---------- --------------------
    53240         1 25-STR-9
    53240         2 51-ATW

SQL> insert into item_list values (53240,3,'51-ATW');

1 row created.

SQL> insert into item_list values (53240,4,'51-ATW');

1 row created.

SQL> insert into item_list values (53240,5,'51-ATW');
insert into item_list values (53240,5,'51-ATW')
            *
ERROR at line 1:
ORA-20002: The item to be purchased has already been purchased thrice.
ORA-06512: at "1057.CHECK_RECEIPTS", line 16
ORA-04088: error during execution of trigger '1057.CHECK_RECEIPTS'


SQL> select * from item_list where rec_no = 53240 order by ordinal asc;

   REC_NO    ORDINAL ITEM
---------- ---------- --------------------
```

```
     53240          1 25-STR-9
     53240          2 51-ATW
     53240          3 51-ATW
     53240          4 51-ATW

SQL>
SQL> rollback to q3;

Rollback complete.

SQL>
SQL>
SQL> REM ************************** END OF FILE*******************************
```