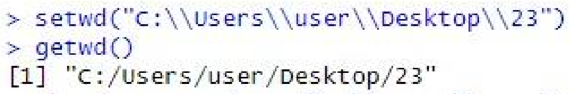
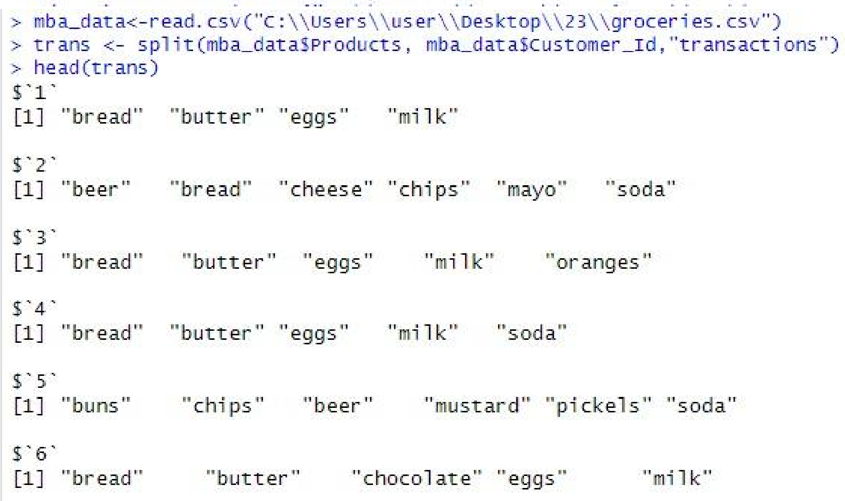
Q.1) A)

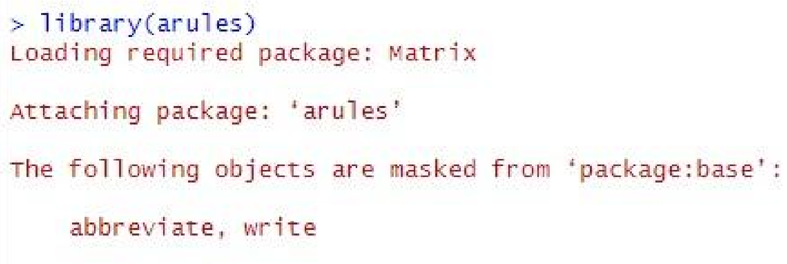
1. **LOAD GROCERIES DATASET AS TRANSACTIONS.**



```
> setwd("C:\\Users\\user\\Desktop\\23")
> getwd()
[1] "C:/Users/user/Desktop/23"
```

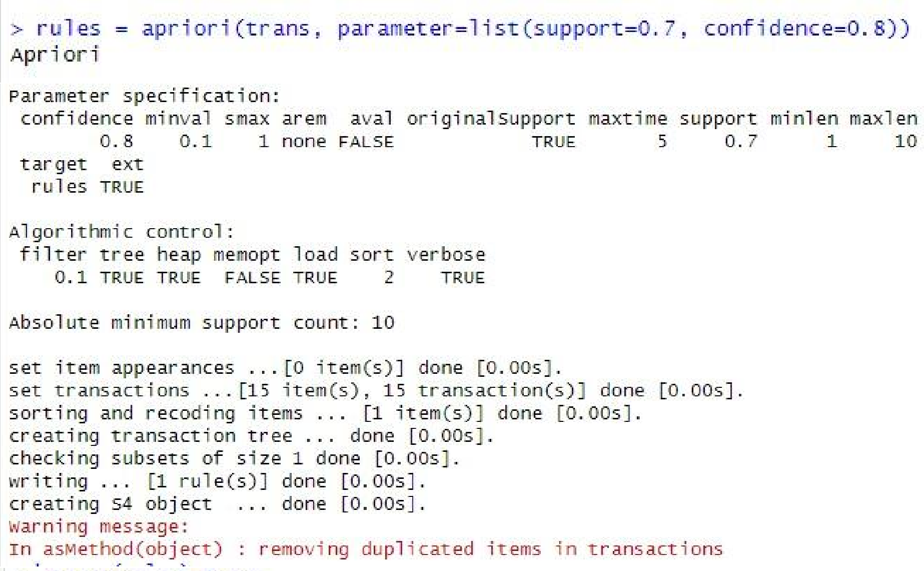


```
> mba_data<-read.csv("C:\\Users\\user\\Desktop\\23\\groceries.csv")
> trans <- split(mba_data$Products, mba_data$Customer_Id,"transactions")
> head(trans)
$`1`
[1] "bread"  "butter" "eggs"   "milk"

$`2`
[1] "beer"   "bread"  "cheese" "chips"  "mayo"   "soda"

$`3`
[1] "bread"   "butter"  "eggs"    "milk"    "oranges"

$`4`
[1] "bread"  "butter" "eggs"   "milk"   "soda"

$`5`
[1] "buns"    "chips"   "beer"    "mustard" "pickels" "soda"

$`6`
[1] "bread"     "butter"    "chocolate" "eggs"      "milk"
```

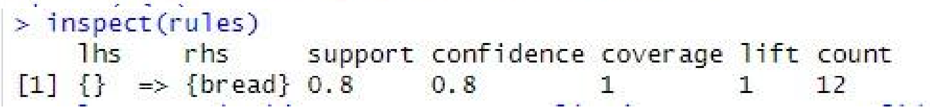


```
> library(arules)
Loading required package: Matrix

Attaching package: 'arules'

The following objects are masked from 'package:base':

    abbreviate, write
```

2. **APPLY APRIORI ALGORITHM :**

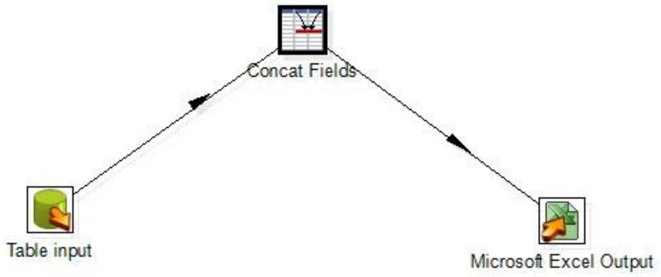


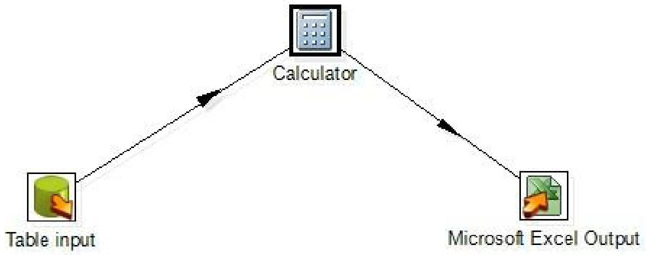
```
> rules = apriori(trans, parameter=list(support=0.7, confidence=0.8))
Apriori

Parameter specification:
 confidence minval smax arem  aval originalSupport maxtime support minlen maxlen
        0.8    0.1    1 none FALSE            TRUE       5     0.7      1     10
 target  ext
  rules TRUE

Algorithmic control:
 filter tree heap memopt load sort verbose
    0.1 TRUE TRUE  FALSE TRUE    2    TRUE

Absolute minimum support count: 10

set item appearances ...[0 item(s)] done [0.00s].
set transactions ...[15 item(s), 15 transaction(s)] done [0.00s].
sorting and recoding items ... [1 item(s)] done [0.00s].
creating transaction tree ... done [0.00s].
checking subsets of size 1 done [0.00s].
writing ... [1 rule(s)] done [0.00s].
creating S4 object  ... done [0.00s].
Warning message:
In asMethod(object) : removing duplicated items in transactions
```

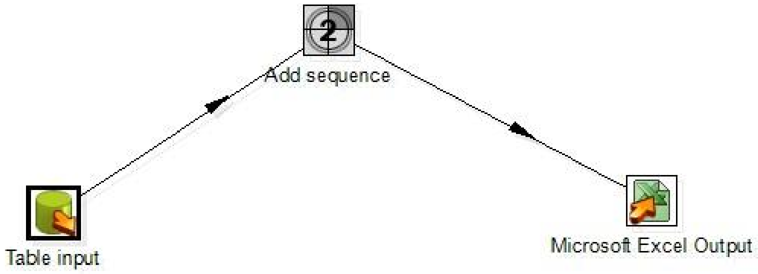


```
> inspect(rules)
    lhs    rhs     support confidence coverage lift count
[1] {}  => {bread} 0.8     0.8        1        1    12
```

Q.2) A) PENTAHO :

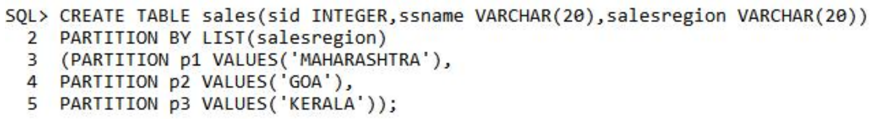

Concat Fields
Table input
Microsoft Excel Output


Calculator
Table input
Microsoft Excel Output


Add sequence
Table input
Microsoft Excel Output

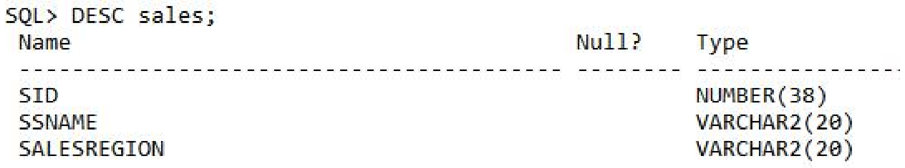
Q.2) B)

Create table sales(sid,ssname,salesregion) with 3 partition using list partition based on region



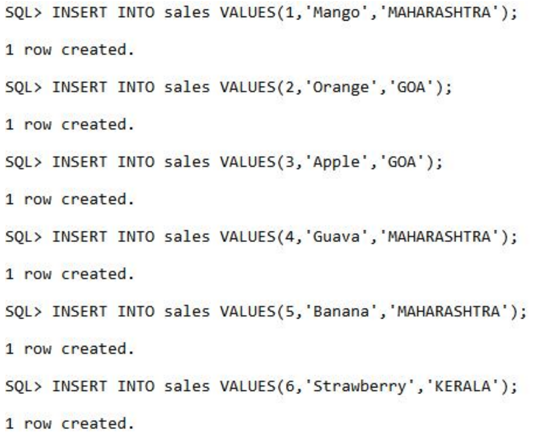
```
SQL> CREATE TABLE sales(sid INTEGER,ssname VARCHAR(20),salesregion VARCHAR(20))
  2  PARTITION BY LIST(salesregion)
  3  (PARTITION p1 VALUES('MAHARASHTRA'),
  4  PARTITION p2 VALUES('GOA'),
  5  PARTITION p3 VALUES('KERALA'));
```

a) Describe the structure of the table and display the partition table.

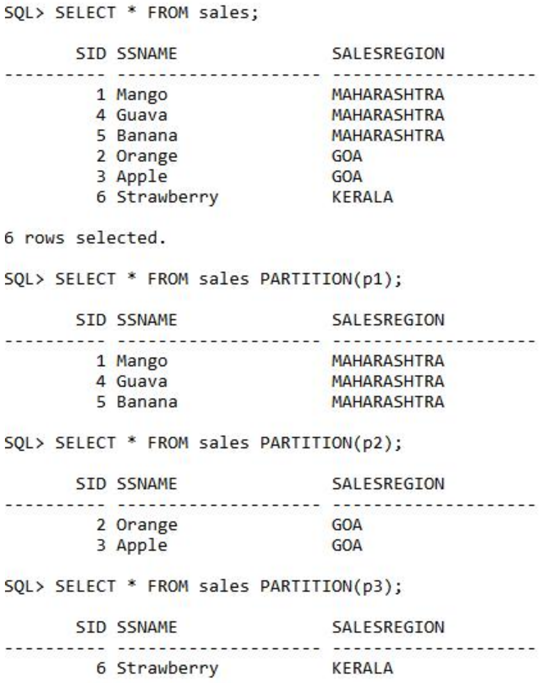


```
SQL> DESC sales;
 Name                                      Null?    Type
 ----------------------------------------- -------- ----------------
 SID                                                NUMBER(38)
 SSNAME                                             VARCHAR2(20)
 SALESREGION                                        VARCHAR2(20)
```

b)Insert minimum 6 records and display the content from each partition.

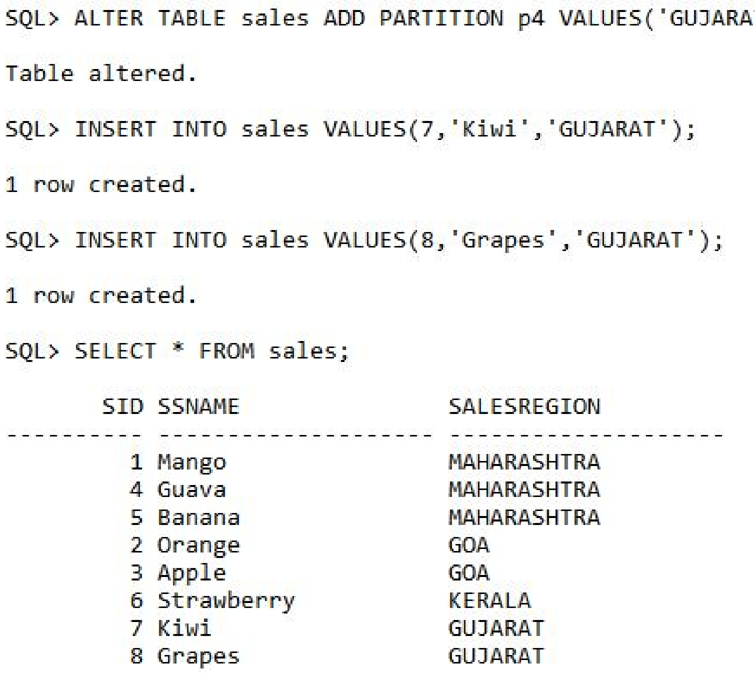


```
SQL> INSERT INTO sales VALUES(1,'Mango','MAHARASHTRA');

1 row created.

SQL> INSERT INTO sales VALUES(2,'Orange','GOA');

1 row created.

SQL> INSERT INTO sales VALUES(3,'Apple','GOA');

1 row created.

SQL> INSERT INTO sales VALUES(4,'Guava','MAHARASHTRA');

1 row created.

SQL> INSERT INTO sales VALUES(5,'Banana','MAHARASHTRA');

1 row created.

SQL> INSERT INTO sales VALUES(6,'Strawberry','KERALA');

1 row created.
```

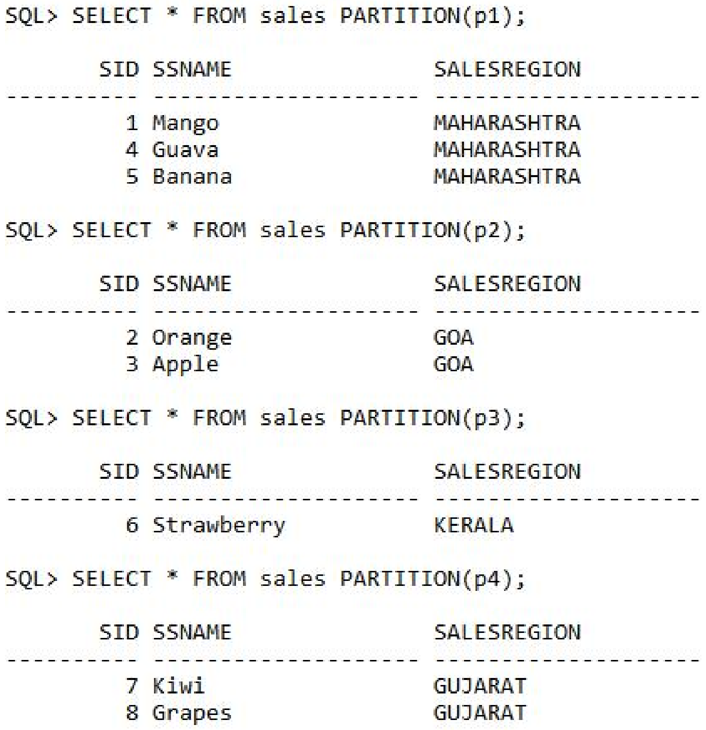


```
SQL> SELECT * FROM sales;

       SID SSNAME               SALESREGION
---------- -------------------- --------------------
         1 Mango                MAHARASHTRA
         4 Guava                MAHARASHTRA
         5 Banana               MAHARASHTRA
         2 Orange               GOA
         3 Apple                GOA
         6 Strawberry           KERALA

6 rows selected.

SQL> SELECT * FROM sales PARTITION(p1);

       SID SSNAME               SALESREGION
---------- -------------------- --------------------
         1 Mango                MAHARASHTRA
         4 Guava                MAHARASHTRA
         5 Banana               MAHARASHTRA

SQL> SELECT * FROM sales PARTITION(p2);

       SID SSNAME               SALESREGION
---------- -------------------- --------------------
         2 Orange               GOA
         3 Apple                GOA

SQL> SELECT * FROM sales PARTITION(p3);

       SID SSNAME               SALESREGION
---------- -------------------- --------------------
         6 Strawberry           KERALA
```

c)Add new partition and insert 2 records and display content from each partiton.



```
SQL> ALTER TABLE sales ADD PARTITION p4 VALUES('GUJARAT');

Table altered.

SQL> INSERT INTO sales VALUES(7,'Kiwi','GUJARAT');

1 row created.

SQL> INSERT INTO sales VALUES(8,'Grapes','GUJARAT');

1 row created.

SQL> SELECT * FROM sales;

       SID SSNAME               SALESREGION
---------- -------------------- --------------------
         1 Mango                MAHARASHTRA
         4 Guava                MAHARASHTRA
         5 Banana               MAHARASHTRA
         2 Orange               GOA
         3 Apple                GOA
         6 Strawberry           KERALA
         7 Kiwi                 GUJARAT
         8 Grapes               GUJARAT
```



```
SQL> SELECT * FROM sales PARTITION(p1);

       SID SSNAME               SALESREGION
---------- -------------------- --------------------
         1 Mango                MAHARASHTRA
         4 Guava                MAHARASHTRA
         5 Banana               MAHARASHTRA

SQL> SELECT * FROM sales PARTITION(p2);

       SID SSNAME               SALESREGION
---------- -------------------- --------------------
         2 Orange               GOA
         3 Apple                GOA

SQL> SELECT * FROM sales PARTITION(p3);

       SID SSNAME               SALESREGION
---------- -------------------- --------------------
         6 Strawberry           KERALA

SQL> SELECT * FROM sales PARTITION(p4);

       SID SSNAME               SALESREGION
---------- -------------------- --------------------
         7 Kiwi                 GUJARAT
         8 Grapes               GUJARAT
```

Q.3) A)

```
SQL> create type passenger_type as object
  2  (
  3  PID number(6),
  4   PName varchar2(20),
  5  Address varchar2(20),
  6  Destination varchar2(20),
  7  Age number(6)
  8  );
  9  /
Type created.

SQL> create table passenger
  2  (
  3  Passenger_dtls passenger_type
  4  );
Table created.

SQL> insert into passenger values(passenger_type('1','Aman','Ghatkopar','London','22'));
1 row created.

SQL> insert into passenger values(passenger_type('2','Aakash','Thane','Sweden','20'));
1 row created.

SQL> insert into passenger values(passenger_type('3','Deepak','Chembur','Germany','19'));
1 row created.

SQL> select * from passenger;
PASSENGER_DTLS(PID, PNAME, ADDRESS, DESTINATION, AGE)
--------------------------------------------------------------------------------
PASSENGER_TYPE(1, 'Aman', 'Ghatkopar', 'London', 22)
PASSENGER_TYPE(2, 'Aakash', 'Thane', 'Sweden', 20)
PASSENGER_TYPE(3, 'Deepak', 'Chembur', 'Germany', 19)
```

Q.3) B)

```
SQL> create table studs(
  2  id int,
  3  name varchar(20),
  4  department varchar(20),
  5  major varchar(20),
  6  joining_date date,
  7  marks int );
Table created.
SQL> insert into studs values(1,'aman','science','IT',to_date('3/2/2022','dd/mm/yyyy'),95);
1 row created.
SQL> insert into studs
values(2,'prasad','science','physics',to_date('4/2/2022','dd/mm/yyyy'),92);
1 row created.
SQL> select * from studs;
        ID NAME                 DEPARTMENT           MAJOR
---------- -------------------- -------------------- --------------------
JOINING_D      MARKS
--------- ----------
         1 aman                 science              IT
03-FEB-22         95

         2 prasad               science              physics
04-FEB-22         92
SQL> select department,marks,
  2  max(marks)keep(DENSE_RANK FIRST ORDER BY marks desc)
  3  over(PARTITION BY department)"max"
  4  from studs;
DEPARTMENT                MARKS        max
-------------------- ---------- ----------
science                      92         95
science                      95         95

SQL> select department,marks,
  2  min(marks)keep(DENSE_RANK LAST ORDER BY marks desc)
  3  over(PARTITION BY department)"min"
  4  from studs;
DEPARTMENT                MARKS       min
-------------------- ---------- ----------
science                      92         92
science                      95         92
```