



Experiment- 3

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Semester: 6th
Subject Name: Data Mining

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1. Aim: Demonstration of association rule mining using Apriori algorithm on supermarket data.

2. Objective:

- I have implement the association rule on given data via apriori algorithm.
- Association rule mining finds interesting associations and relationships among large sets of data items.
- This rule shows how frequently a itemset occurs in a transaction.
- In this experiment I have learn to create plot and how to use different pacakges libraries.

3. Script and Output:

```
#performing association rule using apriori algo
```

```
library(arules)  
library(arulesViz)  
library(RColorBrewer)
```

```
data("Groceries")
```

```
rules <- apriori(Groceries, parameter = list(supp = 0.01, conf = 0.2))  
rules1 <- apriori(Groceries, parameter = list(supp = 0.02, conf = 0.3 ))  
rules2 <- apriori(Groceries, parameter = list(supp = 0.01, conf=0.2, minlen=3))
```

```
plot(rules)
```

```
plot(rules1)
```

```
inspect(rules[1:10])
```

```
inspect(rules2[1:5])
```

```
plot(rules2)
```

```
arules::itemFrequencyPlot(Groceries, topN = 20,
  col = brewer.pal(8, 'Pastel2'),
  main = 'Relative Item Frequency Plot',
  type = "relative",
  ylab = "Item Frequency (Relative)")
```

4. Output-

• Output on R console:-

```
> library(arules)
> library(arulesviz)
> library(RColorBrewer)
> data("Groceries")
> rules <- apriori(Groceries,
+   parameter = list(supp = 0.01, conf = 0.2))
Apriori

Parameter specification:
confidence minval snx arem aval originalsupport maxtime support minlen maxlen target ext
0.2 0.1 1 none FALSE TRUE 1 0.01 1 10 rules TRUE

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

Absolute minimum support count: 98

set item appearances ... [0 item(s)] done [0.00s].
set transactions ... [169 item(s), 9835 transaction(s)] done [0.01s].
sorting and recoding items ... [88 item(s)] done [0.00s].
creating transaction tree ... done [0.01s].
checking subsets of size 1 2 3 4 done [0.00s].
writing ... [232 rule(s)] done [0.00s].
creating S4 object ... done [0.00s].
> rules1 <- apriori(Groceries,
+   parameter = list(supp = 0.02, conf = 0.3))
Apriori

Parameter specification:
confidence minval snx arem aval originalsupport maxtime support minlen maxlen target ext
0.3 0.1 1 none FALSE TRUE 1 0.02 1 10 rules TRUE

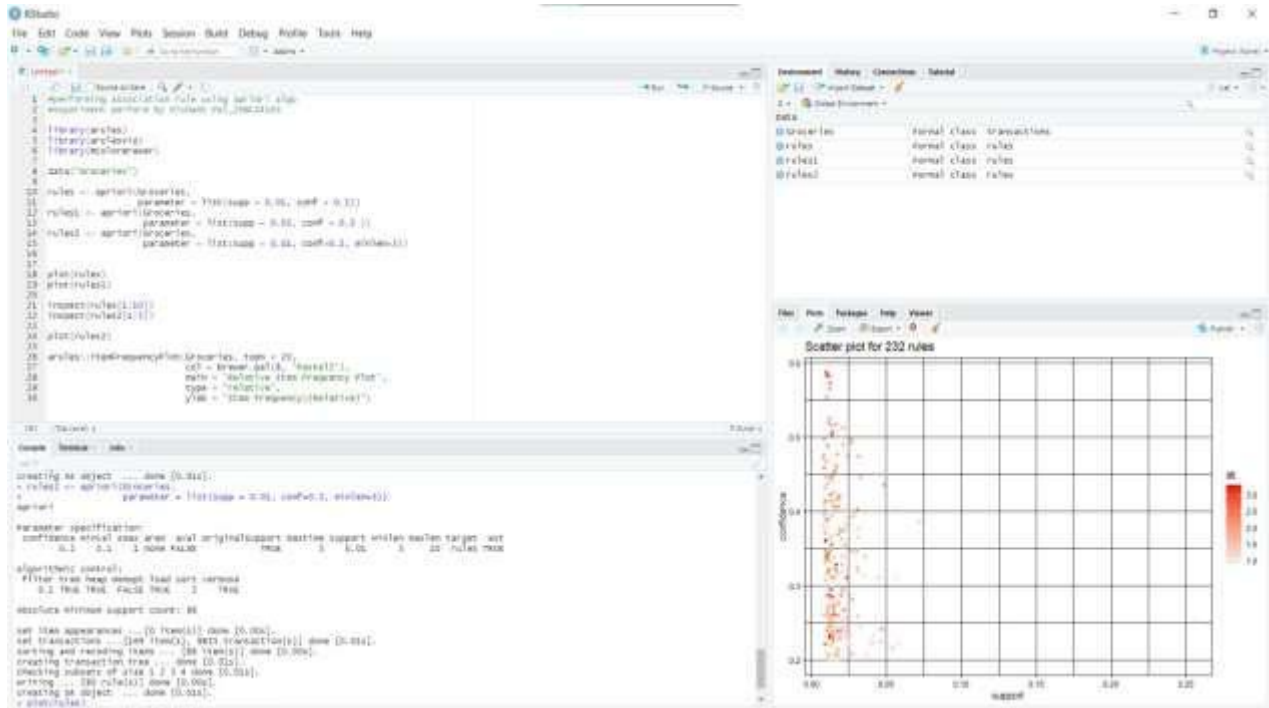
Algorithmic control:
filter tree heap memopt load sort verbose
0.1 TRUE TRUE FALSE TRUE 2 TRUE

Absolute minimum support count: 196

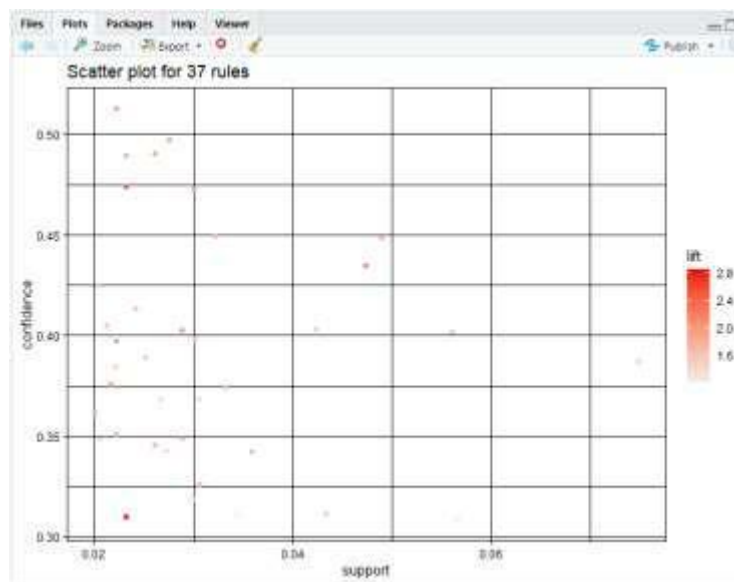
set item appearances ... [0 item(s)] done [0.00s].
set transactions ... [169 item(s), 9835 transaction(s)] done [0.01s].
sorting and recoding items ... [59 item(s)] done [0.00s].
creating transaction tree ... done [0.02s].
checking subsets of size 1 2 3 done [0.00s].
writing ... [37 rule(s)] done [0.00s].
creating S4 object ... done [0.01s].
> rules2 <- apriori(Groceries,
+   parameter = list(supp = 0.01, conf=0.2, minlen=3))
Apriori

Parameter specification:
confidence minval snx arem aval originalsupport maxtime support minlen maxlen target ext
0.2 0.1 1 none FALSE TRUE 1 0.01 3 10 rules TRUE
```

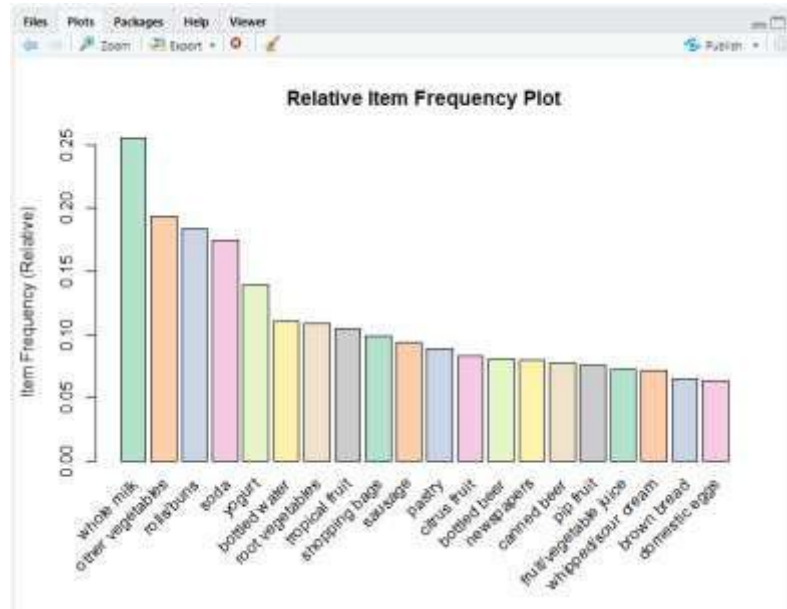
- Scatter Plot Output-



- Output of Confidence v/s Support-



- Output of Relative item Frequency Plot



Learning Outcomes-

1. Learned how to use of arules, arulesViz and RcolorBewer libraries in data mining.
2. Learned how to create scatter plots on given data.
3. Learned how to implement association rule using Apriori algorithm.