Experiment 1.4

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Aim:

Demonstration of FP Growth algorithm on supermarket data.

Objective:

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. Given a set of transactions, we can find rules that will predict the occurrence of an item based on the occurrences of other items in the transaction.

Code and Output:

Creating Records

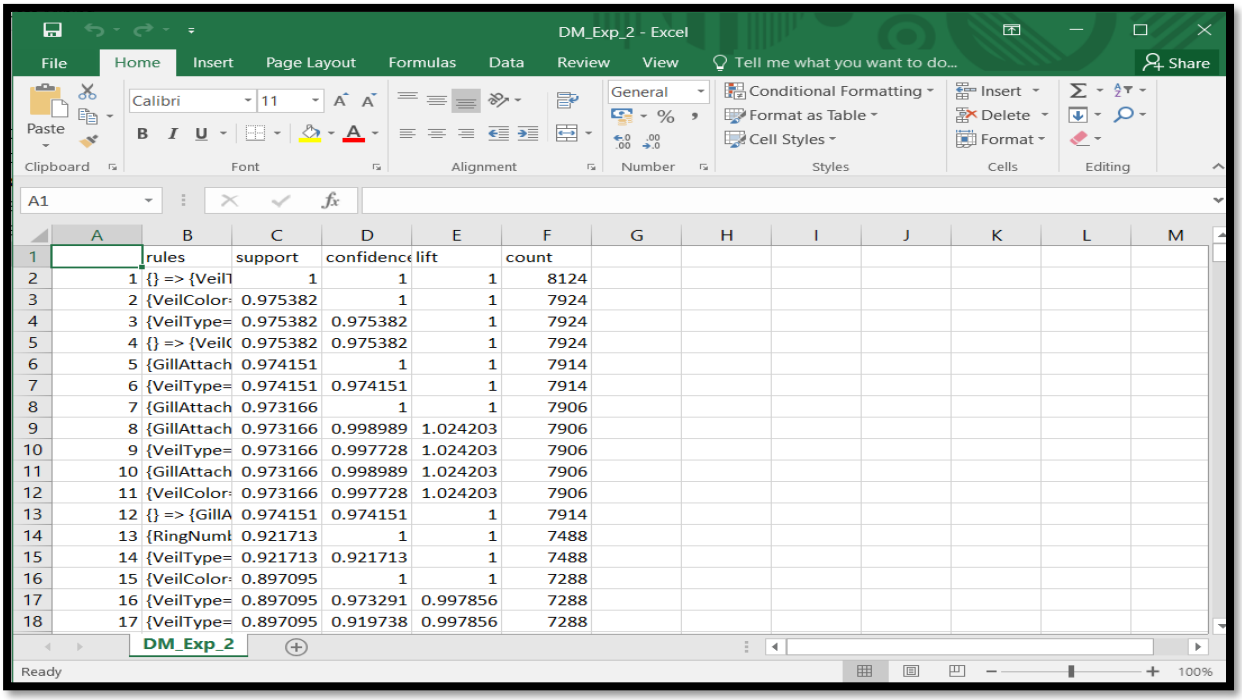
```
setwd("D:\\ Data Mining")

library("arules")

data("Mushroom")

Fp_output <- fim4r(Mushroom, method = "fpgrowth", target = "rules", supp = 60, conf = 50)
```

Applying Operation

```
Fp_output

inspect(Fp_output [1:5])

Data_File<- as(Fp_output,"data.frame")

write.csv(Data_File, file="DM_Exp_2.csv")
```

OUTPUT:

```
> setwd("D:\\Data Mining")
> library("arules")
> data("Mushroom")
> Fp_output <- fim4r(Mushroom, method = "fpgrowth", target = "rules", supp = 60, conf = 50)
>
> Fp_output
set of 594 rules
> inspect(Fp_output [1:5])
    lhs                     rhs                  support   confidence lift count
[1] {}                   => {VeilType=partial}  1.0000000 1.0000000  1    8124
[2] {VeilColor=white}    => {VeilType=partial}  0.9753816 1.0000000  1    7924
[3] {VeilType=partial}   => {VeilColor=white}   0.9753816 0.9753816  1    7924
[4] {}                   => {VeilColor=white}   0.9753816 0.9753816  1    7924
[5] {GillAttached=free}  => {VeilType=partial}  0.9741507 1.0000000  1    7914
> Data_File<- as(Fp_output,"data.frame")
> write.csv(Data_File, file="DM_Exp_2.csv")
```



	A	B	C	D	E	F
1		rules	support	confidence	lift	count
2	1	{} => {Veil	1	1	1	8124
3	2	{VeilColor	0.975382	1	1	7924
4	3	{VeilType=	0.975382	0.975382	1	7924
5	4	{} => {Veil	0.975382	0.975382	1	7924
6	5	{GillAttach	0.974151	1	1	7914
7	6	{VeilType=	0.974151	0.974151	1	7914
8	7	{GillAttach	0.973166	1	1	7906
9	8	{GillAttach	0.973166	0.998989	1.024203	7906
10	9	{VeilType=	0.973166	0.997728	1.024203	7906
11	10	{GillAttach	0.973166	0.998989	1.024203	7906
12	11	{VeilColor	0.973166	0.997728	1.024203	7906
13	12	{} => {GillA	0.974151	0.974151	1	7914
14	13	{RingNumb	0.921713	1	1	7488
15	14	{VeilType=	0.921713	0.921713	1	7488
16	15	{VeilColor	0.897095	1	1	7288
17	16	{VeilType=	0.897095	0.973291	0.997856	7288
18	17	{VeilType=	0.897095	0.919738	0.997856	7288

Observations & Conclusion:

The "fim4r" function is used to mine frequent itemsets and generate association rules using the "fpgrowth" method with a minimum support of 60% and minimum confidence of 50%. The output of the function is stored in the "Fp_output" variable, which is then inspected using the "inspect" function to display the first five association rules.

Learning outcomes (What I have learnt):

1. Association rule mining: Students can learn how to use different methods, such as Apriori or FP-Growth, to mine frequent itemsets and generate association rules.
2. Minimum support and confidence: The code uses the minimum support and minimum confidence parameters to filter out weak rules and ensure that only meaningful rules