Experiment 4

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Branch: CSE	**Section/Group: 902**-A
Semester: 6th	**Date of Performance:** 7/03/23
Subject Name: Data Mining Lab	**Subject Code:** 20CSP-376

1. **Aim:** To implement FP growth algorithm using arules library and transaction data set
2. **Objective:** To demonstrate the working of frequent pattern growth on a given data set **3. Script and Output:**

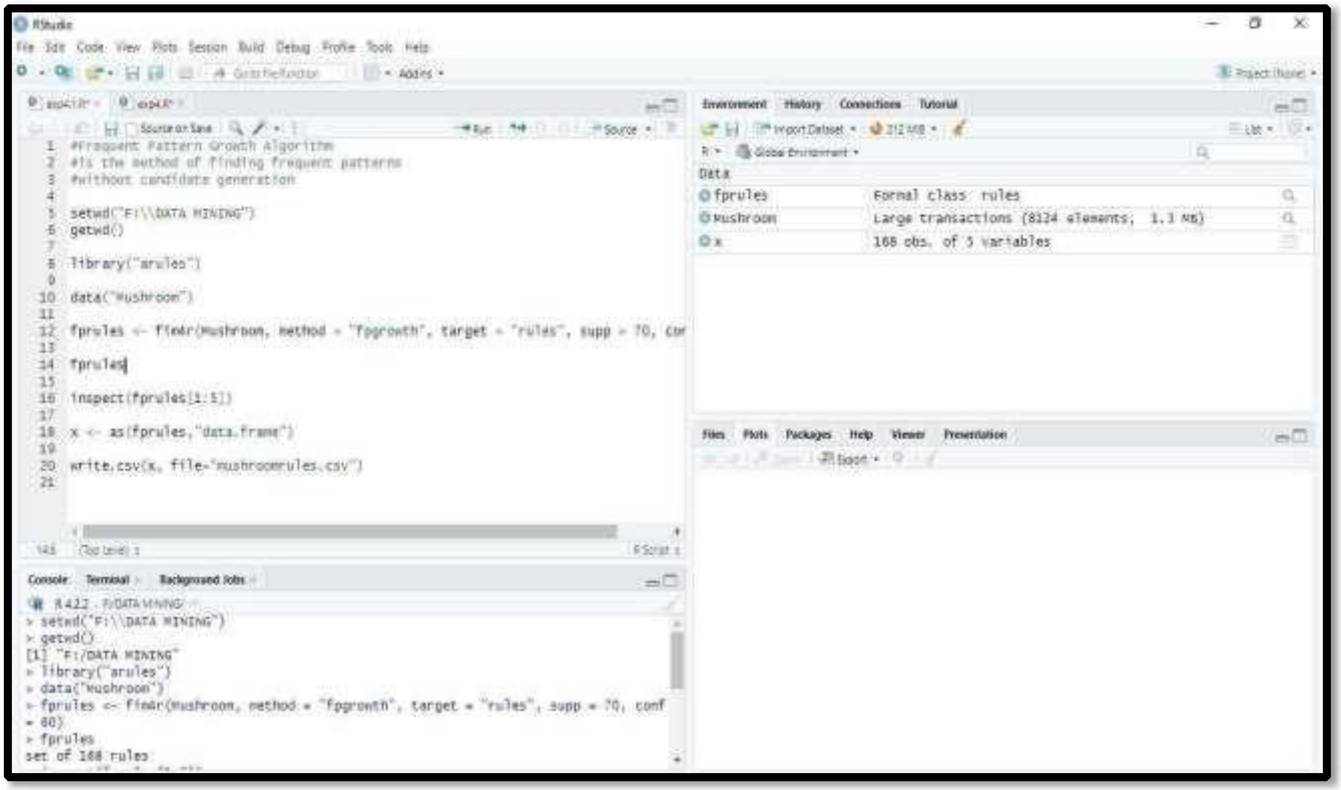
```
#Frequent Pattern Growth Algorithm
#is the method of finding frequent patterns
#without candidate generation

setwd("F:\\DATA MINING")  getwd()

library("arules")

  data("Mushroom")

fprules <- fim4r(Mushroom, method = "fpgrowth", target = "rules", supp
= 70, conf =
```

60) fprules inspect(fprules[1:5]) x <- as(fprules,"data.frame")

write.csv(x,

file="mushroomrules.csv")

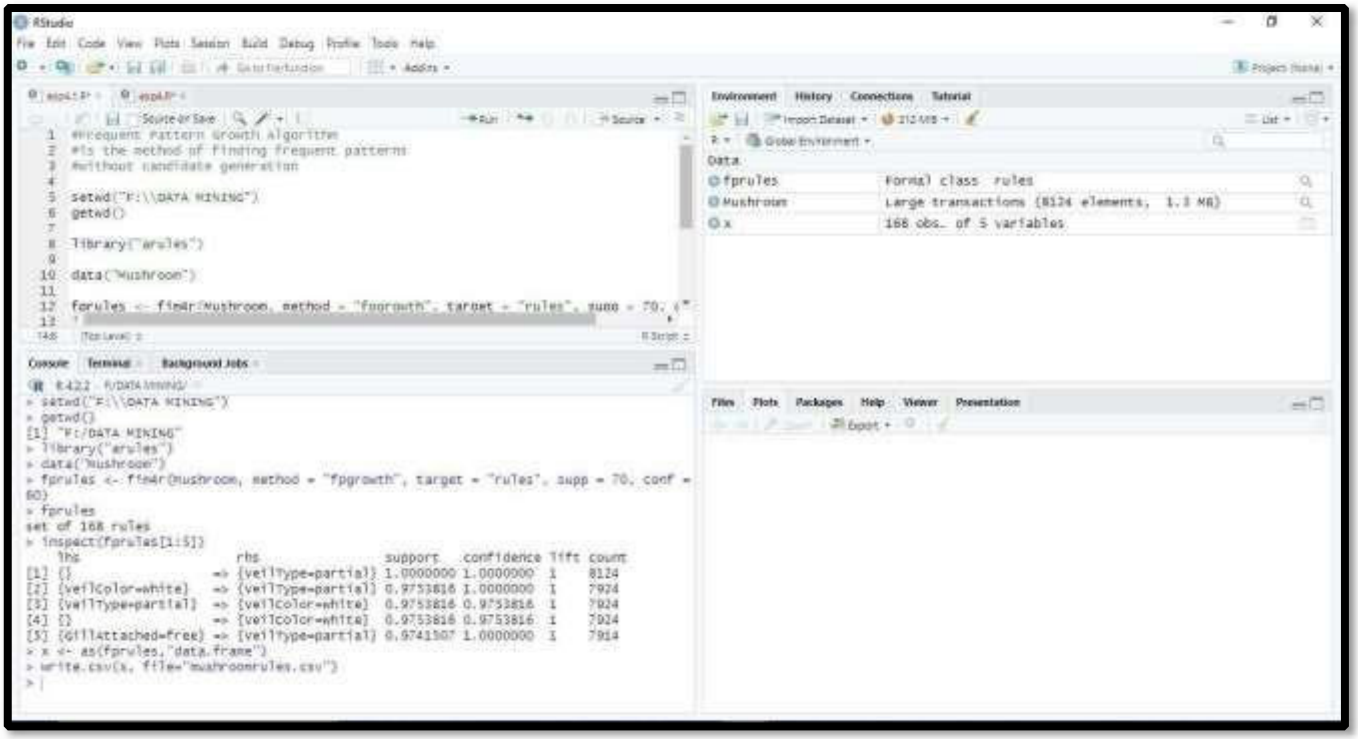
OUTPUT-:


RStudio
File Edit Code View Plots Session Build Debug Profile Tools Help
Go to file/function
Addins
Project (None)
exp4.R
Source on Save
Run
Source
Environment History Connections Tutorial
Import Dataset
212 MiB
List
Global Environment
Console Terminal Background Jobs
R 4.2.2 · F:/DATA MINING/
Files Plots Packages Help Viewer Presentation
Zoom
(Top Level)
R Script

```
#Frequent Pattern Growth Algorithm
#is the method of finding frequent patterns
#without candidate generation

setwd("F:\\DATA MINING")
getwd()

library("arules")

data("Mushroom")

fprules <- fim4r(Mushroom, method = "fpgrowth", target = "rules", supp = 70, cor

fprules

inspect(fprules[1:5])

x <- as(fprules,"data.frame")

write.csv(x, file="mushroomrules.csv")
```

```
Data
fprules          Formal class  rules
Mushroom         Large transactions (8124 elements,  1.3 MB)
x                168 obs. of 3 variables
```

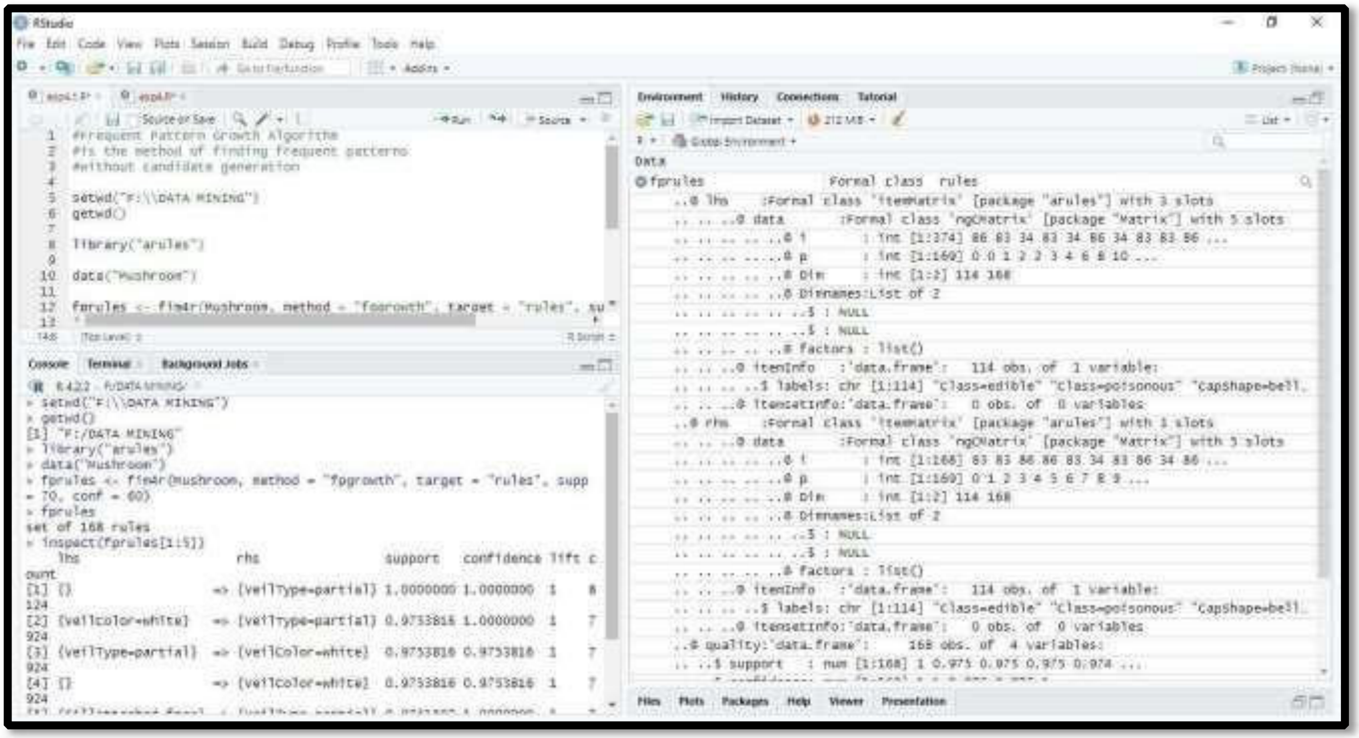
```
> setwd("F:\\DATA MINING")
> getwd()
[1] "F:/DATA MINING"
> library("arules")
> data("Mushroom")
> fprules <- fim4r(Mushroom, method = "fpgrowth", target = "rules", supp = 70, conf
= 80)
> fprules
set of 168 rules
```



```
#Frequent Pattern Growth Algorithm
#is the method of finding frequent patterns
#without candidate generation

setwd("F:\\DATA MINING")
getwd()

library("arules")

data("Mushroom")

fprules <- fim4r(Mushroom, method = "fpgrowth", target = "rules", supp = 70, c
```

```
> setwd("F:\\DATA MINING")
> getwd()
[1] "F:/DATA MINING"
> library("arules")
> data("Mushroom")
> fprules <- fim4r(Mushroom, method = "fpgrowth", target = "rules", supp = 70, conf =
60)
> fprules
set of 168 rules
> inspect(fprules[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
> x <- as(fprules,"data.frame")
> write.csv(x, file="mushroomrules.csv")
> |
```

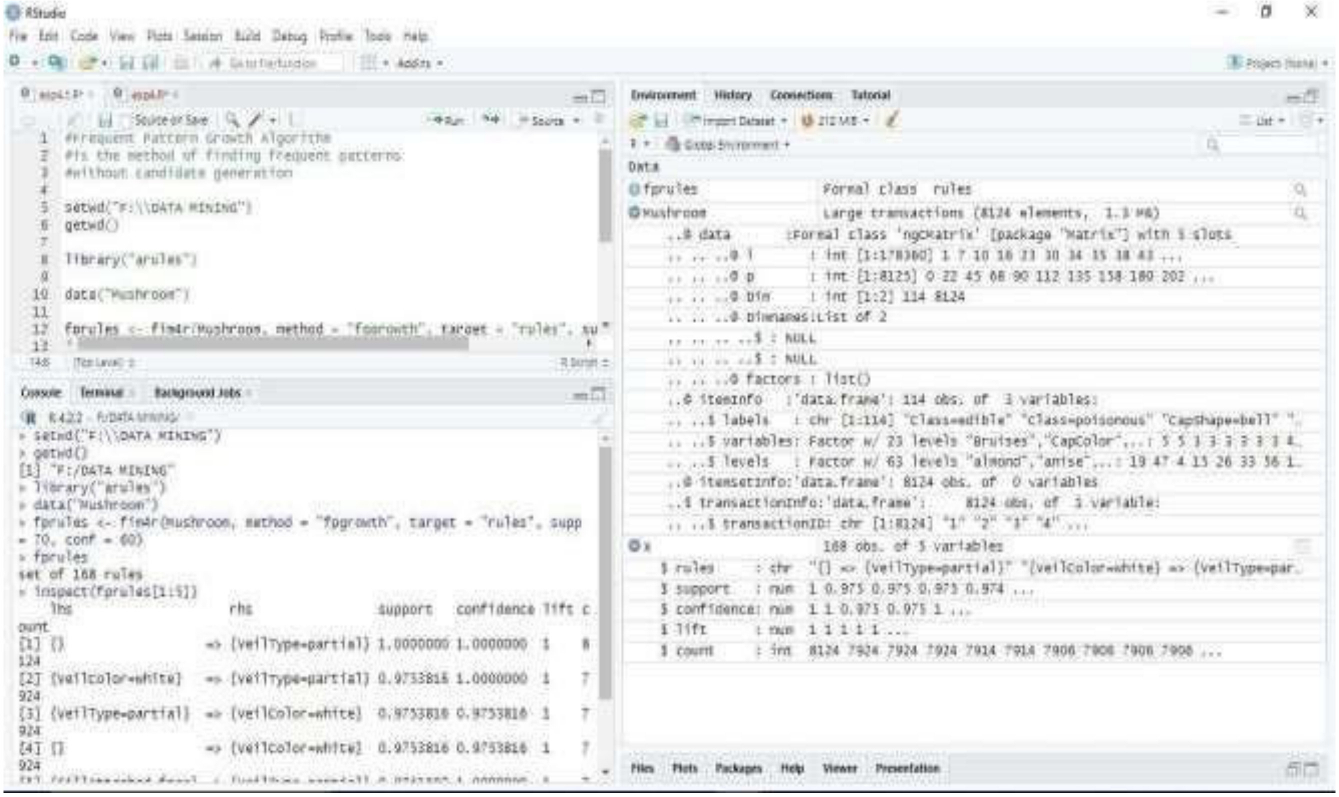
Data	
fprules	Formal class rules
Mushroom	Large transactions (8124 elements, 1.3 MB)
x	168 obs. of 5 variables



```
#Frequent Pattern Growth Algorithm
#is the method of finding frequent patterns
#without candidate generation

setwd("F:\\DATA MINING")
getwd()

library("arules")

data("Mushroom")

fprules <- fim4r(Mushroom, method = "fpgrowth", target = "rules", su
```

```
> setwd("F:\\DATA MINING")
> getwd()
[1] "F:/DATA MINING"
> library("arules")
> data("Mushroom")
> fprules <- fim4r(Mushroom, method = "fpgrowth", target = "rules", supp
= 70, conf = 60)
> fprules
set of 168 rules
> inspect(fprules[1:5])
    lhs                     rhs                 support   confidence lift c
ount
[1] {}                   => {veilType=partial} 1.0000000 1.0000000  1    8
124
[2] {veilColor=white}    => {veilType=partial} 0.9753816 1.0000000  1    7
924
[3] {veilType=partial}   => {veilColor=white}  0.9753816 0.9753816  1    7
924
[4] {}                   => {veilColor=white}  0.9753816 0.9753816  1    7
924
```

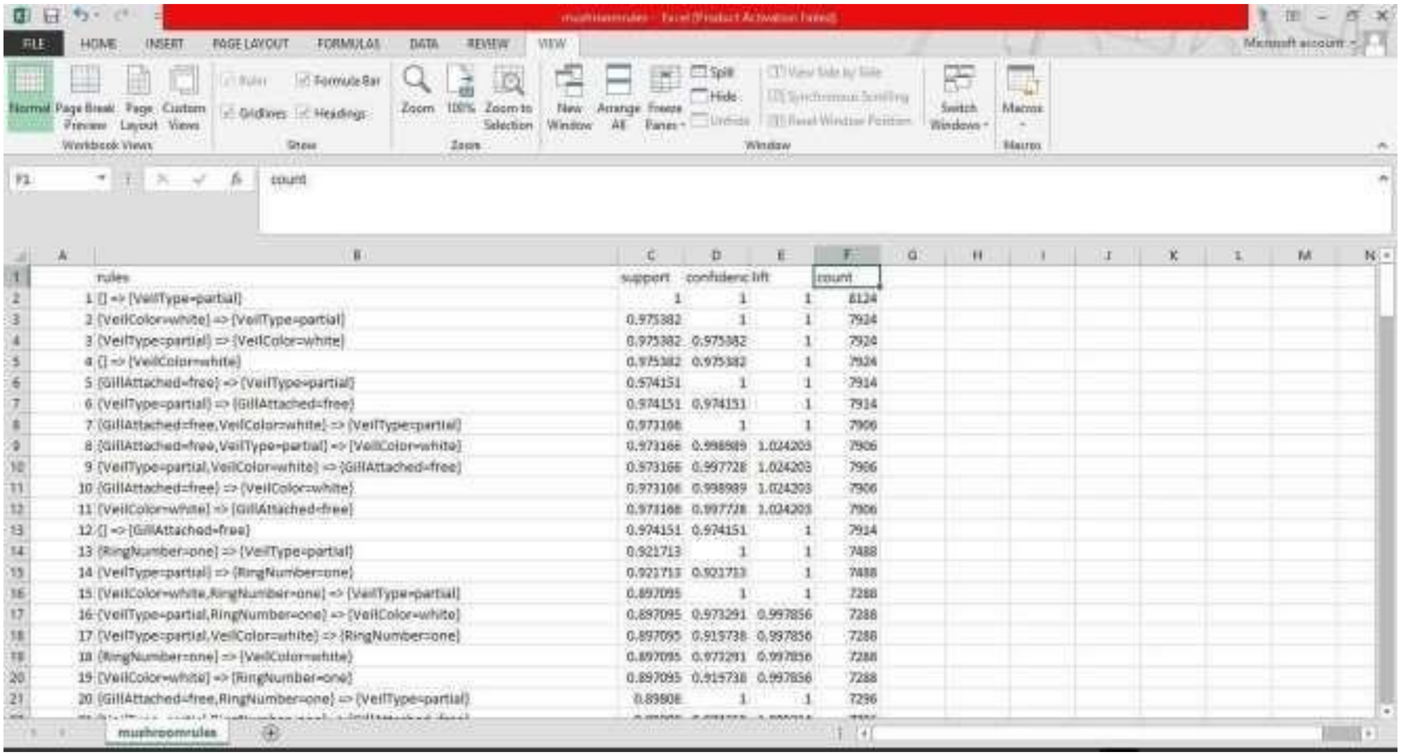
```
Data
fprules             Formal class  rules
  ..@ lhs     :Formal class 'itemMatrix' [package "arules"] with 3 slots
  .. .. ..@ data       :Formal class 'ngCMatrix' [package "Matrix"] with 5 slots
  .. .. .. .. ..@ i        : int [1:374] 86 83 34 83 34 86 34 83 83 86 ...
  .. .. .. .. ..@ p        : int [1:169] 0 0 1 2 2 3 4 6 8 10 ...
  .. .. .. .. ..@ Dim      : int [1:2] 114 168
  .. .. .. .. ..@ Dimnames:List of 2
  .. .. .. .. .. ..$ : NULL
  .. .. .. .. .. ..$ : NULL
  .. .. .. .. ..@ factors : list()
  .. .. ..@ itemInfo   :'data.frame':   114 obs. of  1 variable:
  .. .. .. ..$ labels: chr [1:114] "Class=edible" "Class=poisonous" "CapShape=bell"...
  .. .. ..@ itemsetInfo:'data.frame':   0 obs. of  0 variables
  ..@ rhs     :Formal class 'itemMatrix' [package "arules"] with 3 slots
  .. .. ..@ data       :Formal class 'ngCMatrix' [package "Matrix"] with 5 slots
  .. .. .. .. ..@ i        : int [1:168] 83 83 86 86 83 34 83 86 34 86 ...
  .. .. .. .. ..@ p        : int [1:169] 0 1 2 3 4 5 6 7 8 9 ...
  .. .. .. .. ..@ Dim      : int [1:2] 114 168
  .. .. .. .. ..@ Dimnames:List of 2
  .. .. .. .. .. ..$ : NULL
  .. .. .. .. .. ..$ : NULL
  .. .. .. .. ..@ factors : list()
  .. .. ..@ itemInfo   :'data.frame':   114 obs. of  1 variable:
  .. .. .. ..$ labels: chr [1:114] "Class=edible" "Class=poisonous" "CapShape=bell"...
  .. .. ..@ itemsetInfo:'data.frame':   0 obs. of  0 variables
  ..@ quality:'data.frame':     168 obs. of  4 variables:
  .. ..$ support    : num [1:168] 1 0.975 0.975 0.975 0.974 ...
```


RStudio
File Edit Code View Plots Session Build Debug Profile Tools Help
Addins
Source on Save
Run
Source
Console Terminal Background Jobs
R 4.2.2 · F:/DATA MINING/
Environment History Connections Tutorial
Import Dataset
212 MiB
Global Environment
List
Files Plots Packages Help Viewer Presentation

```
#Frequent Pattern Growth Algorithm
#is the method of finding frequent patterns
#without candidate generation

setwd("F:\\DATA MINING")
getwd()

library("arules")

data("Mushroom")

fprules <- fim4r(Mushroom, method = "fpgrowth", target = "rules", su
```

```
> setwd("F:\\DATA MINING")
> getwd()
[1] "F:/DATA MINING"
> library("arules")
> data("Mushroom")
> fprules <- fim4r(Mushroom, method = "fpgrowth", target = "rules", supp
= 70, conf = 60)
> fprules
set of 168 rules
> inspect(fprules[1:5])
    lhs                  rhs                support   confidence lift c
ount
[1] {}                => {VeilType=partial} 1.0000000 1.0000000  1    8
124
[2] {VeilColor=white}  => {VeilType=partial} 0.9753816 1.0000000  1    7
924
[3] {VeilType=partial} => {VeilColor=white}  0.9753816 0.9753816  1    7
924
[4] {}                => {VeilColor=white}  0.9753816 0.9753816  1    7
924
```

```
Data
fprules              Formal class  rules
Mushroom             Large transactions (8124 elements,  1.3 MB)
  ..@ data       :Formal class 'ngCMatrix' [package "Matrix"] with 5 slots
  .. .. ..@ i        : int [1:178360] 1 7 10 16 23 30 34 35 38 43 ...
  .. .. ..@ p        : int [1:8125] 0 22 45 68 90 112 135 158 180 202 ...
  .. .. ..@ Dim      : int [1:2] 114 8124
  .. .. ..@ Dimnames:List of 2
  .. .. .. ..$ : NULL
  .. .. .. ..$ : NULL
  .. .. ..@ factors : list()
  ..@ itemInfo   :'data.frame': 114 obs. of  3 variables:
  .. ..$ labels   : chr [1:114] "Class=edible" "Class=poisonous" "CapShape=bell" "..
  .. ..$ variables: Factor w/ 23 levels "Bruises","CapColor",..: 5 5 1 3 3 3 3 3 4..
  .. ..$ levels   : Factor w/ 63 levels "almond","anise",..: 19 47 4 13 26 33 36 1..
  ..@ itemsetInfo:'data.frame': 8124 obs. of  0 variables
  ..$ transactionInfo:'data.frame':    8124 obs. of  1 variable:
  .. ..$ transactionID: chr [1:8124] "1" "2" "3" "4" ...
x                    168 obs. of 5 variables
  $ rules     : chr  "{} => {VeilType=partial}" "{VeilColor=white} => {VeilType=par..
  $ support   : num  1 0.975 0.975 0.975 0.974 ...
  $ confidence: num  1 1 0.975 0.975 1 ...
  $ lift      : num  1 1 1 1 1 ...
  $ count     : int  8124 7924 7924 7924 7914 7914 7906 7906 7906 7906 ...
```


mushroomrules - Excel (Product Activation Failed)
FILE HOME INSERT PAGE LAYOUT FORMULAS DATA REVIEW VIEW
Microsoft account
Normal Page Break Preview Page Layout Custom Views
Workbook Views
Ruler Formula Bar Gridlines Headings
Show
Zoom 100% Zoom to Selection
Zoom
New Window Arrange All Freeze Panes Split Hide Unhide View Side by Side Synchronous Scrolling Reset Window Position
Window
Switch Windows
Macros
Macros
F1
mushroomrules

count

	A	B	C	D	E	F
1		rules	support	confidenc	lift	count
2	1	{} => {VeilType=partial}	1	1	1	8124
3	2	{VeilColor=white} => {VeilType=partial}	0.975382	1	1	7924
4	3	{VeilType=partial} => {VeilColor=white}	0.975382	0.975382	1	7924
5	4	{} => {VeilColor=white}	0.975382	0.975382	1	7924
6	5	{GillAttached=free} => {VeilType=partial}	0.974151	1	1	7914
7	6	{VeilType=partial} => {GillAttached=free}	0.974151	0.974151	1	7914
8	7	{GillAttached=free,VeilColor=white} => {VeilType=partial}	0.973166	1	1	7906
9	8	{GillAttached=free,VeilType=partial} => {VeilColor=white}	0.973166	0.998989	1.024203	7906
10	9	{VeilType=partial,VeilColor=white} => {GillAttached=free}	0.973166	0.997728	1.024203	7906
11	10	{GillAttached=free} => {VeilColor=white}	0.973166	0.998989	1.024203	7906
12	11	{VeilColor=white} => {GillAttached=free}	0.973166	0.997728	1.024203	7906
13	12	{} => {GillAttached=free}	0.974151	0.974151	1	7914
14	13	{RingNumber=one} => {VeilType=partial}	0.921713	1	1	7488
15	14	{VeilType=partial} => {RingNumber=one}	0.921713	0.921713	1	7488
16	15	{VeilColor=white,RingNumber=one} => {VeilType=partial}	0.897095	1	1	7288
17	16	{VeilType=partial,RingNumber=one} => {VeilColor=white}	0.897095	0.973291	0.997856	7288
18	17	{VeilType=partial,VeilColor=white} => {RingNumber=one}	0.897095	0.919738	0.997856	7288
19	18	{RingNumber=one} => {VeilColor=white}	0.897095	0.973291	0.997856	7288
20	19	{VeilColor=white} => {RingNumber=one}	0.897095	0.919738	0.997856	7288
21	20	{GillAttached=free,RingNumber=one} => {VeilType=partial}	0.89808	1	1	7296

4. Learning Outcome:

- Setting and getting directory path for R project.
- Creating and working with FP growth algorithm.
- Saving data frame in .csv file format in R.
- Loading .csv file in data frame and print it.
- Basic of the data frame and r studio uses in the data frame