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TE Computer

## **Experiment 9**

### **Objective:**

Apply Apriori Algorithm to given dataset Association Rule Mining with WEKA

### **Procedure:**

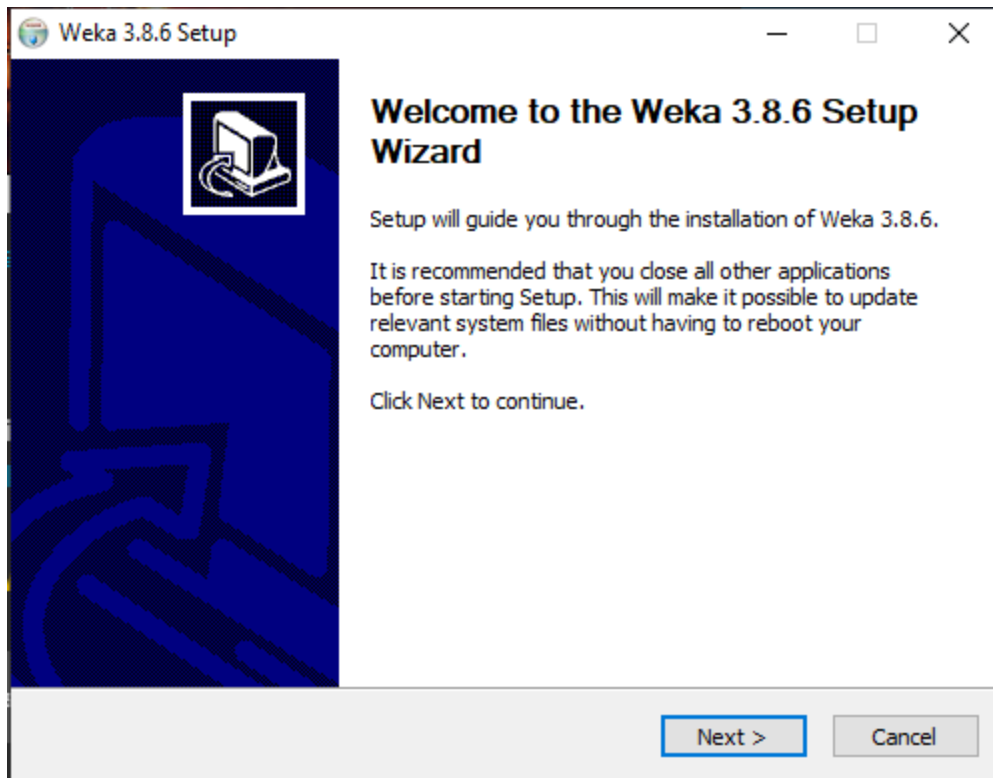
1. Download the software as your requirements from the below given link.

<http://www.cs.waikato.ac.nz/ml/weka/downloading.html>

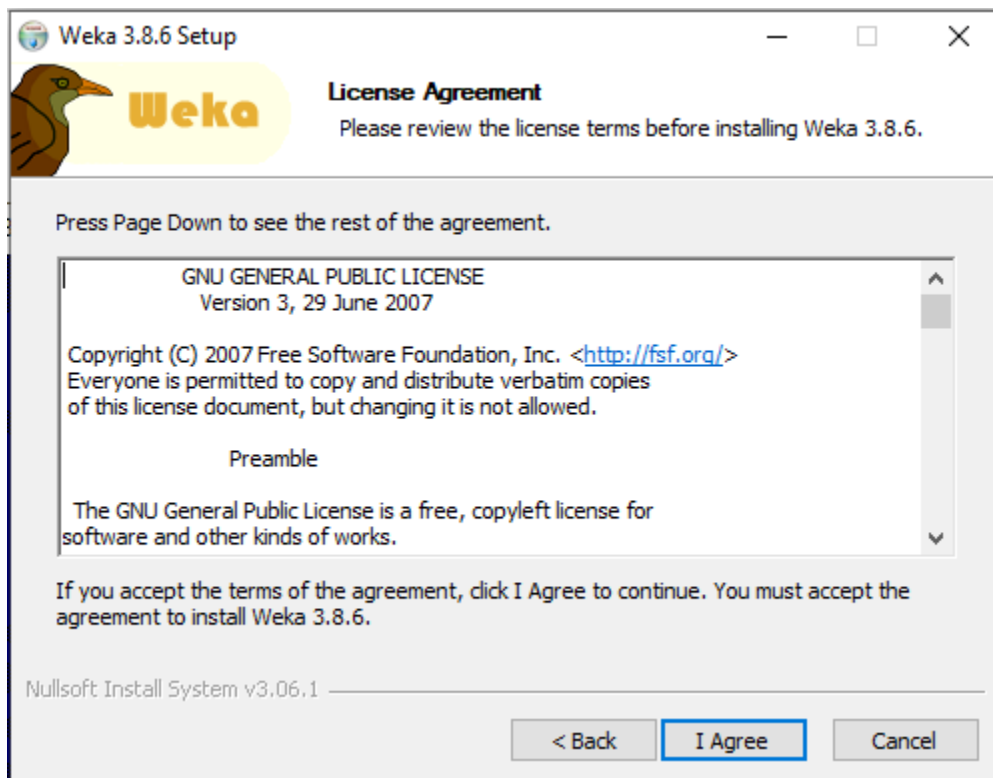
2. The Java is mandatory for installation of WEKA so if you have already Java on your machine then download only WEKA else download the software with JVM.

3. Then open the file location and double click on the file

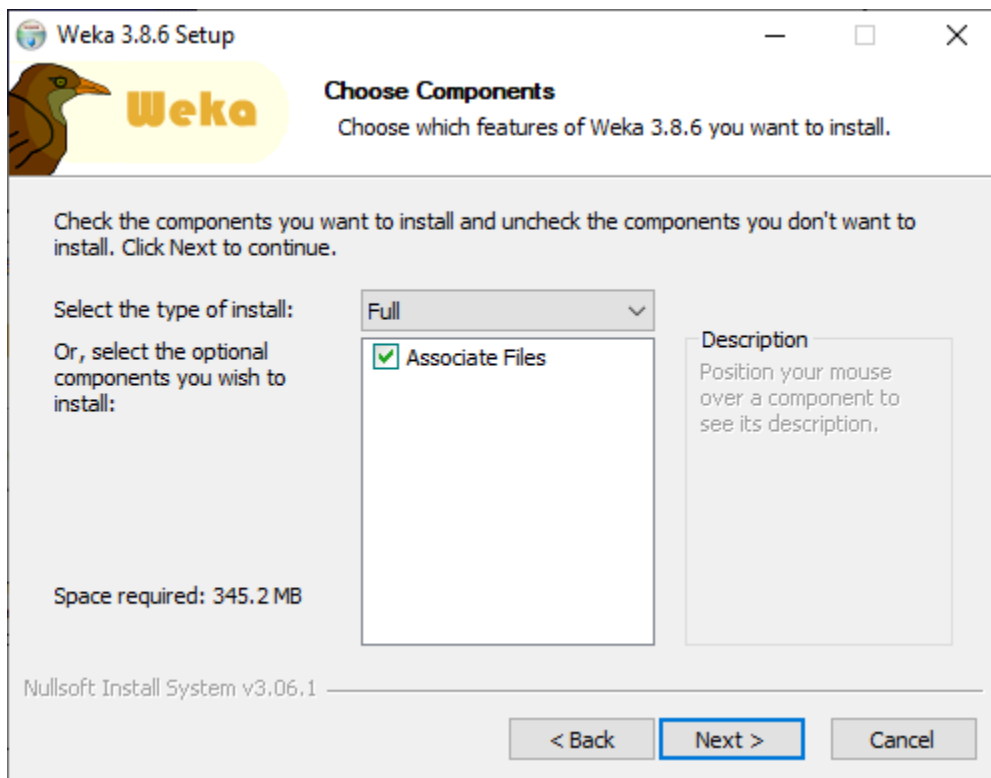
4. Click Next



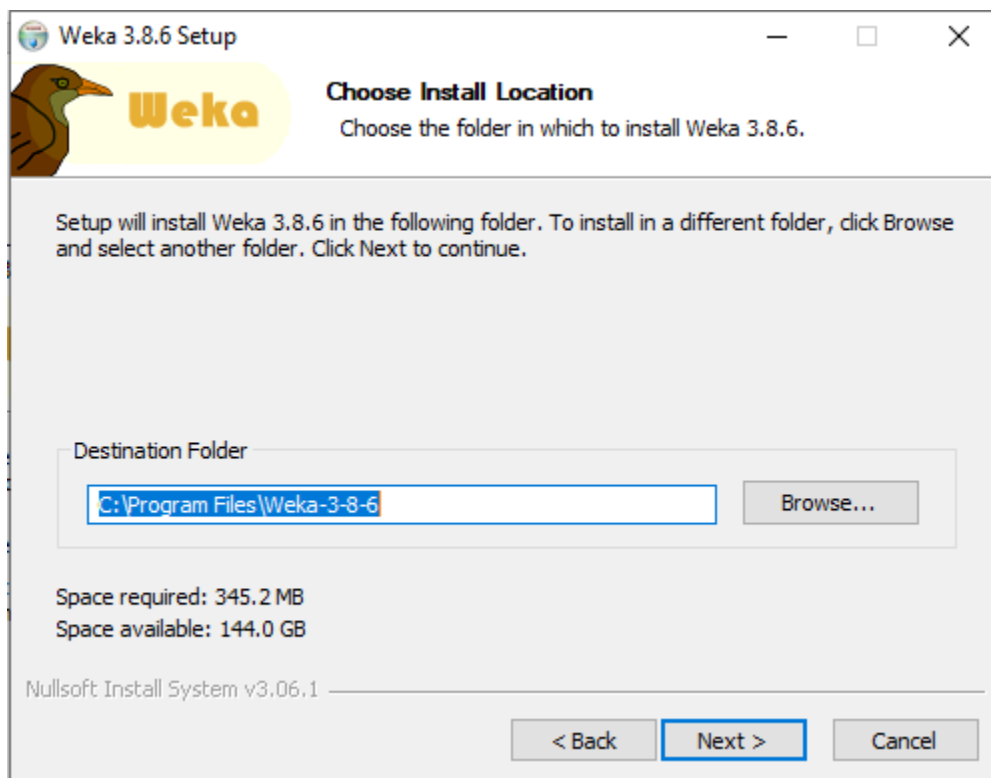
5. Click I Agree.



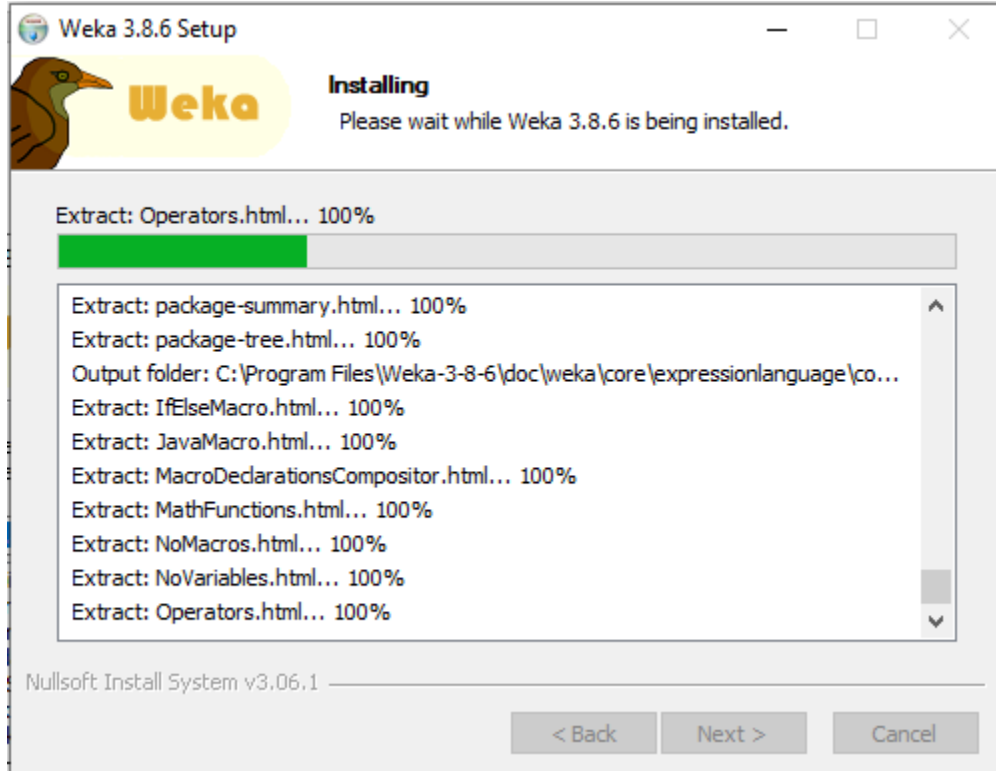
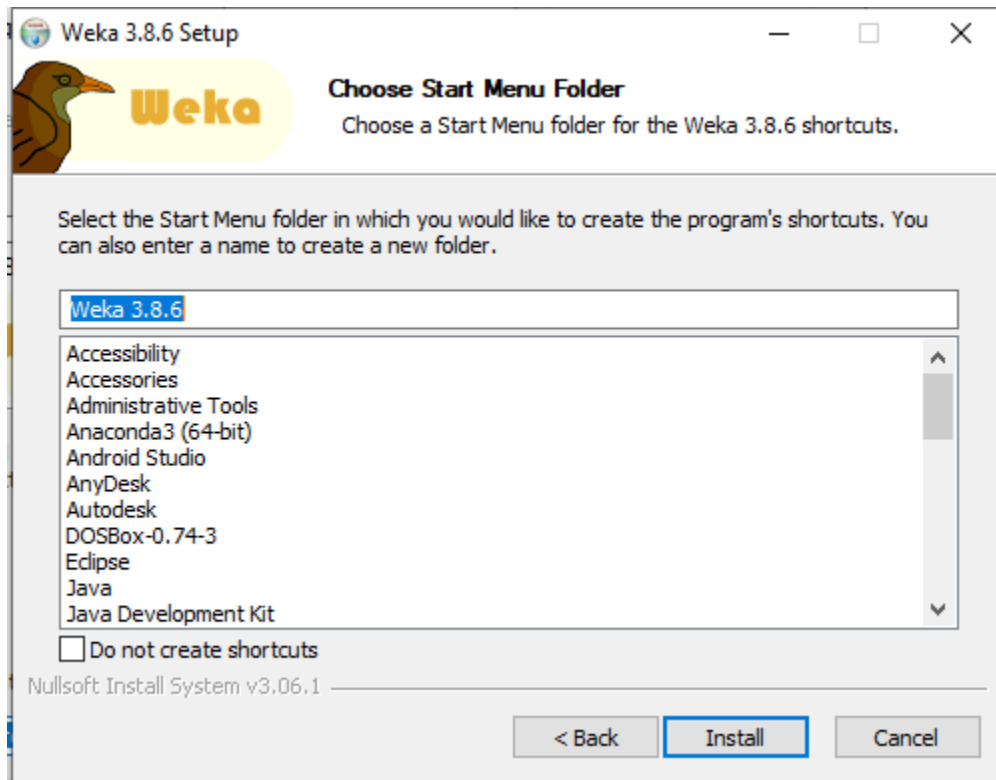
6. select Full and Associate files are the recommended settings and click next.



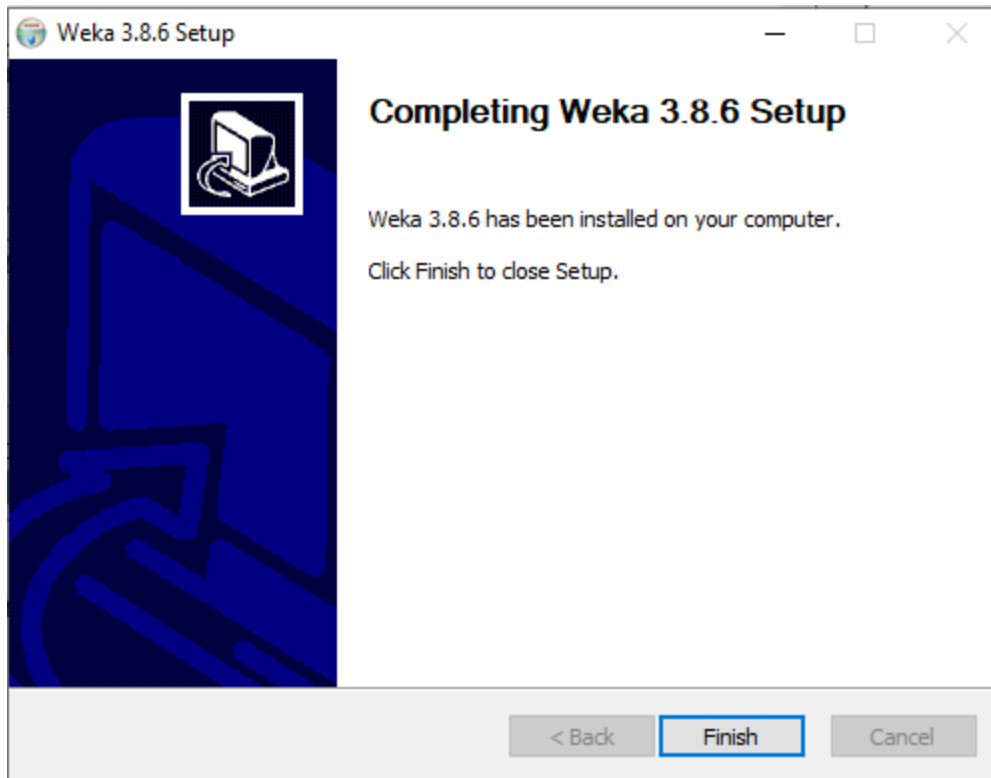
7. Set the installation location and click next



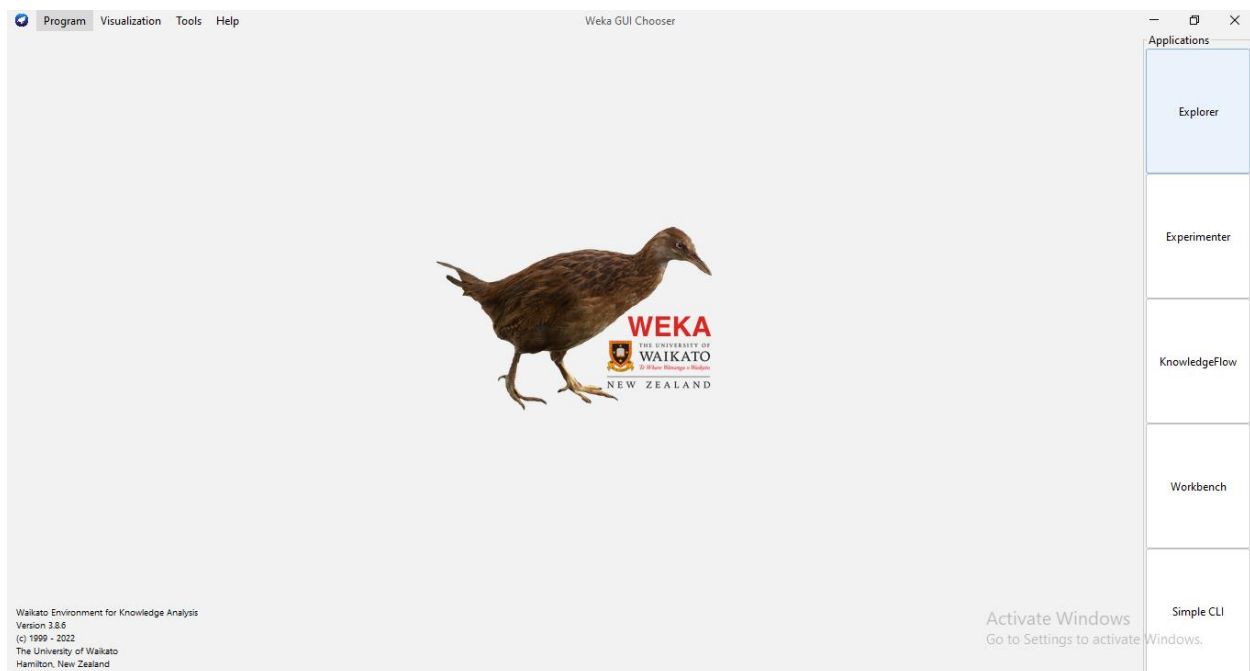
8.click Install.



9.click finish and it will complete the installation



10. This is the GUI is started after the installing the weka. You have 4 options Explorer, Experimenter, KnowledgeFlow and Simple CLI.



1.Explorer An environment for exploring data with WEKA (the rest of this Documentation

deals with this application in more detail).

2. **Experimenter** An environment for performing experiments and conducting statistical tests between learning schemes.

3. **Knowledge Flow** This environment supports essentially the same functions as the Explorer but with a drag-and-drop interface. One advantage is that it supports incremental learning.

4. **SimpleCLI** Provides a simple command-line interface that allows direct execution of WEKA commands for operating systems that do not provide their own command line interface.

11. After click the weka explorer it will show the weka explorer window in that following tabs are available

1. **Preprocess.** Choose and modify the data being acted on.

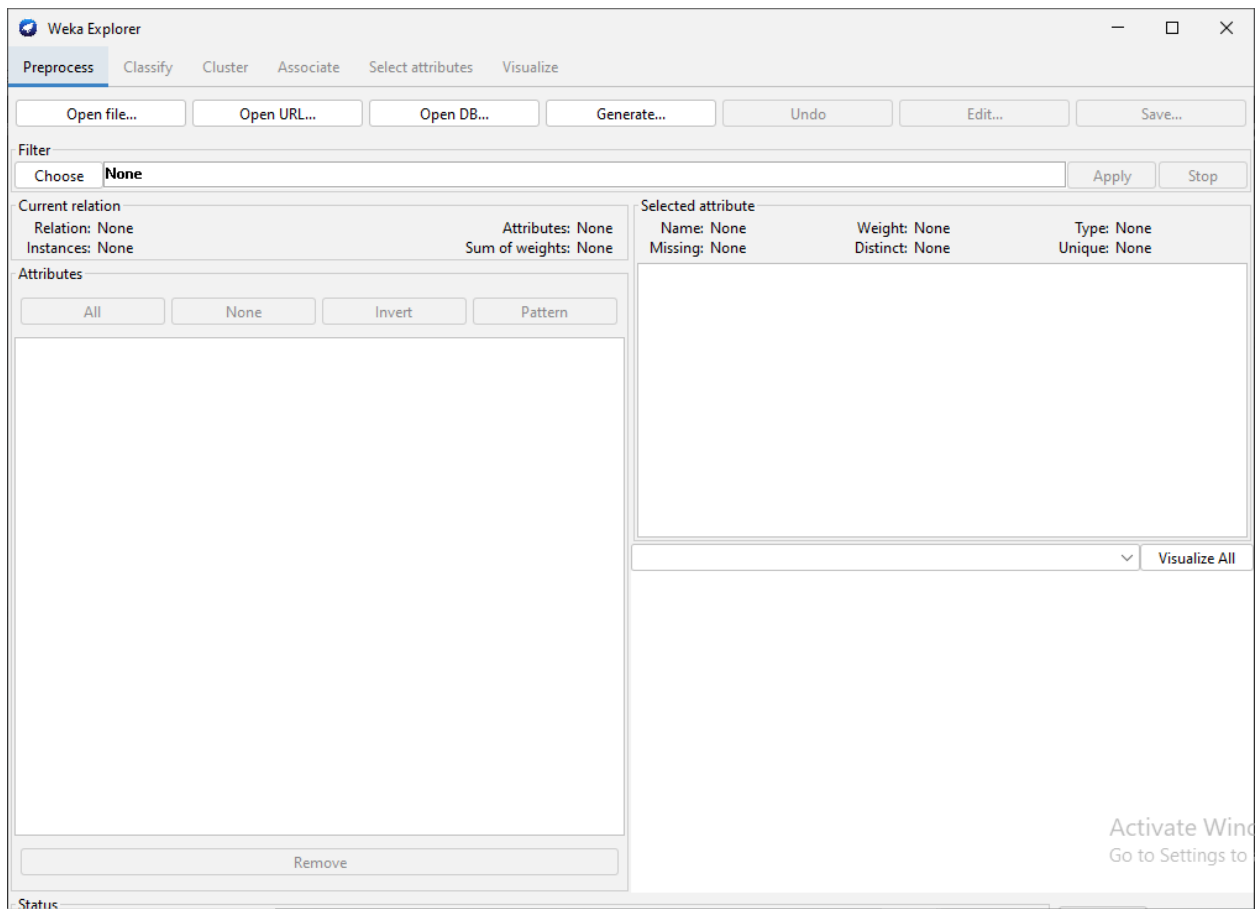
2. **Classify.** Train & test learning schemes that classify or perform regression

3. **Cluster.** Learn clusters for the data.


4. **Associate.** Learn association rules for the data.

5. **Select attributes.** Select the most relevant attributes in the data.

6. **Visualize.** View an interactive 2D plot of the data.



12. After clicking the weka experimenter it will show the weka experimenter window

 Weka Experiment Environment

Setup

Run

Analyse

Experiment Configuration Mode

Simple

Open...

Save...

New

Results Destination

ARFF file

Filename:

Browse...

Experiment Type

Cross-validation

Number of folds:

☒ Classification
 ☐ Regression

Iteration Control

Number of repetitions:

☒ Data sets first
 ☐ Algorithms first

Datasets

Add new...

Edit selected...

Delete selected

☐ Use relative paths

Up

Down

Algorithms

Add new...

Edit selected...

Delete selected

Load options...

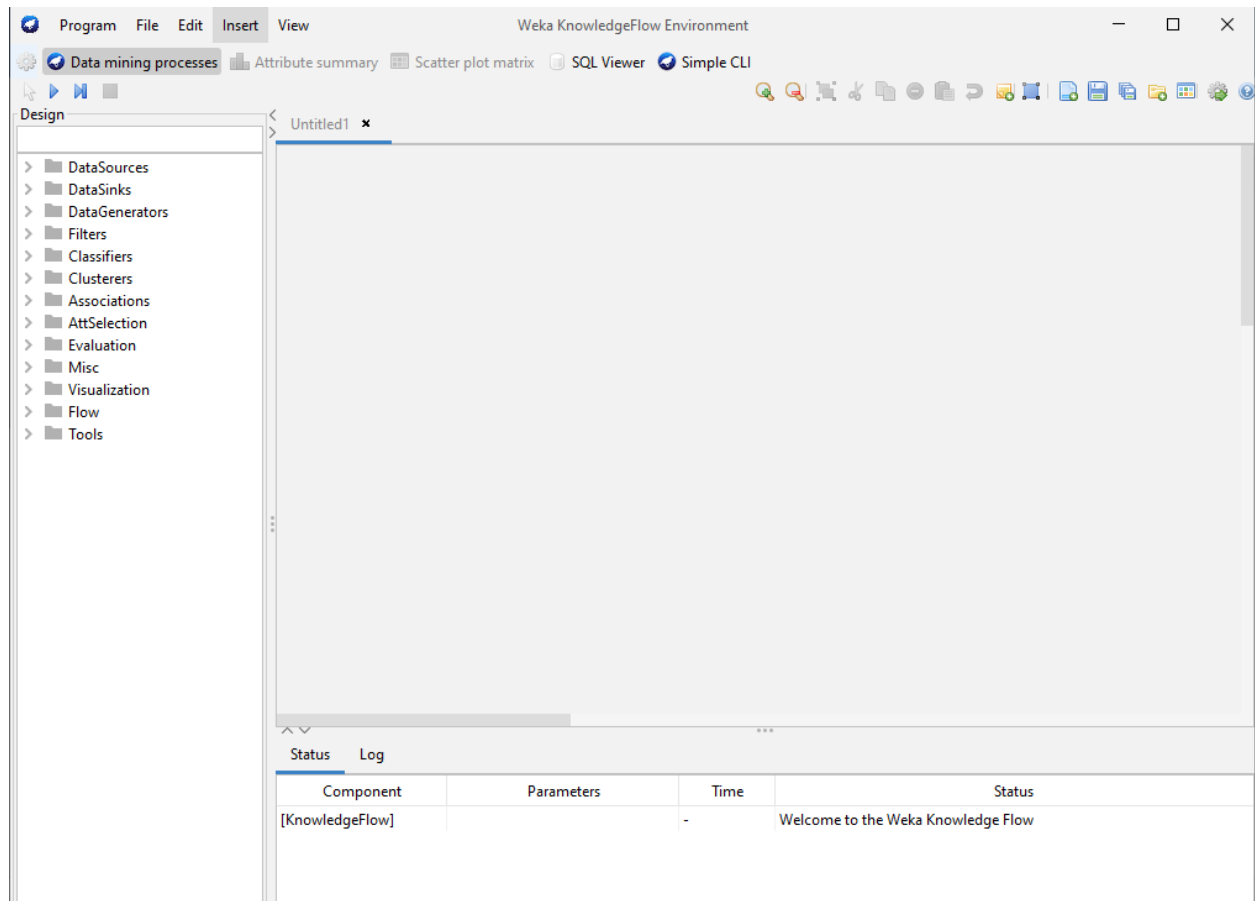
Save options...

Up

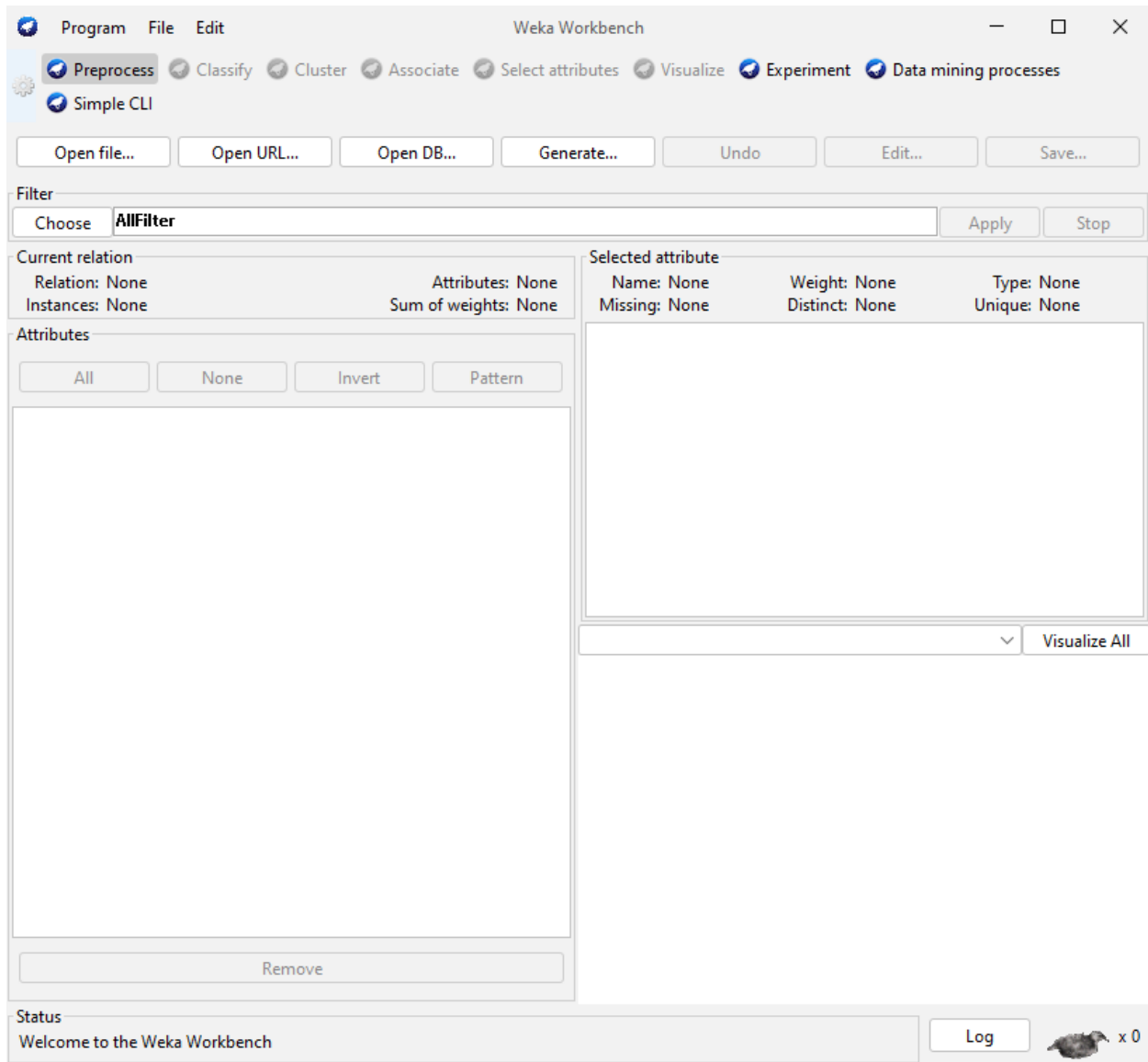
Down

## 13.Knowledge flow





14. Weka workbench



## 15.Simple CLI

Commands:

The following commands are available in the Simple CLI:

- Java <classname> [<args>]

Invokes a java class with the given arguments (if any).

- Break

Stops the current thread, e.g., a running classifier, in a friendly manner kill stops the current thread in an unfriendly fashion.

- Cls

Clears the output area

- Capabilities <classname> [<args>]

Lists the capabilities of the specified class, e.g., for a classifier with its.

- option:

Capabilities weka.classifiers.meta.Bagging -W weka.classifiers.trees.Id3

- exit

Exits the Simple CLI

- help [<command>]

Provides an overview of the available commands if without a command name as argument, otherwise more help on the specified command

```
SimpleCLI

Welcome to the WEKA SimpleCLI

Enter commands in the textfield at the bottom of
the window. Use the up and down arrows to move
through previous commands.
Command completion for classnames and files is
initiated with <Tab>. In order to distinguish
between files and classnames, file names must
be either absolute or start with '.', '\' or '~/ '
(the latter is a shortcut for the home directory).
<Alt+BackSpace> is used for deleting the text
in the commandline in chunks.

Type 'help' followed by <Enter> to see an overview
of all commands.
>

> help

capabilities <classname> <args>
    Lists the capabilities of the specified class.
    If the class is a weka.core.OptionHandler then
    trailing options after the classname will be
    set as well.

cls
    Clears the output area.

echo msg
    Outputs a message.

exit
    Exits the SimpleCLI program.

help [command1] [command2] [...]
    Outputs the help for the specified command or, if omitted,
    for all commands.

history
    Prints all issued commands.

|
```

```
SimpleCLI

Clears the output area.

echo msg
    Outputs a message.

exit
    Exits the SimpleCLI program.

help [command1] [command2] [...]
    Outputs the help for the specified command or, if omitted,
    for all commands.

history
    Prints all issued commands.

java <classname> <args>
    Lists the capabilities of the specified class.
    If the class is a weka.core.OptionHandler then
    trailing options after the classname will be
    set as well.

kill
    Kills the running job, if any.

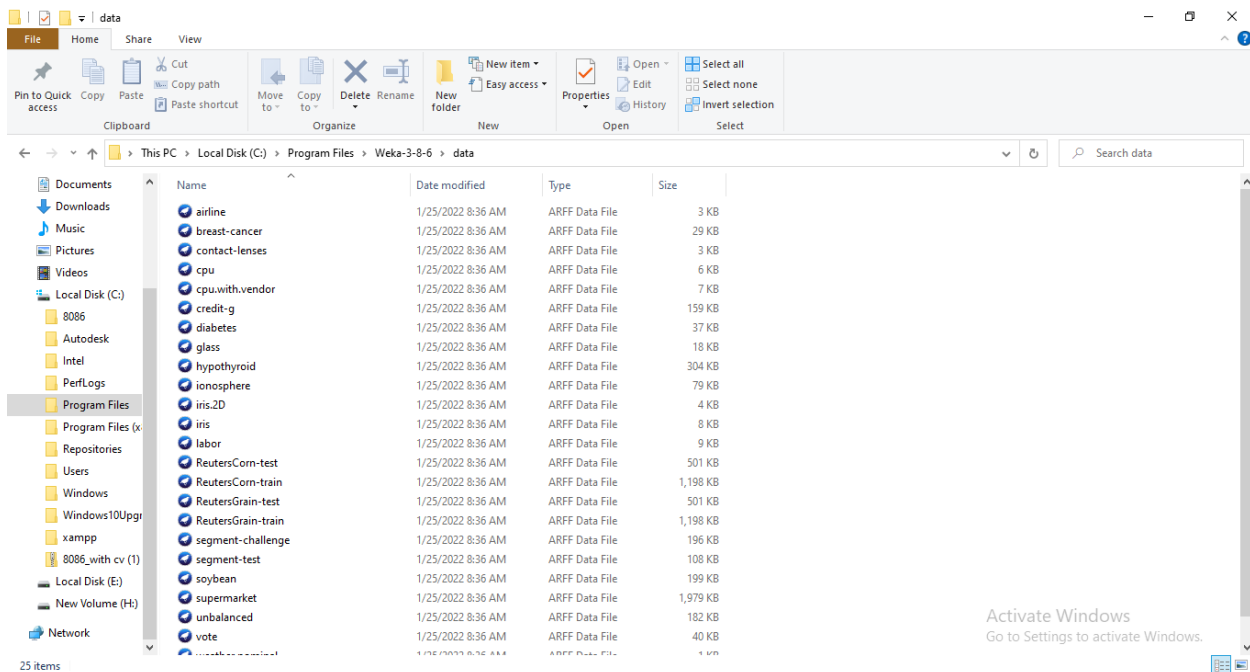
script <script_file>
    Executes commands from a script file.

set [name=value]
    Sets a variable.
    If no key=value pair is given all current variables are listed.

unset name
    Removes a variable.

Notes:
- Variables can be used anywhere using '${<name>}' with '<name>'
  being the name of the variable.
- Environment variables can be used with '${env.<name>}',
  e.g., '${env.PATH}' to retrieve the PATH variable.
```

## 16. Weka Datasets



## 18. Explore the weka dataset

1. Open WEKA Tool.

2. Click on WEKA Explorer.

3. Click on Preprocessing tab button.

4. Click on open file button.

5. Choose WEKA folder in C drive.

6. Select and Click on data option button.

7. Choose iris data set and open file.

**Weka Explorer**

Preprocess   Classify   Cluster   Associate   Select attributes   Visualize

Open file...   Open URL...   Open DB...   Generate...   Undo   Edit...   Save...

Filter: Choose **None**   Apply   Stop

Current relation  
Relation: weather.symbolic  
Instances: 14   Attributes: 5   Sum of weights: 14

Attributes: All   None   Invert   Pattern

No.	Name
1	<input checked="" type="checkbox"/> outlook
2	<input type="checkbox"/> temperature
3	<input type="checkbox"/> humidity
4	<input type="checkbox"/> windy
5	<input type="checkbox"/> play

Remove

Selected attribute  
Name: outlook  
Missing: 0 (0%)   Distinct: 3   Type: Nominal  
Unique: 0 (0%)

No.	Label	Count	Weight
1	sunny	5	5
2	overcast	4	4
3	rainy	5	5

Class: play (Nom)   Visualize All

Status: OK   Log   x 0

Weka Explorer

Preprocess Classify Cluster Associate Select attributes Visualize

Open file... Open URL... Open DB... Generate... Undo Edit... Save...

Filter  
Choose **None** Apply Stop

Current relation  
Relation: supermarket  
Instances: 4627  
Attributes: 217  
Sum of weights: 4627

Attributes  
All None Invert Pattern

No.	Name
1	<input checked="" type="checkbox"/> department1
2	<input type="checkbox"/> department2
3	<input type="checkbox"/> department3
4	<input type="checkbox"/> department4
5	<input type="checkbox"/> department5
6	<input type="checkbox"/> department6
7	<input type="checkbox"/> department7
8	<input type="checkbox"/> department8
9	<input type="checkbox"/> department9
10	<input type="checkbox"/> grocery misc
11	<input type="checkbox"/> department11
12	<input type="checkbox"/> baby needs
13	<input type="checkbox"/> bread and cake
14	<input type="checkbox"/> baking needs
15	<input type="checkbox"/> coupons
16	<input type="checkbox"/> juice-sat-cord-ms
17	<input type="checkbox"/> tea

Remove

Selected attribute  
Name: department1  
Missing: 3580 (77%)  
Distinct: 1  
Type: Nominal  
Unique: 0 (0%)

No.	Label	Count	Weight
1	t	1047	1047

Class: total (Nom) Visualize All

Status  
OK Log x 0

Click on Associate tab and Choose Aprior algorithm and click on start button

Weka Explorer

Preprocess Classify Cluster **Associate** Select attributes Visualize

Associator

Choose **Apriori** -N 10 -T 0 -C 0.9 -D 0.05 -U 1.0 -M 0.1 -S -1.0 -c -1

Start Stop

Result list (right-click for ...)

12:12:19 - Apriori

Associator output

Apriori  
=====

Minimum support: 0.15 (2 instances)  
Minimum metric <confidence>: 0.9  
Number of cycles performed: 17


Generated sets of large itemsets:

Size of set of large itemsets L(1): 12  
Size of set of large itemsets L(2): 47  
Size of set of large itemsets L(3): 39  
Size of set of large itemsets L(4): 6

Best rules found:

1. outlook=overcast 4 ==> play=yes 4 <conf:(1)> lift:(1.56) lev:(0.1) [1] conv:(1.43)
2. temperature=cool 4 ==> humidity=normal 4 <conf:(1)> lift:(2) lev:(0.14) [2] conv:(2)
3. humidity=normal windy=FALSE 4 ==> play=yes 4 <conf:(1)> lift:(1.56) lev:(0.1) [1] conv:(1.43)
4. outlook=sunny play=no 3 ==> humidity=high 3 <conf:(1)> lift:(2) lev:(0.11) [1] conv:(1.5)
5. outlook=sunny humidity=high 3 ==> play=no 3 <conf:(1)> lift:(2.8) lev:(0.14) [1] conv:(1.93)
6. outlook=rainy play=yes 3 ==> windy=FALSE 3 <conf:(1)> lift:(1.75) lev:(0.09) [1] conv:(1.29)
7. outlook=rainy windy=FALSE 3 ==> play=yes 3 <conf:(1)> lift:(1.56) lev:(0.08) [1] conv:(1.07)
8. temperature=cool play=yes 3 ==> humidity=normal 3 <conf:(1)> lift:(2) lev:(0.11) [1] conv:(1.5)
9. outlook=sunny temperature=hot 2 ==> humidity=high 2 <conf:(1)> lift:(2) lev:(0.07) [1] conv:(1)
10. temperature=hot play=no 2 ==> outlook=sunny 2 <conf:(1)> lift:(2.8) lev:(0.09) [1] conv:(1.29)

Status  
OK

Log  x 0



