

Practical No. 9

Aim: Study and Installation of Weka AI tool

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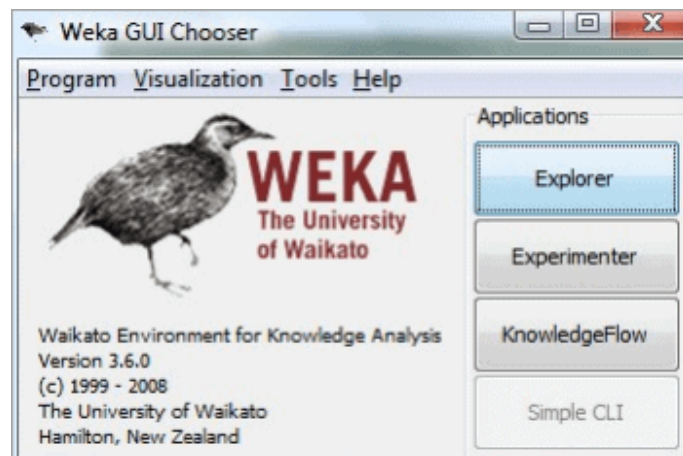
Roll no.: 74 (BDA-B74)

Section: B

Subject: PE-II

Date:

Theory:



What is Weka?

Weka (Waikato Environment for Knowledge Analysis) is a popular suite of machine learning software written in Java. It is developed by the University of Waikato, New Zealand.

❖ **Key Features:**

- GUI-based and user-friendly
- Supports various machine learning algorithms (classification, regression, clustering)

- Data pre-processing tools
- Visualization tools
- Supports scripting and Java API for developers

❖ **Applications:**

- Academic research
- Data mining projects
- Rapid prototyping of ML models
- Teaching and learning machine learning concepts

❖ **Core Components:**

1. **Explorer** – Main GUI for data analysis
2. **Experimenter** – For running experiments and comparing algorithms
3. **Knowledge Flow** – Visual pipeline-style interface for data flow
4. **Simple CLI** – Command-line interface

Installation of Weka:

Step-by-step Instructions:

For Windows:

1. **Go to official website**

<https://ml.cms.waikato.ac.nz/weka/>

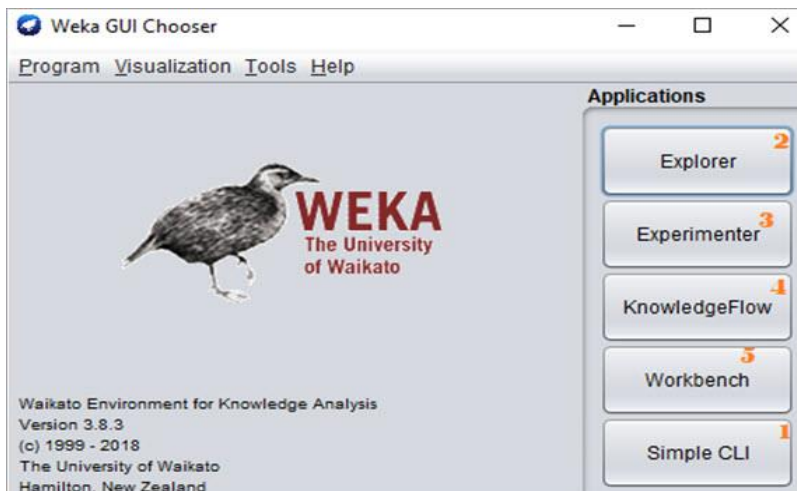


2. Click on the "Download" tab
3. Choose Windows Installer (.exe file)
4. Download and run the installer
Follow the setup wizard steps (Next → Install → Finish)
5. Launch Weka from the Start Menu or desktop icon.

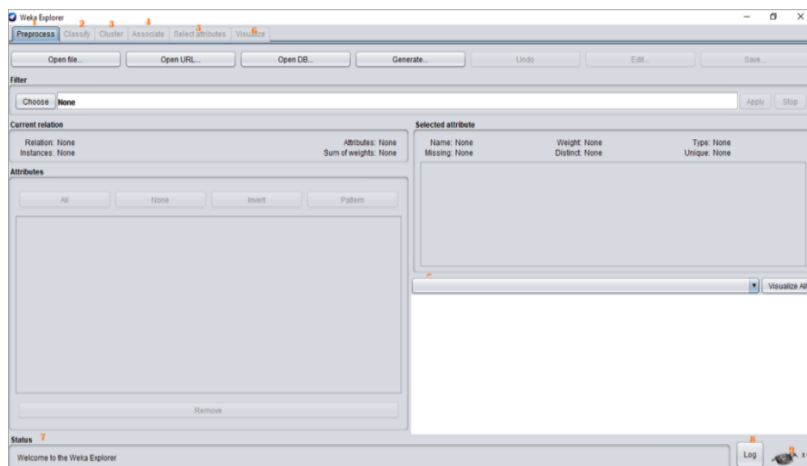
Running Your First Machine Learning Model in Weka:

Step 1: Open Weka:

- After installation, launch the **Weka GUI Chooser**.

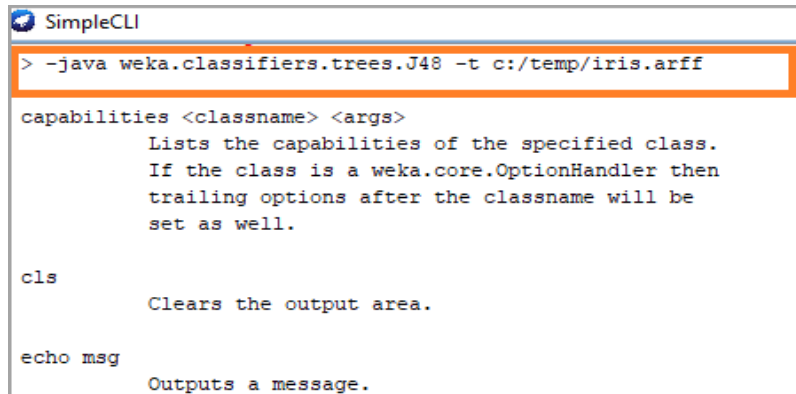


Step 2: Open "Explorer":



Step 3: Load a Dataset:

- Click **Open File**
- Navigate to: /data/iris.arff
- This is a sample dataset with flower measurements.



```
SimpleCLI
> -java weka.classifiers.trees.J48 -t c:/temp/iris.arff

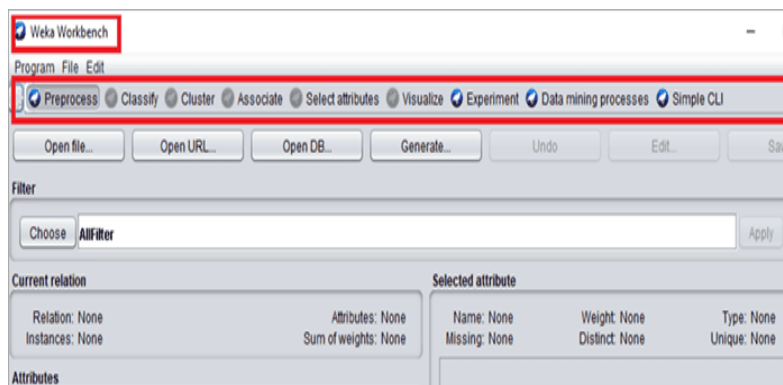
capabilities <classname> <args>
    Lists the capabilities of the specified class.
    If the class is a weka.core.OptionHandler then
    trailing options after the classname will be
    set as well.

cls
    Clears the output area.

echo msg
    Outputs a message.
```

Step 4: Choose a Classifier:

- Go to the **"Classify" tab**
- Click **"Choose"** → **trees** → select **J48 (decision tree)**



Step 5: Click "Start":

- Weka will train the model and show results like:
 - Accuracy
 - Confusion Matrix
 - Precision, Recall, F-measure

Advantages of Using Weka:

- Easy to use, even for beginners
- Excellent for quick testing and prototyping
- Includes many algorithms without needing to code
- Good for educational and research purposes

Limitations of Weka:

- Not suitable for very large datasets (in-memory only)
- Limited support for deep learning
- GUI can feel outdated

Conclusion:

Weka is a valuable tool for anyone learning or experimenting with machine learning. It simplifies data pre-processing, model training, and evaluation through its user-friendly interface. Though it may not be suited for large-scale production systems, it is ideal for teaching, research, and prototyping.