Experiment No. 9

Aim : Study and Installation of Weka AI tool

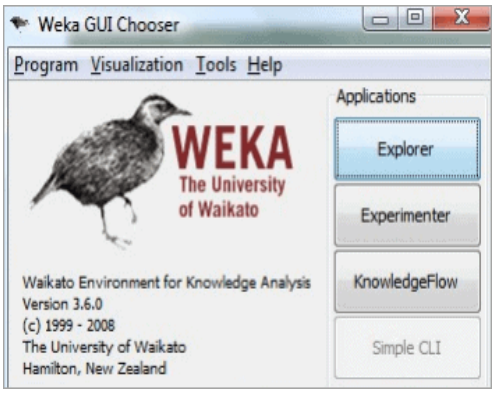
Name: Anushree Kekapure

Roll No.:8

Sec: 3B

Subject:ET - 2

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:**

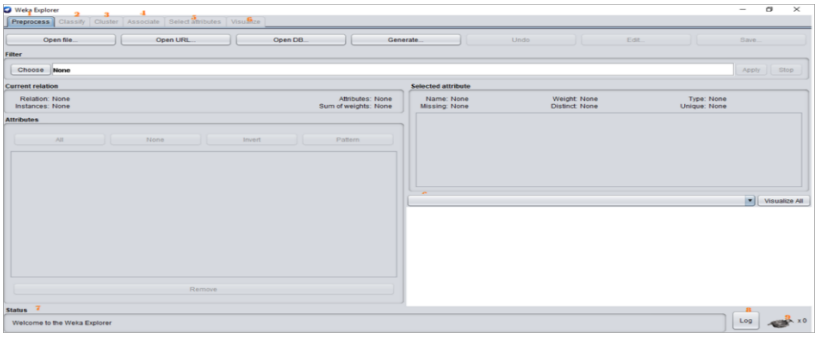
1. **Go_to_Official_Website**
   ➤https://www.cs.waikato.ac.nz/ml/weka/

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.

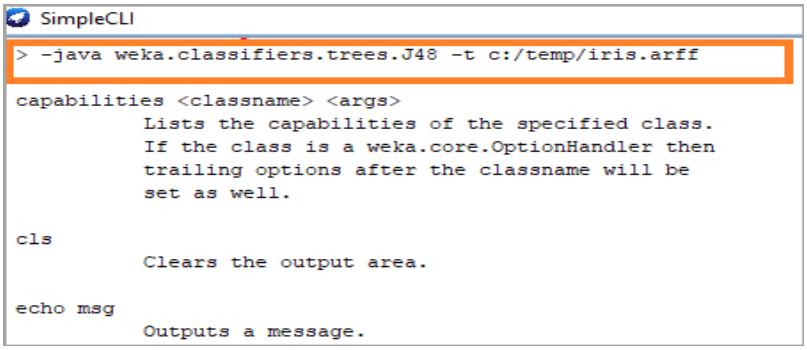
Running Your First Machine Learning Model in Weka:

- **Step 1: Open Weka:**
  - After installation, launch the **Weka GUI Chooser**.

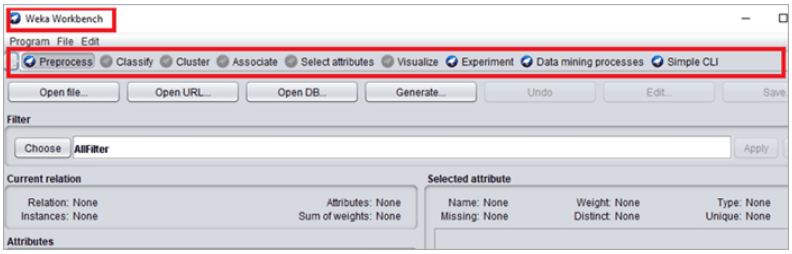
- **Step 2: Open "Explorer":**



- **Step 3: Load a Dataset:**
  - Click **Open File**
  - Navigate to: /data/iris.arff
  - This is a sample dataset with flower measurements.



- **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.