Experiment No. 9

Aim : Study and Installation of Weka AI tool

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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/

   The University of Waikato [NZ] | https://www.cs.waikato.ac.nz/ml/weka/downloading.html

   | Project | Software | Book | Courses | Publications | People |

   Downloading and installing Weka

   There are two versions of Weka: Weka 3.8 is the latest stable version and Weka 3.9 is the development version. For the bleeding edge, it is also possible to download nightly snapshots. Stable versions receive only bug fixes, while the development version receives new features.

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)

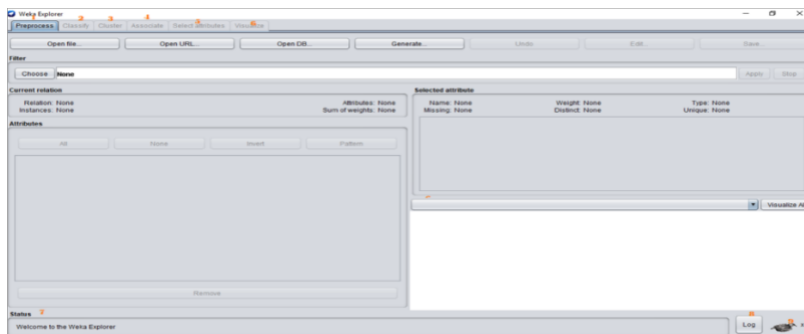5. **Launch Weka** from the Start Menu or desktop icon.

Running Your First Machine Learning Model in Weka:

◈ **Step 1: Open Weka:**

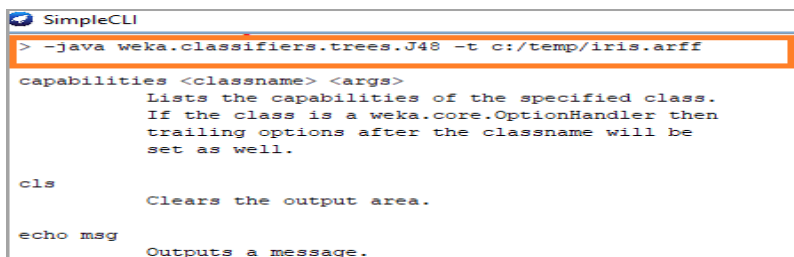- After installation, launch the **Weka GUI Chooser**.

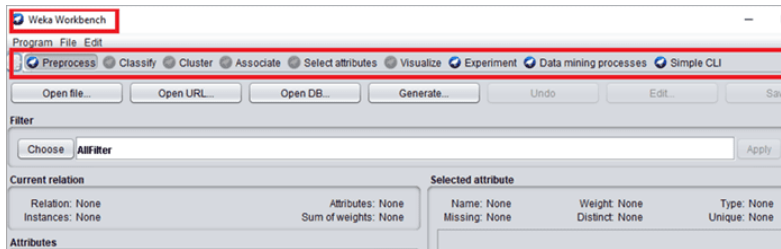◈ **Step 2: Open "Explorer":**

◈ **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:

    o Accuracy

    o Confusion Matrix

    o 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.