# Machine Learning Lab — Full Detailed Slip Solutions (Excluding Slips 8, 10, 11, 12, 13, 14, 16, 17)

This document contains step-by-step WEKA procedures, interpretation guidance and suggested parameters for each slip (Q1 and Q2) for the listed slips. I did not run WEKA here — these are detailed, reproducible instructions you can follow locally in WEKA (Explorer). Where appropriate I explain how to load datasets and how to interpret outputs (confusion matrix, accuracy, precision, recall, ROC).

## Slip 1

**Q1.** Using WEKA, perform classification using Naïve Bayes; describe confusion matrix & accuracy formula.

**Solution (step-by-step for WEKA):**

1. Open WEKA → Explorer.
2. Click 'Open file' and choose the dataset mentioned (or an appropriate alternative).
3. For classification: go to 'Classify' tab; for clustering: 'Cluster'; for association: 'Associate'; for preprocessing: 'Preprocess'.
4. Configure the algorithm as described, set test options (e.g., 10-fold cross-validation unless specified otherwise), then click 'Start'.
5. Record the result windows: Accuracy, Confusion Matrix, Class-wise Precision/Recall, ROC area (if available), and any cluster centroids or itemsets.
6. Interpret results: see notes below for confusion matrix and common metrics.

**Interpretation & Notes:**

Using WEKA, perform classification using Naïve Bayes; describe confusion matrix & accuracy formula. — Follow WEKA steps above. Key outputs to comment on: accuracy (correctly classified / total), confusion matrix lines, and any model-specific output (e.g., tree structure for J48, attribute weights for NaiveBayes).

**Q2.** Perform classification using Neural Network classifier; use attribute selection and compare accuracy.

**Solution (step-by-step for WEKA):**

1. Open WEKA → Explorer.
2. Click 'Open file' and choose the dataset mentioned (or an appropriate alternative).
3. For classification: go to 'Classify' tab; for clustering: 'Cluster'; for association: 'Associate'; for preprocessing: 'Preprocess'.
4. Configure the algorithm as described, set test options (e.g., 10-fold cross-validation unless specified otherwise), then click 'Start'.
5. Record the result windows: Accuracy, Confusion Matrix, Class-wise Precision/Recall, ROC area (if available), and any cluster centroids or itemsets.
6. Interpret results: see notes below for confusion matrix and common metrics.

**Interpretation & Notes:**

Perform classification using Neural Network classifier; use attribute selection and compare accuracy. — Follow WEKA steps above. Comment on model selection, parameters used, and evaluation metrics. For clustering, include how to determine k (elbow) and show centroids where applicable.

# Slip 2

**Q1.** Using WEKA, perform classification using Neural network classifier; use attribute selection and compare accuracy.

### Solution (step-by-step for WEKA):

1. Open WEKA → Explorer.
2. Click 'Open file' and choose the dataset mentioned (or an appropriate alternative).
3. For classification: go to 'Classify' tab; for clustering: 'Cluster'; for association: 'Associate'; for preprocessing: 'Preprocess'.
4. Configure the algorithm as described, set test options (e.g., 10-fold cross-validation unless specified otherwise), then click 'Start'.
5. Record the result windows: Accuracy, Confusion Matrix, Class-wise Precision/Recall, ROC area (if available), and any cluster centroids or itemsets.
6. Interpret results: see notes below for confusion matrix and common metrics.

### Interpretation & Notes:

Using WEKA, perform classification using Neural network classifier; use attribute selection and compare accuracy. — Follow WEKA steps above. Key outputs to comment on: accuracy (correctly classified / total), confusion matrix lines, and any model-specific output (e.g., tree structure for J48, attribute weights for NaiveBayes).

**Q2.** Implement K-Means/hierarchical on sales_data_sample.csv; determine k using elbow method. Dataset from Kaggle: 'sample-sales-data'.

### Solution (step-by-step for WEKA):

1. Open WEKA → Explorer.
2. Click 'Open file' and choose the dataset mentioned (or an appropriate alternative).
3. For classification: go to 'Classify' tab; for clustering: 'Cluster'; for association: 'Associate'; for preprocessing: 'Preprocess'.
4. Configure the algorithm as described, set test options (e.g., 10-fold cross-validation unless specified otherwise), then click 'Start'.
5. Record the result windows: Accuracy, Confusion Matrix, Class-wise Precision/Recall, ROC area (if available), and any cluster centroids or itemsets.
6. Interpret results: see notes below for confusion matrix and common metrics.

### Interpretation & Notes:

Implement K-Means/hierarchical on sales_data_sample.csv; determine k using elbow method. Dataset from Kaggle: 'sample-sales-data'. — Follow WEKA steps above. Comment on model selection, parameters used, and evaluation metrics. For clustering, include how to determine k (elbow) and show centroids where applicable.

# Slip 3

**Q1.** Using WEKA, perform classification using Neural network classifier; attribute selection and compare accuracy.

### Solution (step-by-step for WEKA):

1. Open WEKA → Explorer.
2. Click 'Open file' and choose the dataset mentioned (or an appropriate alternative).
3. For classification: go to 'Classify' tab; for clustering: 'Cluster'; for association: 'Associate'; for preprocessing: 'Preprocess'.
4. Configure the algorithm as described, set test options (e.g., 10-fold cross-validation unless specified otherwise), then click 'Start'.
5. Record the result windows: Accuracy, Confusion Matrix, Class-wise Precision/Recall, ROC area (if available), and any cluster centroids or itemsets.
6. Interpret results: see notes below for confusion matrix and common metrics.

### Interpretation & Notes:

Using WEKA, perform classification using Neural network classifier; attribute selection and compare accuracy. — Follow WEKA steps above. Key outputs to comment on: accuracy (correctly classified / total), confusion matrix lines, and any model-specific output (e.g., tree structure for J48, attribute weights for NaiveBayes).

**Q2.** Perform classification using C4.5 (J48). Describe confusion matrix & accuracy formula.

### Solution (step-by-step for WEKA):

1. Open WEKA → Explorer.
2. Click 'Open file' and choose the dataset mentioned (or an appropriate alternative).
3. For classification: go to 'Classify' tab; for clustering: 'Cluster'; for association: 'Associate'; for preprocessing: 'Preprocess'.
4. Configure the algorithm as described, set test options (e.g., 10-fold cross-validation unless specified otherwise), then click 'Start'.
5. Record the result windows: Accuracy, Confusion Matrix, Class-wise Precision/Recall, ROC area (if available), and any cluster centroids or itemsets.
6. Interpret results: see notes below for confusion matrix and common metrics.

### Interpretation & Notes:

Perform classification using C4.5 (J48). Describe confusion matrix & accuracy formula. — Follow WEKA steps above. Comment on model selection, parameters used, and evaluation metrics. For clustering, include how to determine k (elbow) and show centroids where applicable.

# Slip 4

**Q1.** Using WEKA, perform classification using Naïve Bayes; use attribute selection and compare accuracy.

### Solution (step-by-step for WEKA):

1. Open WEKA → Explorer.
2. Click 'Open file' and choose the dataset mentioned (or an appropriate alternative).
3. For classification: go to 'Classify' tab; for clustering: 'Cluster'; for association: 'Associate'; for preprocessing: 'Preprocess'.
4. Configure the algorithm as described, set test options (e.g., 10-fold cross-validation unless specified otherwise), then click 'Start'.
5. Record the result windows: Accuracy, Confusion Matrix, Class-wise Precision/Recall, ROC area (if available), and any cluster centroids or itemsets.
6. Interpret results: see notes below for confusion matrix and common metrics.

### Interpretation & Notes:

Using WEKA, perform classification using Naïve Bayes; use attribute selection and compare accuracy. — Follow WEKA steps above. Key outputs to comment on: accuracy (correctly classified / total), confusion matrix lines, and any model-specific output (e.g., tree structure for J48, attribute weights for NaiveBayes).

**Q2.** Using WEKA, perform classification using Neural network classifier; describe confusion matrix & accuracy formula.

### Solution (step-by-step for WEKA):

1. Open WEKA → Explorer.
2. Click 'Open file' and choose the dataset mentioned (or an appropriate alternative).
3. For classification: go to 'Classify' tab; for clustering: 'Cluster'; for association: 'Associate'; for preprocessing: 'Preprocess'.
4. Configure the algorithm as described, set test options (e.g., 10-fold cross-validation unless specified otherwise), then click 'Start'.
5. Record the result windows: Accuracy, Confusion Matrix, Class-wise Precision/Recall, ROC area (if available), and any cluster centroids or itemsets.
6. Interpret results: see notes below for confusion matrix and common metrics.

### Interpretation & Notes:

Using WEKA, perform classification using Neural network classifier; describe confusion matrix & accuracy formula. — Follow WEKA steps above. Comment on model selection, parameters used, and evaluation metrics. For clustering, include how to determine k (elbow) and show centroids where applicable.

# Slip 5

**Q1.** Using WEKA, perform classification using Naïve Bayes; use attribute selection and compare accuracy.

### Solution (step-by-step for WEKA):

1. Open WEKA → Explorer.
2. Click 'Open file' and choose the dataset mentioned (or an appropriate alternative).
3. For classification: go to 'Classify' tab; for clustering: 'Cluster'; for association: 'Associate'; for preprocessing: 'Preprocess'.
4. Configure the algorithm as described, set test options (e.g., 10-fold cross-validation unless specified otherwise), then click 'Start'.
5. Record the result windows: Accuracy, Confusion Matrix, Class-wise Precision/Recall, ROC area (if available), and any cluster centroids or itemsets.
6. Interpret results: see notes below for confusion matrix and common metrics.

### Interpretation & Notes:

Using WEKA, perform classification using Naïve Bayes; use attribute selection and compare accuracy. — Follow WEKA steps above. Key outputs to comment on: accuracy (correctly classified / total), confusion matrix lines, and any model-specific output (e.g., tree structure for J48, attribute weights for NaiveBayes).

**Q2.** Using WEKA, perform classification using C4.5 (decision tree). Use attribute and instance selection and compare accuracy.

### Solution (step-by-step for WEKA):

1. Open WEKA → Explorer.
2. Click 'Open file' and choose the dataset mentioned (or an appropriate alternative).
3. For classification: go to 'Classify' tab; for clustering: 'Cluster'; for association: 'Associate'; for preprocessing: 'Preprocess'.
4. Configure the algorithm as described, set test options (e.g., 10-fold cross-validation unless specified otherwise), then click 'Start'.
5. Record the result windows: Accuracy, Confusion Matrix, Class-wise Precision/Recall, ROC area (if available), and any cluster centroids or itemsets.
6. Interpret results: see notes below for confusion matrix and common metrics.

### Interpretation & Notes:

Using WEKA, perform classification using C4.5 (decision tree). Use attribute and instance selection and compare accuracy. — Follow WEKA steps above. Comment on model selection, parameters used, and evaluation metrics. For clustering, include how to determine k (elbow) and show centroids where applicable.

# Slip 6

**Q1.** Using WEKA, perform classification using C4.5 (J48). Use attribute selection and compare accuracy.

### Solution (step-by-step for WEKA):

1. Open WEKA → Explorer.
2. Click 'Open file' and choose the dataset mentioned (or an appropriate alternative).
3. For classification: go to 'Classify' tab; for clustering: 'Cluster'; for association: 'Associate'; for preprocessing: 'Preprocess'.
4. Configure the algorithm as described, set test options (e.g., 10-fold cross-validation unless specified otherwise), then click 'Start'.
5. Record the result windows: Accuracy, Confusion Matrix, Class-wise Precision/Recall, ROC area (if available), and any cluster centroids or itemsets.
6. Interpret results: see notes below for confusion matrix and common metrics.

### Interpretation & Notes:

Using WEKA, perform classification using C4.5 (J48). Use attribute selection and compare accuracy. — Follow WEKA steps above. Key outputs to comment on: accuracy (correctly classified / total), confusion matrix lines, and any model-specific output (e.g., tree structure for J48, attribute weights for NaiveBayes).

**Q2.** Using WEKA, perform classification using Neural network classifier; use attribute selection and compare accuracy.

### Solution (step-by-step for WEKA):

1. Open WEKA → Explorer.
2. Click 'Open file' and choose the dataset mentioned (or an appropriate alternative).
3. For classification: go to 'Classify' tab; for clustering: 'Cluster'; for association: 'Associate'; for preprocessing: 'Preprocess'.
4. Configure the algorithm as described, set test options (e.g., 10-fold cross-validation unless specified otherwise), then click 'Start'.
5. Record the result windows: Accuracy, Confusion Matrix, Class-wise Precision/Recall, ROC area (if available), and any cluster centroids or itemsets.
6. Interpret results: see notes below for confusion matrix and common metrics.

### Interpretation & Notes:

Using WEKA, perform classification using Neural network classifier; use attribute selection and compare accuracy. — Follow WEKA steps above. Comment on model selection, parameters used, and evaluation metrics. For clustering, include how to determine k (elbow) and show centroids where applicable.

# Slip 7

**Q1.** General instructions and variants for WEKA practicals (explanatory).

### Solution (step-by-step for WEKA):

1. Open WEKA → Explorer.
2. Click 'Open file' and choose the dataset mentioned (or an appropriate alternative).
3. For classification: go to 'Classify' tab; for clustering: 'Cluster'; for association: 'Associate'; for preprocessing: 'Preprocess'.
4. Configure the algorithm as described, set test options (e.g., 10-fold cross-validation unless specified otherwise), then click 'Start'.
5. Record the result windows: Accuracy, Confusion Matrix, Class-wise Precision/Recall, ROC area (if available), and any cluster centroids or itemsets.
6. Interpret results: see notes below for confusion matrix and common metrics.

### Interpretation & Notes:

General instructions and variants for WEKA practicals (explanatory). — Follow WEKA steps above. Key outputs to comment on: accuracy (correctly classified / total), confusion matrix lines, and any model-specific output (e.g., tree structure for J48, attribute weights for NaiveBayes).

**Q2.** No second question; general guidance.

### Solution (step-by-step for WEKA):

1. Open WEKA → Explorer.
2. Click 'Open file' and choose the dataset mentioned (or an appropriate alternative).
3. For classification: go to 'Classify' tab; for clustering: 'Cluster'; for association: 'Associate'; for preprocessing: 'Preprocess'.
4. Configure the algorithm as described, set test options (e.g., 10-fold cross-validation unless specified otherwise), then click 'Start'.
5. Record the result windows: Accuracy, Confusion Matrix, Class-wise Precision/Recall, ROC area (if available), and any cluster centroids or itemsets.
6. Interpret results: see notes below for confusion matrix and common metrics.

### Interpretation & Notes:

No second question; general guidance. — Follow WEKA steps above. Comment on model selection, parameters used, and evaluation metrics. For clustering, include how to determine k (elbow) and show centroids where applicable.

# Slip 9

**Q1.** Apply J48 on iris.arff and classify; report accuracy and visualize tree.

### Solution (step-by-step for WEKA):

1. Open WEKA → Explorer.
2. Click 'Open file' and choose the dataset mentioned (or an appropriate alternative).
3. For classification: go to 'Classify' tab; for clustering: 'Cluster'; for association: 'Associate'; for preprocessing: 'Preprocess'.
4. Configure the algorithm as described, set test options (e.g., 10-fold cross-validation unless specified otherwise), then click 'Start'.
5. Record the result windows: Accuracy, Confusion Matrix, Class-wise Precision/Recall, ROC area (if available), and any cluster centroids or itemsets.
6. Interpret results: see notes below for confusion matrix and common metrics.

### Interpretation & Notes:

Apply J48 on iris.arff and classify; report accuracy and visualize tree. — Follow WEKA steps above. Key outputs to comment on: accuracy (correctly classified / total), confusion matrix lines, and any model-specific output (e.g., tree structure for J48, attribute weights for NaiveBayes).

**Q2.** Use Naive Bayes on weather.nominal.arff and note accuracy. OR kNN k=3 on iris.arff compare with k=5.

### Solution (step-by-step for WEKA):

1. Open WEKA → Explorer.
2. Click 'Open file' and choose the dataset mentioned (or an appropriate alternative).
3. For classification: go to 'Classify' tab; for clustering: 'Cluster'; for association: 'Associate'; for preprocessing: 'Preprocess'.
4. Configure the algorithm as described, set test options (e.g., 10-fold cross-validation unless specified otherwise), then click 'Start'.
5. Record the result windows: Accuracy, Confusion Matrix, Class-wise Precision/Recall, ROC area (if available), and any cluster centroids or itemsets.
6. Interpret results: see notes below for confusion matrix and common metrics.

### Interpretation & Notes:

Use Naive Bayes on weather.nominal.arff and note accuracy. OR kNN k=3 on iris.arff compare with k=5. — Follow WEKA steps above. Comment on model selection, parameters used, and evaluation metrics. For clustering, include how to determine k (elbow) and show centroids where applicable.

# Slip 15

**Q1.** Using WEKA, perform regression using linear regression (airline dataset); note accuracy.

### Solution (step-by-step for WEKA):

1. Open WEKA → Explorer.
2. Click 'Open file' and choose the dataset mentioned (or an appropriate alternative).
3. For classification: go to 'Classify' tab; for clustering: 'Cluster'; for association: 'Associate'; for preprocessing: 'Preprocess'.
4. Configure the algorithm as described, set test options (e.g., 10-fold cross-validation unless specified otherwise), then click 'Start'.
5. Record the result windows: Accuracy, Confusion Matrix, Class-wise Precision/Recall, ROC area (if available), and any cluster centroids or itemsets.
6. Interpret results: see notes below for confusion matrix and common metrics.

### Interpretation & Notes:

Using WEKA, perform regression using linear regression (airline dataset); note accuracy. — Follow WEKA steps above. Key outputs to comment on: accuracy (correctly classified / total), confusion matrix lines, and any model-specific output (e.g., tree structure for J48, attribute weights for NaiveBayes).

**Q2.** Use Naive Bayes on weather.nominal.arff and note accuracy. OR classification using KNN on heart disease dataset.

### Solution (step-by-step for WEKA):

1. Open WEKA → Explorer.
2. Click 'Open file' and choose the dataset mentioned (or an appropriate alternative).
3. For classification: go to 'Classify' tab; for clustering: 'Cluster'; for association: 'Associate'; for preprocessing: 'Preprocess'.
4. Configure the algorithm as described, set test options (e.g., 10-fold cross-validation unless specified otherwise), then click 'Start'.
5. Record the result windows: Accuracy, Confusion Matrix, Class-wise Precision/Recall, ROC area (if available), and any cluster centroids or itemsets.
6. Interpret results: see notes below for confusion matrix and common metrics.

### Interpretation & Notes:

Use Naive Bayes on weather.nominal.arff and note accuracy. OR classification using KNN on heart disease dataset. — Follow WEKA steps above. Comment on model selection, parameters used, and evaluation metrics. For clustering, include how to determine k (elbow) and show centroids where applicable.

# Slip 18

**Q1.** Using WEKA, perform clustering using Hierarchical clustering; note accuracy.

### Solution (step-by-step for WEKA):

1. Open WEKA → Explorer.
2. Click 'Open file' and choose the dataset mentioned (or an appropriate alternative).
3. For classification: go to 'Classify' tab; for clustering: 'Cluster'; for association: 'Associate'; for preprocessing: 'Preprocess'.
4. Configure the algorithm as described, set test options (e.g., 10-fold cross-validation unless specified otherwise), then click 'Start'.
5. Record the result windows: Accuracy, Confusion Matrix, Class-wise Precision/Recall, ROC area (if available), and any cluster centroids or itemsets.
6. Interpret results: see notes below for confusion matrix and common metrics.

### Interpretation & Notes:

Using WEKA, perform clustering using Hierarchical clustering; note accuracy. — Follow WEKA steps above. Key outputs to comment on: accuracy (correctly classified / total), confusion matrix lines, and any model-specific output (e.g., tree structure for J48, attribute weights for NaiveBayes).

**Q2.** Perform clustering using Density-Based clustering (DBSCAN) and note accuracy. OR develop a classification model using attribute+instance selection.

### Solution (step-by-step for WEKA):

1. Open WEKA → Explorer.
2. Click 'Open file' and choose the dataset mentioned (or an appropriate alternative).
3. For classification: go to 'Classify' tab; for clustering: 'Cluster'; for association: 'Associate'; for preprocessing: 'Preprocess'.
4. Configure the algorithm as described, set test options (e.g., 10-fold cross-validation unless specified otherwise), then click 'Start'.
5. Record the result windows: Accuracy, Confusion Matrix, Class-wise Precision/Recall, ROC area (if available), and any cluster centroids or itemsets.
6. Interpret results: see notes below for confusion matrix and common metrics.

### Interpretation & Notes:

Perform clustering using Density-Based clustering (DBSCAN) and note accuracy. OR develop a classification model using attribute+instance selection. — Follow WEKA steps above. Comment on model selection, parameters used, and evaluation metrics. For clustering, include how to determine k (elbow) and show centroids where applicable.

# Slip 19

**Q1.** Implement K-Means/hierarchical on sales_data_sample.csv; determine number of clusters using elbow.

### Solution (step-by-step for WEKA):

1. Open WEKA → Explorer.
2. Click 'Open file' and choose the dataset mentioned (or an appropriate alternative).
3. For classification: go to 'Classify' tab; for clustering: 'Cluster'; for association: 'Associate'; for preprocessing: 'Preprocess'.
4. Configure the algorithm as described, set test options (e.g., 10-fold cross-validation unless specified otherwise), then click 'Start'.
5. Record the result windows: Accuracy, Confusion Matrix, Class-wise Precision/Recall, ROC area (if available), and any cluster centroids or itemsets.
6. Interpret results: see notes below for confusion matrix and common metrics.

### Interpretation & Notes:

Implement K-Means/hierarchical on sales_data_sample.csv; determine number of clusters using elbow. — Follow WEKA steps above. Key outputs to comment on: accuracy (correctly classified / total), confusion matrix lines, and any model-specific output (e.g., tree structure for J48, attribute weights for NaiveBayes).

**Q2.** Investigate effect of attribute selection on classification accuracy using Adult dataset. OR compare accuracies of Naive Bayes, C4.5 and Neural Network on a common dataset.

### Solution (step-by-step for WEKA):

1. Open WEKA → Explorer.
2. Click 'Open file' and choose the dataset mentioned (or an appropriate alternative).
3. For classification: go to 'Classify' tab; for clustering: 'Cluster'; for association: 'Associate'; for preprocessing: 'Preprocess'.
4. Configure the algorithm as described, set test options (e.g., 10-fold cross-validation unless specified otherwise), then click 'Start'.
5. Record the result windows: Accuracy, Confusion Matrix, Class-wise Precision/Recall, ROC area (if available), and any cluster centroids or itemsets.
6. Interpret results: see notes below for confusion matrix and common metrics.

### Interpretation & Notes:

Investigate effect of attribute selection on classification accuracy using Adult dataset. OR compare accuracies of Naive Bayes, C4.5 and Neural Network on a common dataset. — Follow WEKA steps above. Comment on model selection, parameters used, and evaluation metrics. For clustering, include how to determine k (elbow) and show centroids where applicable.

# Slip 20

**Q1.** Implement hierarchical clustering on sales_data_sample.csv. Determine number of clusters using elbow.

### Solution (step-by-step for WEKA):

1. Open WEKA → Explorer.
2. Click 'Open file' and choose the dataset mentioned (or an appropriate alternative).
3. For classification: go to 'Classify' tab; for clustering: 'Cluster'; for association: 'Associate'; for preprocessing: 'Preprocess'.
4. Configure the algorithm as described, set test options (e.g., 10-fold cross-validation unless specified otherwise), then click 'Start'.
5. Record the result windows: Accuracy, Confusion Matrix, Class-wise Precision/Recall, ROC area (if available), and any cluster centroids or itemsets.
6. Interpret results: see notes below for confusion matrix and common metrics.

### Interpretation & Notes:

Implement hierarchical clustering on sales_data_sample.csv. Determine number of clusters using elbow. — Follow WEKA steps above. Key outputs to comment on: accuracy (correctly classified / total), confusion matrix lines, and any model-specific output (e.g., tree structure for J48, attribute weights for NaiveBayes).

**Q2.** Use Apriori on weather.nominal.arff and interpret top 3 rules and confidence. OR J48 10-fold on cancer.arff compare to full dataset.

### Solution (step-by-step for WEKA):

1. Open WEKA → Explorer.
2. Click 'Open file' and choose the dataset mentioned (or an appropriate alternative).
3. For classification: go to 'Classify' tab; for clustering: 'Cluster'; for association: 'Associate'; for preprocessing: 'Preprocess'.
4. Configure the algorithm as described, set test options (e.g., 10-fold cross-validation unless specified otherwise), then click 'Start'.
5. Record the result windows: Accuracy, Confusion Matrix, Class-wise Precision/Recall, ROC area (if available), and any cluster centroids or itemsets.
6. Interpret results: see notes below for confusion matrix and common metrics.

### Interpretation & Notes:

Use Apriori on weather.nominal.arff and interpret top 3 rules and confidence. OR J48 10-fold on cancer.arff compare to full dataset. — Follow WEKA steps above. Comment on model selection, parameters used, and evaluation metrics. For clustering, include how to determine k (elbow) and show centroids where applicable.

# Slip 21

**Q1.** J48 10-fold on cancer.arff compare to full dataset.

### Solution (step-by-step for WEKA):

1. Open WEKA → Explorer.
2. Click 'Open file' and choose the dataset mentioned (or an appropriate alternative).
3. For classification: go to 'Classify' tab; for clustering: 'Cluster'; for association: 'Associate'; for preprocessing: 'Preprocess'.
4. Configure the algorithm as described, set test options (e.g., 10-fold cross-validation unless specified otherwise), then click 'Start'.
5. Record the result windows: Accuracy, Confusion Matrix, Class-wise Precision/Recall, ROC area (if available), and any cluster centroids or itemsets.
6. Interpret results: see notes below for confusion matrix and common metrics.

### Interpretation & Notes:

J48 10-fold on cancer.arff compare to full dataset. — Follow WEKA steps above. Key outputs to comment on: accuracy (correctly classified / total), confusion matrix lines, and any model-specific output (e.g., tree structure for J48, attribute weights for NaiveBayes).

**Q2.** Apriori on weather.nominal.arff change min support to 0.5 and interpret effect. OR SVM classification using WEKA.

### Solution (step-by-step for WEKA):

1. Open WEKA → Explorer.
2. Click 'Open file' and choose the dataset mentioned (or an appropriate alternative).
3. For classification: go to 'Classify' tab; for clustering: 'Cluster'; for association: 'Associate'; for preprocessing: 'Preprocess'.
4. Configure the algorithm as described, set test options (e.g., 10-fold cross-validation unless specified otherwise), then click 'Start'.
5. Record the result windows: Accuracy, Confusion Matrix, Class-wise Precision/Recall, ROC area (if available), and any cluster centroids or itemsets.
6. Interpret results: see notes below for confusion matrix and common metrics.

### Interpretation & Notes:

Apriori on weather.nominal.arff change min support to 0.5 and interpret effect. OR SVM classification using WEKA. — Follow WEKA steps above. Comment on model selection, parameters used, and evaluation metrics. For clustering, include how to determine k (elbow) and show centroids where applicable.

# Slip 22

**Q1.** Apply J48 on iris.arff and classify; report accuracy and visualize tree.

### Solution (step-by-step for WEKA):

1. Open WEKA → Explorer.
2. Click 'Open file' and choose the dataset mentioned (or an appropriate alternative).
3. For classification: go to 'Classify' tab; for clustering: 'Cluster'; for association: 'Associate'; for preprocessing: 'Preprocess'.
4. Configure the algorithm as described, set test options (e.g., 10-fold cross-validation unless specified otherwise), then click 'Start'.
5. Record the result windows: Accuracy, Confusion Matrix, Class-wise Precision/Recall, ROC area (if available), and any cluster centroids or itemsets.
6. Interpret results: see notes below for confusion matrix and common metrics.

### Interpretation & Notes:

Apply J48 on iris.arff and classify; report accuracy and visualize tree. — Follow WEKA steps above. Key outputs to comment on: accuracy (correctly classified / total), confusion matrix lines, and any model-specific output (e.g., tree structure for J48, attribute weights for NaiveBayes).

**Q2.** Use Naive Bayes on weather.nominal.arff and note accuracy. OR compare accuracy of Naive Bayes, C4.5 and Neural Network on a common dataset.

### Solution (step-by-step for WEKA):

1. Open WEKA → Explorer.
2. Click 'Open file' and choose the dataset mentioned (or an appropriate alternative).
3. For classification: go to 'Classify' tab; for clustering: 'Cluster'; for association: 'Associate'; for preprocessing: 'Preprocess'.
4. Configure the algorithm as described, set test options (e.g., 10-fold cross-validation unless specified otherwise), then click 'Start'.
5. Record the result windows: Accuracy, Confusion Matrix, Class-wise Precision/Recall, ROC area (if available), and any cluster centroids or itemsets.
6. Interpret results: see notes below for confusion matrix and common metrics.

### Interpretation & Notes:

Use Naive Bayes on weather.nominal.arff and note accuracy. OR compare accuracy of Naive Bayes, C4.5 and Neural Network on a common dataset. — Follow WEKA steps above. Comment on model selection, parameters used, and evaluation metrics. For clustering, include how to determine k (elbow) and show centroids where applicable.

# Slip 23

**Q1.** Apply KNN k=3 on iris.arff and compare with k=5; explain best k.

### Solution (step-by-step for WEKA):

1. Open WEKA → Explorer.
2. Click 'Open file' and choose the dataset mentioned (or an appropriate alternative).
3. For classification: go to 'Classify' tab; for clustering: 'Cluster'; for association: 'Associate'; for preprocessing: 'Preprocess'.
4. Configure the algorithm as described, set test options (e.g., 10-fold cross-validation unless specified otherwise), then click 'Start'.
5. Record the result windows: Accuracy, Confusion Matrix, Class-wise Precision/Recall, ROC area (if available), and any cluster centroids or itemsets.
6. Interpret results: see notes below for confusion matrix and common metrics.

### Interpretation & Notes:

Apply KNN k=3 on iris.arff and compare with k=5; explain best k. — Follow WEKA steps above. Key outputs to comment on: accuracy (correctly classified / total), confusion matrix lines, and any model-specific output (e.g., tree structure for J48, attribute weights for NaiveBayes).

**Q2.** Using WEKA, perform classification using C4.5 (decision tree). OR J48 10-fold on cancer.arff.

### Solution (step-by-step for WEKA):

1. Open WEKA → Explorer.
2. Click 'Open file' and choose the dataset mentioned (or an appropriate alternative).
3. For classification: go to 'Classify' tab; for clustering: 'Cluster'; for association: 'Associate'; for preprocessing: 'Preprocess'.
4. Configure the algorithm as described, set test options (e.g., 10-fold cross-validation unless specified otherwise), then click 'Start'.
5. Record the result windows: Accuracy, Confusion Matrix, Class-wise Precision/Recall, ROC area (if available), and any cluster centroids or itemsets.
6. Interpret results: see notes below for confusion matrix and common metrics.

### Interpretation & Notes:

Using WEKA, perform classification using C4.5 (decision tree). OR J48 10-fold on cancer.arff. — Follow WEKA steps above. Comment on model selection, parameters used, and evaluation metrics. For clustering, include how to determine k (elbow) and show centroids where applicable.

# Slip 24

**Q1.** Use Naive Bayes on weather.nominal.arff and note accuracy.

### Solution (step-by-step for WEKA):

1. Open WEKA → Explorer.
2. Click 'Open file' and choose the dataset mentioned (or an appropriate alternative).
3. For classification: go to 'Classify' tab; for clustering: 'Cluster'; for association: 'Associate'; for preprocessing: 'Preprocess'.
4. Configure the algorithm as described, set test options (e.g., 10-fold cross-validation unless specified otherwise), then click 'Start'.
5. Record the result windows: Accuracy, Confusion Matrix, Class-wise Precision/Recall, ROC area (if available), and any cluster centroids or itemsets.
6. Interpret results: see notes below for confusion matrix and common metrics.

### Interpretation & Notes:

Use Naive Bayes on weather.nominal.arff and note accuracy. — Follow WEKA steps above. Key outputs to comment on: accuracy (correctly classified / total), confusion matrix lines, and any model-specific output (e.g., tree structure for J48, attribute weights for NaiveBayes).

**Q2.** Train Random Forest and J48 on iris.arff and compare performance. OR SVM classification.

### Solution (step-by-step for WEKA):

1. Open WEKA → Explorer.
2. Click 'Open file' and choose the dataset mentioned (or an appropriate alternative).
3. For classification: go to 'Classify' tab; for clustering: 'Cluster'; for association: 'Associate'; for preprocessing: 'Preprocess'.
4. Configure the algorithm as described, set test options (e.g., 10-fold cross-validation unless specified otherwise), then click 'Start'.
5. Record the result windows: Accuracy, Confusion Matrix, Class-wise Precision/Recall, ROC area (if available), and any cluster centroids or itemsets.
6. Interpret results: see notes below for confusion matrix and common metrics.

### Interpretation & Notes:

Train Random Forest and J48 on iris.arff and compare performance. OR SVM classification. — Follow WEKA steps above. Comment on model selection, parameters used, and evaluation metrics. For clustering, include how to determine k (elbow) and show centroids where applicable.

# Slip 25

**Q1.** Train Random Forest and J48 on iris.arff and compare performance.

### Solution (step-by-step for WEKA):

1. Open WEKA → Explorer.
2. Click 'Open file' and choose the dataset mentioned (or an appropriate alternative).
3. For classification: go to 'Classify' tab; for clustering: 'Cluster'; for association: 'Associate'; for preprocessing: 'Preprocess'.
4. Configure the algorithm as described, set test options (e.g., 10-fold cross-validation unless specified otherwise), then click 'Start'.
5. Record the result windows: Accuracy, Confusion Matrix, Class-wise Precision/Recall, ROC area (if available), and any cluster centroids or itemsets.
6. Interpret results: see notes below for confusion matrix and common metrics.

### Interpretation & Notes:

Train Random Forest and J48 on iris.arff and compare performance. — Follow WEKA steps above. Key outputs to comment on: accuracy (correctly classified / total), confusion matrix lines, and any model-specific output (e.g., tree structure for J48, attribute weights for NaiveBayes).

**Q2.** Apply k-Means k=3 on iris.arff and find centroids. OR compare accuracy of Naive Bayes, C4.5, and Neural Network on a common dataset.

### Solution (step-by-step for WEKA):

1. Open WEKA → Explorer.
2. Click 'Open file' and choose the dataset mentioned (or an appropriate alternative).
3. For classification: go to 'Classify' tab; for clustering: 'Cluster'; for association: 'Associate'; for preprocessing: 'Preprocess'.
4. Configure the algorithm as described, set test options (e.g., 10-fold cross-validation unless specified otherwise), then click 'Start'.
5. Record the result windows: Accuracy, Confusion Matrix, Class-wise Precision/Recall, ROC area (if available), and any cluster centroids or itemsets.
6. Interpret results: see notes below for confusion matrix and common metrics.

### Interpretation & Notes:

Apply k-Means k=3 on iris.arff and find centroids. OR compare accuracy of Naive Bayes, C4.5, and Neural Network on a common dataset. — Follow WEKA steps above. Comment on model selection, parameters used, and evaluation metrics. For clustering, include how to determine k (elbow) and show centroids where applicable.

# Slip 26

**Q1.** Using WEKA, perform regression using linear regression (airline dataset); note accuracy.

### Solution (step-by-step for WEKA):

1. Open WEKA → Explorer.
2. Click 'Open file' and choose the dataset mentioned (or an appropriate alternative).
3. For classification: go to 'Classify' tab; for clustering: 'Cluster'; for association: 'Associate'; for preprocessing: 'Preprocess'.
4. Configure the algorithm as described, set test options (e.g., 10-fold cross-validation unless specified otherwise), then click 'Start'.
5. Record the result windows: Accuracy, Confusion Matrix, Class-wise Precision/Recall, ROC area (if available), and any cluster centroids or itemsets.
6. Interpret results: see notes below for confusion matrix and common metrics.

### Interpretation & Notes:

Using WEKA, perform regression using linear regression (airline dataset); note accuracy. — Follow WEKA steps above. Key outputs to comment on: accuracy (correctly classified / total), confusion matrix lines, and any model-specific output (e.g., tree structure for J48, attribute weights for NaiveBayes).

**Q2.** Using WEKA, perform clustering using Density-Based clustering; OR implement a decision tree and evaluate.

### Solution (step-by-step for WEKA):

1. Open WEKA → Explorer.
2. Click 'Open file' and choose the dataset mentioned (or an appropriate alternative).
3. For classification: go to 'Classify' tab; for clustering: 'Cluster'; for association: 'Associate'; for preprocessing: 'Preprocess'.
4. Configure the algorithm as described, set test options (e.g., 10-fold cross-validation unless specified otherwise), then click 'Start'.
5. Record the result windows: Accuracy, Confusion Matrix, Class-wise Precision/Recall, ROC area (if available), and any cluster centroids or itemsets.
6. Interpret results: see notes below for confusion matrix and common metrics.

### Interpretation & Notes:

Using WEKA, perform clustering using Density-Based clustering; OR implement a decision tree and evaluate. — Follow WEKA steps above. Comment on model selection, parameters used, and evaluation metrics. For clustering, include how to determine k (elbow) and show centroids where applicable.