Exercise 4

GENERATING ASSOCIATION RULES ON DATASET USING APRIORI AND FP-GROWTH ALGORITHMS WITH WEKA TOOL

Objectives:

- Generate Association Rules for the Weather.Nominal dataset using the Apriori Algorithm.
- Generate Association Rules for the Weather.Nominal dataset using the FP-Growth Algorithm.

Procedure:

1. Setting Up the Environment:

- Install Weka tool on your system if not already installed.
- Load the Weather.Nominal dataset into Weka.

2. Association Rules using Apriori Algorithm:

a) Generating Rules with Default Parameters:

- Open Weka and load the Weather.Nominal dataset.
- Apply the Apriori algorithm with default parameters.
- Record and analyze all generated association rules.

b) Adjusting Parameters:

- Set the minimum support range from 20% to 100% with an incremental decrease factor of 10%.
- Set the confidence factor to 80%.

   i) Generating 5 Rules:

   - Apply the Apriori algorithm with the specified parameters.
   - Note down the generated rules and analyze them.

   ii) Generating 4 Rules:

   - Apply the Apriori algorithm with the specified parameters.
   - Note down the generated rules and analyze them.

3. Association Rules using FP-Growth Algorithm:

a) Generating Rules with Default Parameters:

- Open Weka and load the Weather.Nominal dataset.
- Apply the FP-Growth algorithm with default parameters.
- Record and analyze all generated association rules.

b) Adjusting Parameters:

- Set the minimum support range from 30% to 90% with an incremental decrease factor of 20%.

- Set the confidence factor to 70%.

i) Generating 3 Rules:

- o Apply the FP-Growth algorithm with the specified parameters.
- o Note down the generated rules and analyze them.

ii) Generating 5 Rules:

- o Apply the FP-Growth algorithm with the specified parameters.
- o Note down the generated rules and analyze them.

4. Analysis and Comparison:

- Compare the rules generated by the Apriori and FP-Growth algorithms in terms of:
- Number of rules generated.
- Support and confidence values.
- Execution time.
- Overall performance and quality of rules.

Video References:

1. https://youtu.be/VEmllUZCAgw
2. https://youtu.be/bMd5_8j1wJ8
3. https://youtu.be/J0EenE3gIiw