

**EXP NO:** ASSOCIATION ANALYSIS : DESIGN ALGORITHMS FOR ASSOCIATION

**DATE:** RULE MINING ALGORITHMS

**AIM:**

## **BACKGROUND THEORY:**

### **ASSOCIATION RULE:**

The FP-Growth (Frequent Pattern Growth) algorithm is another popular algorithm for association rule mining. It works by constructing a tree-like structure called a FP-tree, which encodes the frequent itemsets in the dataset.

Association rules are if-then statements that show the probability of relationships between data items within large data sets in various types of databases. At a basic level, association rule mining involves the use of models to analyze data for patterns, called *co-occurrences*, in a database. It identifies frequent if-then associations, which themselves are the association rules.

### **PROCEDURE:**

#### **1. Load Data:**

- o Use the "File" widget to load your dataset.
- o Connect the "File" widget to a "Data Table" widget to inspect the data.

#### **2. Preprocess Data (if necessary):**

- o Use the "Preprocess" widget for any required data transformations.

#### **3. Generate Frequent Itemsets:**

- o Drag the "Association Rules" widget to the canvas.
- o Connect the "File" widget to the "Association Rules" widget.
- o Set the support threshold in the "Association Rules" widget.

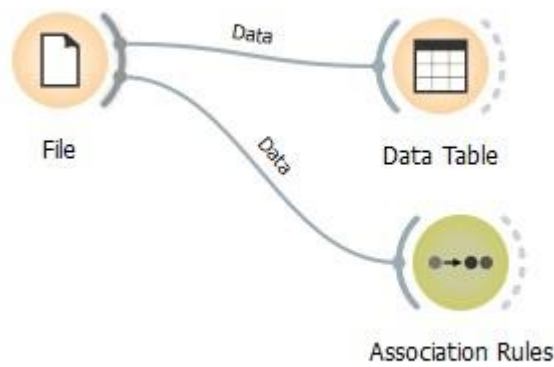
#### **4. Generate Association Rules:**

- o In the "Association Rules" widget, set the confidence threshold.
- o Run the algorithm to generate rules.

#### **5. Inspect Results:**

- o Connect the "Association Rules" widget to a "Data Table" widget to inspect the generated rules.
- o Optionally, use visualization widgets like "Scatter Plot" or "Heat Map" to explore the rules.

OUTPUT:



--- Association Rules - Orange

Info

Rules: 10000 (shown 10000)

Find association rules

Min. supp.: 1 %

Min. conf.: 60 %

Max. rules: 10k

☐ Induce only classification rules

☐ Restrict search by below filters

Find Rules

Filter by Antecedent

Contains:

Items, min: 1 max: 999

Filter by Consequent

Contains:

Items, min: 1 max: 999

☒ Send selection

Supp	Conf	Covr	Strg	Lift	Levr	Antecedent	Consequent
0.802	0.871	0.921	0.946	1.000	-0.000	venomous=0	domestic=0
0.802	0.920	0.871	1.057	1.000	-0.000	domestic=0	venomous=0
0.713	0.857	0.832	1.048	0.984	-0.012	fins=0	domestic=0
0.713	0.818	0.871	0.955	0.984	-0.012	domestic=0	fins=0
0.762	0.917	0.832	1.107	0.996	-0.003	fins=0	venomous=0
0.762	0.828	0.921	0.903	0.996	-0.003	venomous=0	fins=0
0.653	0.857	0.762	1.143	0.984	-0.011	venomous=0, fins=0	domestic=0
0.653	0.786	0.832	0.964	0.980	-0.014	fins=0	venomous=0, domestic=0
0.653	0.710	0.921	0.774	0.996	-0.003	venomous=0	fins=0, domestic=0
0.653	0.917	0.713	1.292	0.996	-0.003	fins=0, domestic=0	venomous=0
0.653	0.815	0.802	1.037	0.980	-0.014	venomous=0, domestic=0	fins=0
0.653	0.750	0.871	0.875	0.984	-0.011	domestic=0	venomous=0, fins=0
0.703	0.855	0.822	1.060	0.982	-0.013	backbone=1	domestic=0
0.703	0.807	0.871	0.943	0.982	-0.013	domestic=0	backbone=1
0.782	0.849	0.921	0.892	1.034	0.025	venomous=0	backbone=1
0.782	0.952	0.822	1.120	1.034	0.025	backbone=1	venomous=0
0.663	0.848	0.782	1.114	0.973	-0.018	backbone=1, venomous=0	domestic=0
0.663	0.720	0.921	0.763	1.025	0.016	venomous=0	backbone=1, domestic=0

RESULT: