	Hope Foundation's **Finolex Academy of Management and Technology, Ratnagiri**		
	Department of Computer Science and Engineering (AIML)		
Subject name: Data Warehousing and Mining Lab			Subject Code: CSL503
Class	TE CSE	Semester –V (CBCGS)	Academic year: 2024-25
Name of Student	GIRIPRASATH K		**QUIZ Score :**
Roll No	33	Experiment No.	05
Title: **Using open source tools to generate association rules.**			

1. Lab objectives applicable:

LOB4: To make students well versed in all data mining algorithms, methods, and tools.

2. Lab outcomes applicable:

LO3: Demonstrate an understanding of the importance of data mining.

LO6: Implement the appropriate data mining methods like classification, clustering or Frequent Pattern mining on large data sets.

3. Learning Objectives:

1. To discover buying patterns.

4. Practical applications of the assignment/experiment:

Market basket can be analyzed to know the products which are bought together by customers frequently.

5. Prerequisites:

Java or Python or C programming language, mysql.

6. Minimum Hardware Requirements:

1. I series processor, RAM 4GB,

7. Software Requirements:

1. JDK 12 or above /Python 3.8.0 and editor.

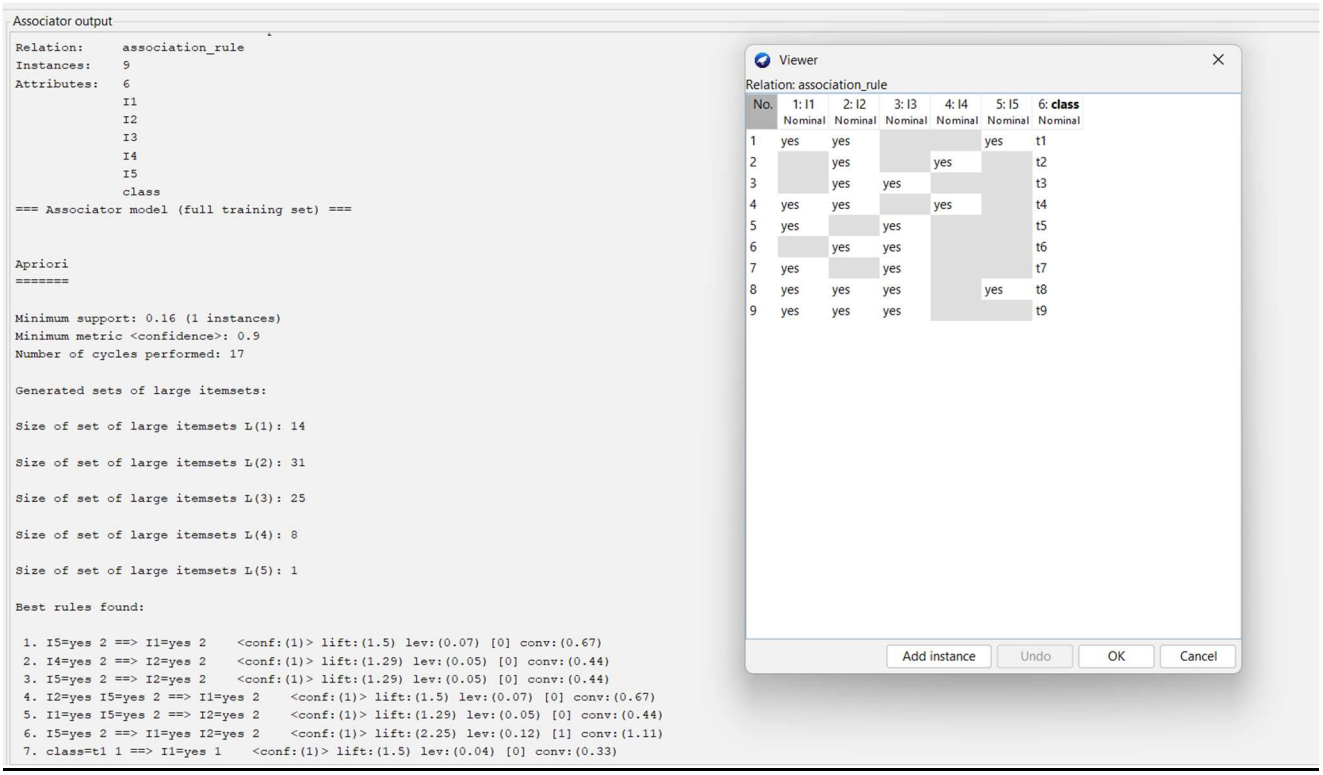
8. Quiz Questions : https://docs.google.com/forms/d/e/1FAIpQLSebmBjIKprJzZQjFl06l-Ernk8YHYAk6rmi-vvX9e3LcYOJqw/viewform?usp=sf_link

9. Experiment/Assignment Evaluation:

Sr. No.	Parameters	Marks obtained	Out of
1	Technical Understanding (Assessment may be done based on Q & A **or** any other relevant method.) Teacher should mention the other method used -		6
2	Lab Performance		2
3	Punctuality		2
Date of performance (DOP)		**Total marks obtained**	**10**

Signature of Faculty

11. Installation Steps / Performance Steps and Results –



Associator output

```
Relation:     association_rule
Instances:    9
Attributes:   6
              I1
              I2
              I3
              I4
              I5
              class
=== Associator model (full training set) ===


Apriori
=======

Minimum support: 0.16 (1 instances)
Minimum metric <confidence>: 0.9
Number of cycles performed: 17

Generated sets of large itemsets:

Size of set of large itemsets L(1): 14

Size of set of large itemsets L(2): 31

Size of set of large itemsets L(3): 25

Size of set of large itemsets L(4): 8

Size of set of large itemsets L(5): 1

Best rules found:

 1. I5=yes 2 ==> I1=yes 2    <conf:(1)> lift:(1.5) lev:(0.07) [0] conv:(0.67)
 2. I4=yes 2 ==> I2=yes 2    <conf:(1)> lift:(1.29) lev:(0.05) [0] conv:(0.44)
 3. I5=yes 2 ==> I2=yes 2    <conf:(1)> lift:(1.29) lev:(0.05) [0] conv:(0.44)
 4. I2=yes I5=yes 2 ==> I1=yes 2    <conf:(1)> lift:(1.5) lev:(0.07) [0] conv:(0.67)
 5. I1=yes I5=yes 2 ==> I2=yes 2    <conf:(1)> lift:(1.29) lev:(0.05) [0] conv:(0.44)
 6. I5=yes 2 ==> I1=yes I2=yes 2    <conf:(1)> lift:(2.25) lev:(0.12) [1] conv:(1.11)
 7. class=t1 1 ==> I1=yes 1    <conf:(1)> lift:(1.5) lev:(0.04) [0] conv:(0.33)
```

Viewer

Relation: association_rule

No.	1: I1 Nominal	2: I2 Nominal	3: I3 Nominal	4: I4 Nominal	5: I5 Nominal	6: class Nominal
1	yes	yes			yes	t1
2		yes		yes		t2
3		yes	yes			t3
4	yes	yes		yes		t4
5	yes		yes			t5
6		yes	yes			t6
7	yes		yes			t7
8	yes	yes	yes		yes	t8
9	yes	yes	yes			t9

Add instance | Undo | OK | Cancel

12. Learning Outcomes Achieved

1. Students are able to find the frequent pattern from the provided set of transactions.

13. Conclusion:

1. Applications of the Studied Technique in Industry

Association rule mining is used extensively in retail for market basket analysis, identifying product combinations that frequently occur together. This technique helps businesses optimize product placement, design promotions, and enhance cross-selling strategies.

2. Engineering Relevance

In engineering, association rule mining aids in discovering patterns in large datasets, such as fault detection and system optimization. It is crucial for predictive maintenance and understanding complex relationships within engineering systems.

3. Skills Developed

The experiment with association rule mining develops skills in data analysis, pattern recognition, and the use of algorithms to extract meaningful relationships from data. It also enhances the ability to interpret and apply these rules for strategic decision-making and operational improvements.

14. References:

[1] https:// Paulraj Ponniah, "Data Warehousing: Fundamentals for IT Professional" , Wiley Publications

[2] Han, Kamber, "Data Mining Concepts and Techniques", Morgan Kaufmann 3nd Edition