OUTPUT

```
=== Run information ===
Scheme: weka.associations.Apriori -N 10 -T 0 -C 0.9 -D
        0.05 -U 1.0 -M 0.1 -S -1.0 -C -1
Relation: Contact-lenses
Instances: 24
Attributes: 5
        age
        spectacle-prescrip
        astigmatism
```

tear-prod-rate
Contact-lenses

=== Associator model (fulling training set) ===

Apriori

==========

Minimum support: 0.2 (5 instances)
Minimum metric <Confidence>: 0.9
Number of cycles performed: 16
Generated sets of large itemsets:
Size of set of large itemsets L(1): 11
Size of set of large itemsets L(2): 21
Size of set of large itemsets L(3): 6

Best rules found:-

1. tear-prod-rate = reduced 12 ==> Contact-lenses = none 12 <Conf:(1)> lift:(1.6) lev:(0.19) [4] conv:(4.5)
2. Spectacle-prescrip = myope tear-prod-rate = reduced 6 ==> Contact-lenses = none 6 <Conf:(1)> lift:(1.6) lev:(0.09) [2] conv:(2.25)
3) Spectacle-prescript = hypermetrope tear-prod-rate = reduced 6 ==> Contact-lenses = none 6
4) astigmatism = no tear-prod-rate = reduced 6
5) astigmatism = yes tear-prod-rate = reduced 6
6) Contact-lenses = soft 5 ==> astigmatism = no 5
7) Contact-lenses = soft 5 ==> tear-prod-rate = normal 5

8. tear-prod-rate = normal Contact-lenses = Soft
5 ==> astigmatism = no 5

9. astigmatism = no Contact-lenses = Soft 5 ==>
tear-prod-rate = normal 5

10. Contact-lenses = Soft 5 ==> astigmatism = no
tear-prod-rate = normal 5

VIVA QUESTIONS

1. Define support and confidence.

Ans. Support measures how often the relationship a given rule refers to appears in the DB being mined, while Confidence refers to the number of times the relationship turns out to be true.

2. What are the frequent patterns?

Ans. Frequent patterns in data mining are items or itemsets that appear frequently together in transactional data.

3. Where we are using apriori algorithm in real time scenario?

Ans. It is used in real-time scenario such as market basket analysis to identify associations blw items frequently purchased together.

4. Explain association rule with a suitable example.

Ans. It identifies relationships blw variables, such as "if a customer buys bread, they are likely to buy butter", revealing patterns in item purchases.

5. What is apriori property?

Ans. It refers to the algorithm's focus on generating frequent itemsets by leveraging the property that all subsets of a frequent itemset must also be frequent.

6. How can we further improve the efficiency of apriori-based mining?

Ans. Improve efficiency by pruning infrequent itemsets, using hash-based structures, or applying FP-Growth.

Week-2

Aim:-

This Experiment illustrates some of the basic elements of association rule mining using WEKA The Sample dataset used for this example is Contactlenses arff.

Step 1:-

loading the data we can load dataset into weka. by clicking on open button in preprocessing interface and selecting the appropriate file

[In program files → data → Contactlenses in weka → open with notepad]

Step 2:-

Once the data is loaded, weka will recognize the attributes and during scan of the data weka will Complete basic strategies on each attribute.

Step 3:-

In left pannel relations instances, attributes, Sum of weights are present whereas in right Pannel selected attribute ~~whereas in~~ description will be shown.

Step 4:-

After data is loaded click on the associate tab will bring up the interface for association rule algorithm.

Step 5:-

Then click on choose and choose aprion algorithm

Step 6:-

Next, click on start to run the experiment.

Output:-

```
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                                 0.05 -U 1.0 -M 0.1 -S -1.0 -C -1

Relation: Contact-lenses

Instances: 24
Attributes: 5
            age
            spectacle-prescrip
            astigmatism
            tear-prod-rate
            Contact-lenses
=== Associator model (fulling training set) ===

Aprion
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3. Spectacle-prescript = hypermetrope tear-prod-rate = reduced 6 ==> Contact-lenses = none 6 <Conf:(1)> lift:(1.6) lev:(0.09) [2] Conv:(2.25)

4. astigmatism = ~~yes~~ no tear-prod-rate = reduced 6

5. astigmatism = yes tear-prod-rate = reduced 6

6. Contact-lenses = soft 5 ==> astigmatism = no 5

7. Contact-lenses = soft 5 ==> tear-prod-rate = normal 5

8. tear-prod-rate = normal Contact-lenses = soft 5 ==> astigmatism = no 5

9. astigmatism = no Contact-lenses = soft 5 ==> tear-prod-rate = normal 5

10. Contact-lenses = soft 5 ==> astigmatism = no tear-prod-rate = normal 5