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Practical no 3

Aim: To Perform Association rule mining on dataset using Apriori algorithm with the help of data mining toolkit.

Theory:

Apriori algorithm:

It is given by R. Agrawal and R. Srikant in 1994 for finding frequent itemsets in a dataset for Boolean association rule. Name of the algorithm is Apriori because it uses prior knowledge of frequent itemset properties. We apply an iterative approach or level-wise search where k-frequent itemsets are used to find k+1 itemsets. To improve the efficiency of level-wise generation of frequent itemsets, an important property is used called Apriori property which helps by



requent itemset must be frequent. The key concept is anti-monotonicity of support measure. Apriori property states that if a frequent itemset must be frequent (Apriori property), if an itemset is infrequent, all its supersets will be infrequent. While implementing the algorithm, go through some definitions from the previous post. Consider the following dataset and generate association rules for them.

Apriori algorithm that used in data mining. The name of the algorithm is Apriori because it uses prior knowledge of frequent

item set properties. The software is used for discovering the social status of the diabetics.

Dataset:

```
@relation contact-lenses
```

```
@attribute age {young, pre-presbyopic, presbyopic}
@attribute spectacle-prescrip {myope, hypermetrope}
@attribute astigmatism {no, yes}
@attribute tear-prod-rate {reduced, normal}
@attribute contact-lenses {soft, hard, none}
```

```
@data
```

```
%
```

```
% 24 instances
```

```
%
```

```
young,myope,no,reduced,none
young,myope,no,normal,soft
young,myope,yes,reduced,none
young,myope,yes,normal,hard
young,hypermetrope,no,reduced,none
young,hypermetrope,no,normal,soft
young,hypermetrope,yes,reduced,none
young,hypermetrope,yes,normal,hard
pre-presbyopic,myope,no,reduced,none
pre-presbyopic,myope,no,normal,soft
pre-presbyopic,myope,yes,reduced,none
pre-presbyopic,myope,yes,normal,hard
pre-presbyopic,hypermetrope,no,reduced,none
pre-presbyopic,hypermetrope,no,normal,soft
pre-presbyopic,hypermetrope,yes,reduced,none
pre-presbyopic,hypermetrope,yes,normal,none
reduced,none
none,none
reduced,none
normal,hard
no,reduced,none
no,normal,soft
yes,reduced,none
yes,normal,none
```



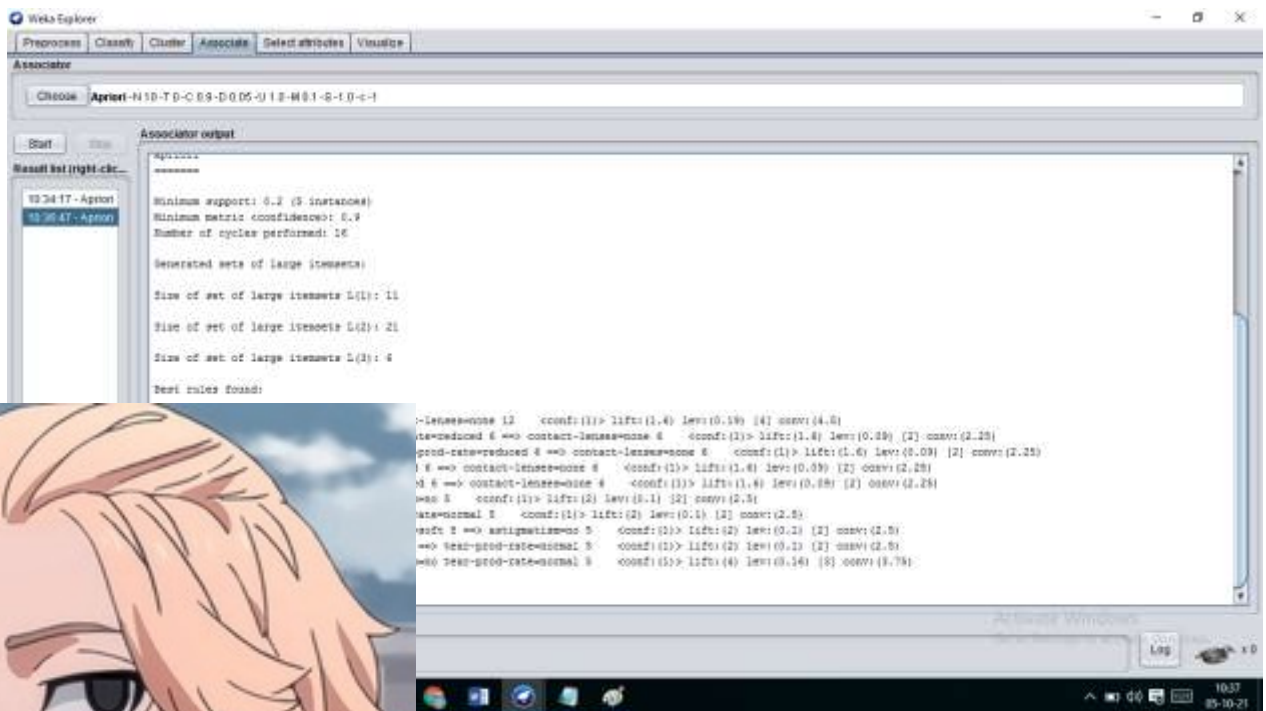
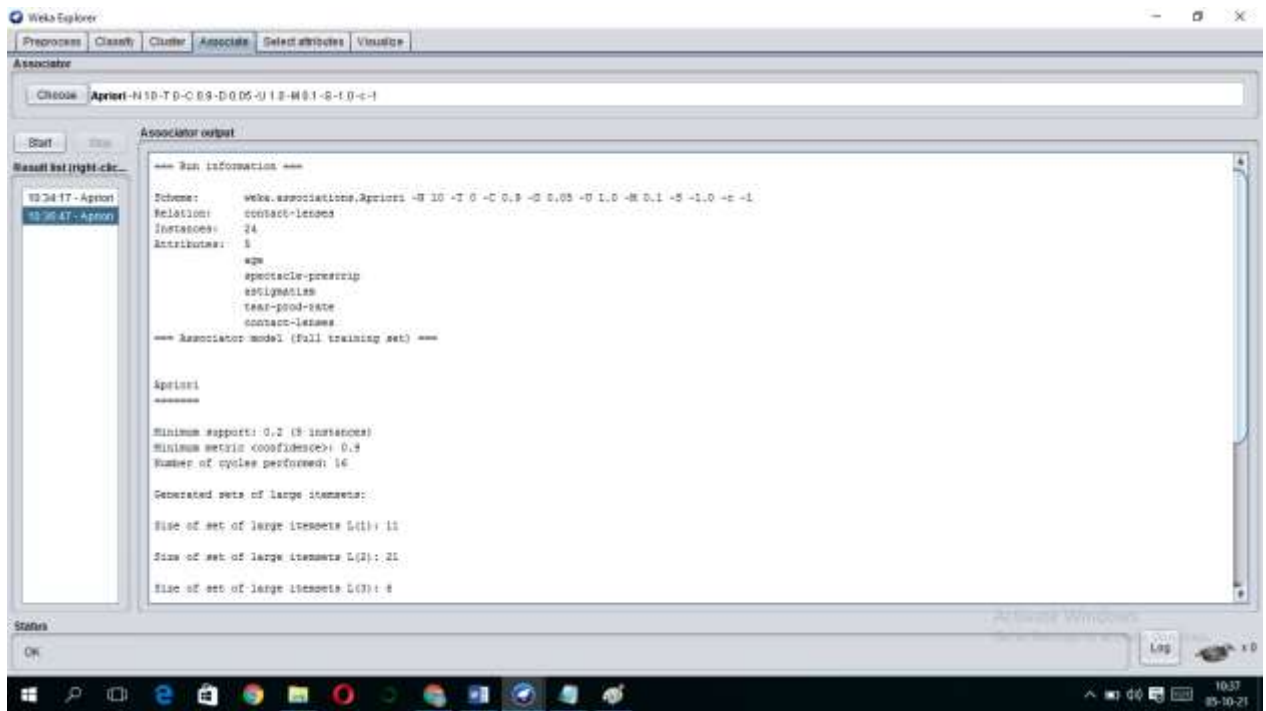
Screenshots:

The screenshot displays the Weka Explorer application window. The 'Preprocess' tab is active, showing the 'Current relation' as 'contact-lenses' with 24 instances and 5 attributes. The 'Attributes' list on the left includes 'age', 'specacle-prescrite', 'astigmatism', 'tear prod-rate', and 'contact-lenses'. The 'Selected attribute' table on the right shows the distribution of the 'age' attribute:

No.	Label	Count	Weight
1	young	8	8.0
2	pre-presbyopic	8	8.0
3	presbyopic	8	8.0

Below the table, the 'Class: contact-lenses (Name)' is shown with three stacked bar charts representing the distribution of the 'age' attribute across the three classes. The bottom chart shows the distribution of the 'age' attribute for the 'contact-lenses' class, with a legend indicating 'young' (red), 'pre-presbyopic' (blue), and 'presbyopic' (cyan).







Result: Thus, we studied about how to Perform Association rule mining on dataset using Apriori algorithm with the help of data mining toolkit.

