

## Association Rules – Assignment - 10

### 4. Interview Questions

#### 1. What is lift and why is it important in Association Rules?

- **Lift** measures how much more likely two items are to be purchased together than would be expected if they were statistically independent. A lift greater than 1 indicates a positive association, meaning that the purchase of one item increases the likelihood of purchasing the other. It's important because it helps identify strong associations between products.

#### 2. What are support and confidence? How do you calculate them?

- **Support** is the proportion of transactions in the dataset that include a particular item or itemset. It is calculated as:
- $$\text{Support}(A) = \frac{\text{Number of transactions containing } A}{\text{Total number of transactions}}$$
- **Confidence** measures the likelihood of purchasing item B given that item A has been purchased. It is calculated as:
- $$\text{Confidence}(A \rightarrow B) = \frac{\text{Support}(A \cap B)}{\text{Support}(A)}$$

#### 3. What are some limitations or challenges of Association Rules Mining?

**1.Data Sparsity:** In large datasets, many combinations may appear infrequently, making it hard to find significant rules.

**2.Computationally Intensive:** The Apriori algorithm can be slow for large datasets because it generates candidate itemsets.

**3.Interpretability:** Many rules might be generated, making it challenging to interpret and act on the results.

4. **Lack of Temporal Information:** Traditional association rule mining does not consider the timing of transactions, which can be important in some contexts.