

## **Week 5**

### **Project Activity-1: Market Basket Analysis using Apriori Algorithm**

#### **Section-B (Market Basket Analysis)**

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**Question1: Give an example where you can apply the Apriori algorithm.**

**Answer:**

- Apriori algorithm is a classical algorithm in data mining. It is used for mining frequent item sets and relevant association rules. It is devised to operate on a database containing a lot of transactions, for instance, items brought by customers in a store.
- It helps the customers buy their items with ease, and enhances the sales performance of the departmental store.
- This algorithm has utility in the field of healthcare as it can help in detecting adverse drug reactions (ADR) by producing association rules to indicate the combination of medications and patient characteristics that could lead to ADRs.

**Question2: What happens when we decrease the support level? Why?**

**Answer:**

- Support represents the popularity of that product of all the product transactions. Support of the product is calculated as the ratio of the number of transactions includes that product and the total number of transactions.
- Support of the product = (Number of transactions includes that product)/(Total number of transactions).
- When we decrease the support level, we decrease the amount of popularity we need.

**Question 3. What happens when we increase the confidence level? Why?**

**Answer:**

- This explains how likely Y is purchased when X is purchased. This defines association between two items. For example when a person buys milk is more likely to buy bread as well or vice versa.
- This is measured by the proportion of transactions with item X, in which item Y also appears. Expressed as  $\{X \rightarrow Y\}$ . Calculated by the proportion

of number of transactions in which both (X & Y) occurs to support of the item X.

- When we increase the confidence level, we tend to increase the probability of that item to be transacted with the compared item.

**Question 9. What recommendations would you give to the owner of the bakery?**

**Answer:**

I would like to give few recommendations:

- There are heavy chances that people will buy a cake if they buy coffee and tea together.
- Make a combo of hot chocolate and cake, it will definitely boost the sales because people are liking to buy them together.
- If a person buys a toast, there is 70% chance that he/she will buy coffee.
- Never recommend your customers to buy brownie with bread.
- Pairs of cake- coffee and pastry- coffee are in high demand.