Practical No:-3.

Title:- Implementation of Apriori Algorithm

Objective:- To study and implement Apriori Algorithm.

Theory:-
Apriori Algorithm refers to an algorithm that is used in mining frequent products sets and relevant association rules. Generally, the apriori algorithm operates on a database containing a huge number of transactions. For example:- the items customers but in at a Big Bazar.

Apriori Algorithm helps the customers to by buy their products with ease and increases the sales performance of the particular store.

Components of Apriori algorithm.
-The given three components comprise the apriori algorithm.
(1) support
(2) confidence
(3) Lift.

lets take an example to understand this concept.

we have already discussed above, you need huge database containing a large no. of transactions. Suppose you have 4000 customers transactions in a Big Bazar. You have to calculate support, confidence and lift of 2 pr and you may say Biscuits and chocolates This is because customers frequently buy these two items together.

Out of 4000 transactions, 400 contain Biscuits, whereas 600 contain chocolate, and these 600 tran include a 200 that includes Biscuits and chocolates. Using these data, we will find out the ~~out~~ support, confidence & lift.

* Support:-

Support refers to the default popularity of any product. You find the support as a ~~single~~ quotient of the division of the number of transactions comprising the product by total no. of transactions. Hence we get,

$$\text{Support (Biscuits)} = \frac{\text{(Transactions relating biscuits)}}{\text{(Total transactions)}}$$

$$= \frac{400}{4000}$$

$$= 10 \text{ percent.}$$

* Confidence

Confidence refers to the possibility that the customers bought both biscuits & chocolates together. So, you need to divide the number of transactions that comprise both biscuits and chocolates by the total number of transactions to get the confidence.

Hence,

$$\text{confidence} = \frac{(\text{Transactions rating both biscuits \& chocolates})}{(\text{Total transactions})}$$

$$= \frac{200}{400}$$

$$= 50 \text{ percent.}$$

It means that 50 percent of customers who bought biscuits bought chocolates also.

* Lift.

Consider the above example. lift refers to the increase in the ratio of the sale of chocolates when you sell biscuits. The mathematical equations of the lift are given below

$$\text{Lift} = \frac{\text{Confidence (Biscuits - chocolates)}}{\text{(Support (Biscuits)}}$$

$$= \frac{50}{10}$$

$$= 5$$