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ASSIGNMENT 3

Title : Create association rules for the Market Basket Analysis for the given threshold (Using K)

Theory :

Association Rules : There are many ways to see the similarities between items. These are techniques that fall under the general umbrella of "association" The outcome of this type of technique, in simple terms, is a set of rules that can be understood as "if this, then that"

Applications : There are many kinds of applications of association :

1) Product recommendation like Amazon's
2) Music recommendation like Last FMs artist recommendations.
3) Medical diagnosis like with diabetes
4) Content optimisation like in magazine, website or blogs

Example :

The Groceries dataset :

Imagine 10000 receipts where each receipt represents a transaction with items that we purchased, This is what groceries dataset contains : a collection of receipts with each line representing

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a receipt and the item purchased. Each like is called a transaction and each column in a row represents an item.
We can represent our items as an item set as follows:

$I = \{i_1, i_2, i_3 \ldots i_n\}$

∴ A transaction is represented as follows:

$T_n = \{i_j, i_k \ldots i_n\}$

This gives us our rules which are represented as $\{i_1, i_2\} \Rightarrow i_k$

Support: The fraction which our item set occurs in our dataset.

Confidence: Probability that a rule is correct for a new transaction with items on the left.

Lift: The ratio by which the confidence of a rule exceeds the expected confidence.

Conclusion: Thus we have implemented Apriori algorithm for Market Basket analysis