SPL1 Project Proposal Form, 2022
Institute of Information Technology (IIT)
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Project Description:

Market Basket Analyzer

The title of my project is "Market Basket Analyzer". Market basket analysis is a technique used to analyze customer purchase data in order to identify relationships between products. It is commonly used in the field of retail to identify products that are frequently purchased together, and to develop strategies to increase sales and customer loyalty. The goal of market basket analysis is to identify patterns in customer purchasing behavior and to use this information to inform marketing and sales strategies. For example, if a retailer notices that a particular brand of shampoo is frequently purchased with a certain conditioner, they may choose to place these products near each other on store shelves in order to encourage customers to purchase both items. Similarly, if a retailer notices that customers who purchase a certain type of baby diaper also tend to purchase baby milk, they may choose to bundle these products together and offer them at a discounted price. Overall, the goal of market basket analysis is to increase sales and customer loyalty by identifying and leveraging patterns in customer purchasing behavior.

One algorithm commonly used for market basket analysis is the FP Growth algorithm, which is an efficient, scalable method for finding frequent item sets in large datasets. The goal of this project is to apply the FP Growth algorithm to a dataset of customer purchase data in order to identify patterns of co-occurring products and generate recommendations for cross-selling and upselling.

There are several steps that will be involved in this project:
1.Data preparation:
The first step will be to obtain and prepare the customer purchase data for analysis. This will involve cleaning and preprocessing the data, and possibly merging it with other relevant datasets (e.g. customer demographic data).

2. Frequent itemset mining:
Next, the FP Growth algorithm will be applied to the prepared data in order to identify sets of products that are frequently purchased together.

3. Association rule generation:
Once the frequent item sets have been identified, association rules will be generated to describe the relationships between the items. These rules will take the form of "if X is purchased, then Y is also likely to be purchased."

4. Recommendation generation:
Using the generated association rules, recommendations for cross-selling and upselling will be developed. These recommendations can be used by retailers to inform product placement and marketing strategies.

5. Evaluation:
Finally, the effectiveness of the generated recommendations will be evaluated using appropriate metrics (e.g. lift, conviction). This will provide insight into the usefulness of the market basket analysis and the FP Growth algorithm for this particular dataset.

Overall, this project has the potential to provide valuable insights for retailers looking to increase sales and customer loyalty through targeted marketing efforts.

Languages or Tools to be used:

C, C++

Supervisor's Name: Dr. Zerina Begum

Signature of the supervisor:_____

Date: 04/01/2023