**Project 10: Market Basket Insights**

**Problem Statement:**

Unveiling Customer Behaviour through Association Analysis: Utilize market basket analysis on the provided dataset to uncover hidden patterns and associations between products, aiming to understand customer purchasing behaviour and identify potential cross-selling opportunities for the retail business.

Nowadays people buy daily goods from super market nearby. There are many supermarkets that provide goods to their customer. The problem many retailers face is the placement of the items. They are unaware of the purchasing habits of the customer so they don’t know which items should be placed together in their store. With the help of this application shop managers can determine the strong relationships between the items which ultimately helps them to put products that co-occur together close to one another. Also decisions like which item to stock more, cross selling, up selling, store shelf arrangement are determined.

**Problem Definition:**

 The problem is to perform market basket analysis on a provided dataset to unveil hidden patterns and associations between products. The goal is to understand customer purchasing behavior and identify potential cross-selling opportunities for a retail business. This project involves using association analysis techniques, such as Apriori algorithm, to find frequently co-occurring products and generate insights for business optimization.

**Design Thinking:**

1. Data Source: Choose a dataset containing transaction data, including lists of purchased products.
2. Data Preprocessing: Prepare the transaction data by transforming it into a suitable format for association analysis.
3. Association Analysis: Utilize the Apriori algorithm to identify frequent itemsets and generate association rules.
4. Insights Generation: Interpret the association rules to understand customer behavior and cross-selling opportunities.
5. Visualization: Create visualizations to present the discovered associations and insights.
6. Business Recommendations: Provide actionable recommendations for the retail business based on the insights.