# Market Basket Analysis

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# Content

- Introduction

- Description of the Dataset

- Tools Used

- High level steps

- Data Analysis

- Data Visualization

- Interpretation of Results

- Recommendations

# Introduction

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Market basket analysis is a project that involves the analysis of groceries dataset of customers to identify patterns and trends.

The objective of this project is to gain insights that will help in making recommendations for customers to improve their market experience and increase sales.

# Description of the Dataset

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The dataset is an open source groceries dataset CSV file from a Github repository.

- **Member_number** :  This is a unique identifier for each customer.

- **Date**: shows the date the purchase was made.

- **ItemDescription**: gives a description of the item purchased by the customers.

# Tools Used

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**Python** : python programming language was used for data cleaning, data manipulation analysis and visualization.

**Libraries**: Numpy and Pandas for data analysis, Matplotlib and Seaborn for data visualization, Apriori algorithm and rule mining association for association.

**Github**: for storing of the jupyter notebook.

# High Level Steps

- Data preparation
- Exploratory data analysis (EDA)
- Market basket analysis
- Visualization
- Interpretation and analysis
- Recommendation
- presentation

# Data Analysis

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The number of transactions made are **38765**.

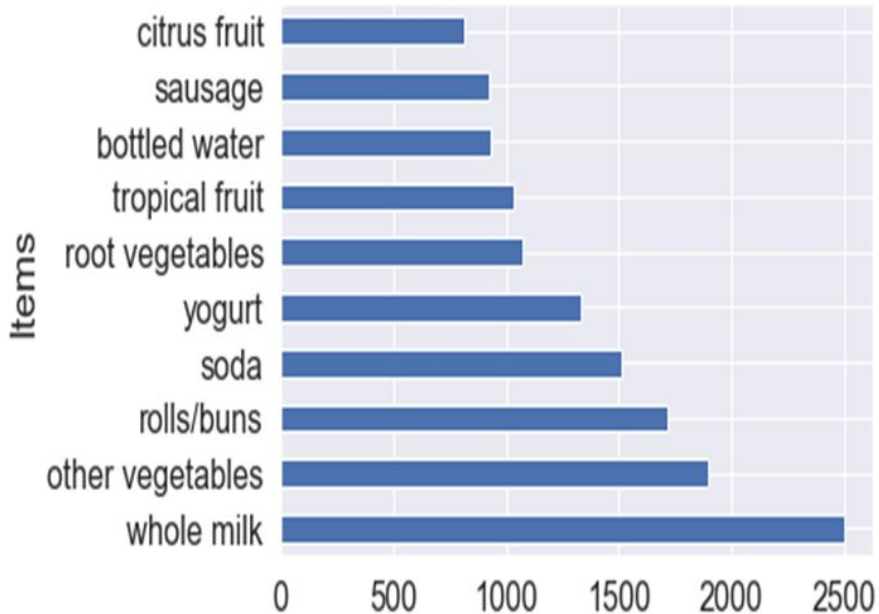There are no null values.

The number of unique items is **167**.

The number of unique customers is **3898**.

The 3 **most sold** items are whole **milk**, **other vegetables** and **rolls/buns**.

The 3 **least sold** items are **preservation products**, **kitchen utensils** and **baby cosmetics**.
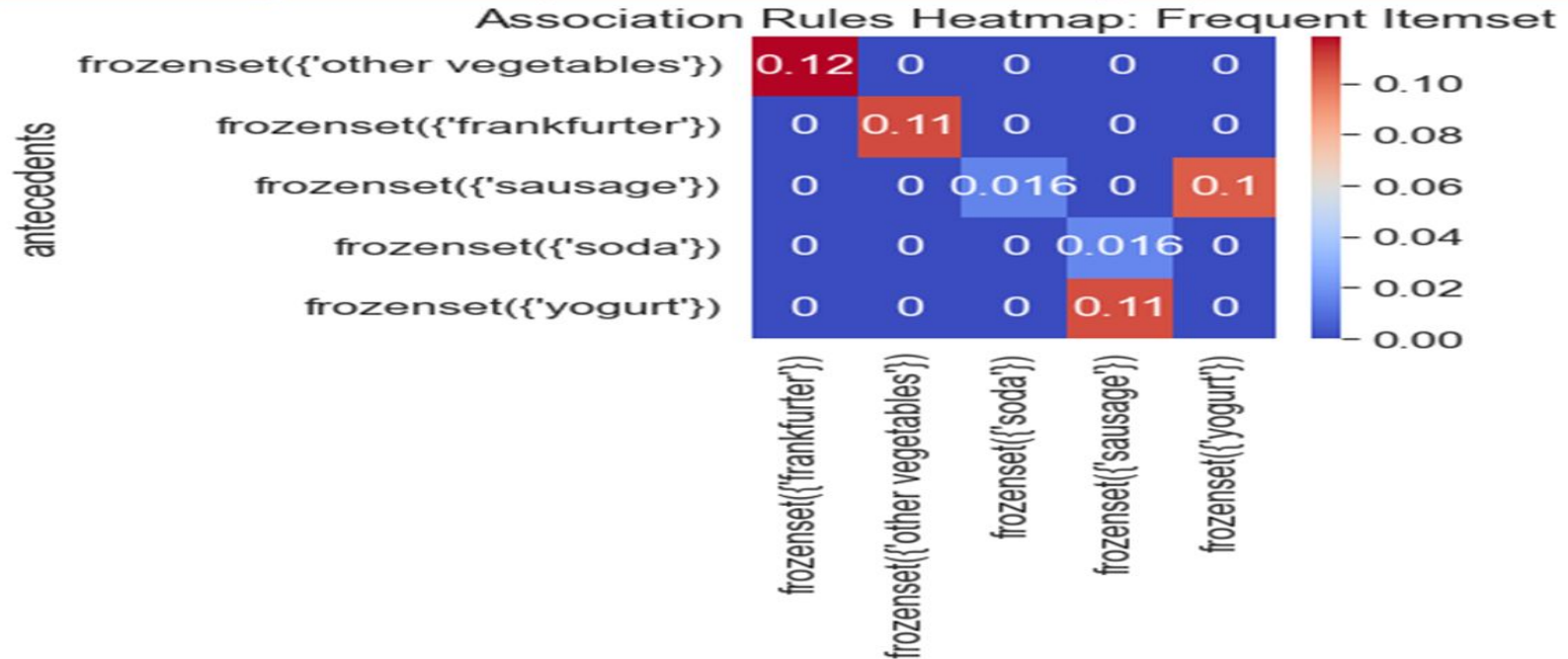
# Data Visualisation



Association Rules Heatmap: Frequent Itemset

# Interpretation of Results

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Cross selling recommendations: **bottled beer and whole milk**, **sausage and whole milk**, **newspaper and whole milk** .

Frequent items mostly bought together are other **vegetables and frankfurter**, **sausage and yoghurt**, **sausage and soda**.

# Recommendations

Frequent items bought together should be arranged close to each other to encourage their sales.

Targeted discounts can also be made for products which are known to be frequently bought together.

The findings should be incorporated in an online supermarket that would help customers find what would be useful for them based on the association patterns of other customers.

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