Setup
Python3 -m venv .venv
Source .venv/bin/activate

Install Dependencies
Python3 -m pip install -r requirements.txt

Run the Project
Python3 app.py

The supermarket simulator grants users the ability to select from one to all items to add to the cart. They have to create at least five transactions before they can see the association rule in action. We store these transactions in a SQLite database, where the ID is an integer and the primary key and a string of the set of items for each transaction.

The user can then run two datamining operations - k-means clustering and apriori association rules mining - on the stored transactions.

K-Means clustering allows us to group similar transactions that customers have made. By default the K-Means algorithm will divide the transactions into two clusters. This can be useful for targeting specific customers for deals and promotions. It can also help understand customer behavior patterns. In addition to grouping the entire transactions, we can now see which items are typically purchased together.

The apriori association rules require a minimum support of 0.25 to be considered. They are then sorted into categories based on their confidence and lift values, and displayed to the users as such. A rule is considered to have high confidence if the confidence is greater than or equal to 0.9, medium confidence if it is less than 0.9 but greater than or equal to 0.7, and low confidence if the confidence value is less than 0.7. A rule has a strong positive correlation if the lift value is greater than or equal to two, or a moderate correlation if the lift value is greater than one but less than two. Rules with a lift score below one are filtered out.