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ARTIFICIAL INTELLIGENCE - GROUP 3

PROJECT: TEAM MEMBER:

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PHASE 3 : DEVELOPMENT PART -1



INTRODUCTION:

Market basket insights refer to the analysis of consumer purchase data to uncover patterns, associations, and trends in the items customers buy together. This information is valuable for businesses, as it helps optimize product placement, marketing strategies, and inventory management. Market basket analysis often employs techniques like association rule mining to reveal relationships between products and can be used in various industries, particularly in retail and e-commerce, to enhance customer experience and increase revenue.Market basket insights, also known as market basket analysis or association rule mining, are techniques used to analyze customer purchase data. It involves identifying relationships between items that are frequently bought together in a single shopping transaction. These insights help businesses understand customer behavior, optimize product placement, improve marketing strategies, and enhance inventory management. By uncovering these patterns, businesses can make data-driven decisions to increase sales, improve customer satisfaction, and drive operational efficiency.

ALGORITHM:

STEP 1: Import the library packages and modulesSTEP 2: Load the Datasets

STEP 3: Exploring the DatasetsSTEP 4: Split the dataset into training and testing setsSTEP 5: Predicting models using datasetSTEP 6: Visualising models and maintenance

STEP 7:Print the results

PROGRAM:

pip install pandas mlxtend

import pandas as pd

# Example dataset

data = pd.read\_csv('your\_dataset.csv')

# Convert the dataset into a list of lists

transactions = data.values.tolist()

from mlxtend.frequent\_patterns import apriori

from mlxtend.frequent\_patterns import association\_rules

# Convert the transactions into a one-hot encoded DataFrame

oht = pd.get\_dummies(data, sparse=True)

# Find frequent item sets using Apriori

frequent\_itemsets = apriori(oht, min\_support=0.1, use\_colnames=True)

# Generate association rules

rules = association\_rules(frequent\_itemsets, metric="lift", min\_threshold=1.0)

# Display the association rules

print(rules)

LIBRARIES AND MODULES USED:

Pandas : Pandas is a powerful library for data manipulation and analysis. It's often used to load, preprocess, and transform transaction data.

mlxtend: The mlxtend library provides tools for frequent itemset mining, association rule generation, and various metrics for market basket analysis. You can use it to find frequent item sets and generate association rules.

NumPy: NumPy is a fundamental library for numerical operations in Python. It can be handy for working with arrays and data transformations.

Matplotlib or Seaborn : These visualization libraries can help you create meaningful charts and plots to visualize the results of market basket analysis, such as bar charts, scatter plots, or network graphs.

NetworkX : If you want to visualize association rules as a network graph, Network is a great library for creating and analyzing complex networks.

Scikit-learn : If you want to apply machine learning algorithms to your transaction data, scikit-learn is a valuable library for clustering or classification tasks.

SQLAlchemy : If your transaction data is stored in a database, SQLAlchemy can be used to connect to the database and retrieve the data.

Apriori Algorithm Implementation : While mlxtend provides an Apriori implementation, you can also implement the Apriori algorithm from scratch to gain a deeper understanding of how it works.

Market Basket Analysis Libraries : Some specialized libraries like arules in R have been ported to Python and can be used for advanced market basket analysis. These libraries offer more customization and complex analysis options.

Jupyter Notebook : Jupyter notebooks are a popular choice for data analysis tasks. They allow you to create and share interactive documents with code, visualizations, and explanations.

CONCLUSION:

Market basket analysis is a valuable tool for understanding customer preferences and behaviors, optimizing retail operations, and increasing revenue. The conclusions drawn from this analysis can drive data-driven decision-making, resulting in more effective marketing, sales, and inventory management strategies.