**Purchase Pattern Analytics:**

Problem Statement:

In the context of a retail environment, the challenge is to leverage Market Basket Analysis (MBA) on a Transaction dataset to unveil relationships between products. By conducting exploratory data analysis, addressing data quality issues, employing data visualization techniques, and implementing the Apriori algorithm, the objective is to extract valuable insights. This includes understanding customer purchasing behavior, identifying frequently co-occurring products, and deriving actionable recommendations to enhance sales strategies and customer satisfaction.

Database Credentials:

Host: 18.136.157.135  
User: dm\_team16  
Password: 2o\_hihiFeTRE

**Four-Week Roadmap**

**Week 1:** Project Kick-off and Data Exploration

- Tasks:

- Familiarize the team with the project objectives and expectations.

- Acquire and load the Transaction dataset.

- Begin Exploratory Data Analysis (EDA):

- Identify key statistics (mean, median, mode, etc.).

- Visualize data distributions and patterns.

- Detect any outliers or missing values.

- Deliverables:

- Kick-off meeting summary.

- Initial exploratory data analysis report and Domain analysis.

**Week 2:** Data Cleaning and Transformation

- Tasks:

- Address missing values, outliers, and inconsistencies.

- Transform the dataset into a suitable format for market basket analysis.

- Document the data cleaning steps.

- Deliverables:

- Cleaned and transformed dataset.

- Documentation of data cleaning process.

**Week 3:** Data Visualization and Apriori Algorithm Implementation

- Tasks:

- Create visualizations to represent product occurrences, associations, and trends.

- Implement the Apriori algorithm for market basket analysis:

- Identify frequent item sets and association rules.

- Visualize the results of the Apriori algorithm.

- Deliverables:

- Visualizations illustrating product relationships.

- Apriori algorithm implementation.

**Week 4:** Insights, Recommendations, and Finalization

- Tasks:

- Summarize findings from the market basket analysis.

- Formulate actionable insights and recommendations for the business.

- Prepare a presentation for stakeholders.

- Document the entire process, including data cleaning, algorithm implementation, and interpretation of results.

**- Deliverables:**

- Insights and recommendations report.

- Presentation slides for communicating the results to stakeholders.

- Final project documentation.

Review and Iteration:

- Tasks:

- Conduct a review of the entire project with the team.

- Address any feedback or suggestions for improvement.

- Make necessary iterations to enhance the project's quality.