**Customer Segmentation Based on Purchase Behavior**

**Project Title:**

Customer Segmentation Based on Purchase Behavior Using Machine Learning

**Project Objectives:**

* Segment customers based on their purchase behavior to identify customer groups.
* Provide insights into customer behavior for targeted marketing and personalized service.
* Visualize customer groups and their characteristics.

**3. Dataset:**

* **Source:** <https://archive.ics.uci.edu/dataset/352/online+retail>

**(ETL) Data Collection:**

* **Procedure:**
* Download the dataset from <https://archive.ics.uci.edu/dataset/352/online+retail>
* Import into a PostgreSQL database.
* clean and preprocess the data as needed in jupyter notebook and create a dataframe.

**Data Loading and Processing:**

* **Technology:** Jupyter Notebook with Python
* **Procedure:**
  + Connect to the PostgreSQL database using Python libraries
  + Load the data into a Pandas DataFrame for analysis.
  + Perform data cleaning for missing values, removing duplicates, etc.

**Segmentation Model:**

* **Technology:** Scikit-learn
  + Preprocess the data for clustering (e.g., normalization or standardization).
  + Apply clustering algorithms
  + Evaluate the clustering results
  + Interpret the characteristics of each customer segment.

**Visualization:**

* **Technologies:**
  + **Tableau:** For creating interactive dashboards and visualizing customer segments.
  + **Matplotlib:** For static plots to visualize clustering results and feature distributions.

**Potential expected Outcomes:**

* Identify distinct customer segments based on purchase behavior.
* Insight into the characteristics and behaviors of different customer groups.
* Visual tools to help stakeholders understand customer groups and make decisions.
* Recommendations for targeted marketing and personalized customer service based on analysis.