Title: **Customer Behavior Analysis and Recommendation System for E-commerce**

Team Composition:

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Project Description:

This project aims to create a product recommendation system for an e-commerce platform. We will use customer browsing and purchase history to understand their behavior and suggest relevant products. By processing large amounts of user activity data, we can find patterns like frequently viewed or bought items. Using this information, we will build a recommendation engine that helps show useful product suggestions to users, improving their shopping experience.

Key Technology Challenges:

- Handling high-volume, real-time clickstream data efficiently
- Designing scalable session-based recommendation models
- Building accurate recommendations despite sparse or incomplete user data

Technology Stack:

Data Ingestion: Apache Kafka or CSV Files
Data Storage: HDFS or Pandas DataFrames
Processing Engine: Apache Spark (PySpark) or Pandas + NumPy
Modeling: Spark MLlib (ALS) or Scikit-learn (TF-IDF)
API & Backend: Flask
Visualization: Matplotlib or Seaborn

Deliverables:

Application Demo

- Interface (web or notebook) to show product recommendations
- Input: User ID → Output: Top N suggested products

Codebase + API

- Clean, well-documented GitHub repo
- REST API: `GET /recommendations?user_id=123` to fetch recommendations