Task 2: Restaurant Recommendation System

Internship Program: Machine Learning
Company: Cognifyz Technologies

Objective

The goal of this task is to build a content-based recommendation system that suggests restaurants to users based on their preferences such as cuisine, price range, and availability of online delivery.

Dataset Description

The dataset provided contains detailed information about restaurants including:
- Restaurant Name
- Cuisines offered
- Price Range
- Whether online delivery is available
- Aggregate ratings

Relevant columns used for recommendation:
- Cuisines
- Price range
- Has Online delivery

Tools & Technologies Used

- Language: Python
- Libraries:
  - pandas – for data loading and preprocessing
  - scikit-learn – for TF-IDF vectorization and cosine similarity
- Environment: Jupyter Notebook or any Python IDE

Steps Performed

1. Data Preprocessing:
   - Removed rows with missing values in the selected columns.
   - Ensured all required fields are in string format for vectorization.

2. Filtering Based on User Input:
   - Users are prompted to enter:
     - Preferred cuisine (e.g., "North Indian")
     - Price range (1 for low, 2 for medium, 3 for high)
     - Online delivery preference (Yes/No)
   - Dataset is filtered strictly to match these preferences.

3. Feature Engineering:
   - Combined selected fields (Cuisines, Price range, Has Online delivery) into a new feature `combined_features` for TF-IDF processing.

4. Content-Based Filtering:
   - Applied TF-IDF Vectorization to convert text into numerical format.
   - Used Cosine Similarity to find the most similar restaurants based on user input.

5. Recommendation Output:
   - Displayed top 5 recommended restaurants sorted by similarity score.
   - Output includes restaurant name, cuisine, price range, online delivery status, and rating.

Conclusion

This content-based recommendation system allows users to receive personalized restaurant suggestions based on their specific preferences. The project demonstrates core machine learning concepts such as feature extraction, text vectorization, and similarity measurement, which are fundamental in building real-world recommendation engines.