Task 2: Restaurant Recommendation System

Objective

Build a content-based filtering recommendation system based on user preferences such as cuisine type and price range.

```
import pandas as pd
from sklearn.feature_extraction.text import TfidfVectorizer
from sklearn.metrics.pairwise import cosine_similarity

# Mount Google Drive
from google.colab import drive
drive.mount('/content/drive')

# Load Dataset from Google Drive
file_path = '/content/drive/My Drive/ML_Internship/resturant_dataset.csv'
df = pd.read_csv(file_path)

# Preview first few rows
df.head()

# Drop missing cuisines
df = df.dropna(subset=['Cuisines'])

# Create simplified dataset
data = df[['Restaurant Name', 'Cuisines', 'Average Cost for two', 'Price range']].copy()
data.drop_duplicates(inplace=True)
data.reset_index(drop=True, inplace=True)
data.head()
```

```
Mounted at /content/drive
```

	Restaurant Name	Cuisines	Average Cost for two	Price range
0	Le Petit Souffle	French, Japanese, Desserts	1100	3
1	Izakaya Kikufuji	Japanese	1200	3
2	Heat - Edsa Shangri-La	Seafood, Asian, Filipino, Indian	4000	4
3	Ooma	Japanese, Sushi	1500	4
4	Sambo Kojin	Japanese, Korean	1500	4

Step 1: Feature Encoding using TF-IDF

```
# TF-IDF on Cuisines
tfidf = TfidfVectorizer(stop_words='english')
tfidf_matrix = tfidf.fit_transform(data['Cuisines'])

# Compute similarity
cosine_sim = cosine_similarity(tfidf_matrix, tfidf_matrix)
```

Step 2: Recommendation Function

```
indices = pd.Series(data.index, index=data['Restaurant Name'].str.lower())

def recommend(restaurant_name, top_n=5):
    idx = indices.get(restaurant_name.lower())
    if idx is None:
        return "Restaurant not found."
    sim_scores = list(enumerate(cosine_sim[idx]))
    sim_scores = sorted(sim_scores, key=lambda x: x[1], reverse=True)
    sim_scores = sim_scores[1:top_n+1]
    restaurant_indices = [i[0] for i in sim_scores]
    return data[['Restaurant Name', 'Cuisines', 'Average Cost for two']].iloc[restaurant_indices]
```

Step 3: Test the Recommendation System

```
# Sample test
recommend('Le Petit Souffle')
```

	Restaurant Name	Cuisines	Average Cost for two
4404	Tokyo Mon Amour	Japanese, French	2200
68	Paris 6 Classique	French	200
251	Django	French	40
446	Jaan	French	430
447	Rhubarb Le Restaurant	French	315