Task 3: Cuisine Classification

Objective

Build a classification model to predict the primary cuisine type of a restaurant based on features like price, ratings, and delivery options.

```
import pandas as pd
from sklearn.model_selection import train_test_split
from sklearn.ensemble import RandomForestClassifier
from sklearn.metrics import classification_report, accuracy_score
from sklearn.preprocessing import LabelEncoder

# 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 values in 'Cuisines'
df = df.dropna(subset=['Cuisines'])
```

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

Step 1: Data Preprocessing

```
# Extract first cuisine as main class
df['Main Cuisine'] = df['Cuisines'].apply(lambda x: x.split(',')[0])

# Select top 10 cuisines only
top_cuisines = df['Main Cuisine'].value_counts().nlargest(10).index
df = df[df['Main Cuisine'].isin(top_cuisines)]

# Encode categorical variables
df['Has Table booking'] = df['Has Table booking'].map({'Yes': 1, 'No': 0})
df['Has Online delivery'] = df['Has Online delivery'].map({'Yes': 1, 'No': 0})
```

Step 2: Train-Test Split and Encoding

```
# Prepare features and label
X = df[['Average Cost for two', 'Price range', 'Votes', 'Has Table booking', 'Has Online delivery']]
y = df['Main Cuisine']

# Label encode cuisine
le = LabelEncoder()
y = le.fit_transform(y)

# Split
X_train, X_test, y_train, y_test = train_test_split(X, y, test_size=0.25, random_state=42)
```

Step 3: Train Classifier and Evaluate

```
model = RandomForestClassifier(random_state=42)
model.fit(X_train, y_train)
y_pred = model.predict(X_test)

print("Accuracy:", accuracy_score(y_test, y_pred))
print("Classification Report:")
print(classification_report(y_test, y_pred, target_names=le.classes_))
```

```
Accuracy: 0.3694412770809578
Classification Report:
```

	precision	recall	f1-score	support
American	0.57	0.56	0.57	73
Bakery	0.24	0.17	0.20	143
Cafe	0.22	0.20	0.21	153
Chinese	0.20	0.13	0.16	210
Continental	0.12	0.10	0.11	59
Fast Food	0.12	0.08	0.09	172
Mithai	0.21	0.15	0.18	66
North Indian	0.48	0.64	0.55	746
South Indian	0.02	0.01	0.02	67
Street Food	0.29	0.22	0.25	65
accuracy			0.37	1754
macro avg	0.25	0.23	0.23	1754
weighted avg	0.33	0.37	0.34	1754