

```

import pandas as pd
import numpy as np
import matplotlib.pyplot as plt
import seaborn as sns
import missingno as msno
from sklearn.model_selection import train_test_split
from sklearn.preprocessing import LabelEncoder, StandardScaler
from sklearn.linear_model import LinearRegression
from sklearn.tree import DecisionTreeRegressor
from sklearn.metrics import mean_squared_error, r2_score
from sklearn.ensemble import RandomForestClassifier
from sklearn.metrics import accuracy_score, precision_score, recall_score, classification_report
from sklearn.neighbors import NearestNeighbors
import folium

```

```
df=pd.read_csv('/content/Dataset .csv')
```

```
print(df)
```

```

9547      Koşuyolu, İstanbul 29.041297
9548      Kuruçeşme, İstanbul 29.034640
9549      Kuruçeşme, İstanbul 29.036019
9550      Moda, İstanbul 29.026016

   Latitude  Cuisines  ...  Currency \
0   14.565443  French, Japanese, Desserts  ...  Botswana Pula(P)
1   14.553708      Japanese  ...  Botswana Pula(P)
2   14.581404  Seafood, Asian, Filipino, Indian  ...  Botswana Pula(P)
3   14.585318      Japanese, Sushi  ...  Botswana Pula(P)
4   14.584450      Japanese, Korean  ...  Botswana Pula(P)
...      ...      ...      ...
9546  41.022793      Turkish  ...  Turkish Lira(TL)
9547  41.009847  World Cuisine, Patisserie, Cafe  ...  Turkish Lira(TL)
9548  41.055817      Italian, World Cuisine  ...  Turkish Lira(TL)
9549  41.057979      Restaurant Cafe  ...  Turkish Lira(TL)
9550  40.984776      Cafe  ...  Turkish Lira(TL)

   Has Table booking  Has Online delivery  Is delivering now \
0                   Yes                   No                   No
1                   Yes                   No                   No
2                   Yes                   No                   No
3                   No                    No                   No
4                   Yes                   No                   No
...      ...      ...      ...
9546                No                   No                   No
9547                No                   No                   No
9548                No                   No                   No
9549                No                   No                   No
9550                No                   No                   No

   Switch to order menu  Price range  Aggregate rating  Rating color \
0                   No           3           4.8      Dark Green
1                   No           3           4.5      Dark Green
2                   No           4           4.4         Green
3                   No           4           4.9      Dark Green
4                   No           4           4.8      Dark Green
...      ...      ...      ...
9546                No           3           4.1         Green
9547                No           3           4.2         Green
9548                No           4           3.7        Yellow
9549                No           4           4.0         Green
9550                No           2           4.0         Green

   Rating text  Votes
0      Excellent    314
1      Excellent    591
2      Very Good    270
3      Excellent    365
4      Excellent    229
...      ...      ...
9546      Very Good    788
9547      Very Good   1034
9548         Good     661
9549      Very Good    901
9550      Very Good    591

```

```
[9551 rows x 21 columns]
```

```
print(df.head())
```

```

Restaurant ID      Restaurant Name  Country Code      City \
0      6317637      Le Petit Souffle      162      Makati City
1      6304287      Izakaya Kikufuji      162      Makati City
2      6300002      Heat - Edsa Shangri-La      162      Mandaluyong City
3      6318506      Ooma      162      Mandaluyong City
4      6314302      Sambo Kojin      162      Mandaluyong City

Address \
0      Third Floor, Century City Mall, Kalayaan Avenu...
1      Little Tokyo, 2277 Chino Roces Avenue, Legaspi...
2      Edsa Shangri-La, 1 Garden Way, Ortigas, Mandal...
3      Third Floor, Mega Fashion Hall, SM Megamall, O...
4      Third Floor, Mega Atrium, SM Megamall, Ortigas...

Locality \
0      Century City Mall, Poblacion, Makati City
1      Little Tokyo, Legaspi Village, Makati City
2      Edsa Shangri-La, Ortigas, Mandaluyong City
3      SM Megamall, Ortigas, Mandaluyong City
4      SM Megamall, Ortigas, Mandaluyong City

Locality Verbose  Longitude  Latitude \
0      Century City Mall, Poblacion, Makati City, Mak...  121.027535  14.565443
1      Little Tokyo, Legaspi Village, Makati City, Ma...  121.014101  14.553708
2      Edsa Shangri-La, Ortigas, Mandaluyong City, Ma...  121.056831  14.581404
3      SM Megamall, Ortigas, Mandaluyong City, Mandal...  121.056475  14.585318
4      SM Megamall, Ortigas, Mandaluyong City, Mandal...  121.057508  14.584450

Cuisines ...      Currency Has Table booking \
0      French, Japanese, Desserts ...      Botswana Pula(P)      Yes
1      Japanese ...      Botswana Pula(P)      Yes
2      Seafood, Asian, Filipino, Indian ...      Botswana Pula(P)      Yes
3      Japanese, Sushi ...      Botswana Pula(P)      No
4      Japanese, Korean ...      Botswana Pula(P)      Yes

Has Online delivery  Is delivering now  Switch to order menu  Price range \
0      No      No      No      3
1      No      No      No      3
2      No      No      No      4
3      No      No      No      4
4      No      No      No      4

Aggregate rating  Rating color  Rating text  Votes
0      4.8      Dark Green      Excellent      314
1      4.5      Dark Green      Excellent      591
2      4.4      Green      Very Good      270
3      4.9      Dark Green      Excellent      365
4      4.8      Dark Green      Excellent      229

```

```
[5 rows x 21 columns]
```

```
print(df.tail())
```

```

Restaurant ID      Restaurant Name  Country Code      City \
9546      5915730      Naml' Gurme      208      🇹🇷stanbul
9547      5908749      Ceviz A🇹🇷ac'      208      🇹🇷stanbul
9548      5915807      Huqqa      208      🇹🇷stanbul
9549      5916112      A🇹🇷🇹🇷k Kahve      208      🇹🇷stanbul
9550      5927402      Walter's Coffee Roastery      208      🇹🇷stanbul

Address      Locality \
9546      Kemanke🇹🇷 Karamustafa Pa🇹🇷a Mahallesi, R'ht'm ...      Karak🇹🇷_y
9547      Ko🇹🇷uyolu Mahallesi, Muhittin 🇹🇷st🇹🇷_nda🇹🇷 Cadd...      Ko🇹🇷uyolu
9548      Kuru🇹🇷_e🇹🇷me Mahallesi, Muallim Naci Caddesi, N...      Kuru🇹🇷_e🇹🇷me
9549      Kuru🇹🇷_e🇹🇷me Mahallesi, Muallim Naci Caddesi, N...      Kuru🇹🇷_e🇹🇷me
9550      Cafea🇹🇷a Mahallesi, Bademalt' Sokak, No 21/B, ...      Moda

Locality Verbose  Longitude  Latitude \
9546      Karak🇹🇷_y, 🇹🇷stanbul      28.977392  41.022793
9547      Ko🇹🇷uyolu, 🇹🇷stanbul      29.041297  41.009847
9548      Kuru🇹🇷_e🇹🇷me, 🇹🇷stanbul      29.034640  41.055817
9549      Kuru🇹🇷_e🇹🇷me, 🇹🇷stanbul      29.036019  41.057979
9550      Moda, 🇹🇷stanbul      29.026016  40.984776

Cuisines ...      Currency \
9546      Turkish ...      Turkish Lira(TL)
9547      World Cuisine, Patisserie, Cafe ...      Turkish Lira(TL)
9548      Italian, World Cuisine ...      Turkish Lira(TL)
9549      Restaurant Cafe ...      Turkish Lira(TL)
9550      Cafe ...      Turkish Lira(TL)

```

	Has Table booking	Has Online delivery	Is delivering now	\
9546	No	No	No	
9547	No	No	No	
9548	No	No	No	
9549	No	No	No	
9550	No	No	No	

	Switch to order menu	Price range	Aggregate rating	Rating color	\
9546	No	3	4.1	Green	
9547	No	3	4.2	Green	
9548	No	4	3.7	Yellow	
9549	No	4	4.0	Green	
9550	No	2	4.0	Green	

	Rating text	Votes
9546	Very Good	788
9547	Very Good	1034
9548	Good	661
9549	Very Good	901
9550	Very Good	591

[5 rows x 21 columns]

```
print(df.info())
```

```
<class 'pandas.core.frame.DataFrame'>
RangeIndex: 9551 entries, 0 to 9550
Data columns (total 21 columns):
#   Column                                Non-Null Count  Dtype
---  -
0   Restaurant ID                        9551 non-null   int64
1   Restaurant Name                      9551 non-null   object
2   Country Code                        9551 non-null   int64
3   City                                9551 non-null   object
4   Address                             9551 non-null   object
5   Locality                           9551 non-null   object
6   Locality Verbose                    9551 non-null   object
7   Longitude                           9551 non-null   float64
8   Latitude                           9551 non-null   float64
9   Cuisines                            9542 non-null   object
10  Average Cost for two                 9551 non-null   int64
11  Currency                            9551 non-null   object
12  Has Table booking                    9551 non-null   object
13  Has Online delivery                  9551 non-null   object
14  Is delivering now                    9551 non-null   object
15  Switch to order menu                 9551 non-null   object
16  Price range                          9551 non-null   int64
17  Aggregate rating                     9551 non-null   float64
18  Rating color                         9551 non-null   object
19  Rating text                          9551 non-null   object
20  Votes                               9551 non-null   int64
dtypes: float64(3), int64(5), object(13)
memory usage: 1.5+ MB
None
```

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```
# Display basic information
print(df.head())
print(df.info())

# Handle missing values
df.dropna(subset=['Cuisines', 'Price range'], inplace=True)

# Encode target variable (Cuisine classification)
label_encoder = LabelEncoder()
df['Cuisines'] = label_encoder.fit_transform(df['Cuisines'])

# Separate features and target
X = df.drop(columns=['Cuisines'])
y = df['Cuisines']

# Identify categorical and numerical columns
categorical_columns = X.select_dtypes(include=['object']).columns
numerical_columns = X.select_dtypes(include=['int64', 'float64']).columns

# One-hot encode categorical features
column_transformer = ColumnTransformer(
```

```

column_transformer = ColumnTransformer(
    transformers=[
        ('cat', OneHotEncoder(handle_unknown='ignore'), categorical_columns),
        ('num', StandardScaler(), numerical_columns)
    ]
)

# Split data into training and testing sets
X_train, X_test, y_train, y_test = train_test_split(X, y, test_size=0.2, random_state=42)

# Apply transformations
X_train = column_transformer.fit_transform(X_train)
X_test = column_transformer.transform(X_test)

# Train classification models
log_reg = LogisticRegression(max_iter=200)
log_reg.fit(X_train, y_train)

rf_clf = RandomForestClassifier(n_estimators=100, random_state=42)
rf_clf.fit(X_train, y_train)

# Evaluate models
y_pred_log_reg = log_reg.predict(X_test)
y_pred_rf = rf_clf.predict(X_test)

print("Logistic Regression Metrics:")
print(classification_report(y_test, y_pred_log_reg))

print("Random Forest Metrics:")
print(classification_report(y_test, y_pred_rf))

```

```

➡ Restaurant ID      Restaurant Name  Country Code      City \
0      6317637      Le Petit Souffle      162      Makati City
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2      6300002      Heat - Edsa Shangri-La      162      Mandaluyong City
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                                Address \
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                                Locality \
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                                Locality Verbose  Longitude  Latitude \
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3      SM Megamall, Ortigas, Mandaluyong City, Mandal...  121.056475  14.585318
4      SM Megamall, Ortigas, Mandaluyong City, Mandal...  121.057508  14.584450

Cuisines ...      Currency Has Table booking Has Online delivery \
0      920 ...      Botswana Pula(P)      Yes      No
1      1111 ...      Botswana Pula(P)      Yes      No
2      1671 ...      Botswana Pula(P)      Yes      No
3      1126 ...      Botswana Pula(P)      No      No
4      1122 ...      Botswana Pula(P)      Yes      No

Is delivering now Switch to order menu Price range  Aggregate rating \
0      No      No      3      4.8
1      No      No      3      4.5
2      No      No      4      4.4
3      No      No      4      4.9
4      No      No      4      4.8

Rating color Rating text Votes
0      Dark Green      Excellent      314
1      Dark Green      Excellent      591
2      Green      Very Good      270
3      Dark Green      Excellent      365
4      Dark Green      Excellent      229

```

```
[5 rows x 21 columns]
<class 'pandas.core.frame.DataFrame'>
Index: 9542 entries, 0 to 9550
Data columns (total 21 columns):
#   Column              Non-Null Count  Dtype
---  ---
0   Restaurant ID        9542 non-null   int64
1   Restaurant Name      9542 non-null   object
2   Country Code         9542 non-null   int64
```

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