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TASK 01

```
import pandas as pd
import numpy as np
import seaborn as sns
import matplotlib.pyplot as plt
from sklearn.preprocessing import LabelEncoder, StandardScaler
df = pd.read_csv('/content/Titanic-Dataset.csv')
print("Basic Info:\n", df.info())
print("\nNull Values:\n", df.isnull().sum())
print("\nData Types:\n", df.dtypes)
for col in df.columns:
    if df[col].isnull().sum() > 0:
        if df[col].dtype in ['int64', 'float64']:
            df[col].fillna(df[col].mean(), inplace=True)  # or use df[col].median()
        else:
            df[col].fillna(df[col].mode()[0], inplace=True)  # for categorical
label_encoders = {}
for col in df.select_dtypes(include=['object']).columns:
    le = LabelEncoder()
    df[col] = le.fit_transform(df[col])
    label_encoders[col] = le
scaler = StandardScaler()
numeric_cols = df.select_dtypes(include=['int64', 'float64']).columns
df[numeric_cols] = scaler.fit_transform(df[numeric_cols])
plt.figure(figsize=(12, 6))
sns.boxplot(data=df[numeric_cols])
plt.xticks(rotation=90)
plt.title("Boxplot to Visualize Outliers")
plt.tight_layout()
plt.show()
for col in numeric_cols:
    Q1 = df[col].quantile(0.25)
    Q3 = df[col].quantile(0.75)
    IQR = Q3 - Q1
    lower_bound = Q1 - 1.5 * IQR
```

```
    upper_bound = Q3 + 1.5 * IQR
    df = df[(df[col] >= lower_bound) & (df[col] <= upper_bound)]

print("\nFinal shape after outlier removal:", df.shape)
```

Output:

```
<class 'pandas.core.frame.DataFrame'>
RangeIndex: 891 entries, 0 to 890
Data columns (total 12 columns):
 #   Column       Non-Null Count  Dtype  
---  ------       --------------  -----  
 0   PassengerId  891 non-null    int64  
 1   Survived     891 non-null    int64  
 2   Pclass       891 non-null    int64  
 3   Name         891 non-null    object 
 4   Sex          891 non-null    object 
 5   Age          714 non-null    float64
 6   SibSp        891 non-null    int64  
 7   Parch        891 non-null    int64  
 8   Ticket       891 non-null    object 
 9   Fare         891 non-null    float64
 10  Cabin        204 non-null    object 
 11  Embarked     889 non-null    object 
dtypes: float64(2), int64(5), object(5)
memory usage: 83.7+ KB
Basic Info:
 None

Null Values:
 PassengerId      0
Survived         0
Pclass           0
Name             0
Sex              0
Age            177
SibSp            0
Parch            0
Ticket           0
Fare             0
Cabin          687
Embarked         2
dtype: int64
```

```
Data Types:
 PassengerId      int64
Survived         int64
Pclass           int64
Name            object
Sex             object
Age            float64
SibSp            int64
Parch            int64
Ticket          object
Fare           float64
Cabin           object
Embarked        object
dtype: object
<ipython-input-2-7df8e85306c3>:13: FutureWarning: A value is trying to be set on a copy of a DataFrame or Series through chained assignment using an inplace meth
The behavior will change in pandas 3.0. This inplace method will never work because the intermediate object on which we are setting values always behaves as a co

For example, when doing 'df[col].method(value, inplace=True)', try using 'df.method({col: value}, inplace=True)' or df[col] = df[col].method(value) instead, to p


  df[col].fillna(df[col].mean(), inplace=True)  # or use df[col].median()
<ipython-input-2-7df8e85306c3>:15: FutureWarning: A value is trying to be set on a copy of a DataFrame or Series through chained assignment using an inplace meth
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df[col].fillna(df[col].mode()[0], inplace=True)  # for categorical
```

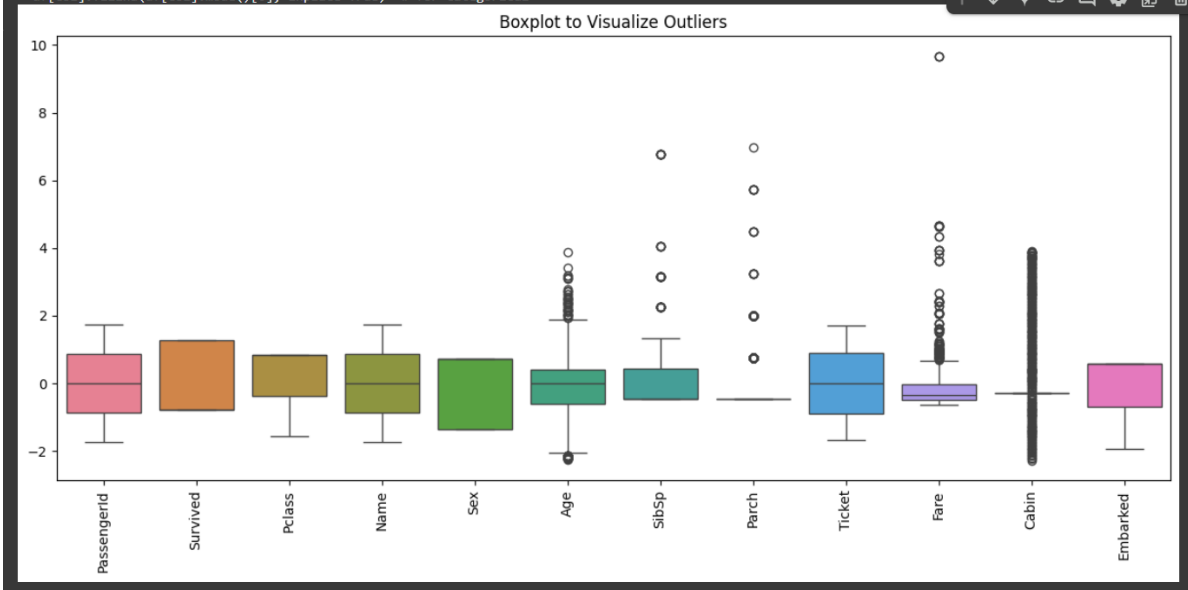


```
Final shape after outlier removal: (491, 12)
```