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```
import pandas as pd

# Load dataset
url = "https://raw.githubusercontent.com/datasciencedojo/datasets/master/titanic.csv"
df = pd.read_csv(url)

# Display first few rows
print(df.head())

# Basic info
print(df.info())

# Check for null values
print(df.isnull().sum())
```

```
   PassengerId  Survived  Pclass  \
0            1         0       3
1            2         1       1
2            3         1       3
3            4         1       1
4            5         0       3

                                                Name     Sex   Age  SibSp  \
0                            Braund, Mr. Owen Harris    male  22.0      1
1  Cumings, Mrs. John Bradley (Florence Briggs Th...  female  38.0      1
2                             Heikkinen, Miss. Laina  female  26.0      0
```

Release notes Cell

```
# Fill missing 'Age' with median
df['Age'].fillna(df['Age'].median(), inplace=True)

# Fill missing 'Embarked' with mode
df['Embarked'].fillna(df['Embarked'].mode()[0], inplace=

# Drop 'Cabin' due to too many missing values
df.drop(columns=['Cabin'], inplace=True)

# Verify
print(df.isnull().sum())
```

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Variables Terminal

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```
   PassengerId  Survived  Pclass  \
0            1         0       3
1            2         1       1
2            3         1       3
3            4         1       1
4            5         0       3

                                                Name     Sex   Age  SibSp  \
0                            Braund, Mr. Owen Harris    male  22.0      1
1  Cumings, Mrs. John Bradley (Florence Briggs Th...  female  38.0      1
2                             Heikkinen, Miss. Laina  female  26.0      0
3       Futrelle, Mrs. Jacques Heath (Lily May Peel)  female  35.0      1
4                           Allen, Mr. William Henry    male  35.0      0

   Parch            Ticket     Fare Cabin Embarked
0      0         A/5 21171   7.2500   NaN        S
1      0          PC 17599  71.2833   C85        C
2      0  STON/O2. 3101282   7.9250   NaN        S
3      0            113803  53.1000  C123        S
4      0            373450   8.0500   NaN        S
<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
```

```
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
None
PassengerId      0
Survived         0
Pclass           0
Name             0
Sex              0
Age            177
SibSp            0
Parch            0
Ticket           0
Fare             0
Cabin          687
```

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```
<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
None
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
```

Release notes Cell Cell

```
import pandas as pd

# Load dataset
url = "https://raw.githubusercontent.com/datasciencedojo/datasets/master/titanic
df = pd.read_csv(url)

# Display first few rows
print(df.head())

# Basic info
print(df.info())

# Check for null values
print(df.isnull().sum())
```

```
   PassengerId  Survived  Pclass  \
0            1         0       3
1            2         1       1
2            3         1       3
3            4         1       1
4            5         0       3

                                                Name     Sex   Age  SibSp  \
0                            Braund, Mr. Owen Harris    male  22.0      1
1  Cumings, Mrs. John Bradley (Florence Briggs Th...  female  38.0      1
2                             Heikkinen, Miss. Laina  female  26.0      0
```

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Variables Terminal

21:29 Python 3

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Release notes Cell Cell

```
# Fill missing 'Age' with median
df['Age'].fillna(df['Age'].median(), inplace=True)

# Fill missing 'Embarked' with mode
df['Embarked'].fillna(df['Embarked'].mode()[0], inplace=True)

# Drop 'Cabin' due to too many missing values
df.drop(columns=['Cabin'], inplace=True)

# Verify
print(df.isnull().sum())
```

```
PassengerId    0
Survived       0
Pclass         0
Name           0
Sex            0
Age            0
SibSp          0
Parch          0
Ticket         0
Fare           0
Embarked       0
dtype: int64
<ipython-input-9-ee2512204c12>:2: FutureWarning: A value is trying to be set on a copy of a DataFrame or Series through chained assignment using an inplace method.
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 copy.
```


Variables Terminal

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```
PassengerId    0
Survived       0
Pclass         0
Name           0
Sex            0
Age            0
SibSp          0
Parch          0
Ticket         0
Fare           0
Embarked       0
dtype: int64
<ipython-input-9-ee2512204c12>:2: FutureWarning: A value is trying to be set on a copy of a DataFrame or Series through chained assignment using an inplace method.
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 copy.

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 perform the operation inp


  df['Age'].fillna(df['Age'].median(), inplace=True)
<ipython-input-9-ee2512204c12>:5: FutureWarning: A value is trying to be set on a copy of a DataFrame or Series through chained assignment using an inplace method.
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 copy.

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 perform the operation inp


  df['Embarked'].fillna(df['Embarked'].mode()[0], inplace=True)
```

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```
df['Embarked'].fillna(df['Embarked'].mode()[0], inplace=True)
```

```
# Convert 'Sex' and 'Embarked' using Label Encoding or One-Hot Encoding
df = pd.get_dummies(df, columns=['Sex', 'Embarked'], drop_first=True)

# Display updated dataframe
print(df.head())
```

```
   PassengerId  Survived  Pclass  \
0            1         0       3
1            2         1       1
2            3         1       3
3            4         1       1
4            5         0       3

                                                Name   Age  SibSp  Parch  \
0                            Braund, Mr. Owen Harris  22.0      1      0
1  Cumings, Mrs. John Bradley (Florence Briggs Th...  38.0      1      0
2                             Heikkinen, Miss. Laina  26.0      0      0
3       Futrelle, Mrs. Jacques Heath (Lily May Peel)  35.0      1      0
4                           Allen, Mr. William Henry  35.0      0      0

             Ticket     Fare  Sex_male  Embarked_Q  Embarked_S
0         A/5 21171   7.2500      True       False        True
1          PC 17599  71.2833     False       False       False
2  STON/O2. 3101282   7.9250     False       False        True
3            113803  53.1000     False       False        True
4            373450   8.0500      True       False        True
```

Release notes Cell Cell Cell

```
# Convert 'Sex' and 'Embarked' using Label Encoding or One-Hot E
df = pd.get_dummies(df, columns=['Sex', 'Embarked'], drop_first

# Display updated dataframe
print(df.head())
```

```
   PassengerId  Survived  Pclass  \
0            1         0       3
1            2         1       1
2            3         1       3
3            4         1       1
4            5         0       3

                                                Name   Age  SibSp
0                            Braund, Mr. Owen Harris  22.0      1
1  Cumings, Mrs. John Bradley (Florence Briggs Th...  38.0      1
2                             Heikkinen, Miss. Laina  26.0      0
3       Futrelle, Mrs. Jacques Heath (Lily May Peel)  35.0      1
4                           Allen, Mr. William Henry  35.0      0

             Ticket     Fare  Sex_male  Embarked_Q  Embarked_S
0         A/5 21171   7.2500      True       False        True
1          PC 17599  71.2833     False       False       False
2  STON/O2. 3101282   7.9250     False       False        True
3            113803  53.1000     False       False        True
4            373450   8.0500      True       False        True
```


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```
1          PC 17599  71.2833    False    False    False
2  STON/O2. 3101282   7.9250    False    False     True
3            113803  53.1000    False    False     True
4            373450   8.0500     True    False     True
```

```
from sklearn.preprocessing import StandardScaler

# Select numerical columns
numerical_cols = ['Age', 'Fare', 'SibSp', 'Parch']

# Initialize scaler
scaler = StandardScaler()
df[numerical_cols] = scaler.fit_transform(df[numerical_cols])

# Display scaled data
print(df[numerical_cols].head())
```

```
        Age      Fare     SibSp     Parch
0 -0.565736 -0.502445  0.432793 -0.473674
1  0.663861  0.786845  0.432793 -0.473674
2 -0.258337 -0.488854 -0.474545 -0.473674
3  0.433312  0.420730  0.432793 -0.473674
4  0.433312 -0.486337 -0.474545 -0.473674
```

```
import seaborn as sns
import matplotlib.pyplot as plt

# Plot boxplots
for col in numerical_cols:
```

Release notes Cell Cell Cell

```
# Convert 'Sex' and 'Embarked' using Label Encoding or One-Hot E
df = pd.get_dummies(df, columns=['Sex', 'Embarked'], drop_first=

# Display updated dataframe
print(df.head())
```

```
   PassengerId  Survived  Pclass  \
0            1         0       3
1            2         1       1
2            3         1       3
3            4         1       1
4            5         0       3

                                                Name   Age  SibSp
0                            Braund, Mr. Owen Harris  22.0      1
1  Cumings, Mrs. John Bradley (Florence Briggs Th...  38.0      1
2                             Heikkinen, Miss. Laina  26.0      0
3       Futrelle, Mrs. Jacques Heath (Lily May Peel)  35.0      1
4                           Allen, Mr. William Henry  35.0      0

            Ticket     Fare  Sex_male  Embarked_Q  Embarked_S
0        A/5 21171   7.2500      True       False        True
1         PC 17599  71.2833     False       False       False
2  STON/O2. 3101282   7.9250     False       False        True
3           113803  53.1000     False       False        True
4           373450   8.0500      True       False        True
```

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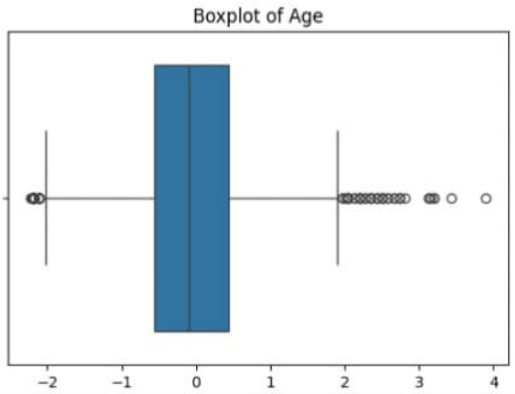
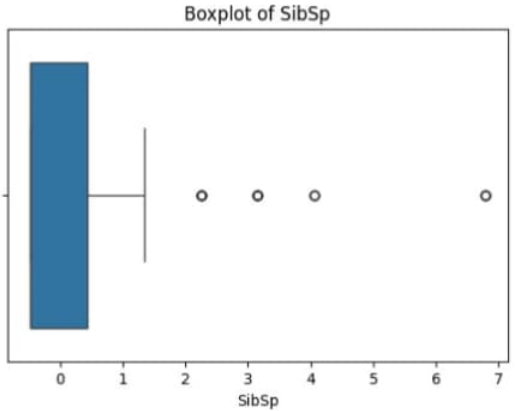
```
import seaborn as sns
import matplotlib.pyplot as plt

# Plot boxplots
for col in numerical_cols:
    plt.figure(figsize=(6, 4))
    sns.boxplot(x=df[col])
    plt.title(f'Boxplot of {col}')
    plt.show()
```



Release notes Cell Cell Cell Cell

Fare



Boxplot of Parch

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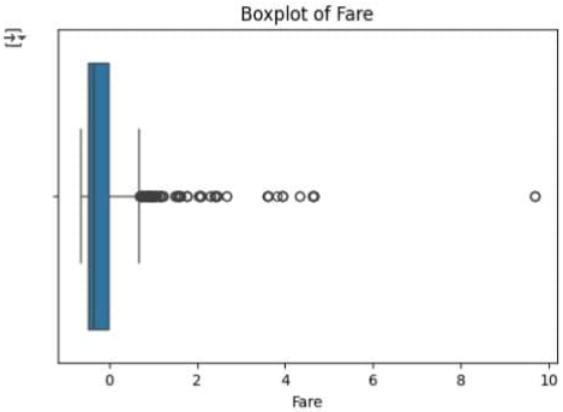

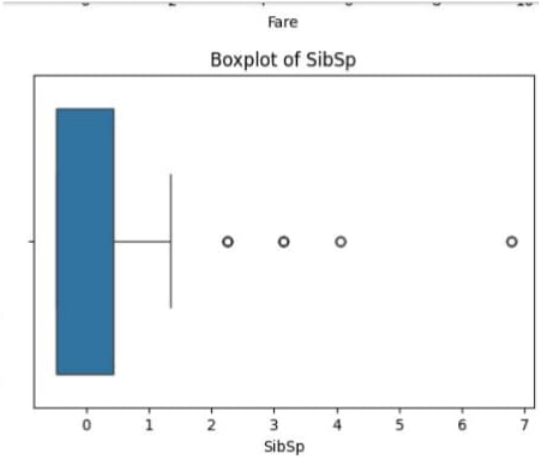

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21:39 Python 3

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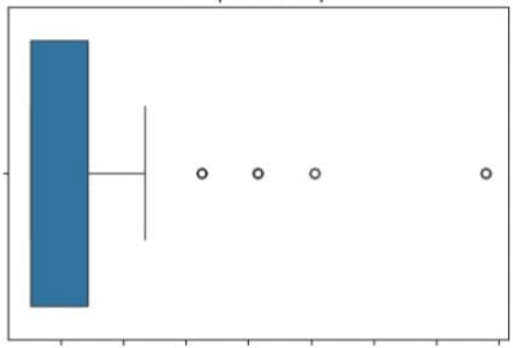
Fare

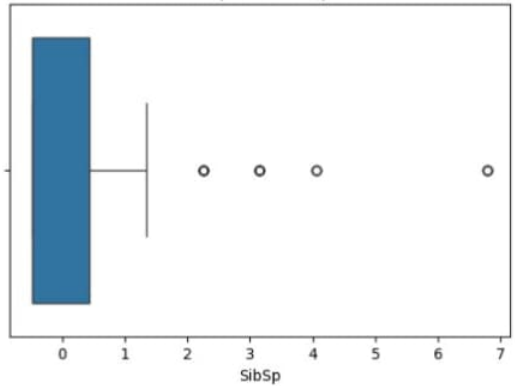
Boxplot of SibSp



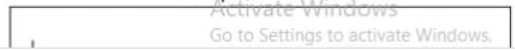
Boxplot of Parch

Fare

Boxplot of SibSp



Boxplot of Parch



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21:39 Python 3

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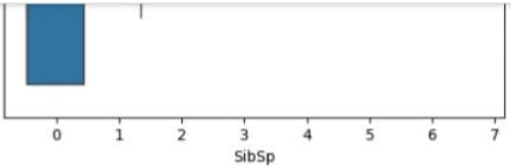

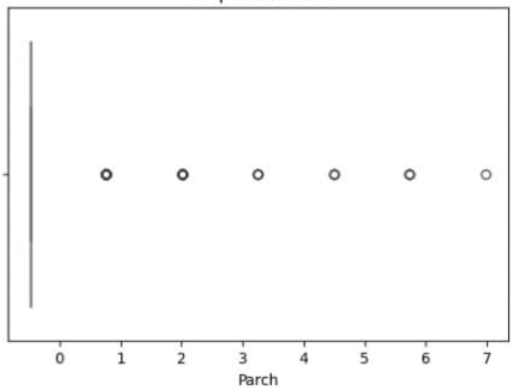

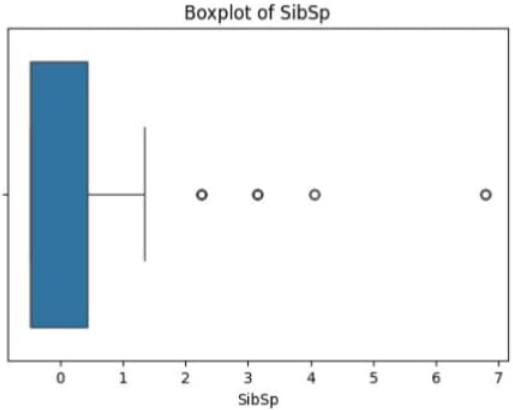

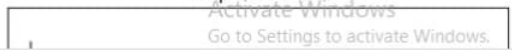


```python
# Function to remove outliers
def remove_outliers(df, column):
    Q1 = df[column].quantile(0.25)
    Q3 = df[column].quantile(0.75)
    IQR = Q3 - Q1
    lower = Q1 - 1.5 * IQR
    upper = Q3 + 1.5 * IQR
    return df[(df[column] >= lower) & (df[column] <= upper)]

# Apply outlier removal on all numerical columns
for col in numerical_cols:
    df = remove_outliers(df, col)

# Final shape after removing outliers
print(df.shape)
```

```
(577, 12)
```