```python
import pandas as pd
import numpy as np

# 1. Import the Dataset
df = pd.read_csv('titanic.csv')
print("Original Dataset:\n", df.head())

# 2. Identify Missing Values
msng_val_cnt = df.isnull().sum()
print("\nCount of Missing Values in Each Column:\n", msng_val_cnt)

most_msng = msng_val_cnt[msng_val_cnt > 0].sort_values(ascending=False)
print("\nColumns with the Most Missing Values:\n", most_msng)

# 3. Handle Missing Values
#by mean and mode
for col in df.select_dtypes(include=[np.number]).columns:
    if df[col].isnull().sum() > 0:
        df[col].fillna(df[col].mean(), inplace=True)


for col in df.select_dtypes(include=['object']).columns:
    if df[col].isnull().sum() > 0:
        df[col].fillna(df[col].mode()[0], inplace=True)

print("\nDataset After Handling Missing Values:\n", df.head())

# 4. Detect and Handle Outliers
for col in df.select_dtypes(include=[np.number]).columns:
    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

    outliers = ((df[col] < lower_bound) | (df[col] > upper_bound))
    if outliers.any():
        print(f"\nOutliers detected in {col}:")
        print(df[col][outliers])


        df[col] = np.where(df[col] < lower_bound, lower_bound, df[col])
        df[col] = np.where(df[col] > upper_bound, upper_bound, df[col])


print("\nDataset After Handling Outliers:\n", df.head())

# 5. Summarize Changes
print("\nFinal Cleaned Dataset:\n", df.head())
print("\nSummary of Preprocessing Steps Applied:\n")
print("1. Missing values were replaced (mean/median for numerical, mode for categorical).\n")
print("2. Outliers were detected using the IQR method and handled by capping.")
```