Theory and Definitions

- **Titanic Dataset: The Titanic dataset is a collection of data about passengers who boarded the Titanic ship, including information such as age, sex, class, fare, and whether they survived or not. It is often used in data science and machine learning for exploratory data analysis (EDA) and predictive modeling.**

- **Seaborn: Seaborn is a Python data visualization library based on Matplotlib that provides a high-level interface for drawing attractive and informative statistical graphics. It is commonly used for visualizing complex datasets.**

- **Histogram: A histogram is a type of bar chart that represents the frequency distribution of a set of continuous data. It is used to visualize how data is distributed across different ranges of values.**

- **Count Plot: A count plot is a type of bar plot that shows the counts of observations in each categorical bin using bars. It is useful for visualizing the distribution of categorical data, like the count of survivors in different passenger classes.**

- **Displot: A function from Seaborn that is used to visualize univariate distributions. It combines the functionality of a histogram and a kernel density estimate.**

Algorithm (Short)

1. **Load the Titanic dataset:**
    - **Use `sns.load_dataset('titanic')` to load the dataset into a Pandas DataFrame.**
2. **Examine the data:**
    - **Use `df.info()`, `df.describe()`, and `df.shape` to understand the dataset's structure and basic statistics.**
3. **Visualize Fare Distribution:**

- Set the figure size using `sns.set()`.
- Use `sns.histplot(x='fare', data=df)` to plot the distribution of fares.

4. Visualize Age Distribution:
   - Use `sns.displot(x='age', data=df)` to visualize the age distribution with 70 bins.
5. Visualize Survival Distribution by Passenger Class:
   - Use `sns.catplot(x='survived', data=df, kind='count', hue='pclass')` to visualize the survival distribution based on passenger class.
6. Visualize Survival Distribution by Sex:
   - Use `sns.catplot(x='survived', data=df, kind='count', hue='sex')` to visualize the survival distribution based on gender.

Conclusion (Short)

The analysis of the Titanic dataset using Seaborn visualizations provides valuable insights into the distribution of features like ticket fare and age. The count plots reveal patterns in survival rates based on passenger class and sex, helping to identify factors that may have influenced survival on the Titanic. These visualizations are essential for understanding the data and formulating hypotheses for further analysis or predictive modeling.