

## Theory and Definitions

### 1. Box Plot:

- A box plot (or box-and-whisker plot) is a graphical representation of the distribution of a dataset based on its quartiles. It shows the median, interquartile range (IQR), minimum, and maximum values, as well as any outliers.
- In this context, the box plot is used to represent the age distribution across different sex categories (male and female), with an additional hue for survival status (whether a passenger survived or not).

### 2. Categorical Plot (Count Plot):

- A count plot is used to show the counts of observations in each category. In the case of the Titanic dataset, the count plot is used to show the number of survivors and non-survivors, broken down by sex.
  - It visually presents the distribution of categorical data by counting the number of occurrences of each category.
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## Algorithm

### 1. Box Plot for Age Distribution by Sex and Survival:

- Step 1: Load the Titanic dataset using `seaborn.load_dataset('titanic')`.
- Step 2: Use `sns.boxplot()` to create a box plot with:
  - x-axis: 'sex' (categorical variable - male and female).
  - y-axis: 'age' (numerical variable).
  - hue: 'survived' (categorical variable to differentiate passengers who survived).

- Step 3: Customize the plot's size and add the title using `plt.title()`.
- Step 4: Display the plot using `plt.show()`.

## 2. Count Plot for Survival by Sex:

- Step 1: Use `sns.catplot()` with:
    - x-axis: 'survived' (categorical variable - 0 = did not survive, 1 = survived).
    - hue: 'sex' (categorical variable to differentiate male and female).
    - kind: 'count' (to create a count plot).
  - Step 2: Customize the figure size and add a title.
  - Step 3: Display the plot using `plt.show()`.
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## Conclusion

- The box plot reveals the distribution of ages for male and female passengers, and it shows that females were generally younger than males. Additionally, more young female passengers survived than older ones, which suggests that younger females had a higher chance of survival.
- The count plot confirms that a higher proportion of female passengers survived compared to males, supporting the historical "women and children first" policy during the Titanic disaster.

These visualizations provide useful insights into the survival dynamics of different demographic groups during the Titanic tragedy, highlighting age and gender as factors influencing survival.