✍ Observations for Each Visual:

1. *Dataset Info and Describe*

- The dataset has *891 rows* and *12 columns* (typical Titanic dataset structure).
- Some columns like **Age**, **Cabin**, and **Embarked** have missing values.
- Numerical columns (**Age**, **Fare**) show variability; **Fare** has a wide range (0 to 512).

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2. *Value Counts (Categorical Variables)*

- **Sex**: More males (577) than females (314).
- **Embarked**: Majority of passengers embarked from port **S** (Southampton).
- **Pclass**: Most passengers were in **3rd class** (Pclass = 3).

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3. *Pairplot*

- Passengers in *higher classes* (Pclass=1) had **higher survival rates**.
- *Females* had a **much higher survival rate** compared to males.
- *Age* and *Survived* relationship: **Young children** had a slightly **higher survival**.

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4. *Correlation Heatmap*

- Strong **negative correlation** between **Pclass** and **Survived** (-0.34) (higher class → higher survival chances).
- **Positive correlation** between **Fare** and **Survived** (0.26) (more expensive ticket → higher chance of survival).
- **Sex** (encoded as 0/1) is **highly correlated** with Survived.

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5. *Histograms*

- **Age** distribution is **slightly right-skewed**; most passengers are young adults (20–40 years).
- **Fare** is **highly skewed to the right**; most fares are low, but a few passengers paid very high fares.
- **Pclass** distribution is **heavily weighted** towards **3rd class**.

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6. *Boxplots*

- **Fare** has **many outliers**; a few passengers paid exceptionally high fares.
- **Age** shows fewer outliers, but extreme ages (baby passengers, elderly) are present.
- **1st class passengers** generally paid **much higher fares** compared to 2nd and 3rd class.

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7. *Scatterplots*

- **Fare vs Age**: No strong direct relationship, but **young, high-fare passengers are rare**.
- **Pclass vs Fare**: Clear separation — **1st class passengers paid higher fares**.

💼 Final Summary of Findings:

- **Missing Values**:
  - **Age**, **Cabin**, and **Embarked** have missing values.
  - **Cabin** has a large amount of missing data — probably needs to be dropped or carefully imputed.

- **Outliers**:
  - **Fare** has several extreme outliers — passengers who paid very high ticket prices.

- **Feature Relationships**:
  - **Sex** is a strong predictor of survival (females much more likely to survive).
  - **Pclass** and **Fare** are important — higher class passengers and those who paid more were more likely to survive.

- **Distribution**:
  - **Age** distribution peaks at 20–30 years; very young and very old are less common.
  - **Fare** distribution is heavily skewed; may need **log transformation** if modeling.

- **Dominant Classes**:
  - More passengers traveled in **3rd class** and embarked from **Southampton**.
  - **Males dominate** the dataset but had a **lower survival rate**.

- **Trends**:
  - **Survival is heavily influenced** by **gender**, **passenger class**, and **fare paid**.
  - **Wealthier and first-class passengers** had a much **better chance of survival**.