🚢 Titanic Dataset Analysis

This project explores the famous **Titanic dataset** to uncover insights about passenger demographics, survival rates, and relationships between different features using **Python, Pandas, Matplotlib, and Seaborn**.

🔍 Key Steps Performed

- **Data Exploration**: Loaded and inspected the dataset, checked data types, missing values, and descriptive statistics.
- **Data Visualization**:
    - Distribution plots (`histplot`) for Age and Fare.
    - Boxplots to compare Age/Fare across Passenger Class, Sex, and Survival.
    - Countplots for categorical features like Sex, Pclass, Embarked, and Survival.
    - Pairplot to observe relationships between numerical features with survival outcomes.
    - Correlation heatmap to identify relationships among variables.
- **Grouping & Aggregation**:
    - Calculated survival rates by Sex, Passenger Class, and Embarkation Port.
    - Analyzed average Age and Fare grouped by Class and Sex.

📊 Key Insights

- **Gender**: Female passengers had a much higher survival rate (~74%) compared to males (~19%).
- **Class**: Survival was highest among **1st class (63%)** passengers and lowest among **3rd class (24%)**.
- **Embarkation**: Passengers boarding from **Cherbourg (C)** had the highest survival rate.
- **Fare & Age**: Higher fares were associated with higher survival, and survival patterns varied by age groups.

🛠️ Tools & Libraries Used

- Python
- Pandas, NumPy
- Matplotlib, Seaborn