

The task is to plot a boxplot to visualize the distribution of the 'age' variable with respect to 'sex' (gender), and the survival status of the passengers (using the 'survived' column as hue). Here's a detailed explanation of the code:

1. Importing Libraries:

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```
import seaborn as sns
```

```
import matplotlib.pyplot as plt
```

- **seaborn** is a Python visualization library based on **matplotlib**. It's used for creating informative and attractive statistical graphics.
- **matplotlib.pyplot** is used for creating various static, animated, and interactive plots.

2. Loading the Titanic Dataset:

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```
df = sns.load_dataset('titanic')
```

- **sns.load_dataset('titanic')** loads the Titanic dataset from Seaborn's built-in datasets. This dataset contains information on passengers, such as age, sex, survival status, class, and fare.

3. Viewing the First Few Rows of the Dataset:

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```
df.head()
```

- `df.head()` displays the first five rows of the Titanic dataset, allowing us to inspect the structure and the first few records.
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4. Setting the Figure Size:

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```
plt.figure(figsize=(6, 5))
```

- `plt.figure(figsize=(6, 5))` sets the size of the figure for the boxplot to 6 inches wide and 5 inches tall. This helps in customizing the plot's appearance.
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5. Creating the Boxplot:

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```
sns.boxplot(x='sex', y='age', data=df, hue='survived')
```

- `sns.boxplot()` creates a boxplot, which is used to display the distribution of a dataset based on five summary statistics (min, Q1, median, Q3, max), and also helps to identify outliers.
- `x='sex'` places the 'sex' column on the x-axis. This divides the data into two groups: male and female.

- `y='age'` places the 'age' column on the y-axis. This shows the age distribution of each gender.
 - `data=df` specifies the Titanic DataFrame (`df`) as the source of the data.
 - `hue='survived'` colors the boxplot by the survival status of the passengers. This allows us to distinguish between passengers who survived and those who didn't.
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6. Adding a Title to the Boxplot:

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```
plt.title('Age Distribution by Sex and Survival')
```

- `plt.title()` adds a title to the plot to indicate what the boxplot represents: "Age Distribution by Sex and Survival."
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7. Displaying the Boxplot:

python

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```
plt.show()
```

- `plt.show()` displays the plot on the screen.
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8. Creating a Count Plot for Survival by Sex:

python

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```
sns.catplot(x='survived', data=df, kind='count',  
hue='sex')
```

- `sns.catplot()` creates a categorical plot. Here, we use it to visualize the count of survivors and non-survivors.
 - `x='survived'` places the survival status (0 = Did not survive, 1 = Survived) on the x-axis.
 - `kind='count'` creates a count plot to show the number of survivors and non-survivors.
 - `hue='sex'` colors the plot based on the sex of the passengers, differentiating between male and female.
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9. Setting the Figure Size for the Count Plot:

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```
sns.set(rc={'figure.figsize':(5,5)})
```

- `sns.set(rc={'figure.figsize':(5,5)})` changes the figure size to a 5x5-inch square for better visibility of the count plot.
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10. Adding a Title to the Count Plot:

python

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```
plt.title('Survival Count by Sex')
```

- `plt.title()` adds a title to the count plot, indicating that it shows the survival count divided by sex.

11. Displaying the Count Plot:

python

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```
plt.show()
```

- `plt.show()` displays the count plot on the screen.

Observations and Inferences from the Above Visualizations:

1. Boxplot of Age Distribution by Sex and Survival:

- The boxplot visualizes the distribution of ages for male and female passengers, split by survival status.
- It shows that female passengers tended to be younger compared to male passengers, as seen by the lower median age.
- Male passengers have a wider age range with some older passengers included in the distribution.
- In both genders, the survival rate seems to be higher among the younger passengers, with more young female passengers surviving than older ones.

2. Survival Count by Sex:

- The count plot shows that more female passengers survived compared to male passengers. This is likely due to the "women and children first" policy during the Titanic disaster.

- **Males, on the other hand, show a higher count of non-survivors, indicating a lower survival rate.**