Data Visualization II:

1. Use the inbuilt dataset 'titanic' as used in the above problem. Plot a box plot for distribution of age with respect to each gender along with the information about whether they survived or not. (Column names : 'sex' and 'age')
2. Write observations on the inference from the above statistics. Note: If we are using inbuilt dataset from seaborn we dont have to import pandas and numpy as they are automatically imported through the seaborn library itself

```
import numpy as np
import matplotlib.pyplot as plt
import seaborn as sns
```

Load the inbuilt dataset from seaborn

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

```
titanic.head()
```

| | survived | pclass | sex | age | sibsp | parch | fare | embarked | class | who | adult_male | deck | embark_town | alive | alone |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **0** | 0 | 3 | male | 22.0 | 1 | 0 | 7.2500 | S | Third | man | True | NaN | Southampton | no | False |
| **1** | 1 | 1 | female | 38.0 | 1 | 0 | 71.2833 | C | First | woman | False | C | Cherbourg | yes | False |
| **2** | 1 | 3 | female | 26.0 | 0 | 0 | 7.9250 | S | Third | woman | False | NaN | Southampton | yes | True |
| **3** | 1 | 1 | female | 35.0 | 1 | 0 | 53.1000 | S | First | woman | False | C | Southampton | yes | False |
| **4** | 0 | 3 | male | 35.0 | 0 | 0 | 8.0500 | S | Third | man | True | NaN | Southampton | no | True |

```
print(titanic.isnull().sum())
```

```
survived         0
pclass           0
sex              0
age            177
sibsp            0
parch            0
fare             0
embarked         2
class            0
who              0
adult_male       0
deck           688
embark_town      2
alive            0
alone            0
dtype: int64
```

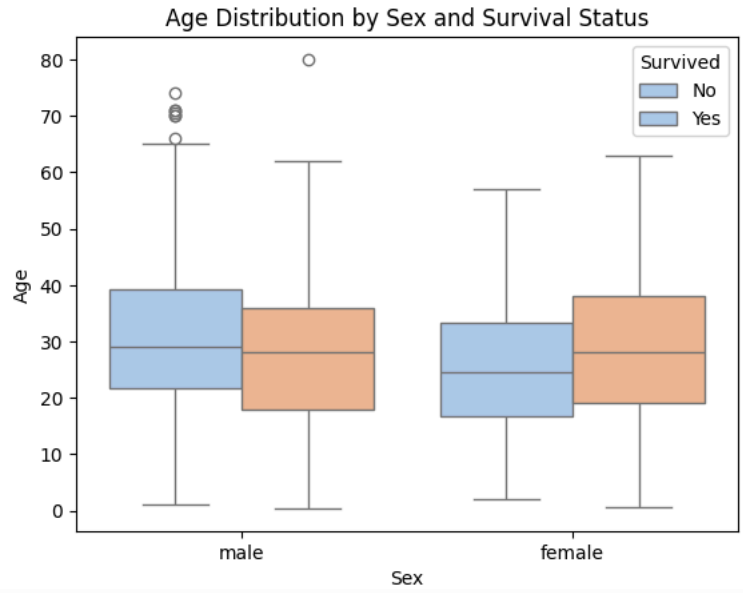
Descriptive Statistics

```
titanic.describe()
```

| | survived | pclass | age | sibsp | parch | fare |
|---|---|---|---|---|---|---|
| **count** | 891.000000 | 891.000000 | 714.000000 | 891.000000 | 891.000000 | 891.000000 |
| **mean** | 0.383838 | 2.308642 | 29.699118 | 0.523008 | 0.381594 | 32.204208 |
| **std** | 0.486592 | 0.836071 | 14.526497 | 1.102743 | 0.806057 | 49.693429 |
| **min** | 0.000000 | 1.000000 | 0.420000 | 0.000000 | 0.000000 | 0.000000 |
| **25%** | 0.000000 | 2.000000 | 20.125000 | 0.000000 | 0.000000 | 7.910400 |
| **50%** | 0.000000 | 3.000000 | 28.000000 | 0.000000 | 0.000000 | 14.454200 |
| **75%** | 1.000000 | 3.000000 | 38.000000 | 1.000000 | 0.000000 | 31.000000 |
| **max** | 1.000000 | 3.000000 | 80.000000 | 8.000000 | 6.000000 | 512.329200 |

boxplot() Visualization

```
sns.boxplot(data=titanic, x='sex', y='age', hue='survived', palette='pastel')
plt.title('Age Distribution by Sex and Survival Status')
plt.xlabel('Sex')
plt.ylabel('Age')
plt.legend(title='Survived', labels=['No', 'Yes'])
plt.show()
```




Insights / Observations: Females had higher survival rates:

1. The box for Survived = Yes among females is much more prominent.
2. Indicates "women and children first" policy during evacuation. Age had little effect on male survival:
3. For males, the age distribution for survived and not survived is similar.
4. Young males did not have a clear survival advantage. Older women rarely survived: Among females who didn't survive, the age distribution skews older. Median age differences: The median age of survivors (especially females) tends to be lower Outliers: A few passengers, particularly elderly males, survived — visible as outlier dots in the box plot.

Start coding or generate with AI.