# Plot Graphs using python by Abul Hassan

- Bar chart using matplotlib library
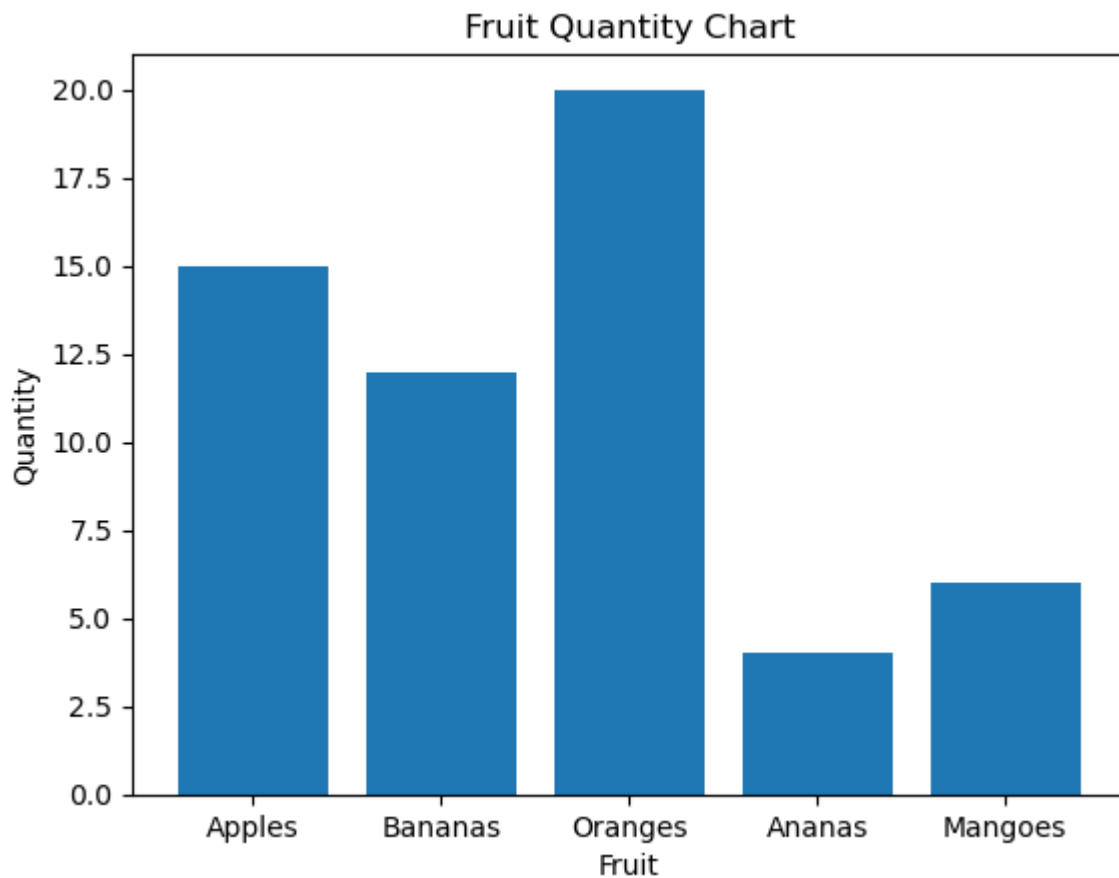
```
In [4]:  import matplotlib.pyplot as plt

         # Data
         x = ['Apples', 'Bananas', 'Oranges','Ananas','Mangoes']
         y = [15,12,20,4,6]

         # Create a bar chart
         plt.bar(x, y)

         # Add labels and title
         plt.xlabel('Fruit')
         plt.ylabel('Quantity')
         plt.title('Fruit Quantity Chart')

         # Show the chart
         plt.show()
```



- Box Plot

```
In [15]:  import matplotlib.pyplot as plt
```
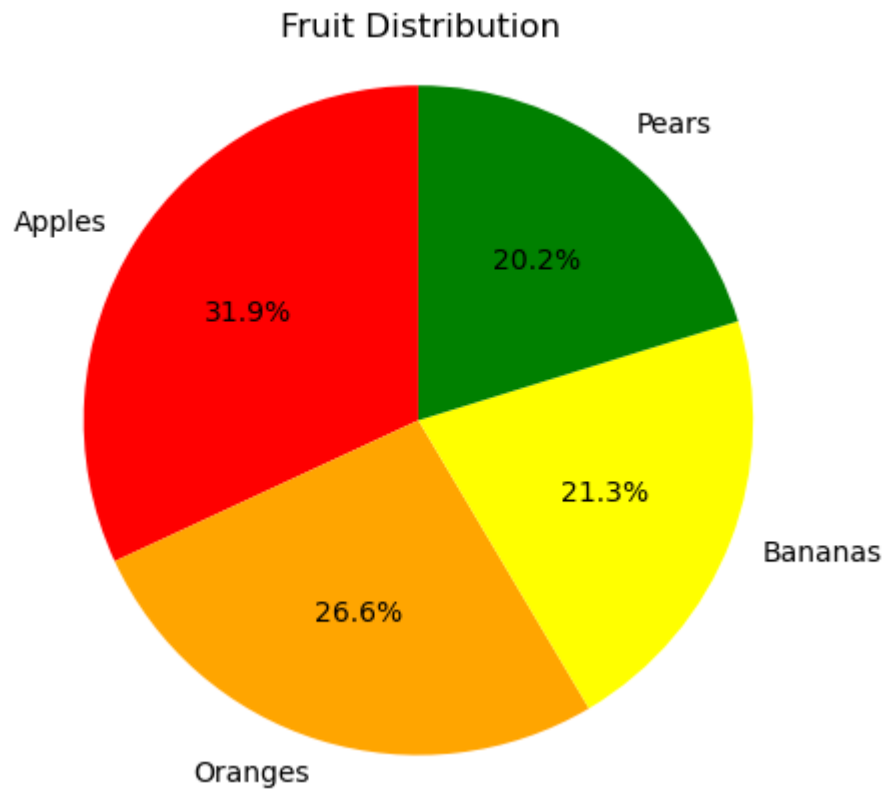
```
# Data to plot
labels = ['Apples', 'Oranges', 'Bananas', 'Pears']
sizes = [30, 25, 20, 19]
colors = ['red', 'orange', 'yellow', 'green']

# Plot
plt.pie(sizes, labels=labels, colors=colors, startangle=90, autopct='%1.1f%%')

plt.axis('equal')  # Equal aspect ratio ensures that pie is drawn as a circle.

plt.title('Fruit Distribution')

plt.show()
```

## Fruit Distribution



- Box plot

```
In [18]:  import matplotlib.pyplot as plt
          import numpy as np

          # Generate some random data
          data = np.random.normal(size=100)

          # Create a figure and axis object
          fig, ax = plt.subplots()

          # Create the boxplot
          ax.boxplot(data)

          # Set the title and axis labels
          ax.set_title('Boxplot Example')
          ax.set_xlabel('Data')
          ax.set_ylabel('Values')
```
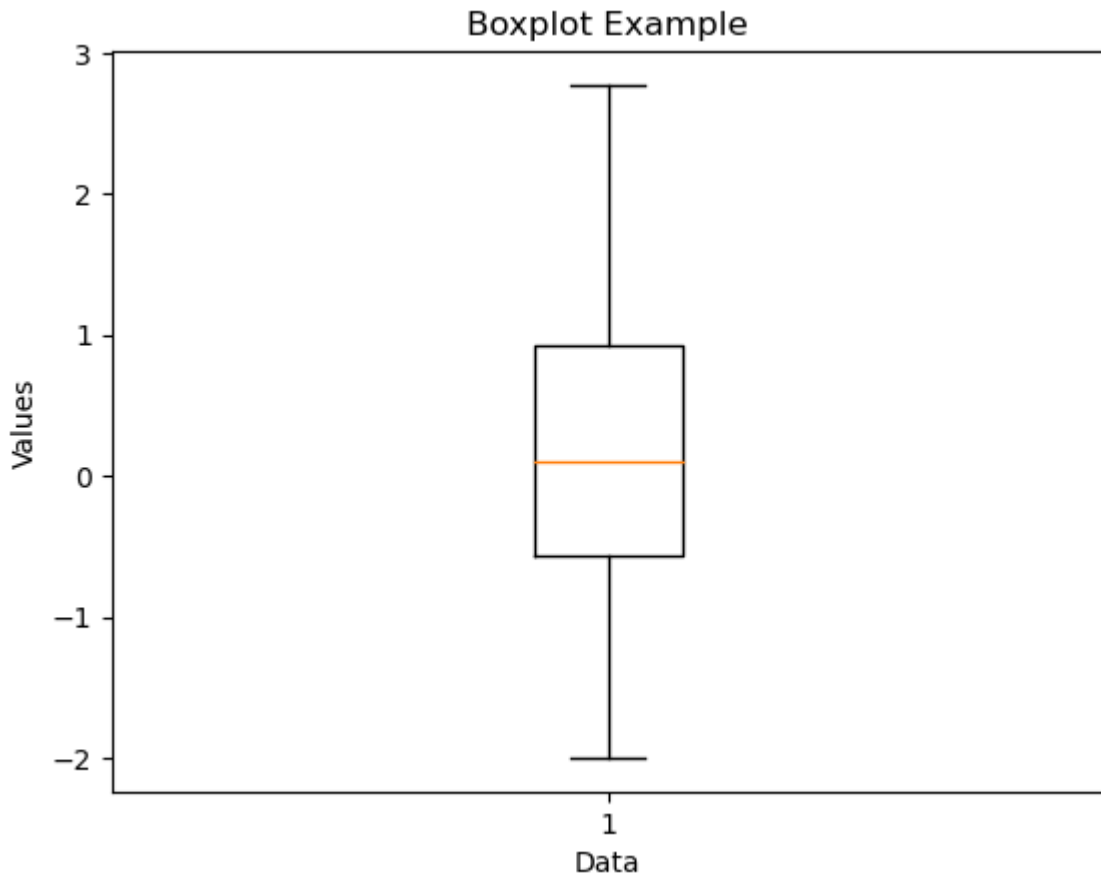
```
# Show the plot
plt.show()
```



In [19]:
```
import numpy as np

# Define two matrices
A = np.array([[1, 2], [3, 4]])
B = np.array([[5, 6], [7, 8]])

# Perform matrix multiplication
C = np.dot(A, B)

# Print the result
print(C)
```

```
[[19 22]
 [43 50]]
```

- This code imports the numpy library using the import statement and then defines two matrices A and B using the np.array() function. The np.dot() function is then used to perform matrix multiplication between the two matrices and the result is stored in C. Finally, the result C is printed using the print() function.

In [17]:
```
import seaborn as sns
import matplotlib.pyplot as plt


boat = sns.load_dataset("titanic")
```

```
boat
sns.barplot(x="who",y="alone" , hue="sex", data=boat)
plt.title('TITANIC GRAPH')
plt.show()
```
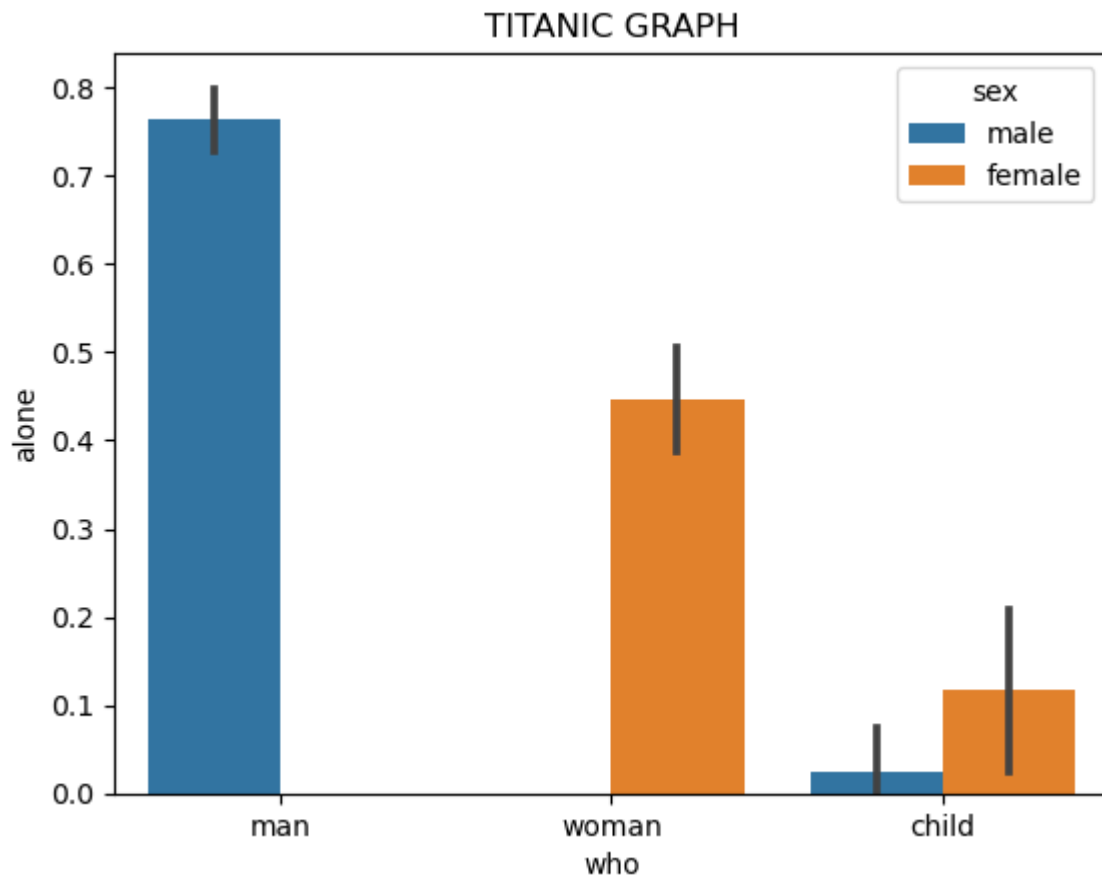


In [18]:
```
import seaborn as sns
import matplotlib.pyplot as plt


boat = sns.load_dataset("titanic")
boat
```

Out[18]:

| | survived | pclass | sex | age | sibsp | parch | fare | embarked | class | who | adult_male | d |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 0 | 0 | 3 | male | 22.0 | 1 | 0 | 7.2500 | S | Third | man | True | N |
| 1 | 1 | 1 | female | 38.0 | 1 | 0 | 71.2833 | C | First | woman | False | |
| 2 | 1 | 3 | female | 26.0 | 0 | 0 | 7.9250 | S | Third | woman | False | N |
| 3 | 1 | 1 | female | 35.0 | 1 | 0 | 53.1000 | S | First | woman | False | |
| 4 | 0 | 3 | male | 35.0 | 0 | 0 | 8.0500 | S | Third | man | True | N |
| ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | |
| 886 | 0 | 2 | male | 27.0 | 0 | 0 | 13.0000 | S | Second | man | True | N |
| 887 | 1 | 1 | female | 19.0 | 0 | 0 | 30.0000 | S | First | woman | False | |
| 888 | 0 | 3 | female | NaN | 1 | 2 | 23.4500 | S | Third | woman | False | N |
| 889 | 1 | 1 | male | 26.0 | 0 | 0 | 30.0000 | C | First | man | True | |
| 890 | 0 | 3 | male | 32.0 | 0 | 0 | 7.7500 | Q | Third | man | True | N |

891 rows × 15 columns

In [24]:
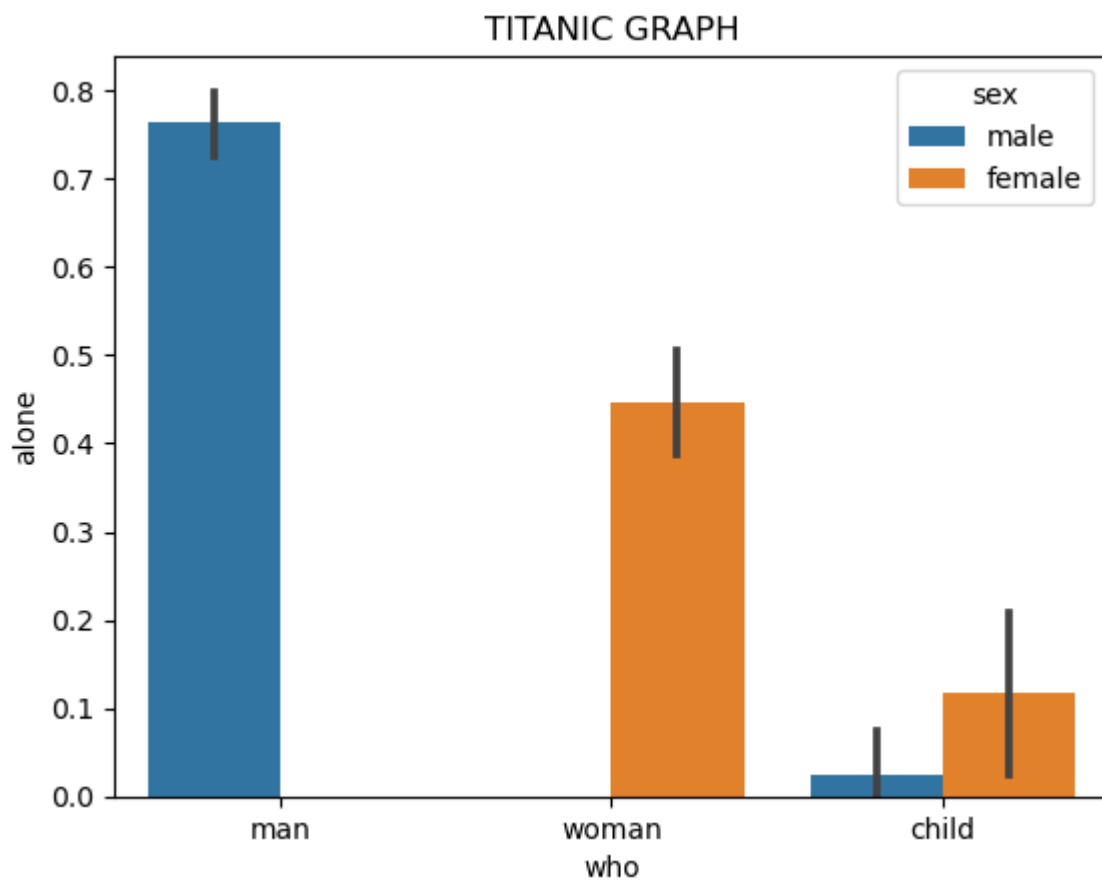```python
import seaborn as sns
import matplotlib.pyplot as plt


boat = sns.load_dataset("titanic")
boat
sns.barplot(x="class",y="fare" , hue="sex", data=boat)
plt.title('TITANIC GRAPH')
plt.show()
```
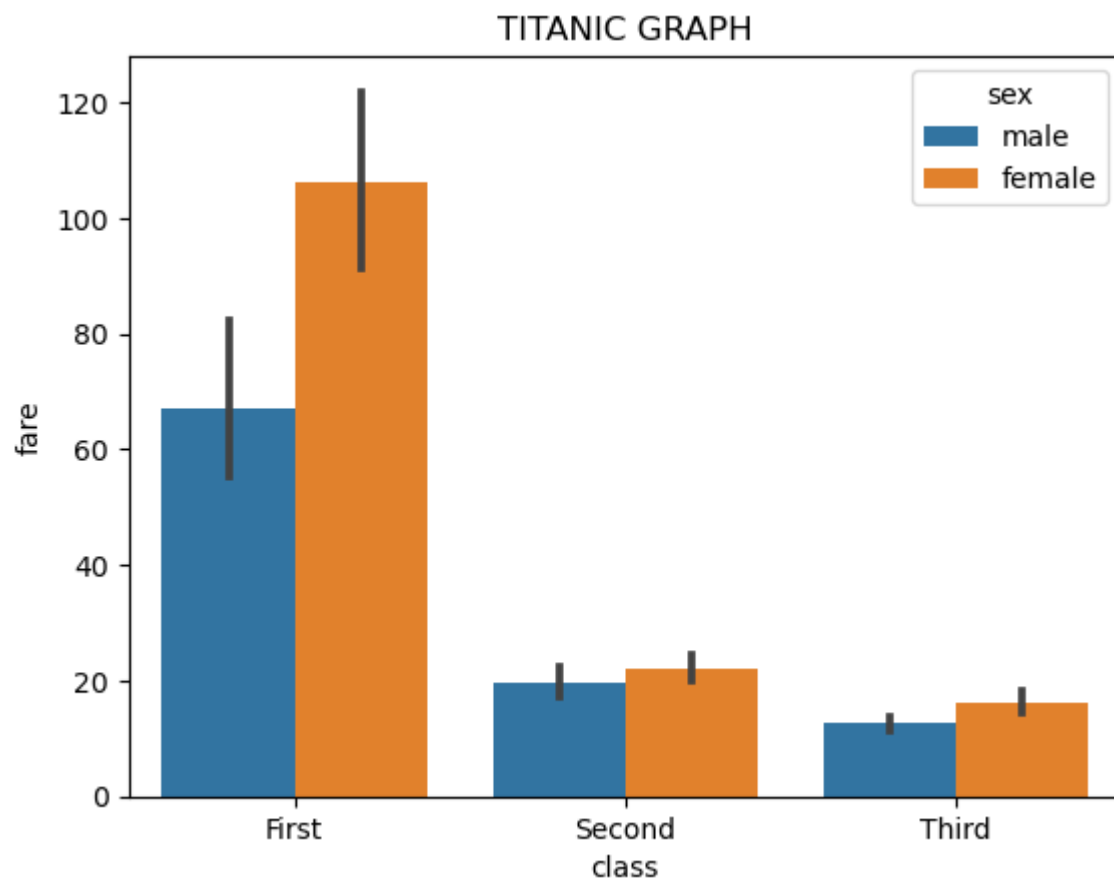
## TITANIC GRAPH



```
In [27]:  import seaborn as sns
          import matplotlib.pyplot as plt


          boat = sns.load_dataset("titanic")
          boat
          sns.barplot(x="who",y="alone" , hue="sex", data=boat)
          plt.title('TITANIC GRAPH')
          plt.show()
```
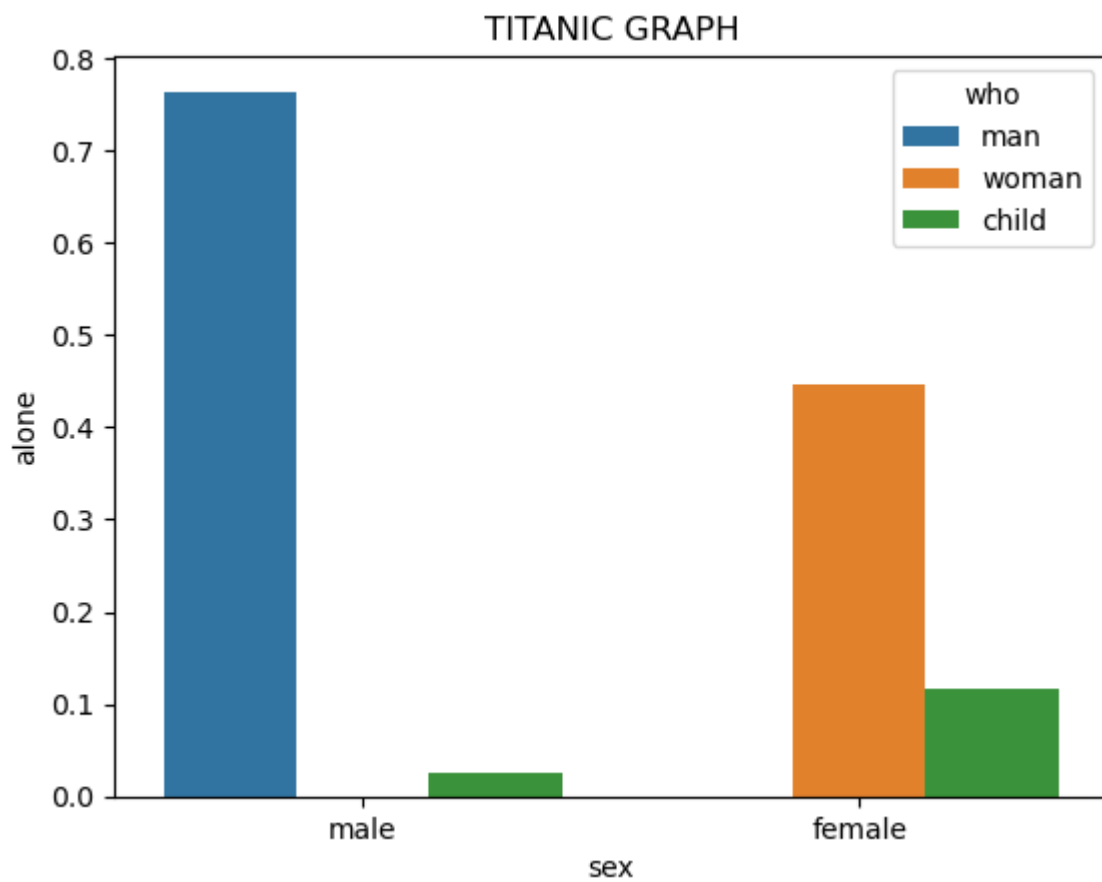
TITANIC GRAPH

```python
import seaborn as sns
import matplotlib.pyplot as plt


boat = sns.load_dataset("titanic")
boat
sns.barplot(x="sex",y="alone" , hue="who", data=boat,ci=None)
plt.title('TITANIC GRAPH')
plt.show()
```

## TITANIC GRAPH



```
In [36]:   import seaborn as sns
           import matplotlib.pyplot as plt


           boat = sns.load_dataset("titanic")
           boat
           sns.barplot(x="sex",y="alone" , hue="who", data=boat ,order=["female","male"],color="r
           # ci = confindence interval
           plt.title('TITANIC GRAPH')
           plt.show()
```
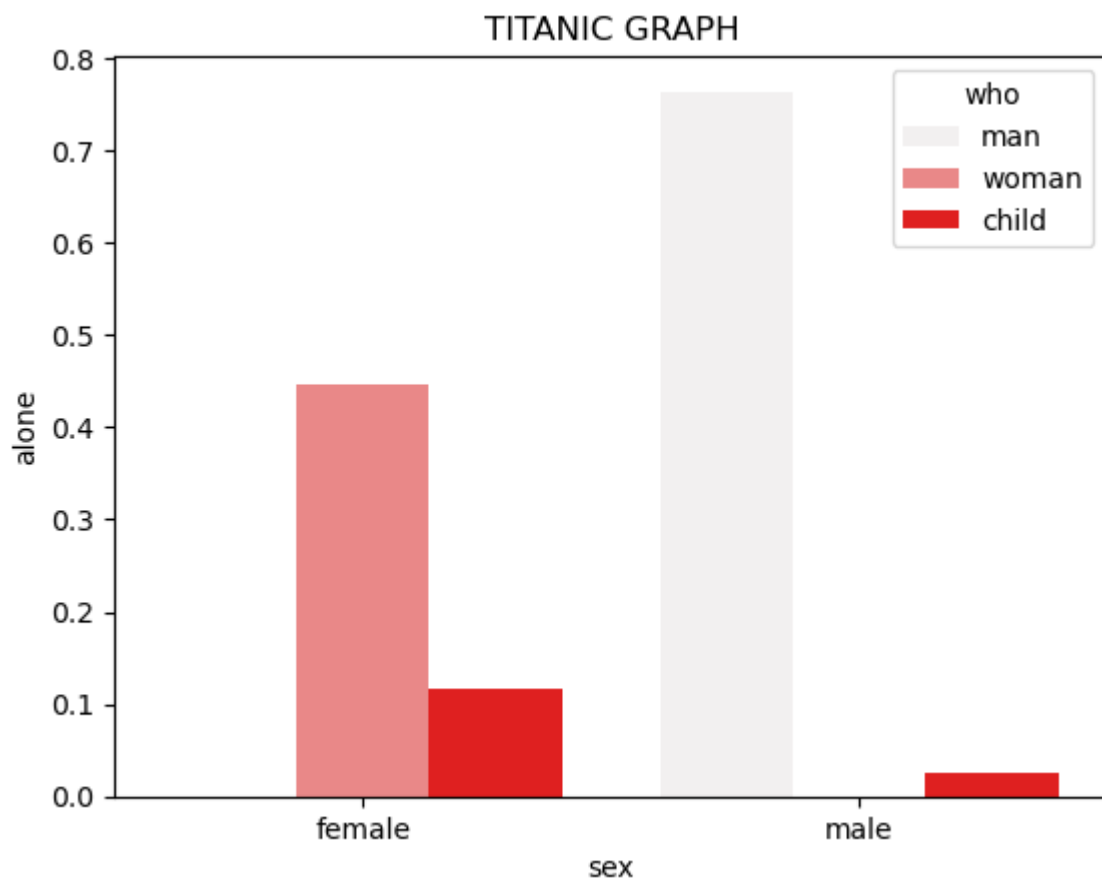
## TITANIC GRAPH



```
In [39]:   import seaborn as sns
           import matplotlib.pyplot as plt


           boat = sns.load_dataset("titanic")
           boat
           sns.barplot(x="sex",y="alone" , hue="who", data=boat ,order=["female","male"],color="r
                      palette ='PRGn')
           # ci = confindence interval
           plt.title('TITANIC GRAPH')
           plt.show()
```
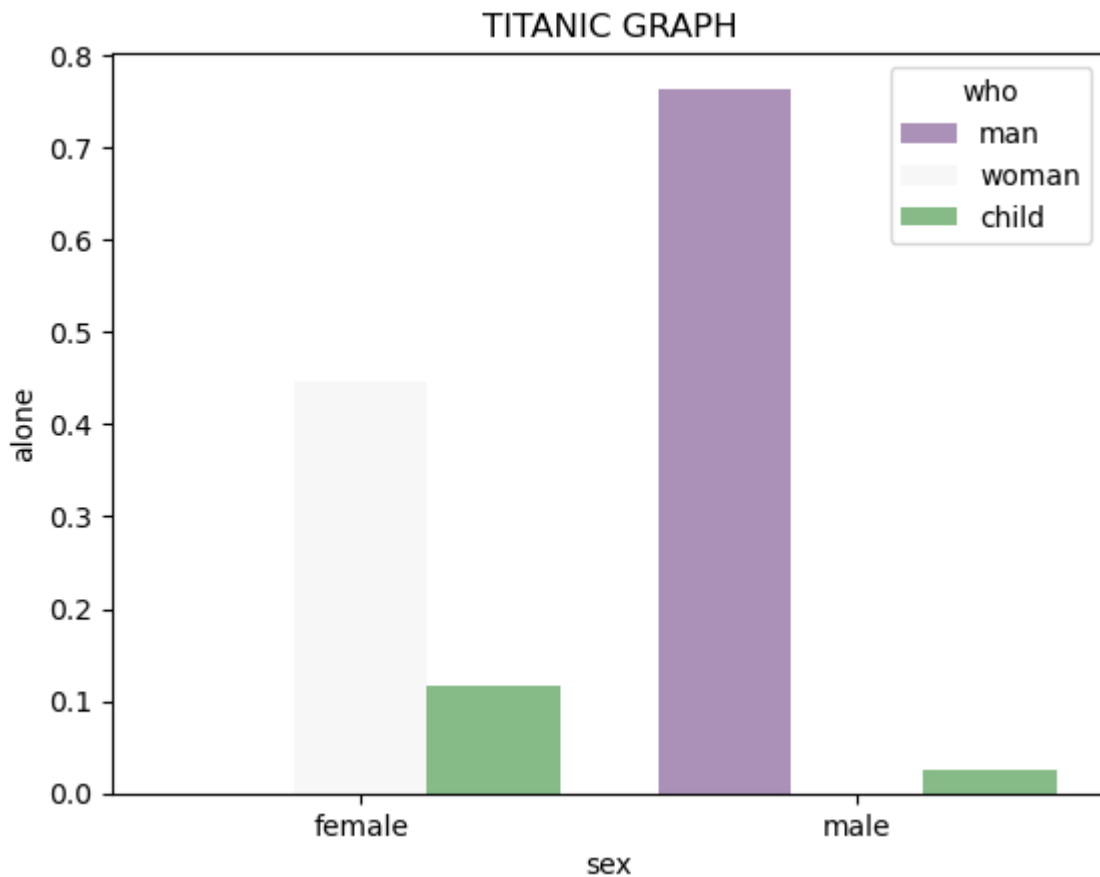
# We can use colors of our own choice from seaborn library and check codes from google:

- color codes like: *PRGn Reds PRGn RdBu Set1 Set2 Set3*

```
In [40]:  import seaborn as sns
          import matplotlib.pyplot as plt


          boat = sns.load_dataset("titanic")
          boat
          sns.barplot(x="sex",y="alone" , hue="who", data=boat ,order=["female","male"],color="r
                      palette ='Set1')
          # ci = confindence interval
          plt.title('TITANIC GRAPH')
          plt.show()
```
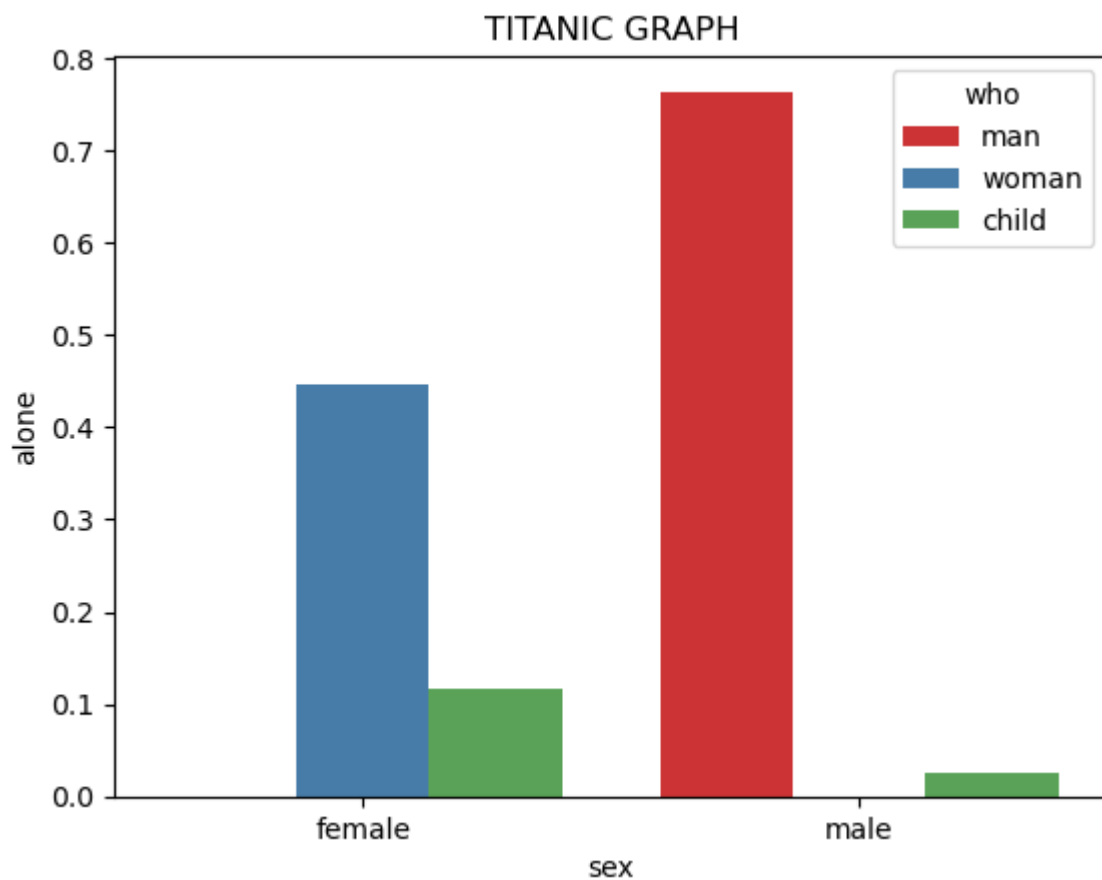
## TITANIC GRAPH



```
In [43]:  import seaborn as sns
          import matplotlib.pyplot as plt


          boat = sns.load_dataset("titanic")
          boat
          sns.barplot(x="sex",y="alone" , hue="who", data=boat ,order=["female","male"],color="r
                      palette ='Set3')
          sns.set_palette("Paired")
          # ci = confindence interval
          plt.title('TITANIC GRAPH')
          plt.show()
```
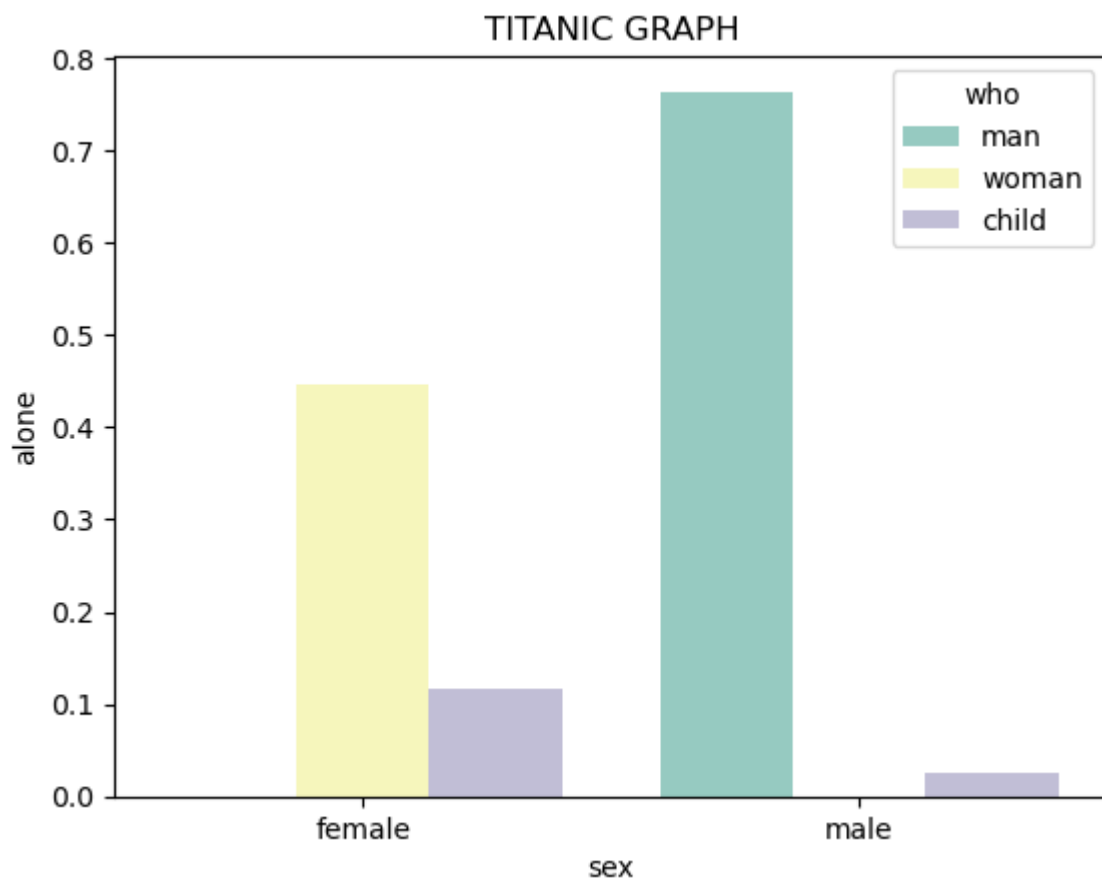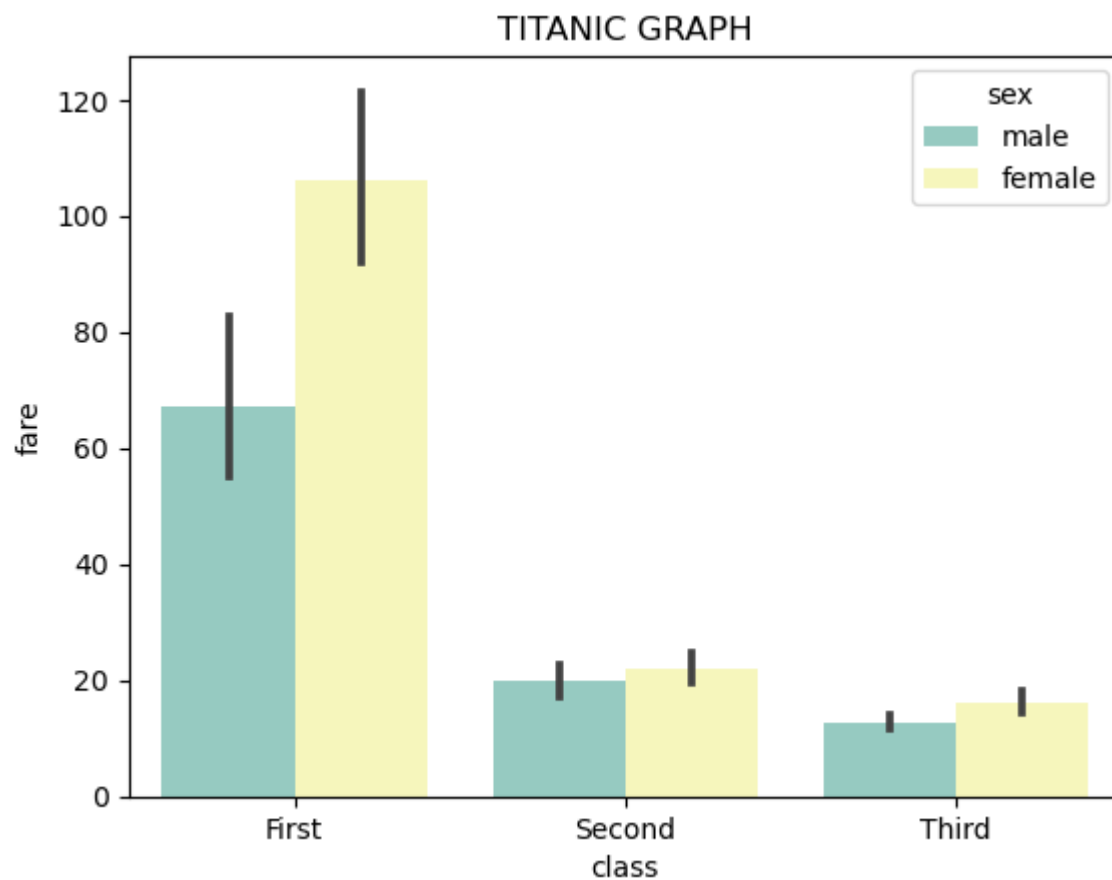
TITANIC GRAPH

```
In [56]:  import seaborn as sns
          #from numpy import mean
          import matplotlib.pyplot as plt
          import numpy

          boat = sns.load_dataset("titanic")
          boat
          sns.barplot(x="class",y="fare" , hue="sex", data=boat , estimator=mean,
                      palette ='Set3')

          # ci = confindence interval
          plt.title('TITANIC GRAPH')
          plt.show()
```

## TITANIC GRAPH



```
In [65]:   import seaborn as sns
           #from numpy import median
           import matplotlib.pyplot as plt
           import numpy

           boat = sns.load_dataset("titanic")
           boat
           sns.barplot(x="class",y="fare" , hue="sex", data=boat , estimator=median,
                       palette ='Reds')

           # ci = confindence interval
           plt.title('TITANIC GRAPH')
           plt.show()
```
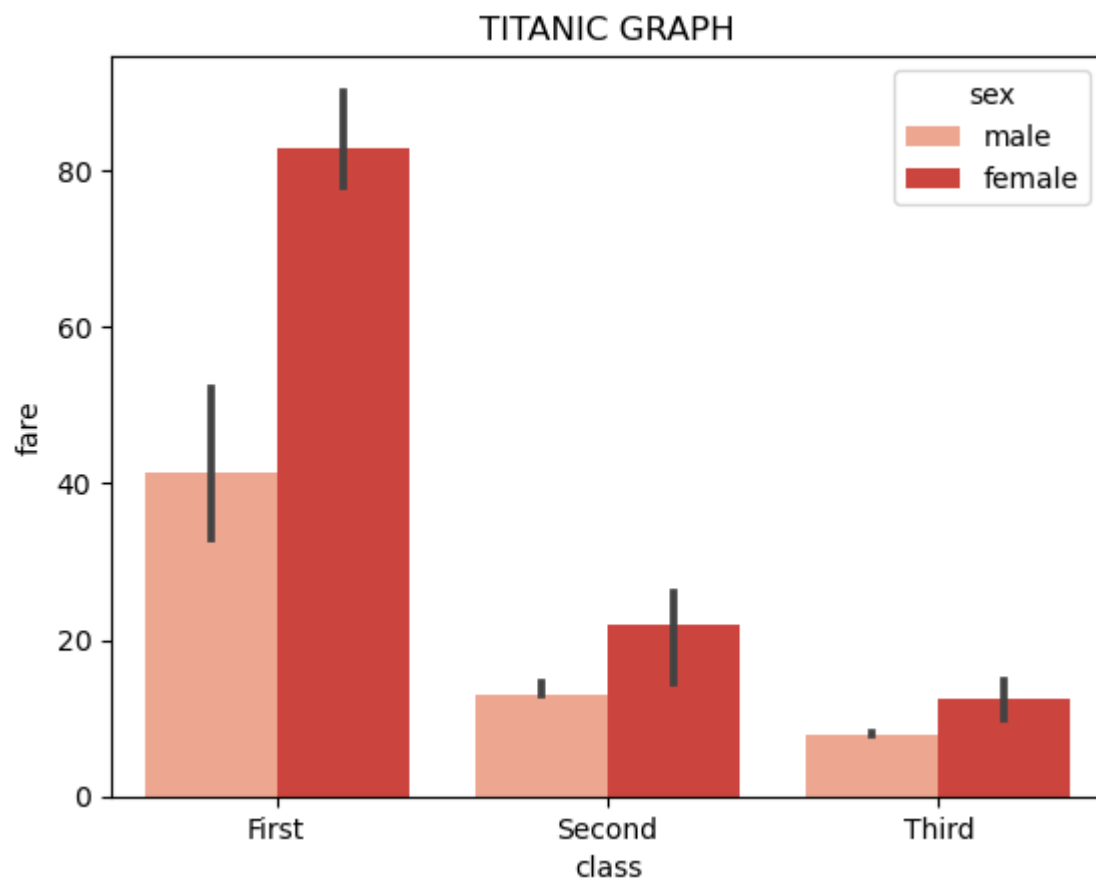
## TITANIC GRAPH



```
In [74]:  #Horizontal plot
          import seaborn as sns
          #from numpy import mode
          import matplotlib.pyplot as plt
          import numpy

          boat = sns.load_dataset("titanic")
          boat
          sns.barplot(x="fare",y="class" , hue="sex", data=boat , estimator=mean,saturation=2,
                      palette ='Reds')

          # ci = confindence interval
          plt.title('TITANIC GRAPH')
          plt.show()
```
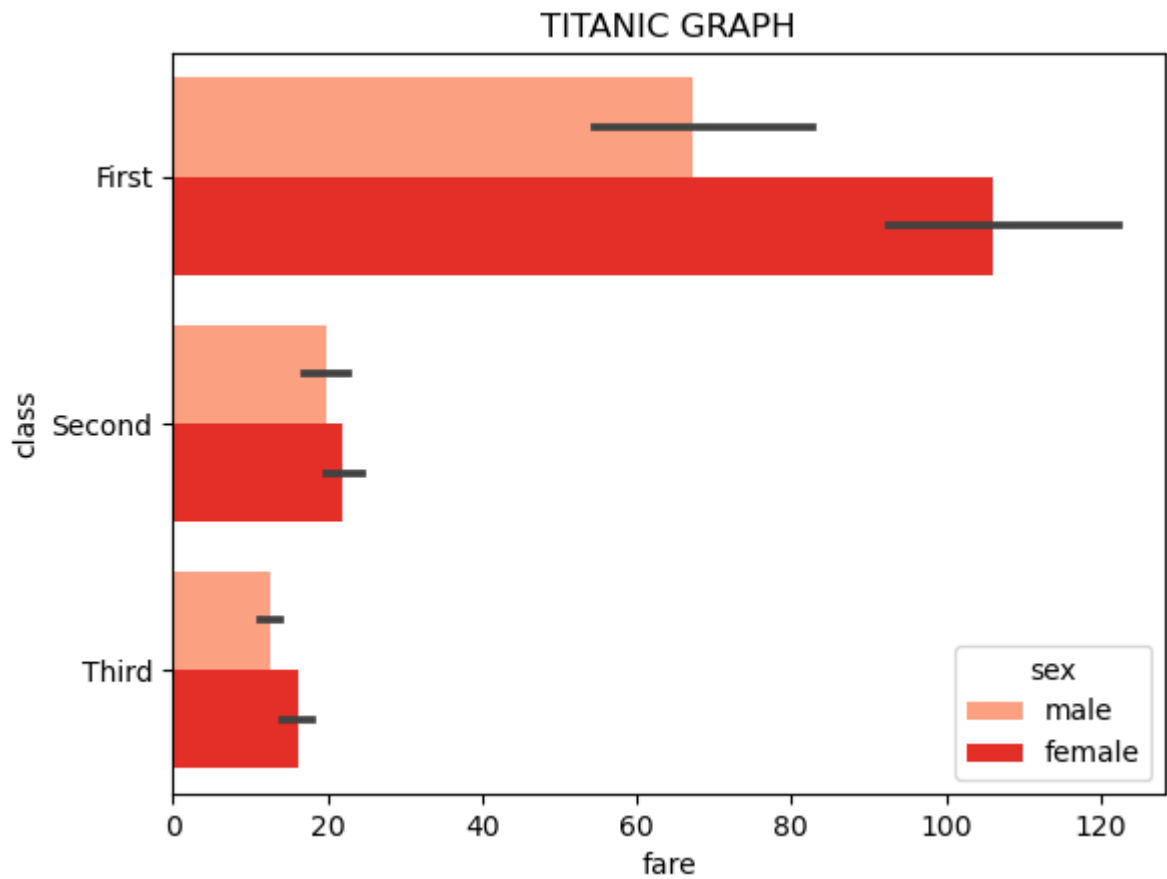
## TITANIC GRAPH



# Box Plot

```python
In [79]: import seaborn as sns
         #from numpy import median
         import matplotlib.pyplot as plt
         import numpy
         sns.set(style='whitegrid')
         boat = sns.load_dataset("titanic")
         boat
         sns.boxplot(x="class",y="fare" ,data=boat)

         # ci = confindence interval
         plt.title('TITANIC GRAPH')
         plt.show()
```

## TITANIC GRAPH
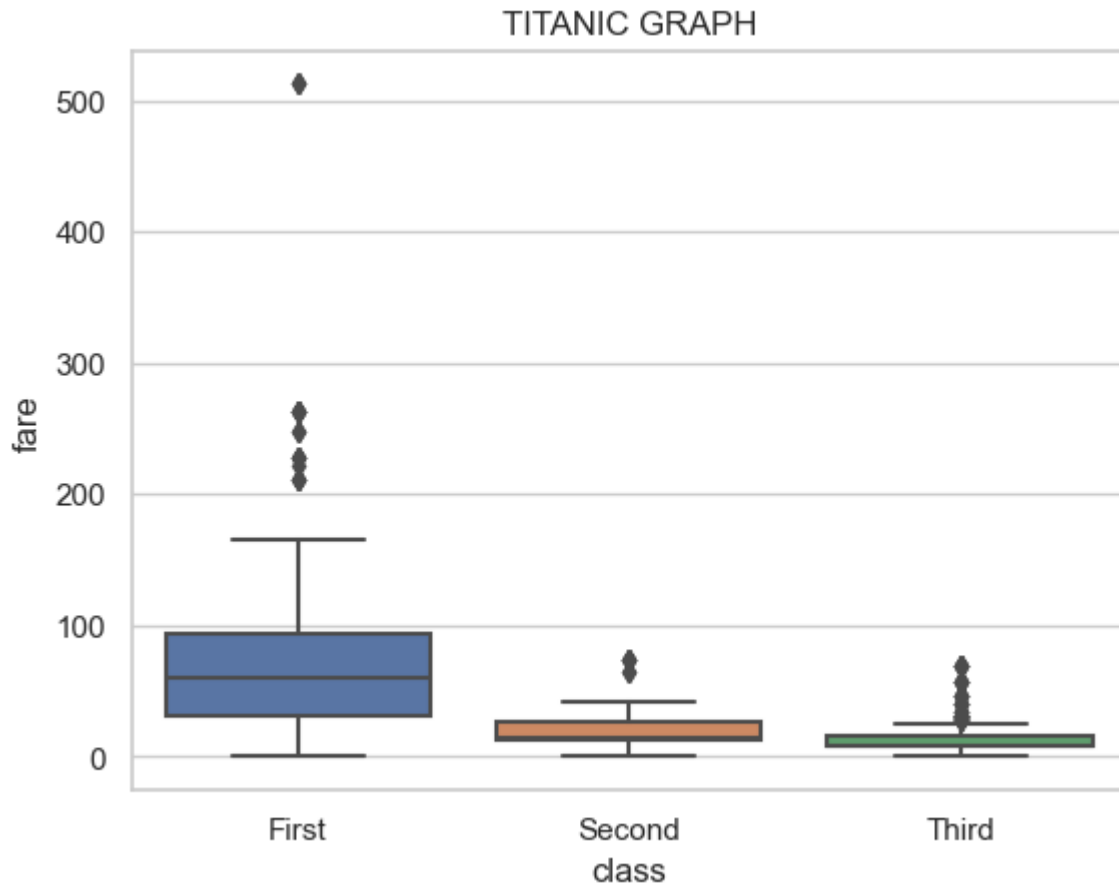


```
In [87]:   import seaborn as sns
           sns.set(style='whitegrid')

           tip = sns.load_dataset("tips")
           tip
```
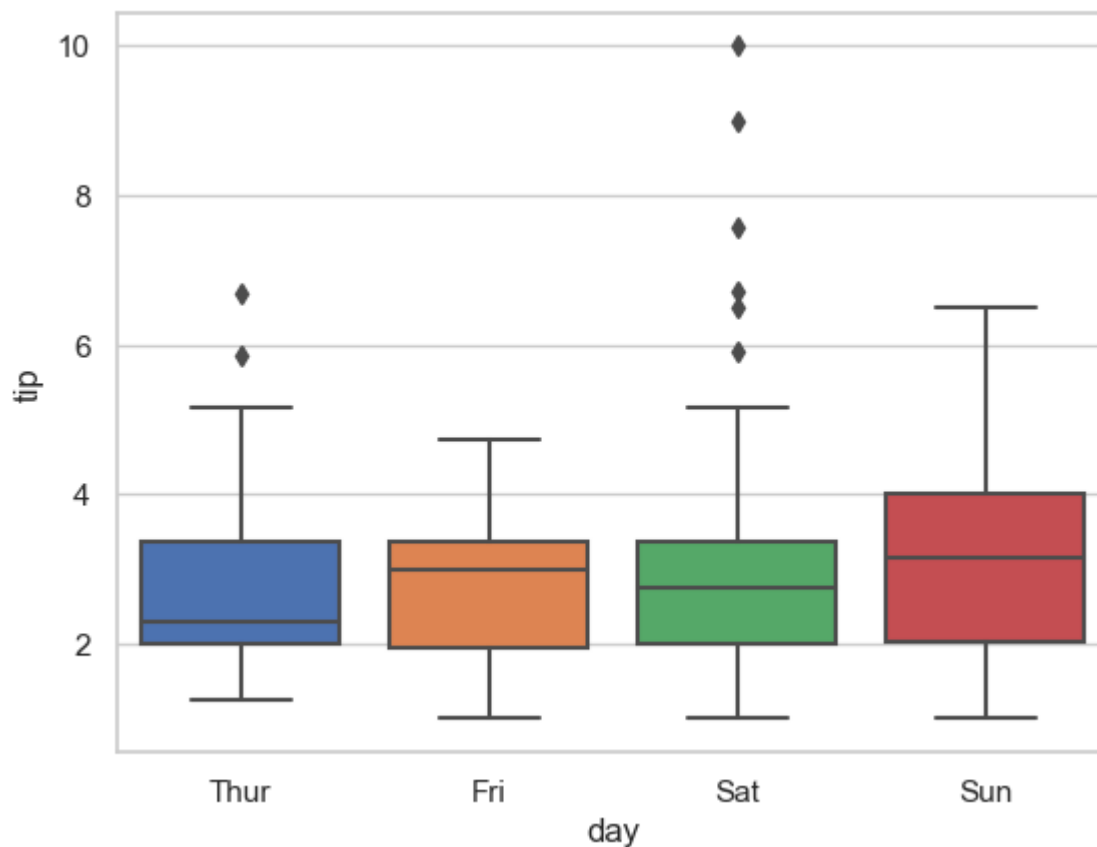
Out[87]:

|     | total_bill | tip  | sex    | smoker | day  | time   | size |
|-----|------------|------|--------|--------|------|--------|------|
| 0   | 16.99      | 1.01 | Female | No     | Sun  | Dinner | 2    |
| 1   | 10.34      | 1.66 | Male   | No     | Sun  | Dinner | 3    |
| 2   | 21.01      | 3.50 | Male   | No     | Sun  | Dinner | 3    |
| 3   | 23.68      | 3.31 | Male   | No     | Sun  | Dinner | 2    |
| 4   | 24.59      | 3.61 | Female | No     | Sun  | Dinner | 4    |
| ... | ...        | ...  | ...    | ...    | ...  | ...    | ...  |
| 239 | 29.03      | 5.92 | Male   | No     | Sat  | Dinner | 3    |
| 240 | 27.18      | 2.00 | Female | Yes    | Sat  | Dinner | 2    |
| 241 | 22.67      | 2.00 | Male   | Yes    | Sat  | Dinner | 2    |
| 242 | 17.82      | 1.75 | Male   | No     | Sat  | Dinner | 2    |
| 243 | 18.78      | 3.00 | Female | No     | Thur | Dinner | 2    |

244 rows × 7 columns

In [92]:
```python
import seaborn as sns
sns.set(style='whitegrid')

tip = sns.load_dataset("tips")
tip
sns.boxplot(x='day',y='tip',data=tip ,saturation=2)
```

Out[92]: `<AxesSubplot:xlabel='day', ylabel='tip'>`



In [100…
```python
# Catagorical variable   draw on x-asis or write in hue=
import seaborn as sns
import pandas as pf
import numpy as np


tip = sns.load_dataset("tips")
tip
```

Out[100]:

| | total_bill | tip | sex | smoker | day | time | size |
|---|---|---|---|---|---|---|---|
| **0** | 16.99 | 1.01 | Female | No | Sun | Dinner | 2 |
| **1** | 10.34 | 1.66 | Male | No | Sun | Dinner | 3 |
| **2** | 21.01 | 3.50 | Male | No | Sun | Dinner | 3 |
| **3** | 23.68 | 3.31 | Male | No | Sun | Dinner | 2 |
| **4** | 24.59 | 3.61 | Female | No | Sun | Dinner | 4 |
| **...** | ... | ... | ... | ... | ... | ... | ... |
| **239** | 29.03 | 5.92 | Male | No | Sat | Dinner | 3 |
| **240** | 27.18 | 2.00 | Female | Yes | Sat | Dinner | 2 |
| **241** | 22.67 | 2.00 | Male | Yes | Sat | Dinner | 2 |
| **242** | 17.82 | 1.75 | Male | No | Sat | Dinner | 2 |
| **243** | 18.78 | 3.00 | Female | No | Thur | Dinner | 2 |

244 rows × 7 columns

In [99]:
```python
# Numric variables    draw on y-asis
import seaborn as sns
import pandas as pf
import numpy as np



tip = sns.load_dataset("tips")
tip.describe()
```

Out[99]:

| | total_bill | tip | size |
|---|---|---|---|
| **count** | 244.000000 | 244.000000 | 244.000000 |
| **mean** | 19.785943 | 2.998279 | 2.569672 |
| **std** | 8.902412 | 1.383638 | 0.951100 |
| **min** | 3.070000 | 1.000000 | 1.000000 |
| **25%** | 13.347500 | 2.000000 | 2.000000 |
| **50%** | 17.795000 | 2.900000 | 2.000000 |
| **75%** | 24.127500 | 3.562500 | 3.000000 |
| **max** | 50.810000 | 10.000000 | 6.000000 |

In [135...
```python
import seaborn as sns
#sns.set(style='whitegrid')
tip=sns.load_dataset("tips")

sns.boxplot(y = tip['total_bill'])
sns.boxplot(x="tip" ,y = "day",hue='smoker', palette='Set3',dodge='true',data=tip)
```
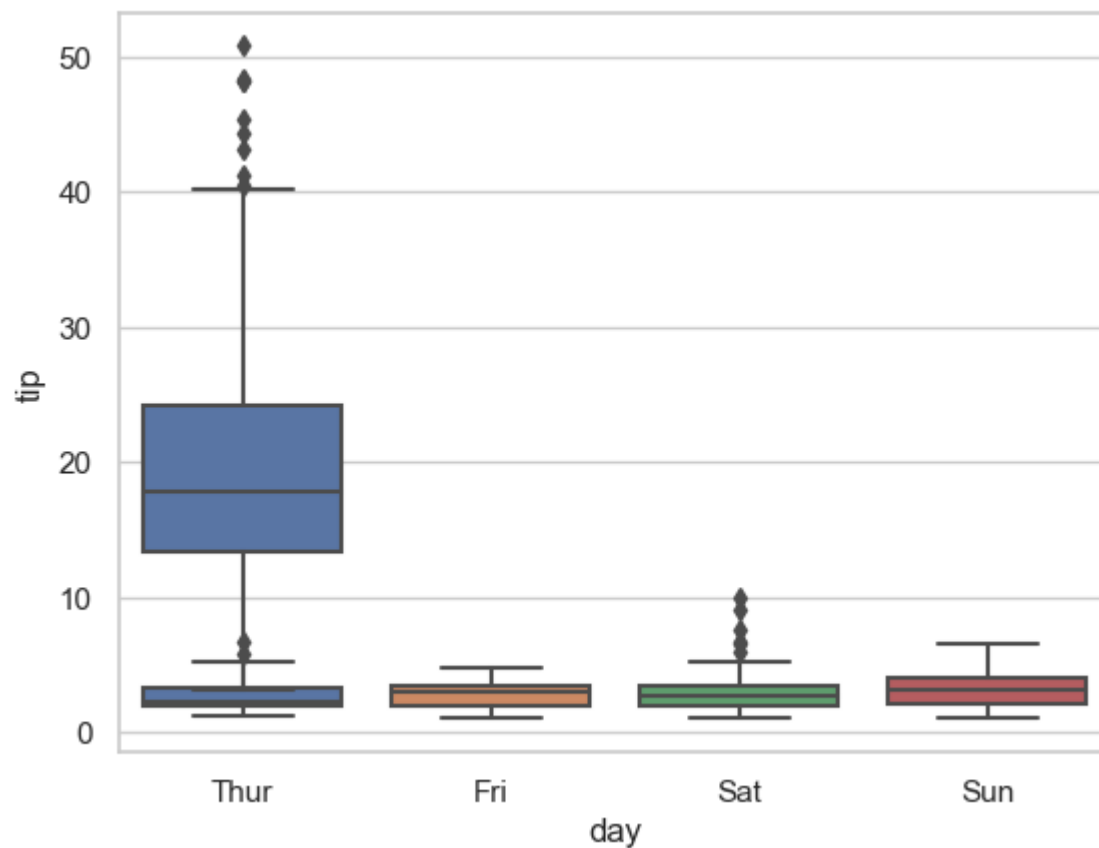
Out[135]:
```
<AxesSubplot:xlabel='tip', ylabel='day'>
```
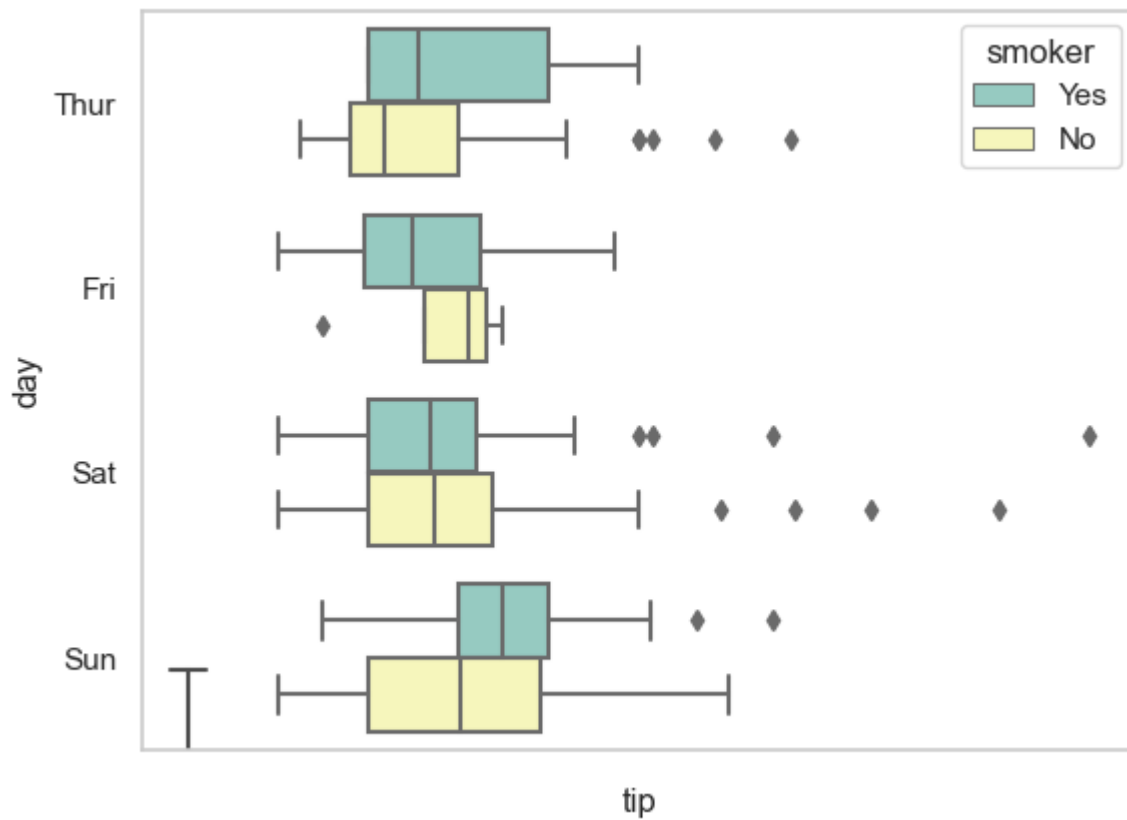
```
In [128…   import seaborn as sns
           #sns.set(style='whitegrid')
           tip=sns.load_dataset("tips")

           sns.boxplot(y = tip['total_bill'])
           sns.boxplot(x="day" ,y = "tip",data=tip)
```

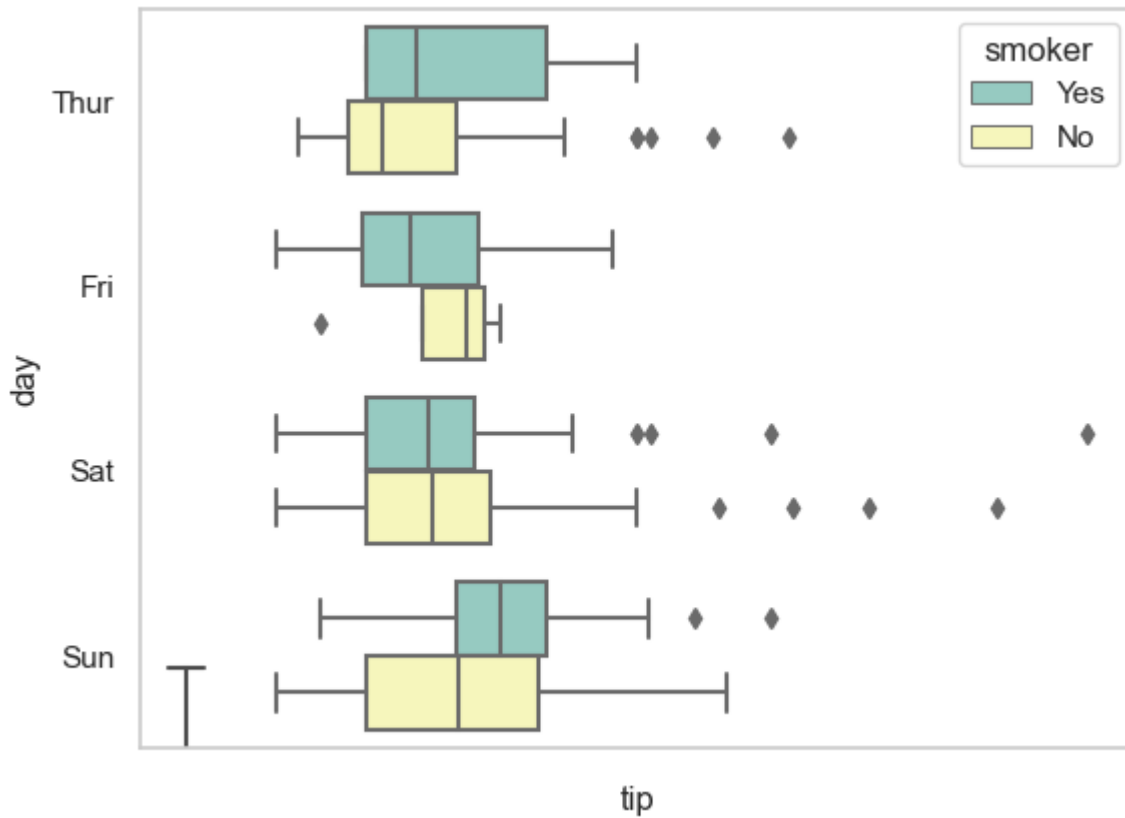Out[128]:   <AxesSubplot:xlabel='day', ylabel='tip'>

```
In [143...   #we can also use color picker from hex color
             import seaborn as sns
             #sns.set(style='whitegrid')
             tip=sns.load_dataset("tips")

             sns.boxplot(y = tip['total_bill'])
             sns.boxplot(x="tip" ,y = "day",hue='smoker',palette='Set3',dodge='true',color="blue",
```

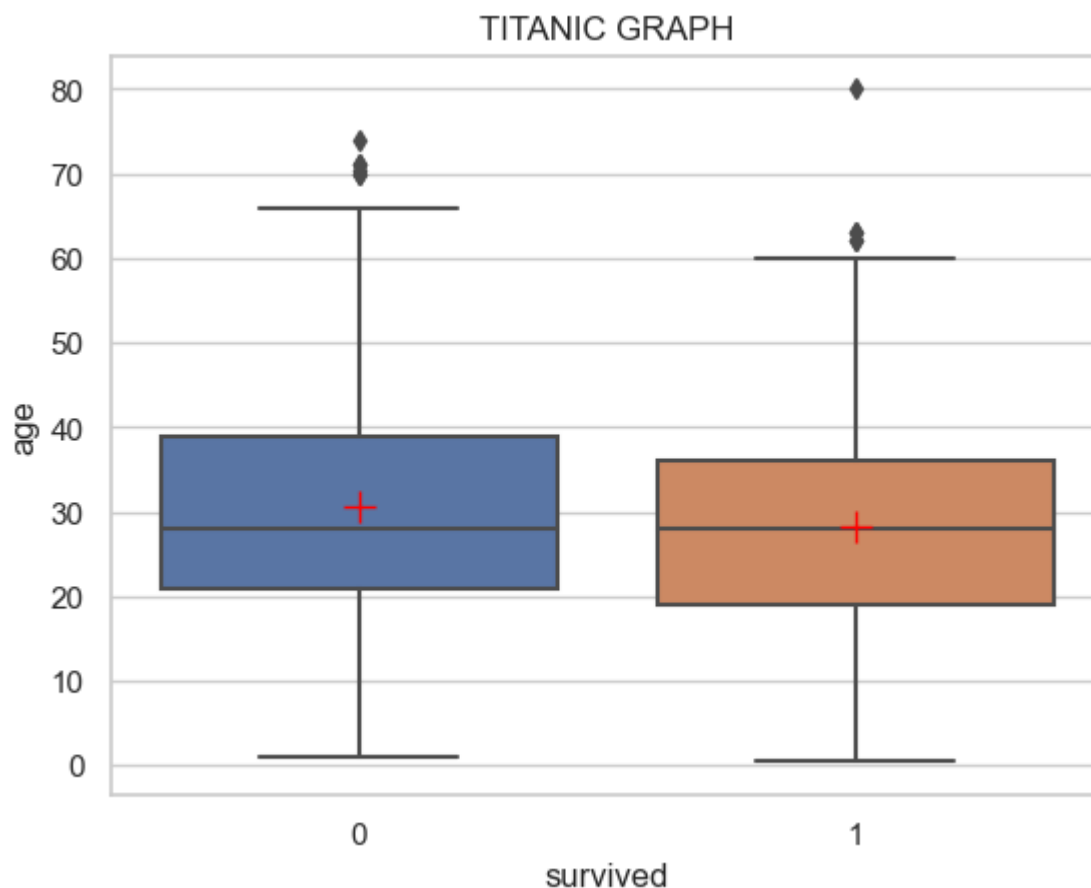Out[143]:   <AxesSubplot:xlabel='tip', ylabel='day'>

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


boat = sns.load_dataset("titanic")
boat.head()
sns.boxplot(x ="survived",
            y ="age" ,
            showmeans=True,
            meanprops={"marker":"+",
                       "markersize":"12",
                       "markeredgecolor":"red"},
            data=boat )

# ci = confindence interval
plt.title('TITANIC GRAPH')
plt.show ()
```

## TITANIC GRAPH



```
In [181…  import seaborn as sns
          import pandas as pf
          import numpy as np
          import matplotlib.pyplot as plt
          sns.boxplot(x ="survived",
                      y ="age" ,
                      showmeans=True,
                      meanprops={"marker":"*",
                                 "markersize":"12",
                                 "markeredgecolor":"red"},
                      data=boat )
          #show labels
          plt.xlabel("How many survived"),
          plt.ylabel("Age(years)"),
          plt.title("Box plot of how many survived and how many died"),
          plt.show ()
```

Box plot of how many survived and how many died