

# practical8

April 2, 2025

```
[59]: pip install seaborn
```

```
Defaulting to user installation because normal site-packages is not writeable
Requirement already satisfied: seaborn in c:\programdata\anaconda3\lib\site-
packages (0.13.2)
Requirement already satisfied: numpy!=1.24.0,>=1.20 in
c:\programdata\anaconda3\lib\site-packages (from seaborn) (1.26.4)
Requirement already satisfied: pandas>=1.2 in c:\programdata\anaconda3\lib\site-
packages (from seaborn) (2.2.2)
Requirement already satisfied: matplotlib!=3.6.1,>=3.4 in
c:\programdata\anaconda3\lib\site-packages (from seaborn) (3.9.2)
Requirement already satisfied: contourpy>=1.0.1 in
c:\programdata\anaconda3\lib\site-packages (from
matplotlib!=3.6.1,>=3.4->seaborn) (1.2.0)
Requirement already satisfied: cycler>=0.10 in
c:\programdata\anaconda3\lib\site-packages (from
matplotlib!=3.6.1,>=3.4->seaborn) (0.11.0)
Requirement already satisfied: fonttools>=4.22.0 in
c:\programdata\anaconda3\lib\site-packages (from
matplotlib!=3.6.1,>=3.4->seaborn) (4.51.0)
Requirement already satisfied: kiwisolver>=1.3.1 in
c:\programdata\anaconda3\lib\site-packages (from
matplotlib!=3.6.1,>=3.4->seaborn) (1.4.4)
Requirement already satisfied: packaging>=20.0 in
c:\programdata\anaconda3\lib\site-packages (from
matplotlib!=3.6.1,>=3.4->seaborn) (24.1)
Requirement already satisfied: pillow>=8 in c:\programdata\anaconda3\lib\site-
packages (from matplotlib!=3.6.1,>=3.4->seaborn) (10.4.0)
Requirement already satisfied: pyparsing>=2.3.1 in
c:\programdata\anaconda3\lib\site-packages (from
matplotlib!=3.6.1,>=3.4->seaborn) (3.1.2)
Requirement already satisfied: python-dateutil>=2.7 in
c:\programdata\anaconda3\lib\site-packages (from
matplotlib!=3.6.1,>=3.4->seaborn) (2.9.0.post0)
Requirement already satisfied: pytz>=2020.1 in
c:\programdata\anaconda3\lib\site-packages (from pandas>=1.2->seaborn) (2024.1)
Requirement already satisfied: tzdata>=2022.7 in
c:\programdata\anaconda3\lib\site-packages (from pandas>=1.2->seaborn) (2023.3)
```

Requirement already satisfied: six>=1.5 in c:\programdata\anaconda3\lib\site-packages (from python-dateutil>=2.7->matplotlib!=3.6.1,>=3.4->seaborn) (1.16.0)  
Note: you may need to restart the kernel to use updated packages.

```
[60]: import seaborn as sns
```

```
[61]: import pandas as pd
import numpy as np
import matplotlib.pyplot as plt
```

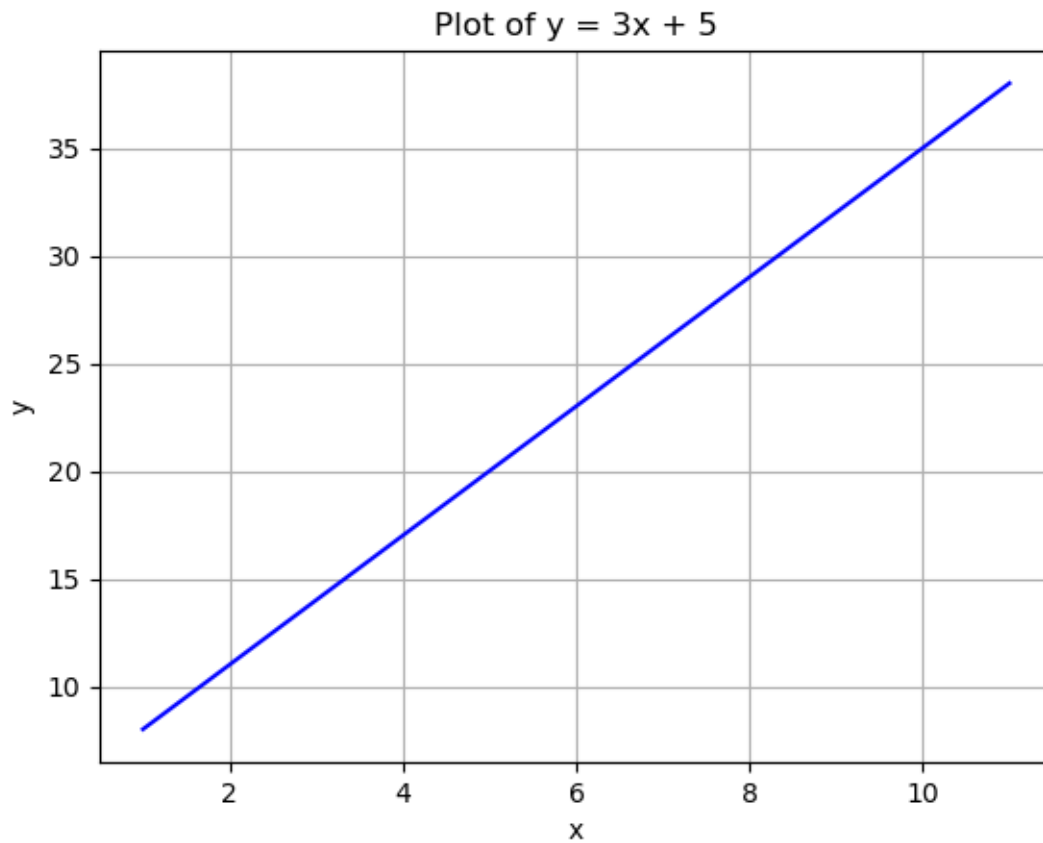
```
[62]: x=np.arange(0,10)
y=np.arange(0,10)
```

```
[63]: x = np.arange(1, 12)
y = 3 * x + 5
plt.plot(x, y, label='y = 3x + 5', color='b')

plt.xlabel('x')
plt.ylabel('y')

plt.title('Plot of y = 3x + 5')

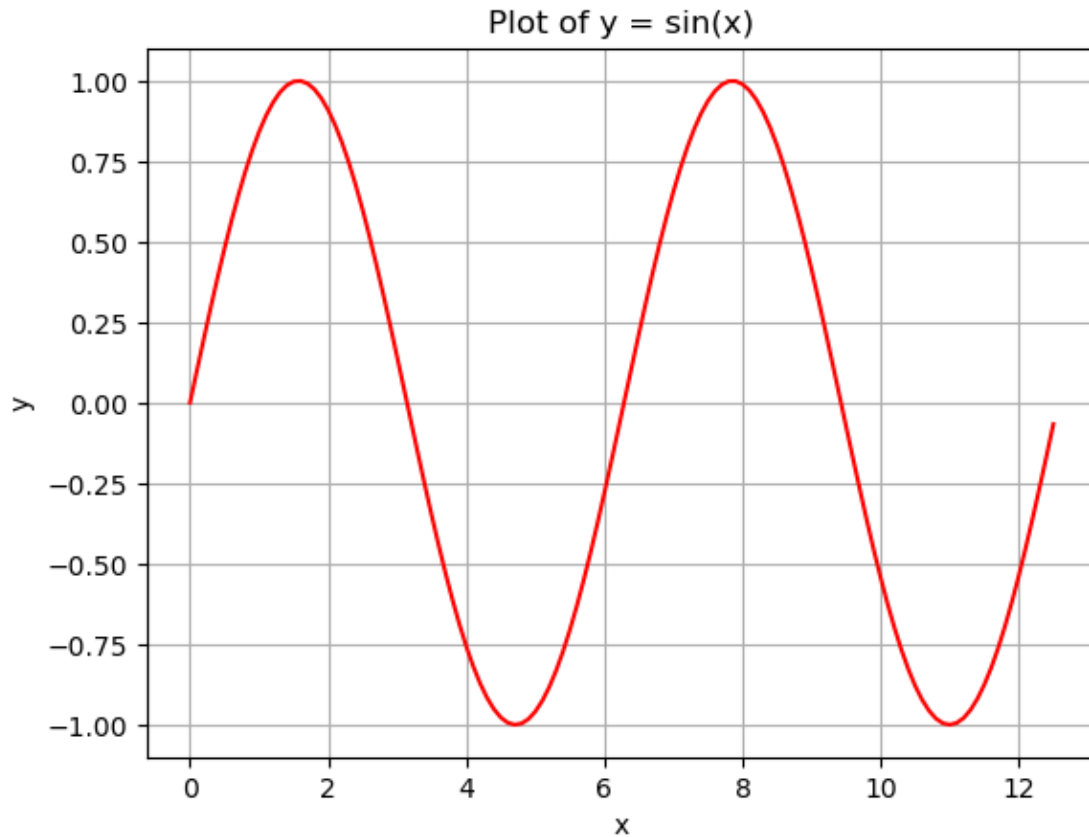
plt.grid(True)
plt.show()
```



```
[64]: x = np.arange(0, 4 * np.pi, 0.1)
      y = np.sin(x)
      plt.plot(x, y, label='y = sin(x)', color='r')

      plt.xlabel('x')
      plt.ylabel('y')

      plt.title('Plot of y = sin(x)')
      plt.grid(True)
```



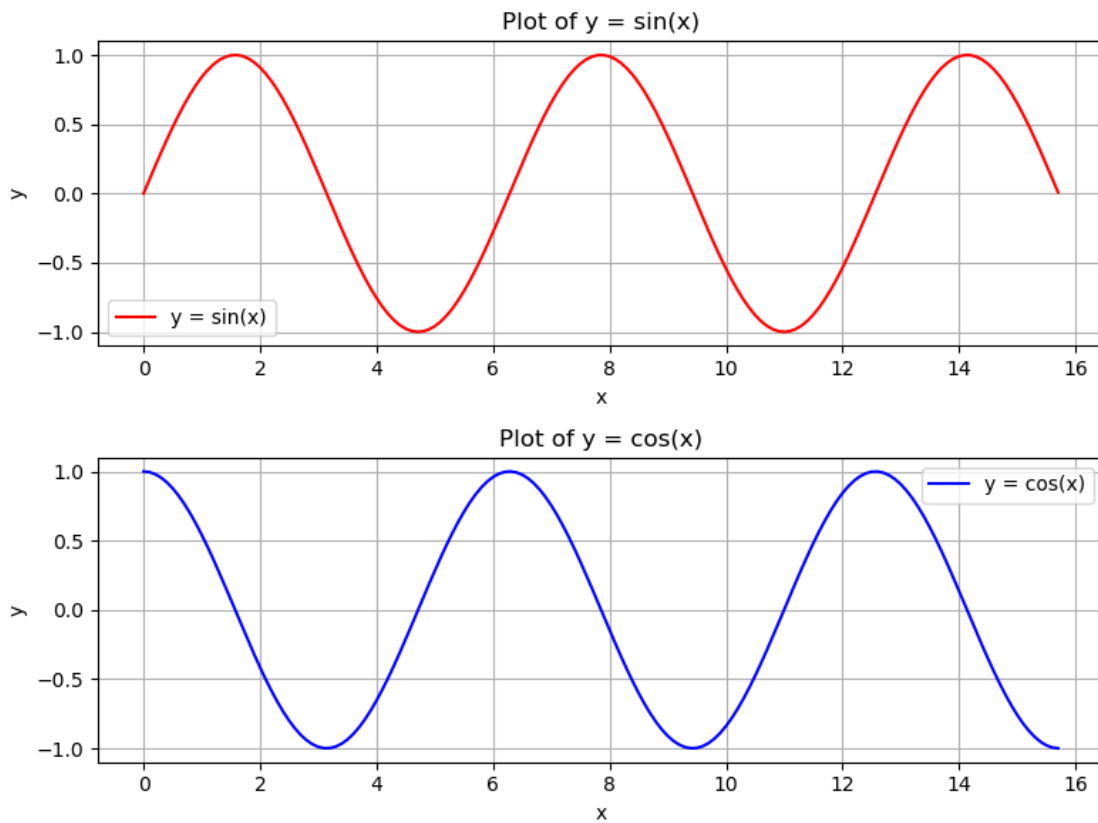
```
[65]: x = np.arange(0, 5 * np.pi, 0.1)
y_sin = np.sin(x)
y_cos = np.cos(x)

fig, (ax1, ax2) = plt.subplots(2, 1, figsize=(8, 6)) # 2 rows, 1 column

ax1.plot(x, y_sin, label='y = sin(x)', color='r')
ax1.set_title('Plot of y = sin(x)')
ax1.set_xlabel('x')
ax1.set_ylabel('y')
ax1.grid(True)
ax1.legend()

ax2.plot(x, y_cos, label='y = cos(x)', color='b')
ax2.set_title('Plot of y = cos(x)')
ax2.set_xlabel('x')
ax2.set_ylabel('y')
ax2.grid(True)
ax2.legend()
```

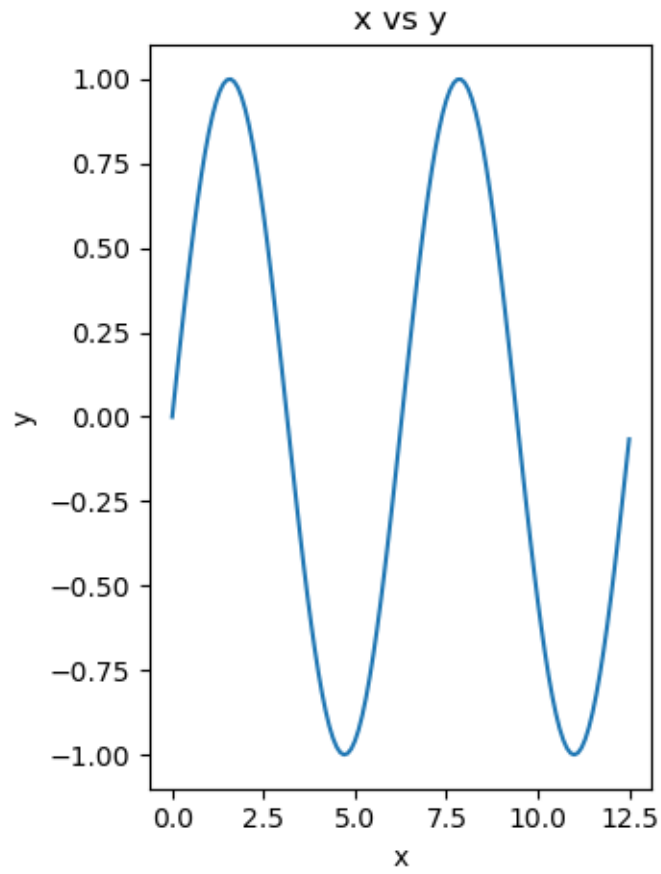
```
plt.tight_layout()
plt.show()
```



```
[66]: x=np.arange(0,4*np.pi,0.1)
      y=np.sin(x)
```

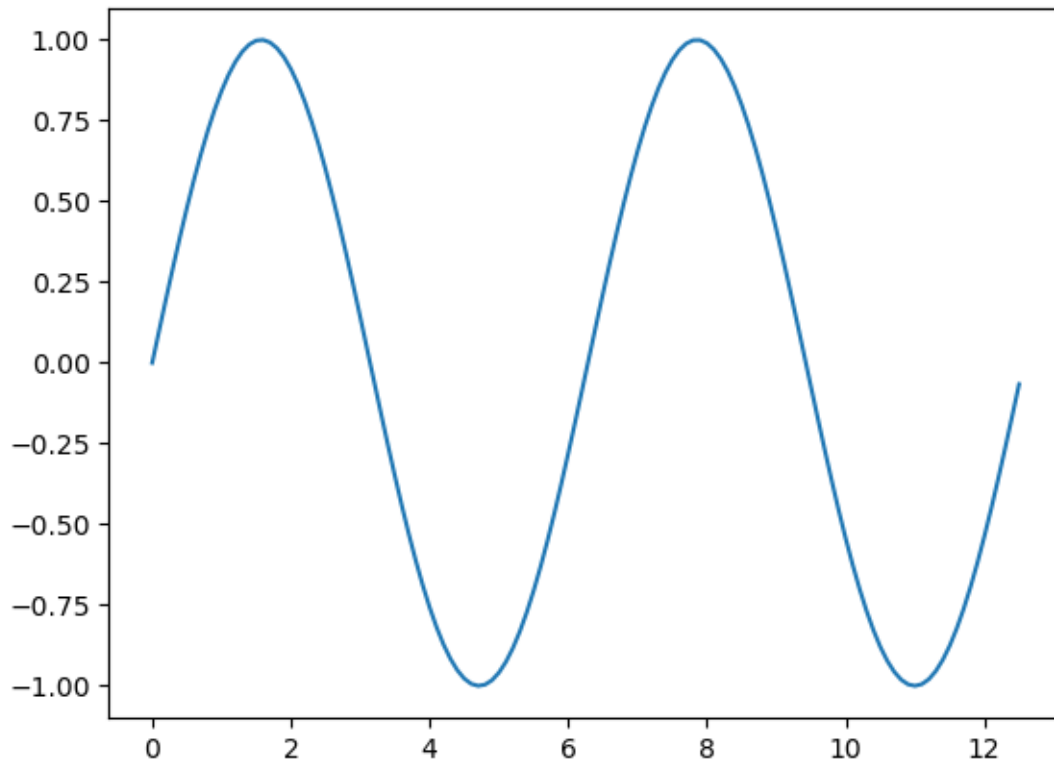
```
[67]: plt.subplot(1, 2, 1)
      plt.plot(x, y)
      plt.title("x vs y")
      plt.xlabel("x")
      plt.ylabel("y")

      plt.tight_layout()
      plt.show()
```



```
[68]: plt.plot(x,y)
```

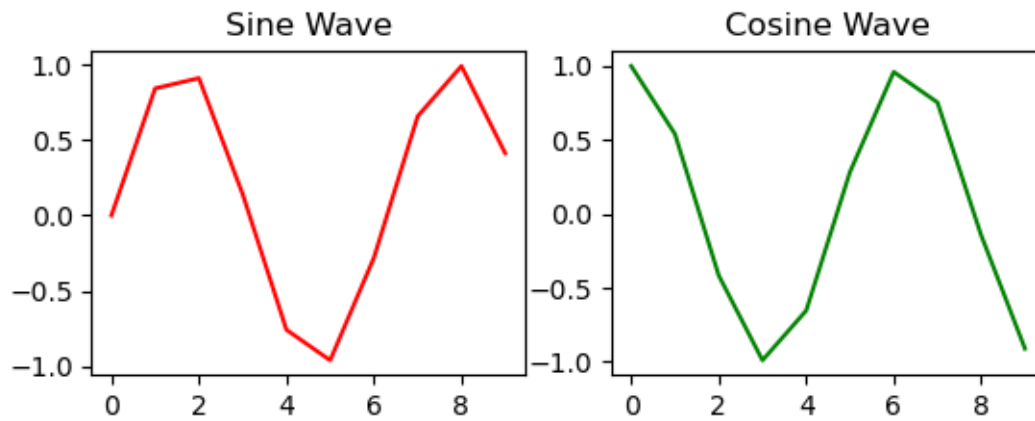
```
[68]: [<matplotlib.lines.Line2D at 0x27b85357830>]
```



```
[69]: x=np.arange(0,10)
      y_sin = np.sin(x)
      y_cos = np.cos(x)
```

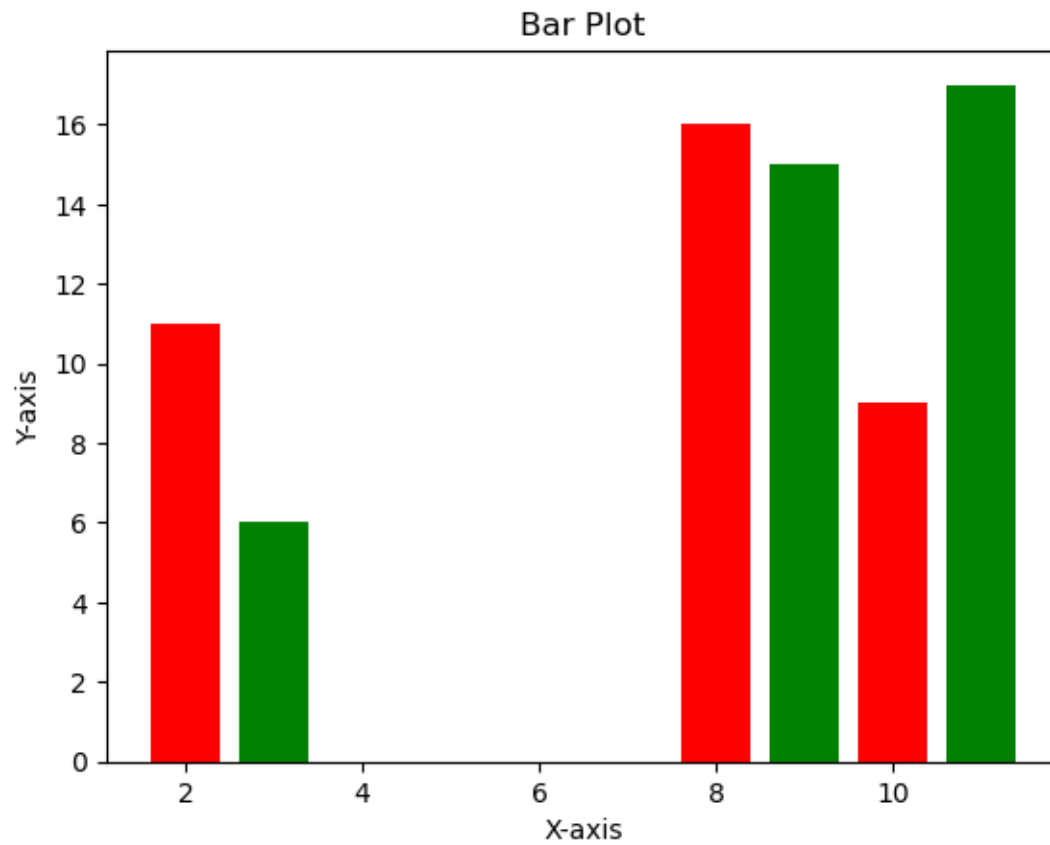
```
[70]: plt.subplot(2,2,1)
      plt.title("Sine Wave")
      plt.plot(x,y_sin,'r')
      plt.subplot(2,2,2)
      plt.title("Cosine Wave")
      plt.plot(x,y_cos,'g')
```

```
[70]: [<matplotlib.lines.Line2D at 0x27b853b4770>]
```

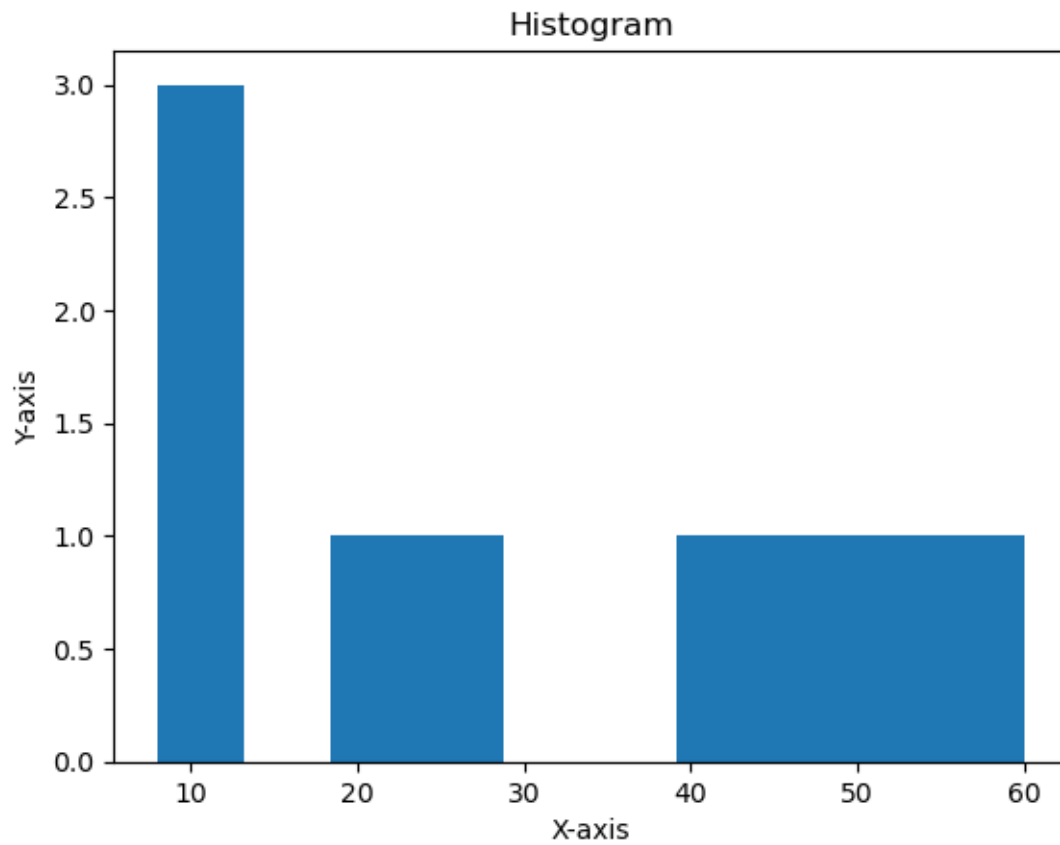


```
[71]: x=[2,8,10]
      y=[11,16,9]
      x2=[3,9,11]
      y2=[6,15,17]
      plt.bar(x,y,color='r')
      plt.bar(x2,y2,color='g')
      plt.xlabel('X-axis')
      plt.ylabel('Y-axis')
      plt.title('Bar Plot')
      plt.show()
```

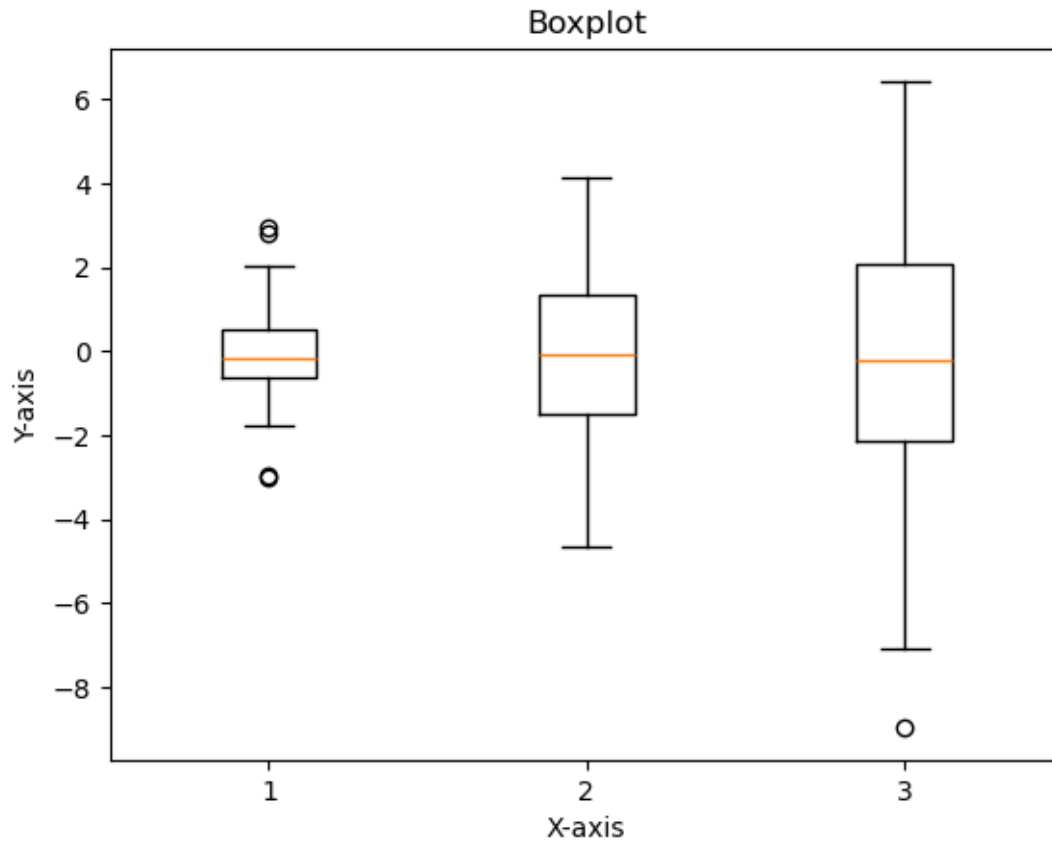




```
[72]: x=np.array([22,11,47,52,12,60,8,27,42])  
plt.hist(x)  
plt.xlabel('X-axis')  
plt.ylabel('Y-axis')  
plt.title('Histogram')  
plt.show()
```

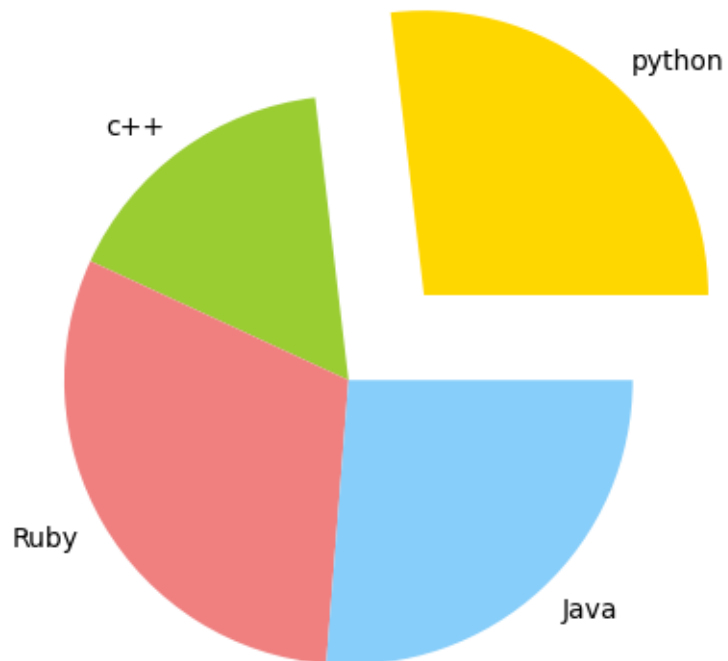


```
[73]: data=[np.random.normal(0,std,100)for std in range(1,4)]  
plt.boxplot(data,vert=True,patch_artist=False)  
plt.xlabel('X-axis')  
plt.ylabel('Y-axis')  
plt.title('Boxplot')  
plt.show()
```



```
[74]: labels=['python','c++','Ruby','Java']
      sizes=[215,130,245,210]
      colors=['gold','yellowgreen','lightcoral','lightskyblue']
      explode=(0.4,0,0,0)
      plt.pie(sizes,explode=explode,labels=labels,colors=colors)
```

```
[74]: ([<matplotlib.patches.Wedge at 0x27b85944680>,
      <matplotlib.patches.Wedge at 0x27b84f38230>,
      <matplotlib.patches.Wedge at 0x27b85944860>,
      <matplotlib.patches.Wedge at 0x27b85944bc0>],
      [Text(0.9963786148748535, 1.1212625276089756, 'python'),
      Text(-0.64656382751384, 0.8899186574910392, 'c++'),
      Text(-0.94900779332915, -0.5562231640272972, 'Ruby'),
      Text(0.7466808503372186, -0.8077547324155322, 'Java')])
```



```
[75]: df= sns.load_dataset('tips')
```

```
[76]: df.head()
```

```
[76]:
```

	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

```
[77]: dt=df[['total_bill','tip','size']]
      dt.head()
```

```
[77]:
```

	total_bill	tip	size
0	16.99	1.01	2
1	10.34	1.66	3
2	21.01	3.50	3
3	23.68	3.31	2
4	24.59	3.61	4

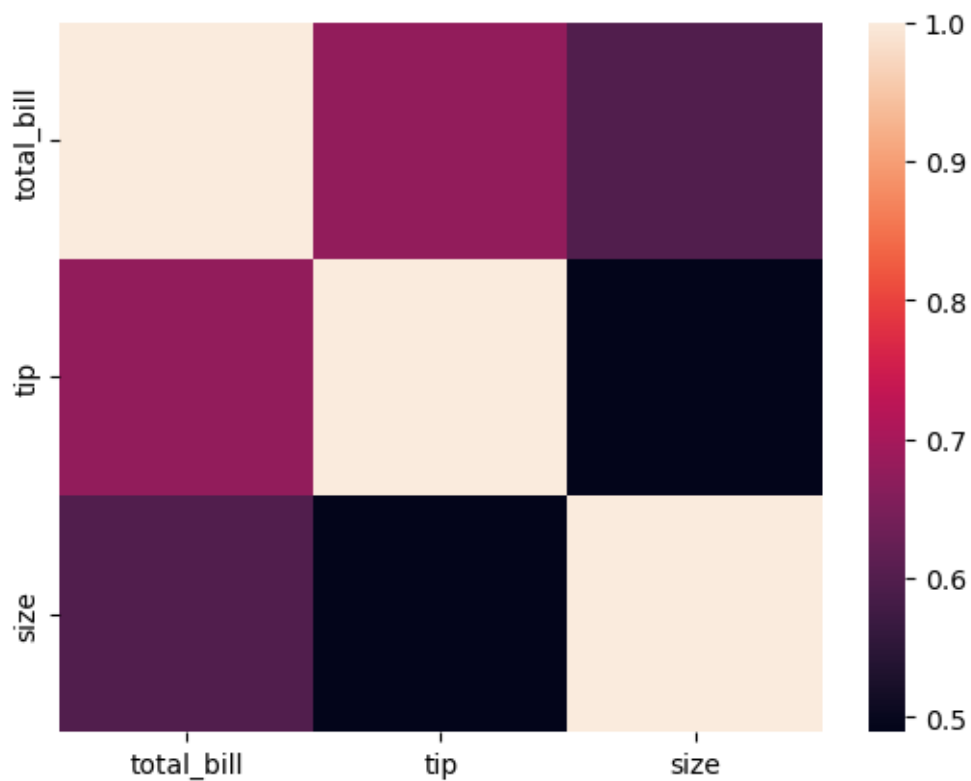
```
[78]: dt.corr()
```

```
[78]:
```

	total_bill	tip	size
total_bill	1.000000	0.675734	0.598315
tip	0.675734	1.000000	0.489299
size	0.598315	0.489299	1.000000

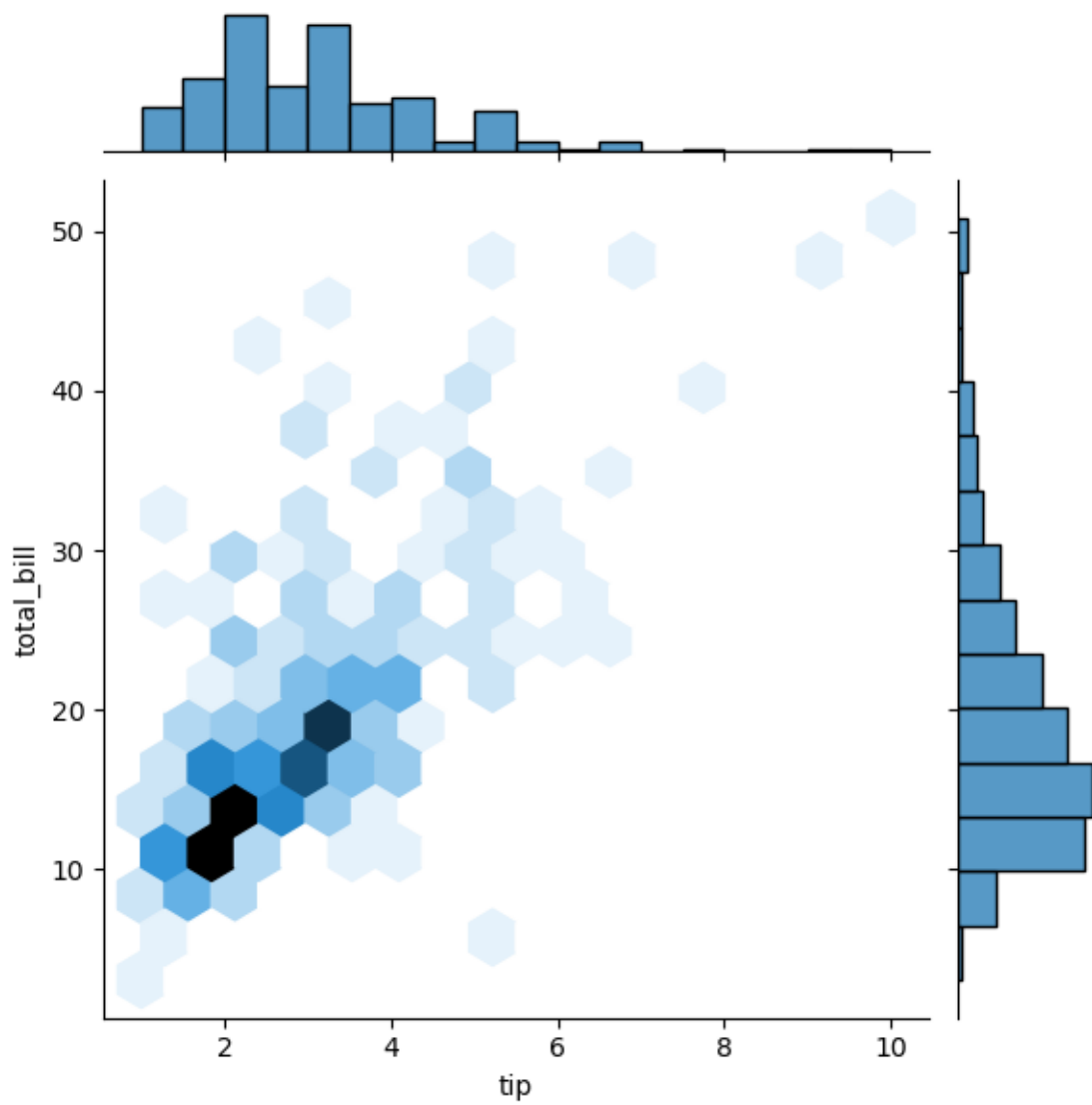
```
[79]: sns.heatmap(dt.corr())
```

```
[79]: <Axes: >
```



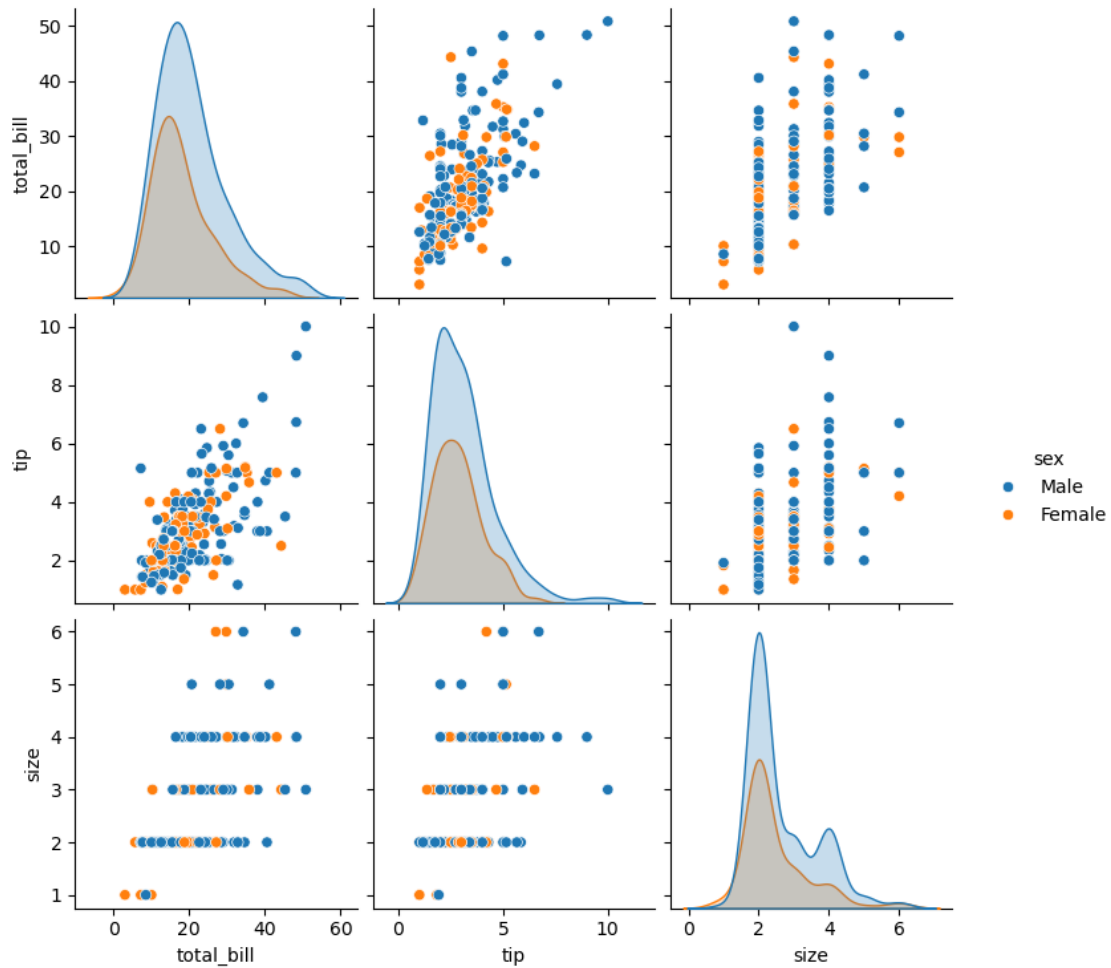
```
[80]: sns.jointplot(x='tip', y='total_bill', data=dt, kind='hex')
```

```
[80]: <seaborn.axisgrid.JointGrid at 0x27b85735be0>
```



```
[81]: sns.pairplot(df,hue='sex')
```

```
[81]: <seaborn.axisgrid.PairGrid at 0x27b85356960>
```



```
[82]: sns.distplot(dt['tip'])
```

C:\Users\hp\AppData\Local\Temp\ipykernel\_1168\2393652879.py:1: UserWarning:

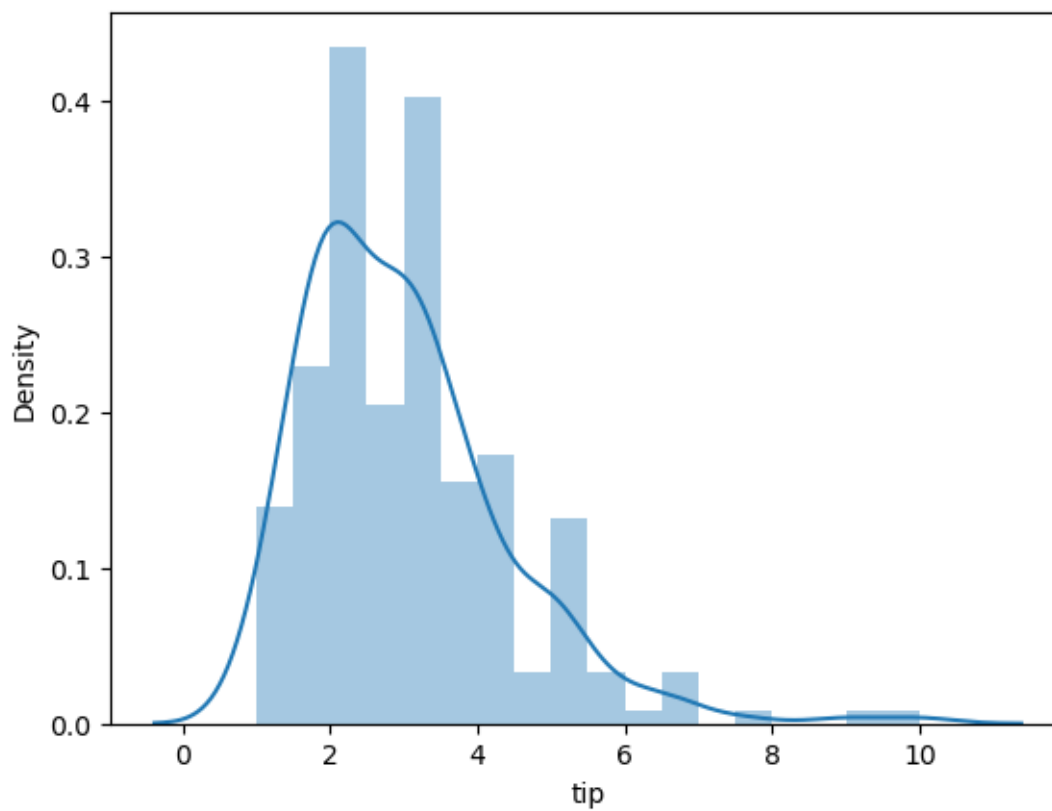
`distplot` is a deprecated function and will be removed in seaborn v0.14.0.

Please adapt your code to use either `displot` (a figure-level function with similar flexibility) or `histplot` (an axes-level function for histograms).

For a guide to updating your code to use the new functions, please see <https://gist.github.com/mwaskom/de44147ed2974457ad6372750bbe5751>

```
sns.distplot(dt['tip'])
```

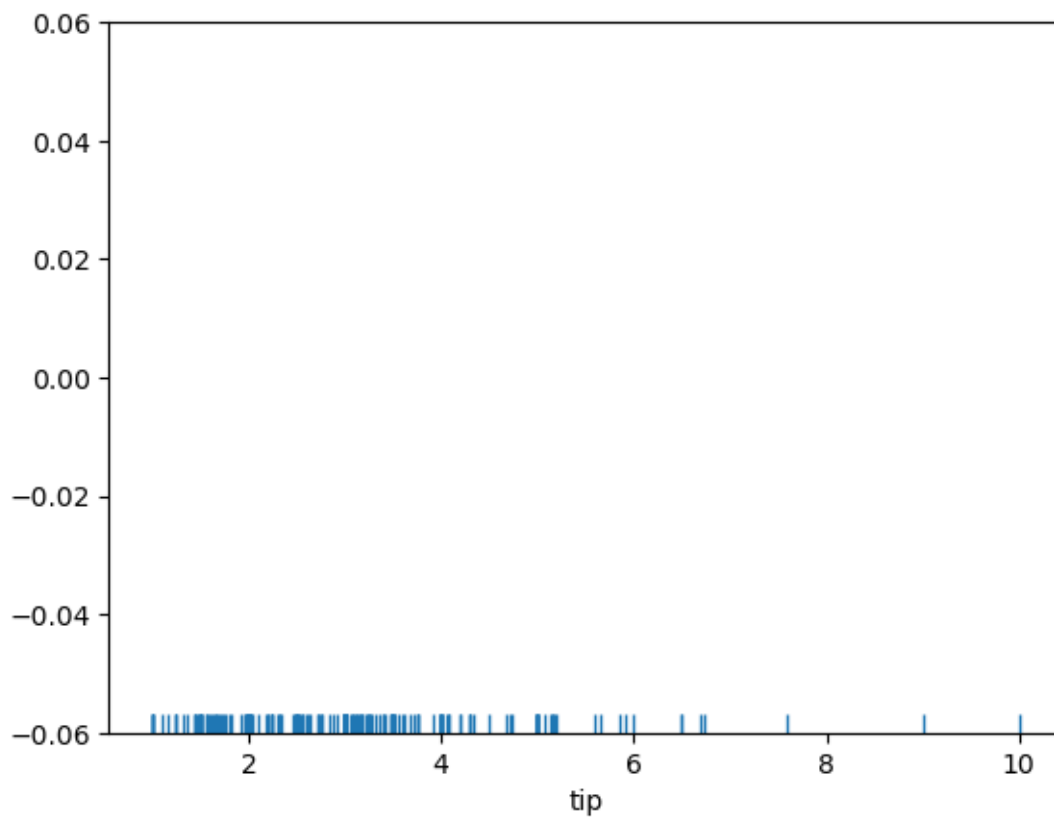
```
[82]: <Axes: xlabel='tip', ylabel='Density'>
```



```
[83]: #rugplot  
sns.rugplot(df['tip'])
```

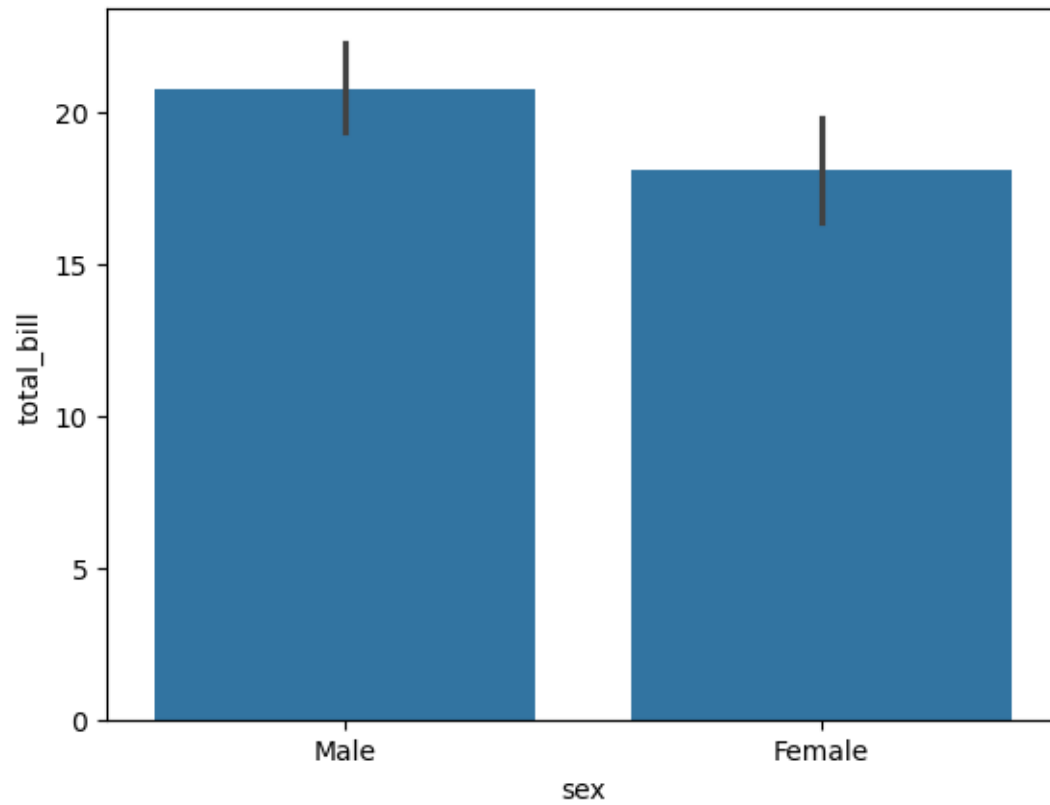
```
[83]: <Axes: xlabel='tip'>
```





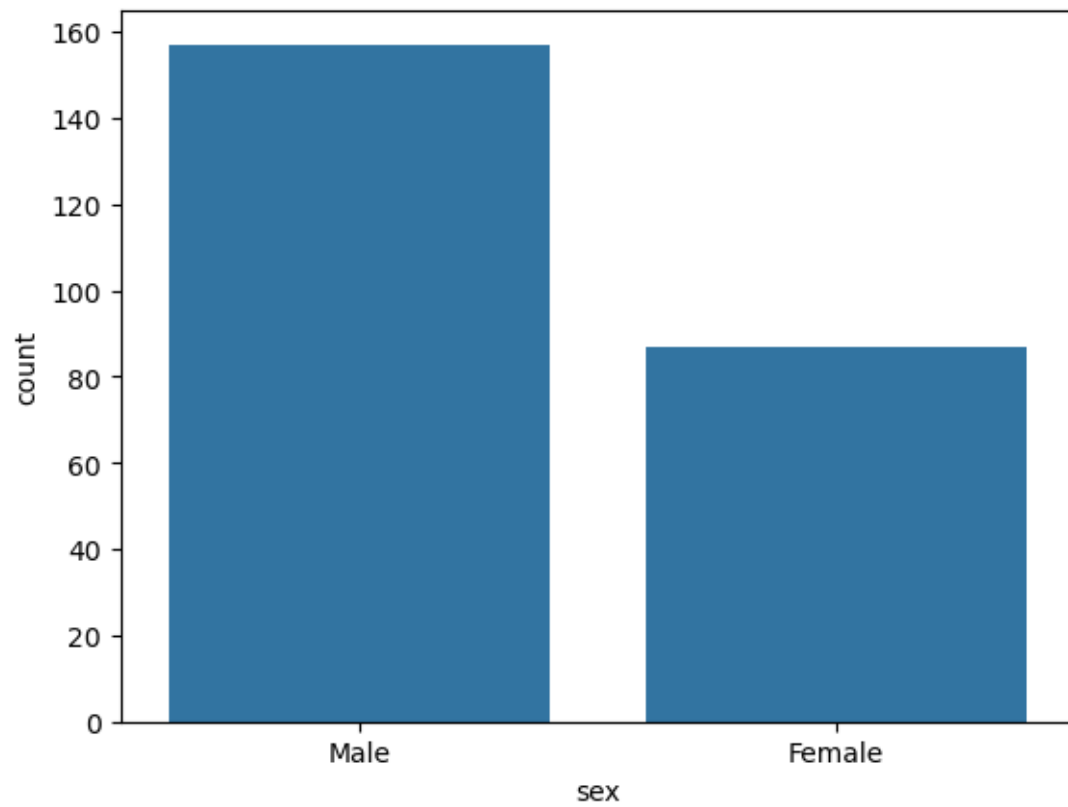
```
[84]: #categorical plot
sns.barplot(x='sex', y='total_bill', data=df)
```

```
[84]: <Axes: xlabel='sex', ylabel='total_bill'>
```



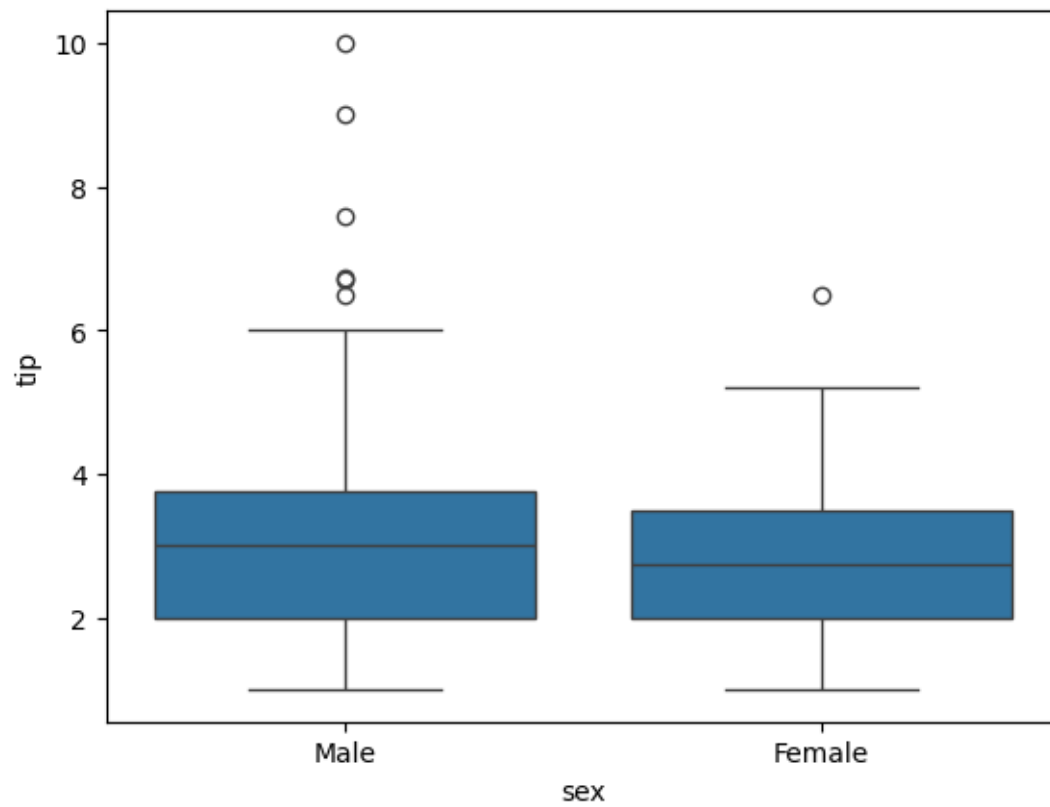
```
[85]: #countplot  
sns.countplot(x='sex', data=df)
```

```
[85]: <Axes: xlabel='sex', ylabel='count'>
```



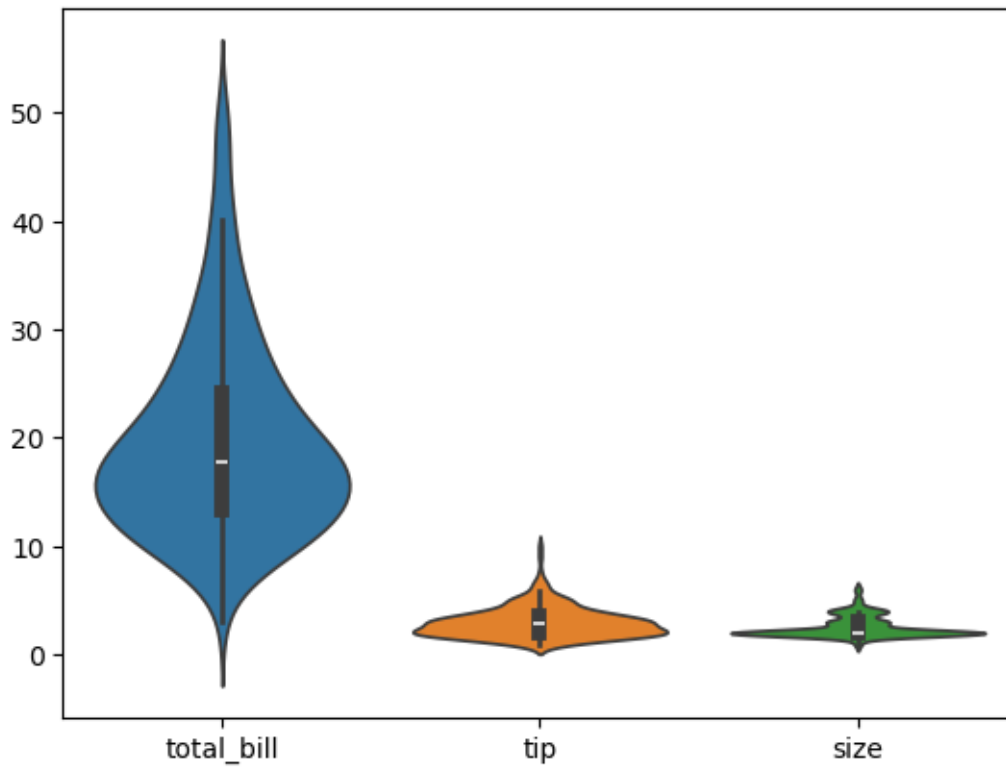
```
[86]: #boxplot
sns.boxplot(x='sex', y='tip', data=df)
```

```
[86]: <Axes: xlabel='sex', ylabel='tip'>
```



```
[87]: sns.violinplot(dt)
```

```
[87]: <Axes: >
```

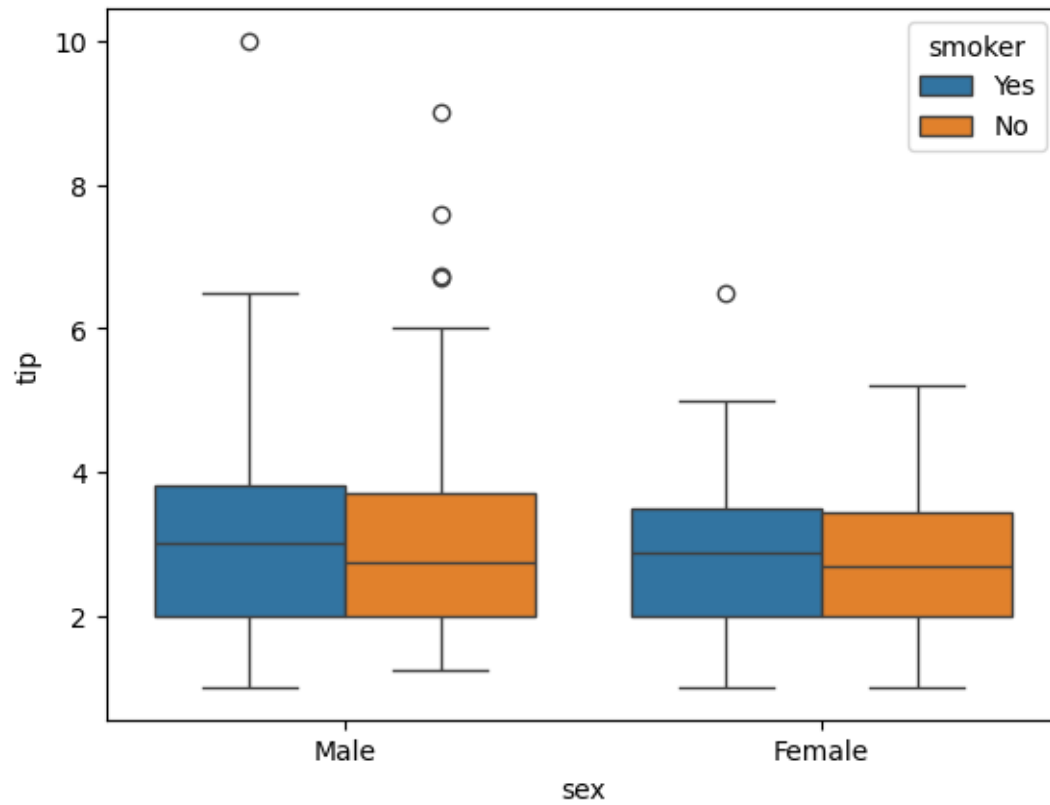


```
[88]: df.head(1)
```

```
[88]:   total_bill  tip    sex smoker  day  time  size
0      16.99  1.01  Female     No  Sun  Dinner    2
```

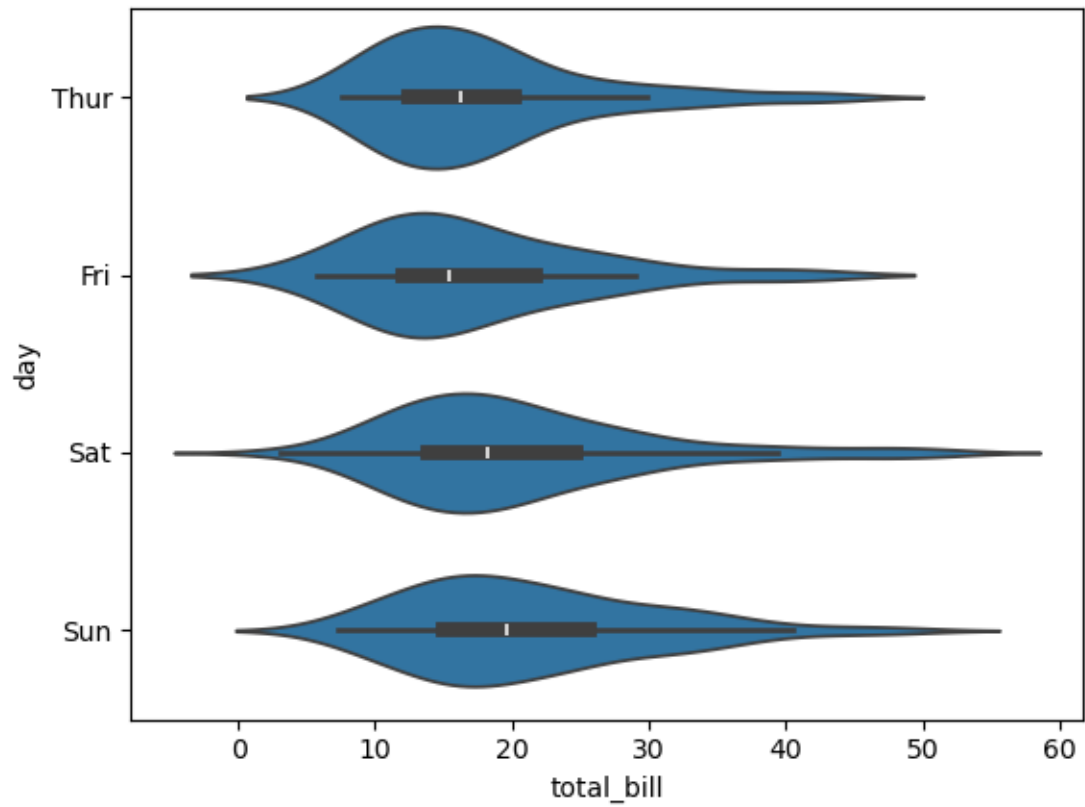
```
[89]: #box plot with hue
sns.boxplot(x='sex', y='tip', data=df, hue="smoker")
```

```
[89]: <Axes: xlabel='sex', ylabel='tip'>
```



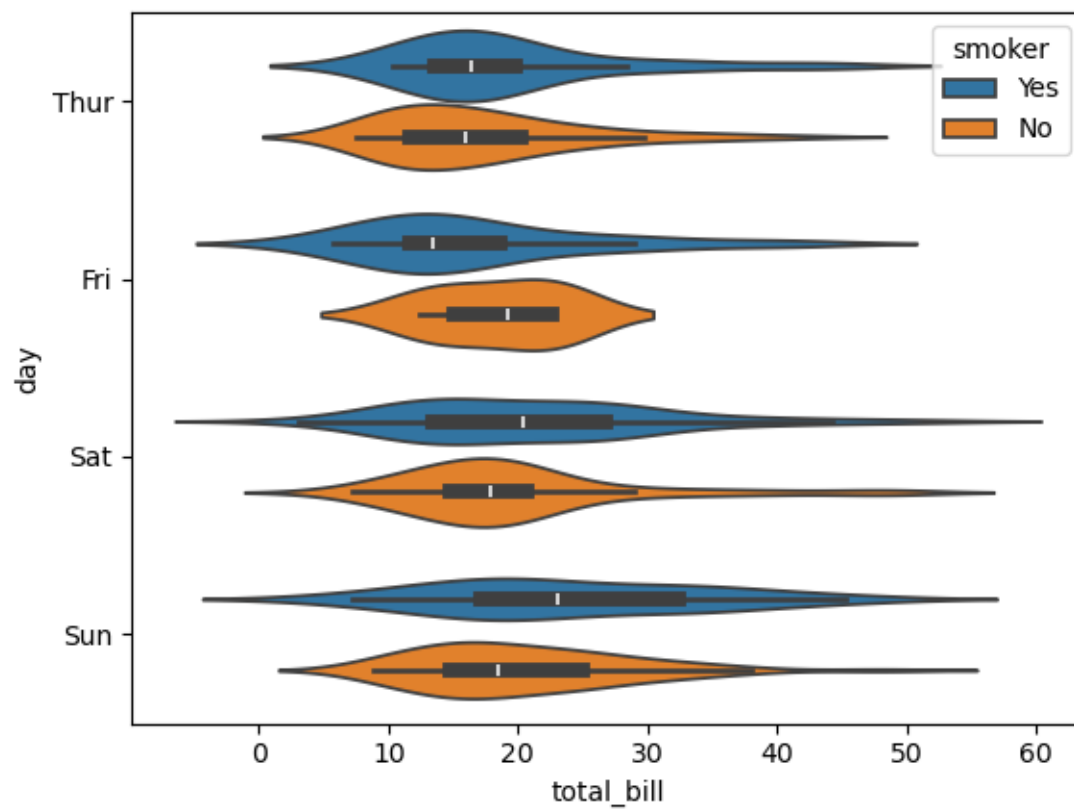
```
[90]: # violin plot
sns.violinplot(x='total_bill', y='day', data=df)
```

```
[90]: <Axes: xlabel='total_bill', ylabel='day'>
```



```
[91]: # violin plot with hue
sns.violinplot(x='total_bill', y='day', data=df, hue="smoker")
```

```
[91]: <Axes: xlabel='total_bill', ylabel='day'>
```



[ ]: