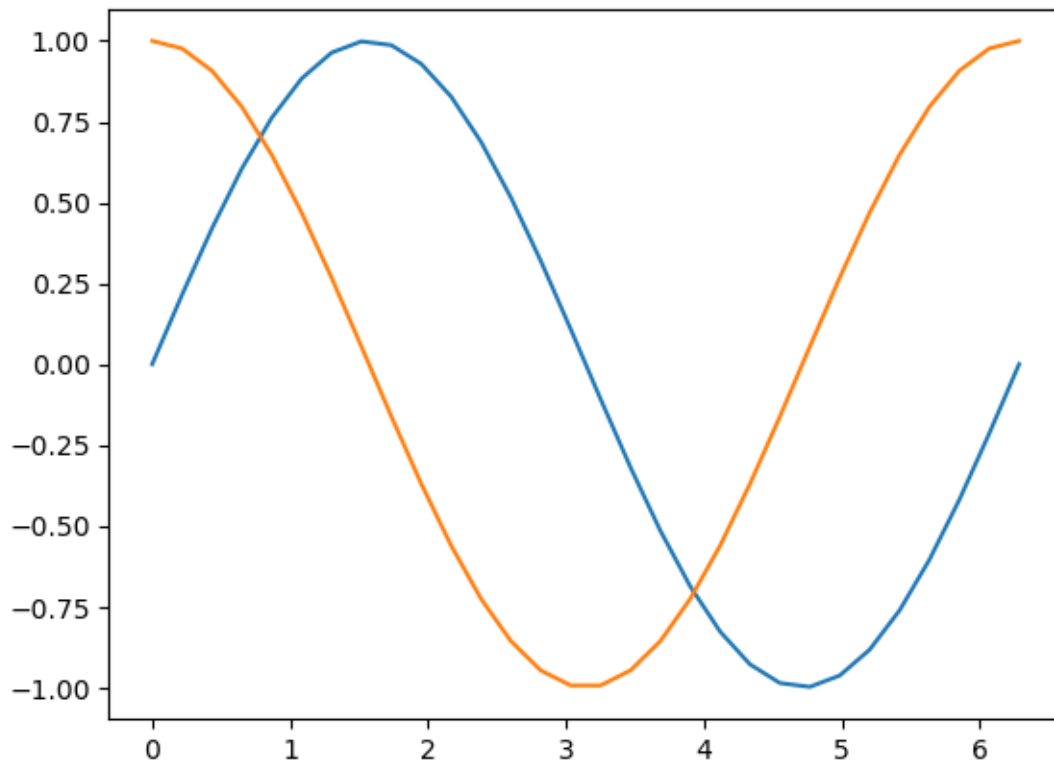# Data_visualization

October 26, 2023

```
[2]: import matplotlib.pyplot as plt
     import seaborn as sns
     import numpy as np
     import pandas as pd
```

```
[3]: x=np.linspace(0,2*np.pi,30)
```

```
[4]: y=np.sin(x)
     z=np.cos(x)
```
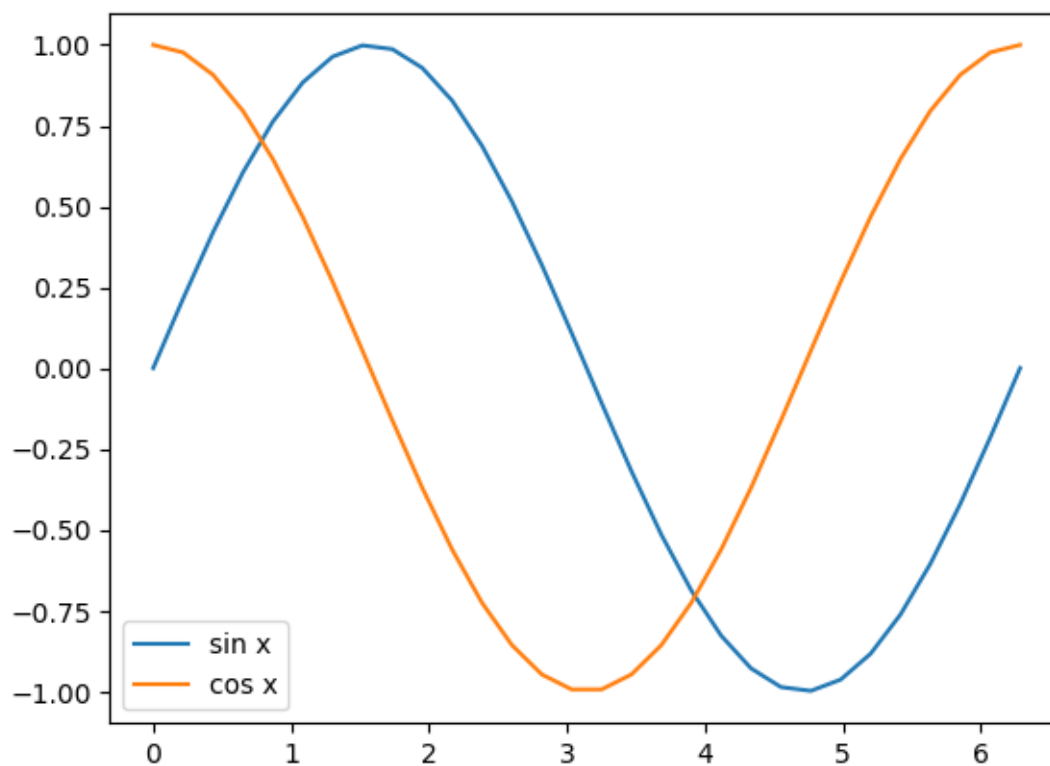
```
[5]: plt.plot(x,y)
     plt.plot(x,z)
```

```
[5]: [<matplotlib.lines.Line2D at 0x7f0a36d4aad0>]
```
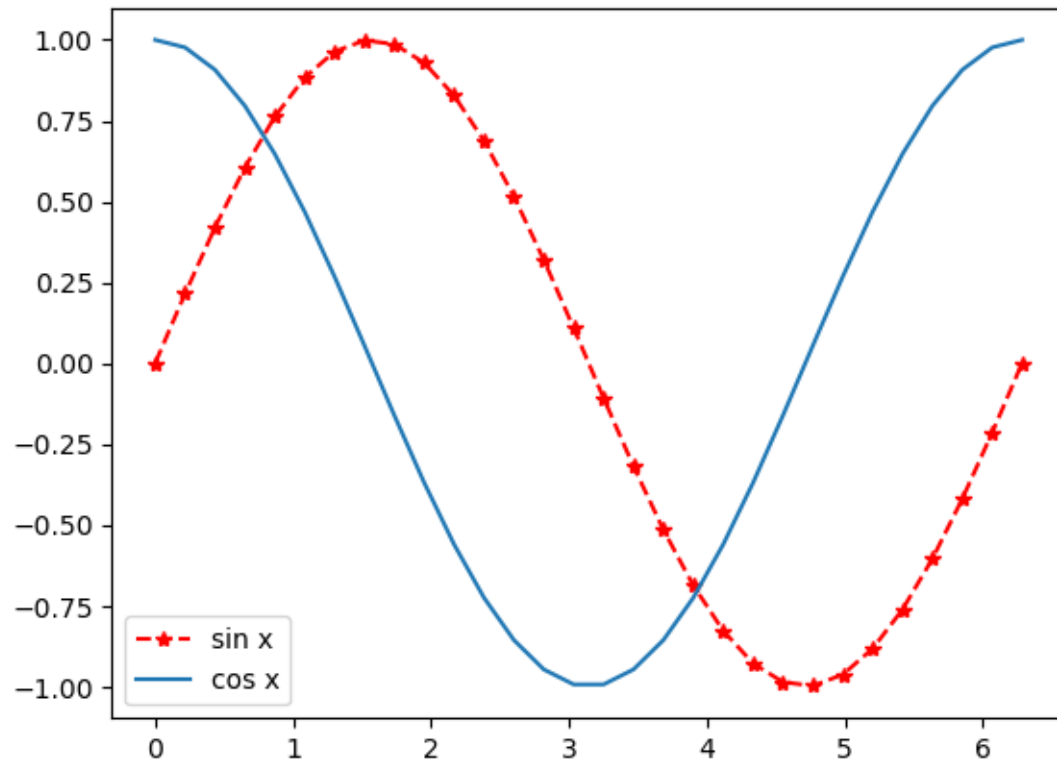
```
[6]: plt.plot(x,y,label="sin x")
     plt.plot(x,z, label="cos x")
     plt.legend()
```

[6]: <matplotlib.legend.Legend at 0x7f0a36d06d50>
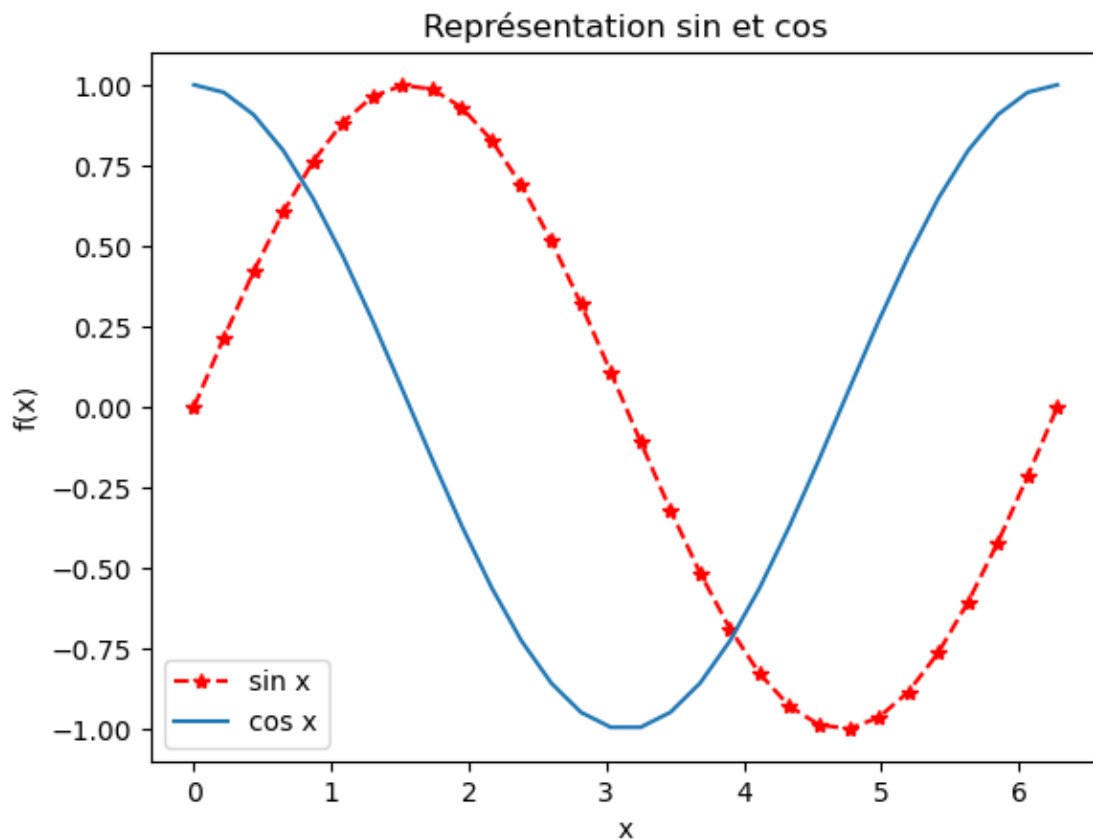


```
[7]: plt.plot(x,y,label="sin x",linestyle="--",marker="*",color="r")
     plt.plot(x,z, label="cos x")
     plt.legend()
```

[7]: <matplotlib.legend.Legend at 0x7f0a363aec90>

```
[8]: plt.plot(x,y,label="sin x",linestyle="--",marker="*",color="r")
     plt.plot(x,z, label="cos x")
     plt.legend()
     plt.title("Représentation sin et cos")
     plt.xlabel("x")
     plt.ylabel("f(x)")
```

[8]: Text(0, 0.5, 'f(x)')

Représentation sin et cos

```
[9]: iris=sns.load_dataset("iris")
```

```
[10]: iris.head()
```

[10]:

	sepal_length	sepal_width	petal_length	petal_width	species
0	5.1	3.5	1.4	0.2	setosa
1	4.9	3.0	1.4	0.2	setosa
2	4.7	3.2	1.3	0.2	setosa
3	4.6	3.1	1.5	0.2	setosa
4	5.0	3.6	1.4	0.2	setosa

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

```
[12]: tip.head()
```

[12]:

	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
```

```
[13]: set(tip["day"])
      ['Sat','Sun', 'Thur','Fri']
```
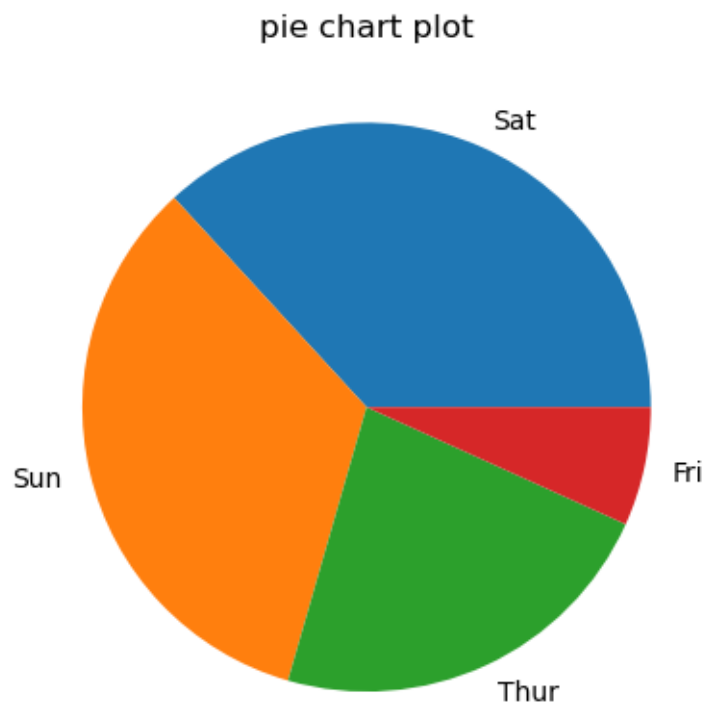
```
[13]: ['Sat', 'Sun', 'Thur', 'Fri']
```

```
[14]: new_tip=tip.groupby(tip.day)["total_bill"].agg(sum).sort_values(ascending=False)
      new_tip
```

```
[14]: day
      Sat     1778.40
      Sun     1627.16
      Thur    1096.33
      Fri      325.88
      Name: total_bill, dtype: float64
```
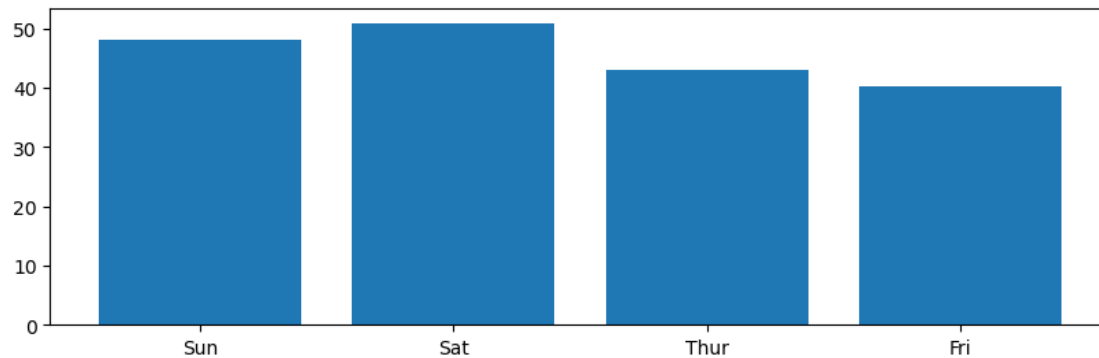
```
[15]: plt.pie(new_tip,labels=['Sat','Sun', 'Thur','Fri'])
      plt.title("pie chart plot")
```

```
[15]: Text(0.5, 1.0, 'pie chart plot')
```


pie chart plot
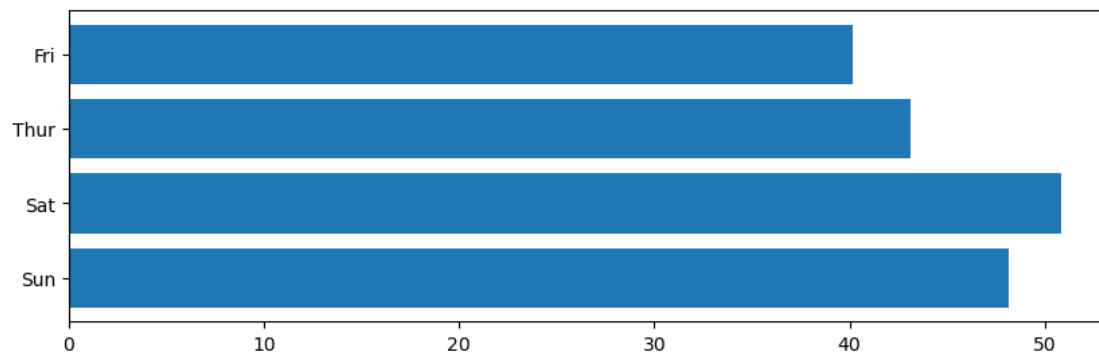
```
[16]: plt.figure(figsize=(10,3))
      plt.bar(tip.day,tip.total_bill)
```

[16]: <BarContainer object of 244 artists>
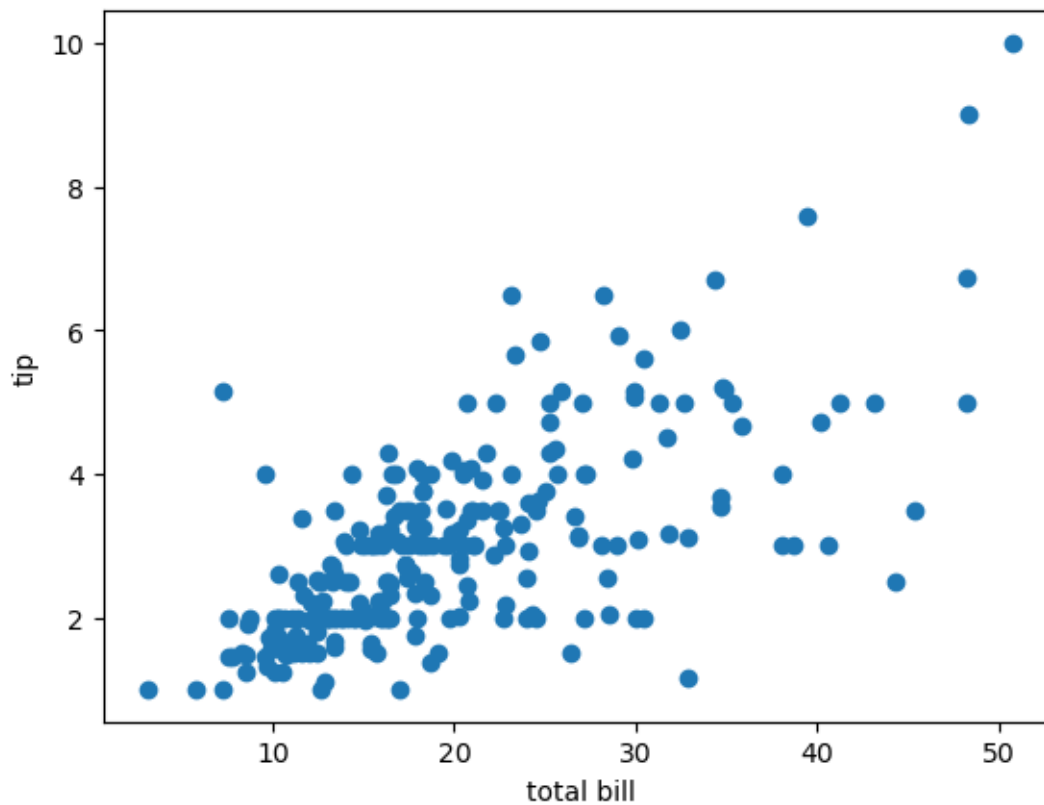


```
[17]: plt.figure(figsize=(10,3))
      plt.barh(tip.day,tip.total_bill)
```

[17]: <BarContainer object of 244 artists>


```
[18]: plt.scatter(tip.total_bill,tip.tip)
      plt.xlabel("total bill")
      plt.ylabel("tip")
```

[18]: Text(0, 0.5, 'tip')

```
[60]: iris
```

```
[60]:      sepal_length  sepal_width  petal_length  petal_width    species
      0             5.1          3.5           1.4          0.2     setosa
      1             4.9          3.0           1.4          0.2     setosa
      2             4.7          3.2           1.3          0.2     setosa
      3             4.6          3.1           1.5          0.2     setosa
      4             5.0          3.6           1.4          0.2     setosa
      ..            ...          ...           ...          ...        ...
      145           6.7          3.0           5.2          2.3  virginica
      146           6.3          2.5           5.0          1.9  virginica
      147           6.5          3.0           5.2          2.0  virginica
      148           6.2          3.4           5.4          2.3  virginica
      149           5.9          3.0           5.1          1.8  virginica

      [150 rows x 5 columns]
```
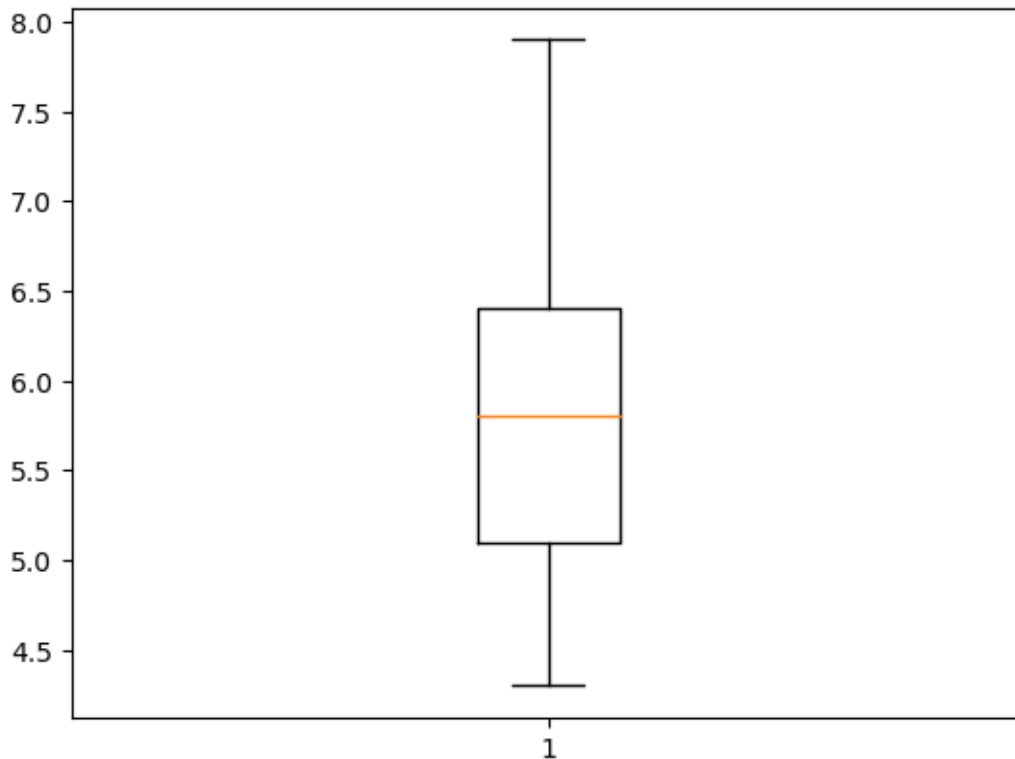
```
[61]: plt.boxplot(iris.sepal_length)
```

```
[61]: {'whiskers': [<matplotlib.lines.Line2D at 0x7f0a2a968d10>,
        <matplotlib.lines.Line2D at 0x7f0a2a9e4450>],
```

```
 'caps': [<matplotlib.lines.Line2D at 0x7f0a2a9e4cd0>,
  <matplotlib.lines.Line2D at 0x7f0a2aa66ed0>],
 'boxes': [<matplotlib.lines.Line2D at 0x7f0a2a947450>],
 'medians': [<matplotlib.lines.Line2D at 0x7f0a2a9e5cd0>],
 'fliers': [<matplotlib.lines.Line2D at 0x7f0a2a9e4410>],
 'means': []}
```


[62]: `set(iris.species)`

[62]: `{'setosa', 'versicolor', 'virginica'}`

[63]:
```python
setosa_data = iris[iris['species'] == 'setosa']['sepal_length']
virginica_data = iris[iris['species'] == 'virginica']['sepal_length']
versicolor_data = iris[iris['species'] == 'versicolor']['sepal_length']

plt.boxplot([setosa_data, virginica_data, versicolor_data], labels=['setosa',␣
 ↪'virginica', 'versicolor'])
```

[63]:
```
{'whiskers': [<matplotlib.lines.Line2D at 0x7f0a2a848b10>,
  <matplotlib.lines.Line2D at 0x7f0a2a849450>,
  <matplotlib.lines.Line2D at 0x7f0a2a854450>,
  <matplotlib.lines.Line2D at 0x7f0a2a854cd0>,
```
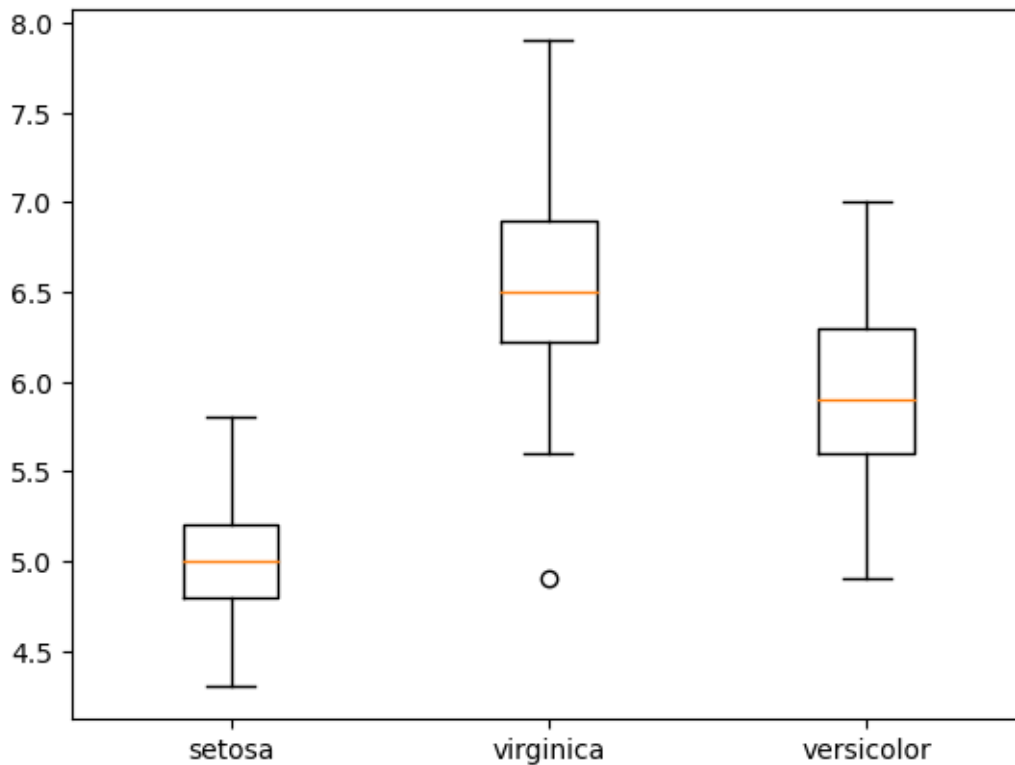
```
    <matplotlib.lines.Line2D at 0x7f0a2a864150>,
    <matplotlib.lines.Line2D at 0x7f0a2a8649d0>],
   'caps': [<matplotlib.lines.Line2D at 0x7f0a2a848150>,
    <matplotlib.lines.Line2D at 0x7f0a2a84a3d0>,
    <matplotlib.lines.Line2D at 0x7f0a2a855550>,
    <matplotlib.lines.Line2D at 0x7f0a2a855e50>,
    <matplotlib.lines.Line2D at 0x7f0a2a865290>,
    <matplotlib.lines.Line2D at 0x7f0a2a865b10>],
   'boxes': [<matplotlib.lines.Line2D at 0x7f0a2a848310>,
    <matplotlib.lines.Line2D at 0x7f0a2a84bb90>,
    <matplotlib.lines.Line2D at 0x7f0a2a857890>],
   'medians': [<matplotlib.lines.Line2D at 0x7f0a2a84abd0>,
    <matplotlib.lines.Line2D at 0x7f0a2a856710>,
    <matplotlib.lines.Line2D at 0x7f0a2a8663d0>],
   'fliers': [<matplotlib.lines.Line2D at 0x7f0a2a849ad0>,
    <matplotlib.lines.Line2D at 0x7f0a2a962d50>,
    <matplotlib.lines.Line2D at 0x7f0a2a856f50>],
   'means': []}
```
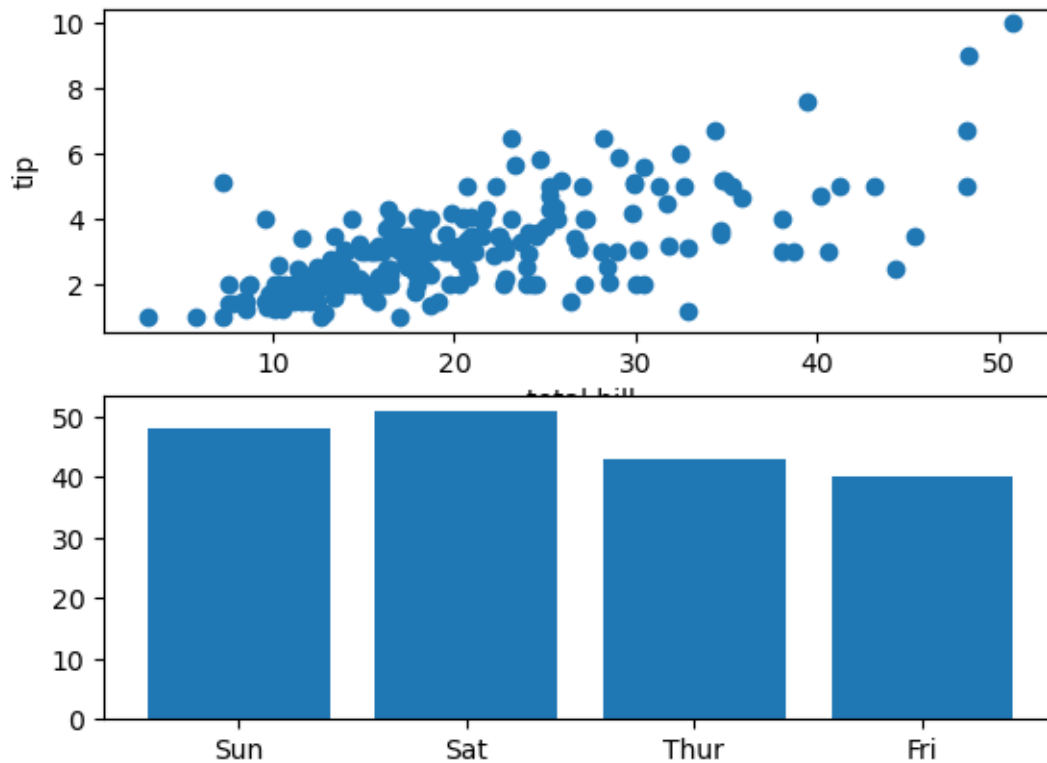


```
[64]: plt.subplot(2,1,1)
      plt.scatter(tip.total_bill,tip.tip)
      plt.xlabel("total bill")
```

```
plt.ylabel("tip")

plt.subplot(2,1,2)
plt.bar(tip.day,tip.total_bill)
```
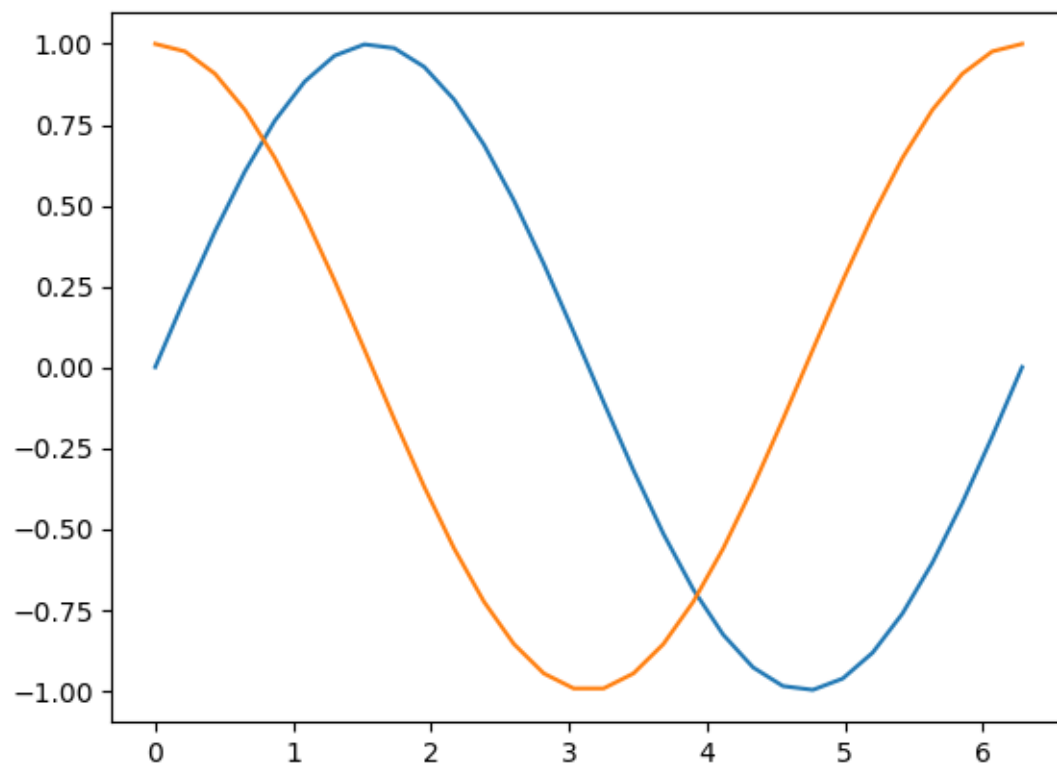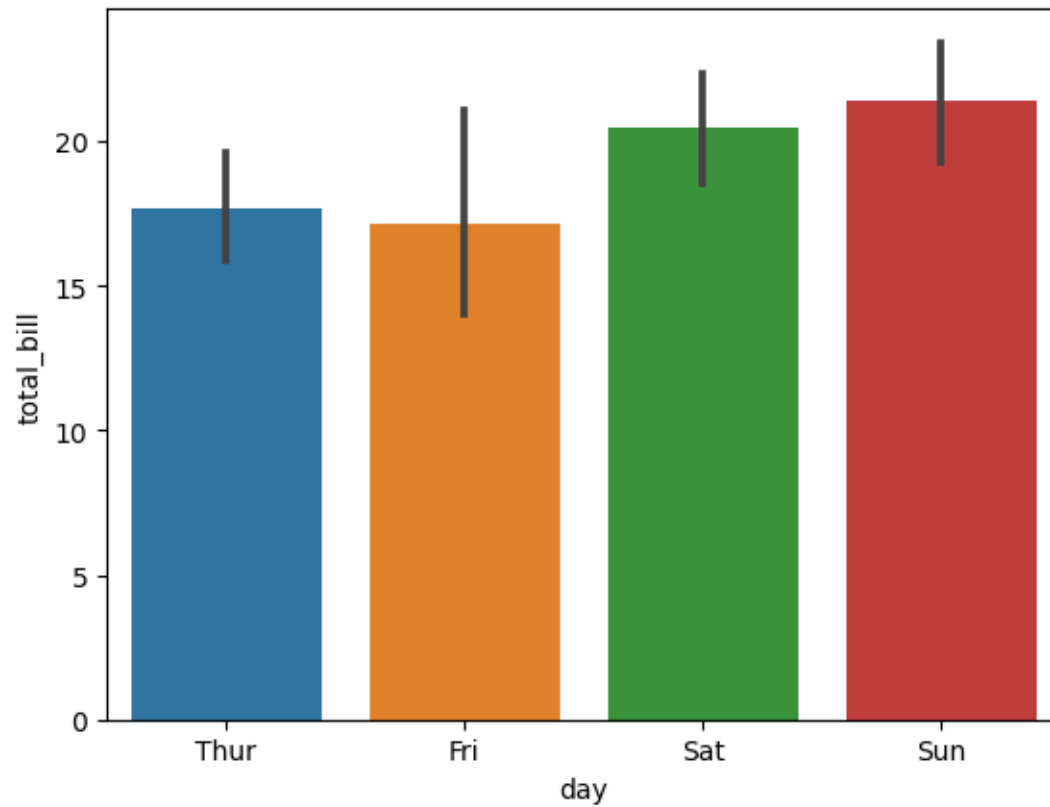
[64]: <BarContainer object of 244 artists>

[65]:
```
sns.lineplot(x=x,y=y)
sns.lineplot(x=x,y=z)
```

[65]: <Axes: >

```
[66]: sns.barplot(x=tip.day,y=tip.total_bill)
```

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

```
[67]: plt.hist(tip.total_bill)
```

```
[67]: (array([ 7., 42., 68., 51., 31., 19., 12.,  7.,  3.,  4.]),
       array([ 3.07 ,  7.844, 12.618, 17.392, 22.166, 26.94 , 31.714, 36.488,
              41.262, 46.036, 50.81 ]),
       <BarContainer object of 10 artists>)
```
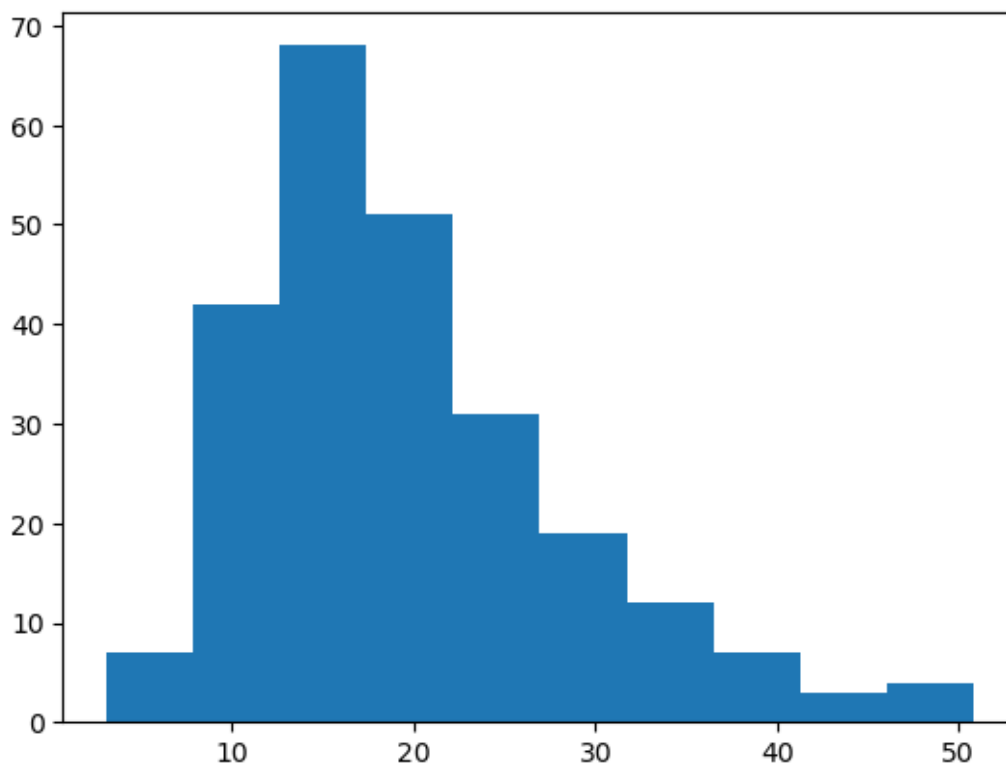
```
[68]: sns.boxplot(x="species",y="sepal_length", data=iris)
```

```
[68]: <Axes: xlabel='species', ylabel='sepal_length'>
```

```
[69]: iris
```

```
[69]:       sepal_length  sepal_width  petal_length  petal_width    species
      0              5.1          3.5           1.4          0.2     setosa
      1              4.9          3.0           1.4          0.2     setosa
      2              4.7          3.2           1.3          0.2     setosa
      3              4.6          3.1           1.5          0.2     setosa
      4              5.0          3.6           1.4          0.2     setosa
      ..             ...          ...           ...          ...        ...
      145            6.7          3.0           5.2          2.3  virginica
      146            6.3          2.5           5.0          1.9  virginica
      147            6.5          3.0           5.2          2.0  virginica
      148            6.2          3.4           5.4          2.3  virginica
      149            5.9          3.0           5.1          1.8  virginica

      [150 rows x 5 columns]
```
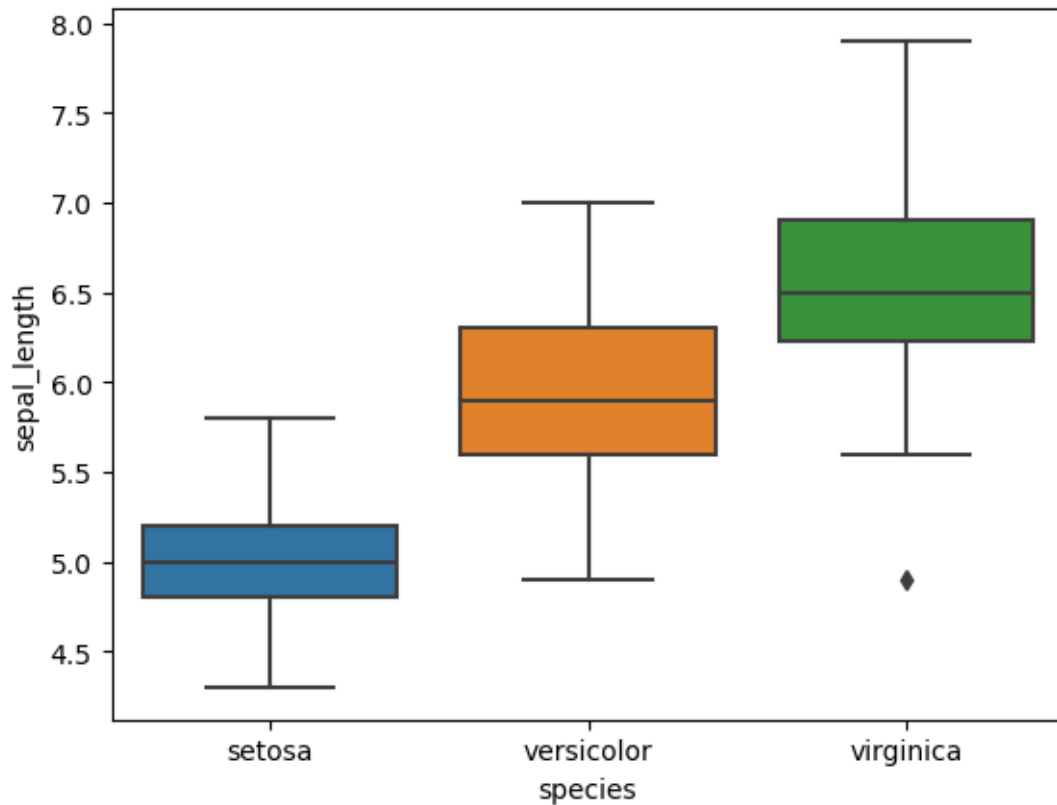
```
[70]: sns.barplot
```

```
[70]: <function seaborn.categorical.barplot(data=None, *, x=None, y=None, hue=None,
      order=None, hue_order=None, estimator='mean', errorbar=('ci', 95), n_boot=1000,
```

```
units=None, seed=None, orient=None, color=None, palette=None, saturation=0.75,
width=0.8, errcolor='.26', errwidth=None, capsize=None, dodge=True,
ci='deprecated', ax=None, **kwargs)>
```

[71]:
```python
import plotly.express as px
```

[72]:
```python
fig = px.line(x=x, y=y, labels={'x':'x', 'y': 'Cos x'})
fig.show()
```

[73]:
```python
fig=px.bar(tip.total_bill,tip.day)
fig.show()
```

[74]:
```python
fig=px.pie(tip.total_bill,tip.day)
fig.show()
```

[75]:
```python
fig=px.histogram(tip.total_bill)
fig.show()
```

[76]:
```python
new_tip2=tip.pivot_table('total_bill','day','time',aggfunc='sum')
new_tip2
```

[76]:
```
time     Lunch    Dinner
day
Thur   1077.55     18.78
Fri      89.92    235.96
Sat       0.00   1778.40
Sun       0.00   1627.16
```

[77]:
```python
fig = px.imshow(new_tip2)

fig.show()
```

[ ]:

[ ]: