

```
from sklearn import datasets
import pandas as pd
import numpy as np
iris=datasets.load_iris()
print(iris)

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[illegible]

separable from each other.\n\n.. topic:: References\n\n - Fisher, R.A. "The use of multiple measurements in taxonomic problems"\n Annual Eugenics, 7, Part II, 179-188 (1936); also in "Contributions to\n Mathematical Statistics" (John Wiley, NY, 1950).\n - Duda, R.O., & Hart, P.E. (1973) Pattern Classification and Scene Analysis.\n (Q327.D83) John Wiley & Sons. ISBN 0-471-22361-1. See page 218.\n - Dasarathy, B.V. (1980) "Nosing Around the Neighborhood: A New System\n Structure and Classification Rule for Recognition in Partially Exposed\n Environments". IEEE Transactions on Pattern Analysis and Machine\n Intelligence, Vol. PAMI-2, No. 1, 67-71.\n - Gates, G.W. (1972) "The Reduced Nearest Neighbor Rule". IEEE Transactions\n on Information Theory, May 1972, 431-433.\n - See also: 1988 MLC Proceedings, 54-64. Cheeseman et al's AUTOCLASS II\n conceptual clustering system finds 3 classes in the data.\n - Many, many more ...', 'feature\_names': ['sepal length (cm)', 'sepal width (cm)', 'petal length (cm)', 'petal width (cm)'], 'filename': 'iris.csv', 'data\_module': 'sklearn.datasets.data'}

```
print(type(iris))
```

```
<class 'sklearn.utils.Bunch'>
```

```
print(type(iris.data))
```

```
<class 'numpy.ndarray'>
```

```
print(type(iris.target))
```

```
<class 'numpy.ndarray'>
```

```
print(iris.keys())
```

```
dict_keys(['data', 'target', 'frame', 'target_names', 'DESCR', 'feature_names', 'filename', 'data_module'])
```

```
print(iris.data.shape)
```

```
(150, 4)
```

```
print(iris.target_names)
```

```
['setosa' 'versicolor' 'virginica']
```

```
x=iris.data
```

```
y=iris.target
```

```
print(x)
```

```
print(y)
```

```
[[5.1 3.5 1.4 0.2]
```

```
 [4.9 3.  1.4 0.2]
```

```
 [4.7 3.2 1.3 0.2]
```

```
 [4.6 3.1 1.5 0.2]
```

[5. 3.6 1.4 0.2]  
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[5.8 2.7 5.1 1.9]

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[5.9 3. 5.1 1.8]]
```



[illegible]

```
#convert dataset to dataframe
df=pd.DataFrame(x,columns=iris.feature_names)
print(df)
```

	sepal length (cm)	sepal width (cm)	petal length (cm)	petal width (cm)
0	5.1	3.5	1.4	0.2
1	4.9	3.0	1.4	0.2
2	4.7	3.2	1.3	0.2
3	4.6	3.1	1.5	0.2
4	5.0	3.6	1.4	0.2
...	...	...	...	...
145	6.7	3.0	5.2	2.3
146	6.3	2.5	5.0	1.9
147	6.5	3.0	5.2	2.0
148	6.2	3.4	5.4	2.3
149	5.9	3.0	5.1	1.8

```
[150 rows x 4 columns]
```

```
print(df.head()) #printing first 5 rows
```

	sepal length (cm)	sepal width (cm)	petal length (cm)	petal width
0	5.1	3.5	1.4	
0.2				
1	4.9	3.0	1.4	
0.2				
2	4.7	3.2	1.3	
0.2				

```
3          4.6          3.1          1.5
0.2
4          5.0          3.6          1.4
0.2
```

```
print(df.tail())#printing last 5 rows
```

```
      sepal length (cm)  sepal width (cm)  petal length (cm)  petal
width (cm)
145          6.7          3.0          5.2
2.3
146          6.3          2.5          5.0
1.9
147          6.5          3.0          5.2
2.0
148          6.2          3.4          5.4
2.3
149          5.9          3.0          5.1
1.8
```

```
print(df.describe())
```

```
      sepal length (cm)  sepal width (cm)  petal length (cm)  \
count          150.000000          150.000000          150.000000
mean           5.843333           3.057333           3.758000
std            0.828066           0.435866           1.765298
min            4.300000           2.000000           1.000000
25%            5.100000           2.800000           1.600000
50%            5.800000           3.000000           4.350000
75%            6.400000           3.300000           5.100000
max            7.900000           4.400000           6.900000
```

```
      petal width (cm)
count          150.000000
mean           1.199333
std            0.762238
min            0.100000
25%            0.300000
50%            1.300000
75%            1.800000
max            2.500000
```

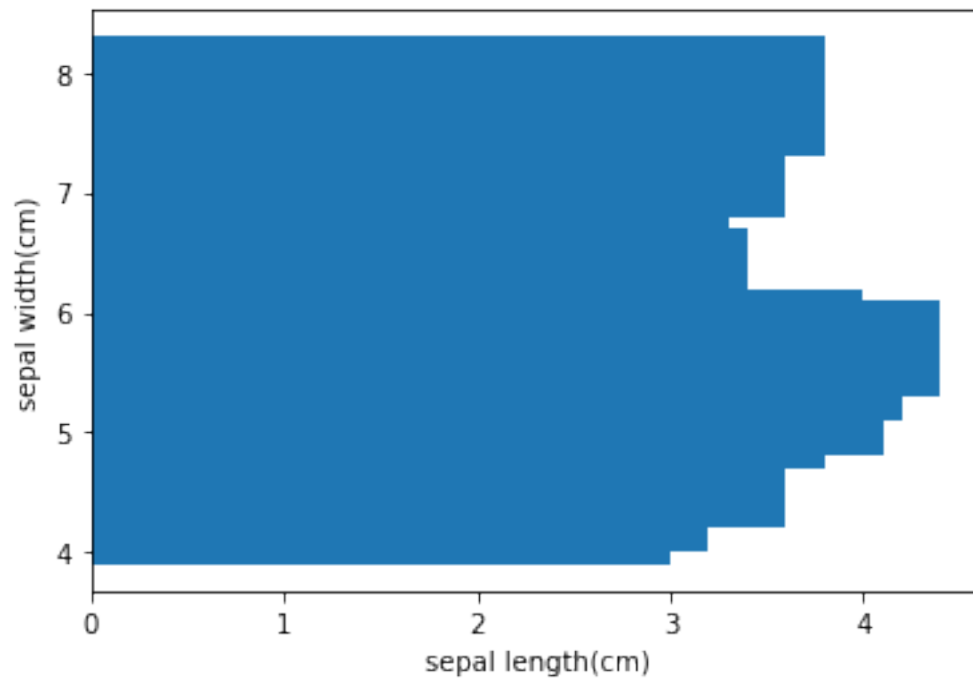
```
print(df.shape)
```

```
(150, 4)
```

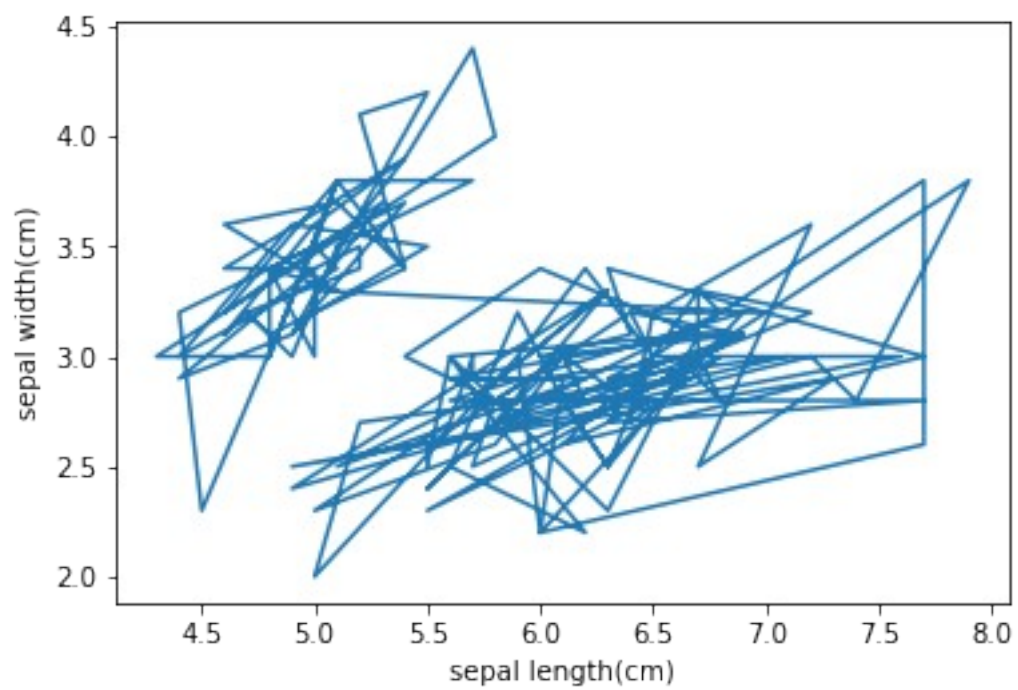
```
a=df["sepal length (cm)"] #accessing df columns for plotting
b=df["sepal width (cm)"]
print(a,b)
```

```
0      5.1
1      4.9
2      4.7
3      4.6
4      5.0
...
145     6.7
146     6.3
147     6.5
148     6.2
149     5.9
Name: sepal length (cm), Length: 150, dtype: float64 0      3.5
1      3.0
2      3.2
3      3.1
4      3.6
...
145     3.0
146     2.5
147     3.0
148     3.4
149     3.0
Name: sepal width (cm), Length: 150, dtype: float64

import matplotlib.pyplot as plt
plt.barh(a,b)
plt.xlabel("sepal length(cm)")
plt.ylabel("sepal width(cm)")
plt.show()
```



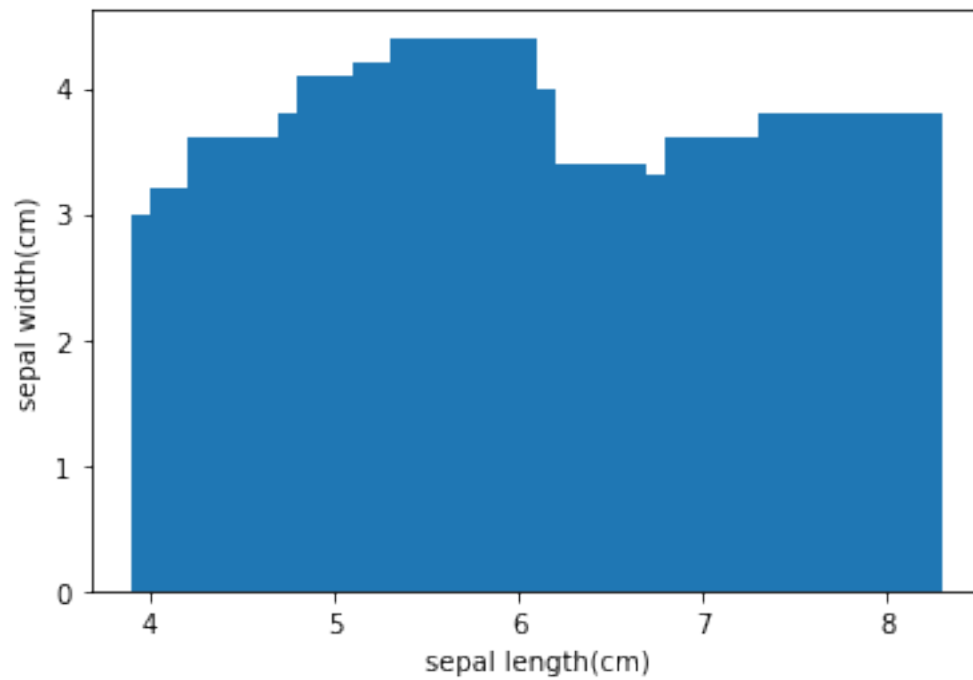
```
plt.plot(a,b)  
plt.xlabel("sepal length(cm)")  
plt.ylabel("sepal width(cm)")  
plt.show()
```



```
plt.pie(a,b)  
plt.show()
```



```
plt.bar(a,b)  
plt.xlabel("sepal length(cm)")  
plt.ylabel("sepal width(cm)")  
plt.show()
```



```
plt.plot(x,y)  
plt.show()
```

