

```
def read_data(filename):
    with open(filename, 'r') as f:
        text = f.readlines()
        print(text)
```

```
read_data('welcome.txt')
```

```
['Hello everyone!\n', 'Welcome to the course BM2033-Probability and
Random Processes. This course requires a background in libraries like
Pandas,matplotlib,numpy etc.\n', 'First class is on Thursday, 23rd
Sept 2021 at 2.30 pm.\n']
```

```
f1 = open("output.txt", "w")
with open("welcome.txt", "r") as myfile:
    data = myfile.readlines()
    data_1 = data[:-1]
    f1.writelines(data_1)
    f1.close()
```

```
print("Please enter the name of the file: ")
fileName = str(input())
f = open(fileName, "r")
num = 0
vowels = ['a', 'e', 'i', 'o', 'u', 'A', 'E', 'I', 'O', 'U']
```

```
for char in f.read():
    if char in vowels:
        num = num + 1
f.close()
```

```
Please enter the name of the file:
welcome.txt
```

```
print("\nThe number of vowels in the file are:")
print(num)
```

```
The number of vowels in the file are:
58
```

```
print("Enter the Name of File: ")
fileName = str(input())
try:
    f1 = open(fileName)
    counts = dict()
    for line in f1:
        words = line.split()
        for word in words:
            if word in counts:
```

```

        counts[word] += 1
    else:
        counts[word]=1
print(counts)
except:
    print('File cannot be opened:', fname)

```

Enter the Name of File:

welcome.txt

```
{'Hello': 1, 'everyone!': 1, 'Welcome': 1, 'to': 1, 'the': 1,
'course': 2, 'BM2033-Probability': 1, 'and': 1, 'Random': 1,
'Processes.': 1, 'This': 1, 'requires': 1, 'a': 1, 'background': 1,
'in': 1, 'libraries': 1, 'like': 1, 'Pandas,matplotlib,numpy': 1,
'etc.': 1, 'First': 1, 'class': 1, 'is': 1, 'on': 1, 'Thursday.': 1,
'23rd': 1, 'Sept': 1, '2021': 1, 'at': 1, '2.30': 1, 'pm.': 1}
```

```
import pandas as pd
data=pd.read_csv('iris.csv')
print(data)
```

	sepal.length	sepal.width	petal.length	petal.width	variety
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]

#read the sepal length column

```
sepal_info = data[['sepal.length','sepal.width']]
sepal_info
```

	sepal.length	sepal.width
0	5.1	3.5
1	4.9	3.0
2	4.7	3.2
3	4.6	3.1
4	5.0	3.6
..
145	6.7	3.0
146	6.3	2.5
147	6.5	3.0
148	6.2	3.4
149	5.9	3.0

[150 rows x 2 columns]

data[data['sepal.length']>=5.0]

	sepal.length	sepal.width	petal.length	petal.width	variety
0	5.1	3.5	1.4	0.2	Setosa
4	5.0	3.6	1.4	0.2	Setosa
5	5.4	3.9	1.7	0.4	Setosa
7	5.0	3.4	1.5	0.2	Setosa
10	5.4	3.7	1.5	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

[128 rows x 5 columns]

data[data['sepal.width']>=3.5]

	sepal.length	sepal.width	petal.length	petal.width	variety
0	5.1	3.5	1.4	0.2	Setosa
4	5.0	3.6	1.4	0.2	Setosa
5	5.4	3.9	1.7	0.4	Setosa
10	5.4	3.7	1.5	0.2	Setosa
14	5.8	4.0	1.2	0.2	Setosa
15	5.7	4.4	1.5	0.4	Setosa
16	5.4	3.9	1.3	0.4	Setosa
17	5.1	3.5	1.4	0.3	Setosa
18	5.7	3.8	1.7	0.3	Setosa
19	5.1	3.8	1.5	0.3	Setosa
21	5.1	3.7	1.5	0.4	Setosa
22	4.6	3.6	1.0	0.2	Setosa
27	5.2	3.5	1.5	0.2	Setosa
32	5.2	4.1	1.5	0.1	Setosa
33	5.5	4.2	1.4	0.2	Setosa
36	5.5	3.5	1.3	0.2	Setosa
37	4.9	3.6	1.4	0.1	Setosa
40	5.0	3.5	1.3	0.3	Setosa
43	5.0	3.5	1.6	0.6	Setosa
44	5.1	3.8	1.9	0.4	Setosa
46	5.1	3.8	1.6	0.2	Setosa
48	5.3	3.7	1.5	0.2	Setosa
109	7.2	3.6	6.1	2.5	Virginica
117	7.7	3.8	6.7	2.2	Virginica
131	7.9	3.8	6.4	2.0	Virginica

data[data['petal.length']>=5.3]

	sepal.length	sepal.width	petal.length	petal.width	variety
100	6.3	3.3	6.0	2.5	Virginica
102	7.1	3.0	5.9	2.1	Virginica
103	6.3	2.9	5.6	1.8	Virginica
104	6.5	3.0	5.8	2.2	Virginica
105	7.6	3.0	6.6	2.1	Virginica
107	7.3	2.9	6.3	1.8	Virginica
108	6.7	2.5	5.8	1.8	Virginica
109	7.2	3.6	6.1	2.5	Virginica
111	6.4	2.7	5.3	1.9	Virginica
112	6.8	3.0	5.5	2.1	Virginica
115	6.4	3.2	5.3	2.3	Virginica
116	6.5	3.0	5.5	1.8	Virginica
117	7.7	3.8	6.7	2.2	Virginica
118	7.7	2.6	6.9	2.3	Virginica
120	6.9	3.2	5.7	2.3	Virginica
122	7.7	2.8	6.7	2.0	Virginica
124	6.7	3.3	5.7	2.1	Virginica
125	7.2	3.2	6.0	1.8	Virginica
128	6.4	2.8	5.6	2.1	Virginica
129	7.2	3.0	5.8	1.6	Virginica
130	7.4	2.8	6.1	1.9	Virginica
131	7.9	3.8	6.4	2.0	Virginica
132	6.4	2.8	5.6	2.2	Virginica
134	6.1	2.6	5.6	1.4	Virginica
135	7.7	3.0	6.1	2.3	Virginica
136	6.3	3.4	5.6	2.4	Virginica
137	6.4	3.1	5.5	1.8	Virginica
139	6.9	3.1	5.4	2.1	Virginica
140	6.7	3.1	5.6	2.4	Virginica
143	6.8	3.2	5.9	2.3	Virginica
144	6.7	3.3	5.7	2.5	Virginica
148	6.2	3.4	5.4	2.3	Virginica

```
sepal_info = data[['sepal.length', 'sepal.width']]
sepal_info
```

	sepal.length	sepal.width
0	5.1	3.5
1	4.9	3.0
2	4.7	3.2
3	4.6	3.1
4	5.0	3.6
..
145	6.7	3.0
146	6.3	2.5
147	6.5	3.0
148	6.2	3.4
149	5.9	3.0

[150 rows x 2 columns]

```
import pandas as pd
data=pd.read_csv('iris.csv')
data.loc[33:35]
```

	sepal.length	sepal.width	petal.length	petal.width	variety
33	5.5	4.2	1.4	0.2	Setosa
34	4.9	3.1	1.5	0.2	Setosa
35	5.0	3.2	1.2	0.2	Setosa

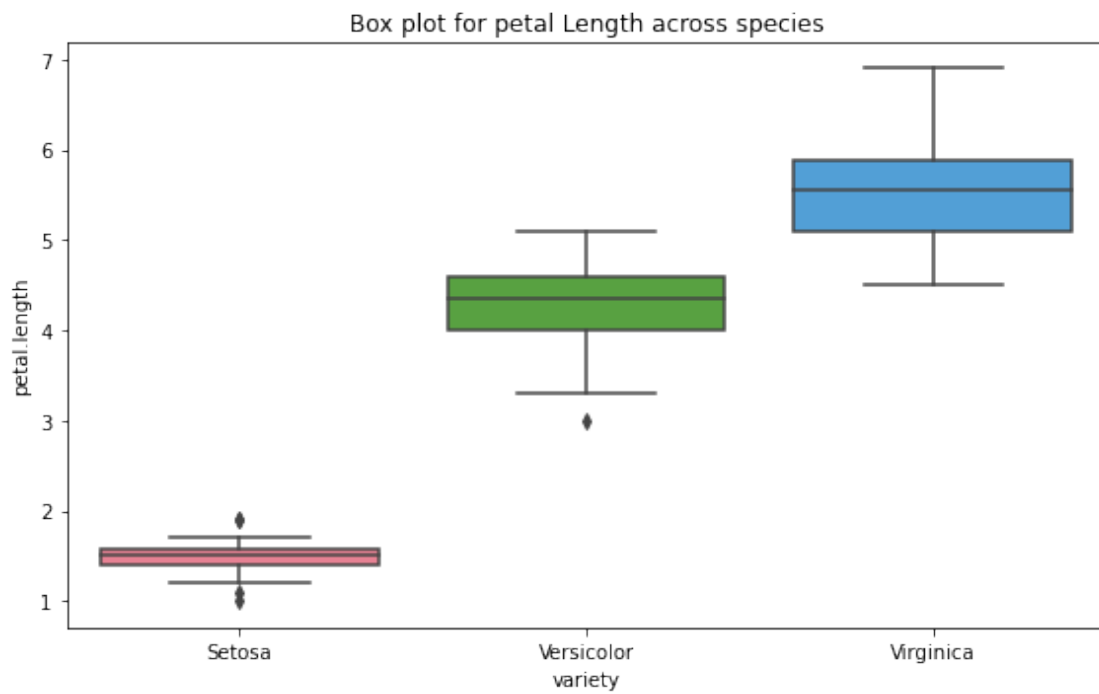
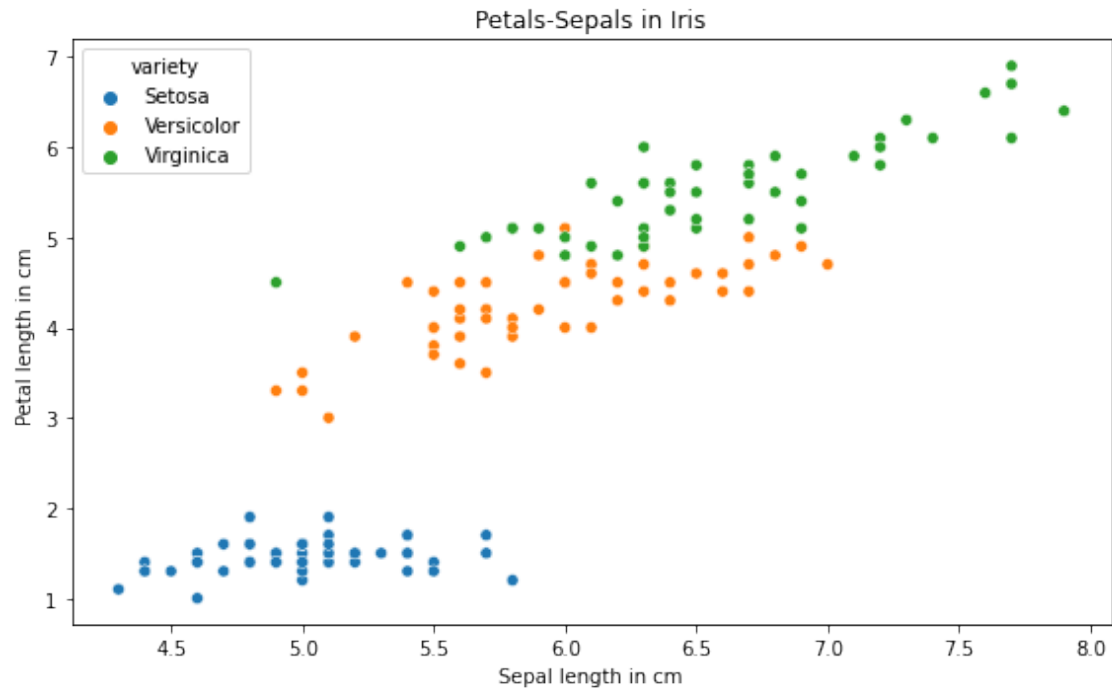
```
import pandas as pd
data=pd.read_csv('iris.csv')
data.loc[22::23]
```

	sepal.length	sepal.width	petal.length	petal.width	variety
22	4.6	3.6	1.0	0.2	Setosa
45	4.8	3.0	1.4	0.3	Setosa
68	6.2	2.2	4.5	1.5	Versicolor
91	6.1	3.0	4.6	1.4	Versicolor
114	5.8	2.8	5.1	2.4	Virginica
137	6.4	3.1	5.5	1.8	Virginica

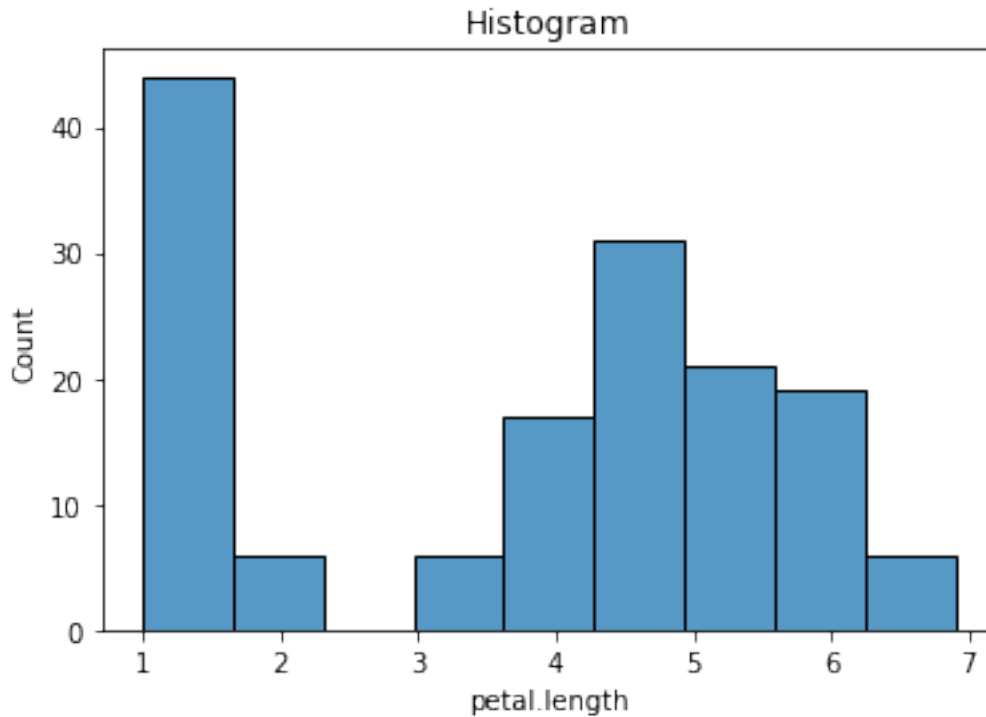
```
import seaborn as sb
import matplotlib
import matplotlib.pyplot as plt
```

```
fig, axs = plt.subplots(2,figsize=(8,10))
axs[0].set_title('Petals-Sepals in Iris')
axs[0].set_xlabel('Sepal length in cm');
axs[0].set_ylabel('Petal length in cm ');
sb.scatterplot(x=data['sepal.length'],y=data['petal.length'],hue=data.
variety,ax=axs[0]);
```

```
axs[1].set_title('Box plot for petal Length across species')
sb.boxplot(x="variety", y="petal.length", palette="husl",
data=data,ax=axs[1])
fig.tight_layout()
```



```
sb.histplot(data=data, x="petal.length")
plt.title('Histogram');
```



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

y = np.array([data['variety'], data['sepal.width']])

from PIL import Image
import numpy as np

img = Image.open('lena.png')

img.show()

image_data = np.array(img)
image_data
array([[162, 162, 162, ..., 170, 155, 128],
       [162, 162, 162, ..., 170, 155, 128],
       [162, 162, 162, ..., 170, 155, 128],
       ...,
       [ 43,  43,  50, ..., 104, 100,  98],
       [ 44,  44,  55, ..., 104, 105, 108],
       [ 44,  44,  55, ..., 104, 105, 108]], dtype=uint8)
```