

```
In [6]: import pandas as pd
        from sklearn.datasets import load_iris
```

```
In [10]: iris = load_iris()
         dir(iris)
```

```
Out[10]: ['DESCR',
          'data',
          'feature_names',
          'filename',
          'frame',
          'target',
          'target_names']
```

```
In [9]: iris.feature_names
```

```
Out[9]: ['sepal length (cm)',
          'sepal width (cm)',
          'petal length (cm)',
          'petal width (cm)']
```

```
In [13]: iris.target_names
```

```
Out[13]: array(['setosa', 'versicolor', 'virginica'], dtype='<U10')
```

```
In [19]: df = pd.DataFrame(iris.data , columns = iris.feature_names)
         df.head()
```

```
Out[19]:
```

	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

```
In [21]: df['target'] = iris.target  
df.head()
```

Out[21]:

	sepal length (cm)	sepal width (cm)	petal length (cm)	petal width (cm)	target
0	5.1	3.5	1.4	0.2	0
1	4.9	3.0	1.4	0.2	0
2	4.7	3.2	1.3	0.2	0
3	4.6	3.1	1.5	0.2	0
4	5.0	3.6	1.4	0.2	0

```
In [22]: df[df.target== 1].head()
```

Out[22]:

	sepal length (cm)	sepal width (cm)	petal length (cm)	petal width (cm)	target
50	7.0	3.2	4.7	1.4	1
51	6.4	3.2	4.5	1.5	1
52	6.9	3.1	4.9	1.5	1
53	5.5	2.3	4.0	1.3	1
54	6.5	2.8	4.6	1.5	1

```
In [23]: df[df.target == 2].head()
```

Out[23]:

	sepal length (cm)	sepal width (cm)	petal length (cm)	petal width (cm)	target
100	6.3	3.3	6.0	2.5	2
101	5.8	2.7	5.1	1.9	2
102	7.1	3.0	5.9	2.1	2
103	6.3	2.9	5.6	1.8	2
104	6.5	3.0	5.8	2.2	2

```
In [25]: df['flower name'] = df.target.apply( lambda x: iris.target_names[x])
df
```

Out[25]:

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

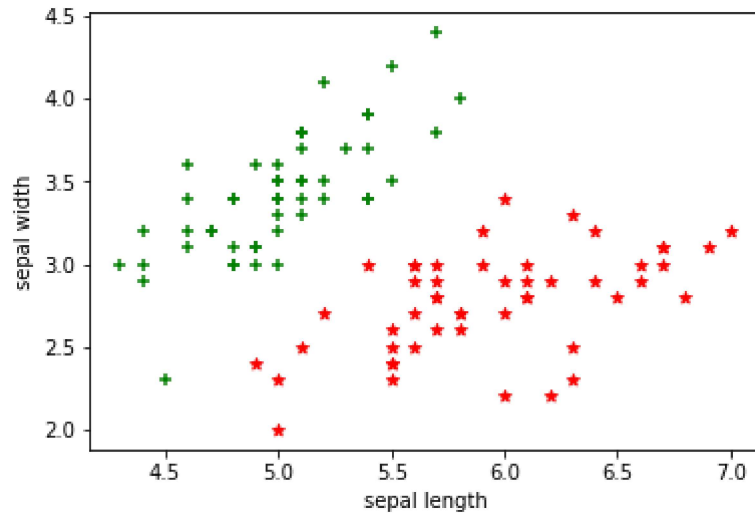
150 rows × 6 columns

```
In [28]: df0 = df[:50]
df1 = df[50:100]
df2 = df[ :100]
```

```
In [29]: import matplotlib.pyplot as plt
%matplotlib inline
```

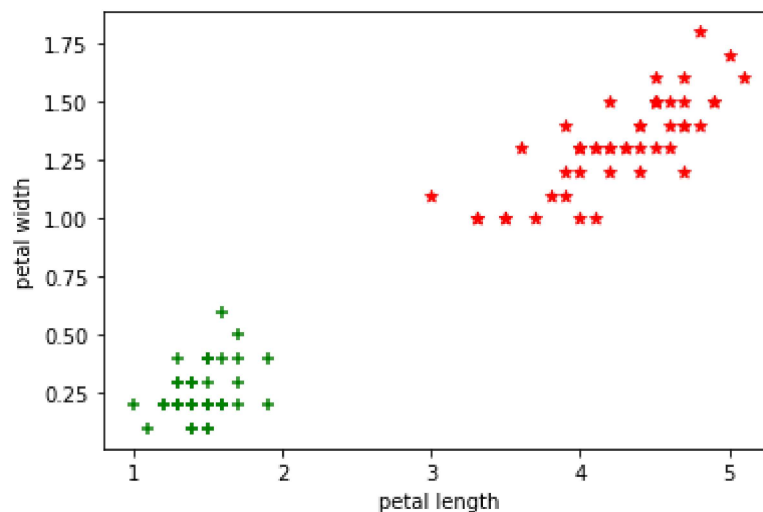
```
In [33]: plt.xlabel('sepal length')
plt.ylabel('sepal width')
plt.scatter(df0['sepal length (cm)'], df0['sepal width (cm)'], color = 'green')
plt.scatter(df1['sepal length (cm)'], df1['sepal width (cm)'], color = 'red')
```

Out[33]: <matplotlib.collections.PathCollection at 0x1f5e6e4b820>



```
In [34]: plt.xlabel('petal length')
plt.ylabel('petal width')
plt.scatter(df0['petal length (cm)'], df0['petal width (cm)'], color = 'green')
plt.scatter(df1['petal length (cm)'], df1['petal width (cm)'], color = 'red')
```

Out[34]: <matplotlib.collections.PathCollection at 0x1f5e6eedfa0>



```
In [36]: x = df.drop(['target', 'flower name'], axis = 'columns')
x
```

Out[36]:

	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 × 4 columns

```
In [37]: y = df.target
y
```

```
Out[37]: 0      0
1      0
2      0
3      0
4      0
..
145    2
146    2
147    2
148    2
149    2
Name: target, Length: 150, dtype: int32
```

```
In [38]: from sklearn.model_selection import train_test_split
```

```
In [39]: x_train , x_test, y_train ,y_test = train_test_split(x , y, test_size = 0.2)
```

```
In [40]: len(x_train)
```

Out[40]: 120

```
In [41]: from sklearn.svm import SVC
```

```
In [42]: model = SVC()
```

```
In [43]: model.fit(x_train , y_train)
```

```
Out[43]: SVC()
```

```
In [44]: model.score(x_test , y_test)
```

```
Out[44]: 0.9333333333333333
```

```
In [45]: model.predict([[4.0, 3.8 , 2.8 , 3.0]])
```

```
Out[45]: array([1])
```

```
In [ ]:
```