

```
In [2]: #Load the required library
import pandas as pd
```

```
In [7]: # Load the dataset
df=pd.read_csv(r"C:\Users\user\Desktop\AI LAB WORKS\SVM\iris.csv")
df.head()
```

```
Out[7]:
```

	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

```
In [8]: df.dtypes
```

```
Out[8]: sepal.length    float64
sepal.width          float64
petal.length         float64
petal.width          float64
species              object
dtype: object
```

```
In [12]: df['target']=df['species'].map({'Setosa':0, 'Versicolor':1, 'Virginica':2})
df.head()
```

```
Out[12]:
```

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

```
In [14]: df[df.target==1].head()
```

Out[14]:

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

```
In [15]: df[df.target==2].head()
```

Out[15]:

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

```
In [16]: df.groupby('species').size()
```

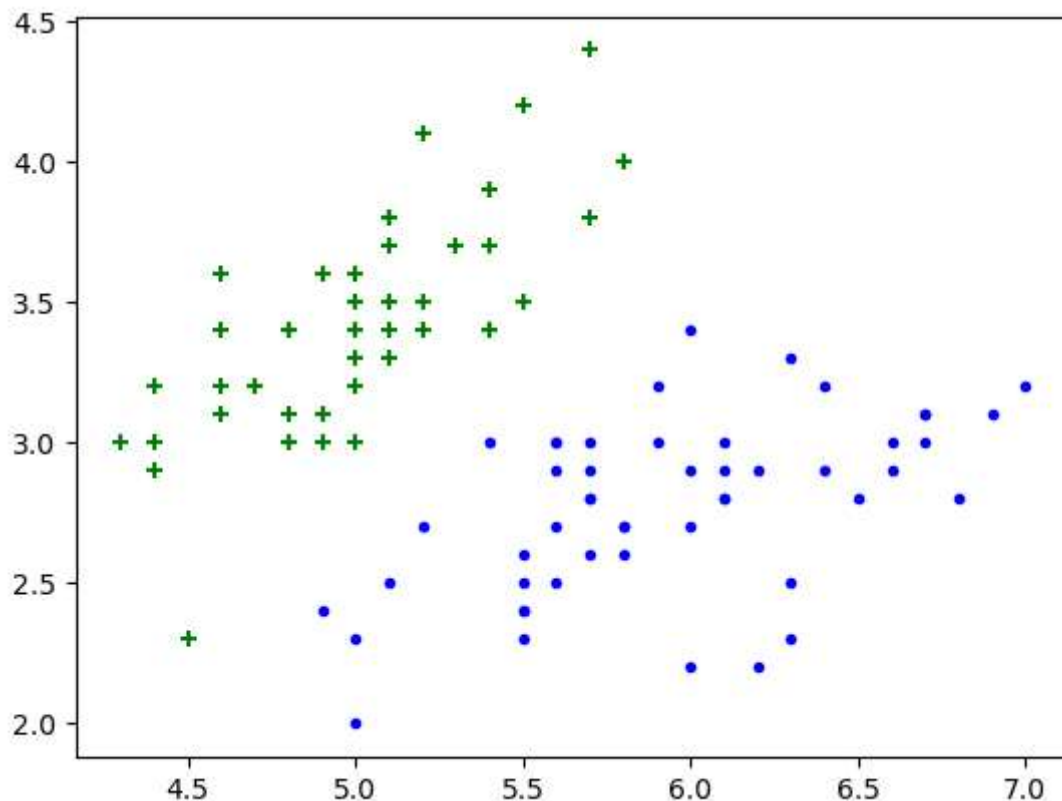
Out[16]:

```
species
Setosa      50
Versicolor  50
Virginica   50
dtype: int64
```

```
In [17]: d1=df[:50]
d2=df[50:100]
d3=df[100:]
```

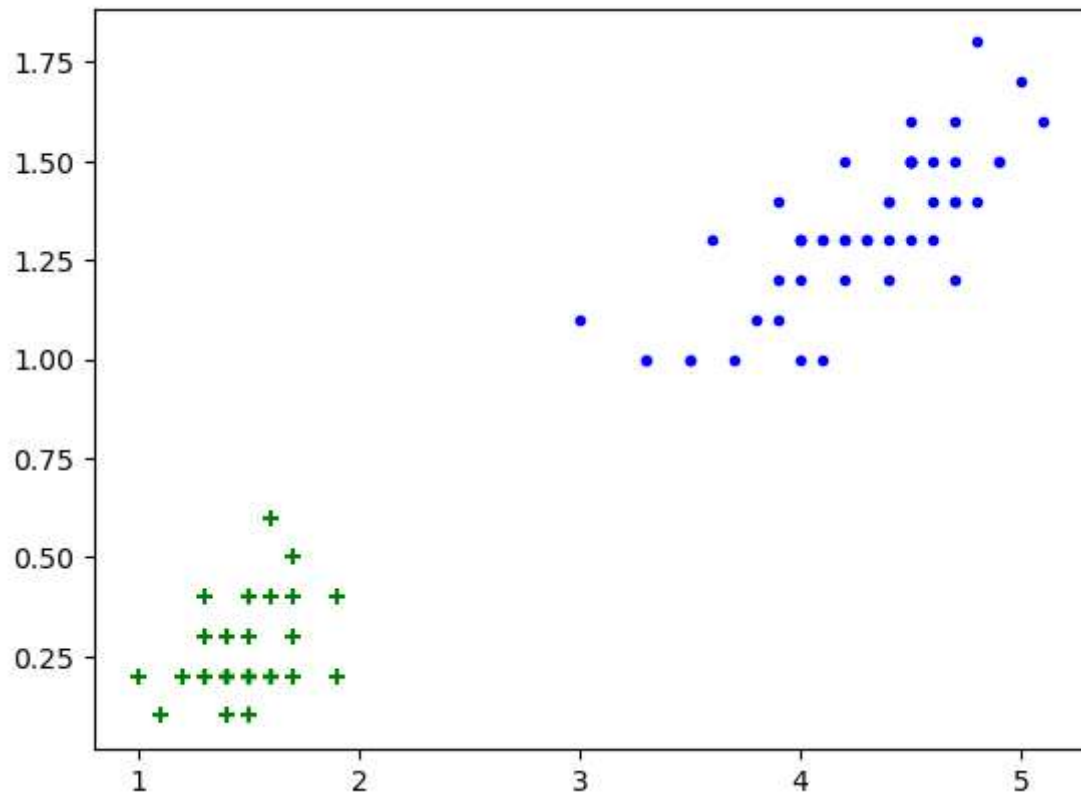
```
In [19]: import matplotlib.pyplot as plt
plt.xlabel=('sepal Length')
plt.ylabel=('sepal Width')
plt.scatter(d1['sepal.length'],d1['sepal.width'],color="green",marker="+")
plt.scatter(d2['sepal.length'],d2['sepal.width'],color="blue",marker=".")
```

Out[19]: <matplotlib.collections.PathCollection at 0x1ed91eeb3d0>



```
In [20]: plt.xlabel('petal Length')
plt.ylabel('petal Width')
plt.scatter(d1['petal.length'],d1['petal.width'],color="green",marker="+")
plt.scatter(d2['petal.length'],d2['petal.width'],color="blue",marker=".")
```

Out[20]: <matplotlib.collections.PathCollection at 0x1ed8ef91050>



```
In [22]: x=df.drop(['target','species'],axis='columns')
y=df.target
```

```
In [23]: from sklearn.model_selection import train_test_split
x_train,x_test,y_train,y_test=train_test_split(x,y,test_size=0.2)
```

```
In [24]: len(x_train)
```

Out[24]: 120

```
In [25]: len(x_test)
```

Out[25]: 30

```
In [29]: from sklearn import metrics
from sklearn.svm import SVC
linear_svc=SVC(kernel='linear').fit(x_train,y_train)
p=linear_svc.predict(x_test)
print("The accuracy of the linear SVC is", '{:.3f}'.format(metrics.accuracy_score(p, y_test)))
```

The accuracy of the linear SVC is 1.000

In [ ]: