In [91]:
```
import pandas as pd
import seaborn as sns
from sklearn.datasets import load_iris
```

In [92]:
```
iris=load_iris()
```

In [93]:
```
dir(iris)
```

Out[93]:
```
['DESCR',
 'data',
 'data_module',
 'feature_names',
 'filename',
 'frame',
 'target',
 'target_names']
```

In [94]:
```
iris.feature_names
```

Out[94]:
```
['sepal length (cm)',
 'sepal width (cm)',
 'petal length (cm)',
 'petal width (cm)']
```

In [95]:
```
df=pd.DataFrame(iris.data,columns=iris.feature_names)  # here create the dataframe for our easy ness
```

In [96]:
```
df
```

Out[96]:

	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 [97]:
```
df['target']=iris.target # here we add the target column  we add target to EDA only
```

In [98]:
```
df
```

Out[98]:

	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
...	...	...	...	...	...
145	6.7	3.0	5.2	2.3	2
146	6.3	2.5	5.0	1.9	2
147	6.5	3.0	5.2	2.0	2
148	6.2	3.4	5.4	2.3	2
149	5.9	3.0	5.1	1.8	2

150 rows × 5 columns

In [99]:
```
iris.target
```

Out[99]:
```
array([0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0,
       0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0,
       0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 1, 1, 1, 1, 1, 1, 1, 1,
       1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1,
       1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1,
       1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 2, 2, 2, 2, 2, 2, 2, 2, 2, 2,
       2, 2, 2, 2, 2, 2, 2, 2, 2, 2, 2, 2, 2, 2, 2, 2, 2, 2, 2, 2, 2, 2,
       2, 2, 2, 2, 2, 2, 2, 2, 2, 2, 2, 2, 2, 2, 2, 2, 2, 2])
```

In [100]:
```
iris.target_names
```

Out[100]:
```
array(['setosa', 'versicolor', 'virginica'], dtype='<U10')
```

In [101]:
```
# here the setosa is 0 the versicolor is 1 and virginica is 2
```

In [56]:
```
df
```

Out[56]:

	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
...	...	...	...	...	...
145	6.7	3.0	5.2	2.3	2
146	6.3	2.5	5.0	1.9	2
147	6.5	3.0	5.2	2.0	2
148	6.2	3.4	5.4	2.3	2
149	5.9	3.0	5.1	1.8	2

150 rows × 5 columns

In [102]:
```
df = df.rename(columns={'sepal length (cm)': 'sepal length', 'sepal width (cm)': 'sepal width',"petal length (cm)":"petal length",
                        "petal width (cm)":"petal width"})
```

In [103]:
```
#we change column name for easyness
```

In [104]:
```
df
```

Out[104]:

	sepal length	sepal width	petal length	petal width	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
...	...	...	...	...	...
145	6.7	3.0	5.2	2.3	2
146	6.3	2.5	5.0	1.9	2
147	6.5	3.0	5.2	2.0	2
148	6.2	3.4	5.4	2.3	2
149	5.9	3.0	5.1	1.8	2

150 rows × 5 columns

In [105]:
```
df[df['target']==1].head()
```

Out[105]:

	sepal length	sepal width	petal length	petal width	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 [106]:
```
def add(x):
    if x==0:
        return "versicolor"
    elif x==0:
        return "setosa"
    else:
        return "virginica"

df['flowername']=df.target.apply(add)
# here i learn to use the one column to create the new column using the functions as well.
```

In [62]:
```
df
```

Out[62]:

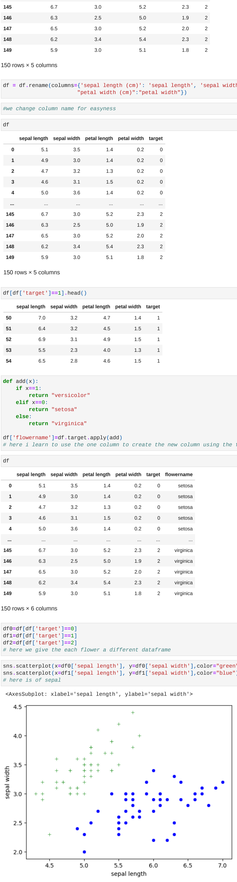
	sepal length	sepal width	petal length	petal width	target	flowername
0	5.1	3.5	1.4	0.2	0	setosa
1	4.9	3.0	1.4	0.2	0	setosa
2	4.7	3.2	1.3	0.2	0	setosa
3	4.6	3.1	1.5	0.2	0	setosa
4	5.0	3.6	1.4	0.2	0	setosa
...	...	...	...	...	...	...
145	6.7	3.0	5.2	2.3	2	virginica
146	6.3	2.5	5.0	1.9	2	virginica
147	6.5	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 [107]:
```
df0=df[df['target']==0]
df1=df[df['target']==1]
df2=df[df['target']==2]
# here we give the each flower a different dataframe
```

In [108]:
```
sns.scatterplot(x=df0['sepal length'], y=df0['sepal width'],color="green",marker="+")
sns.scatterplot(x=df1['sepal length'], y=df1['sepal width'],color="blue")
# here is of sepal
```

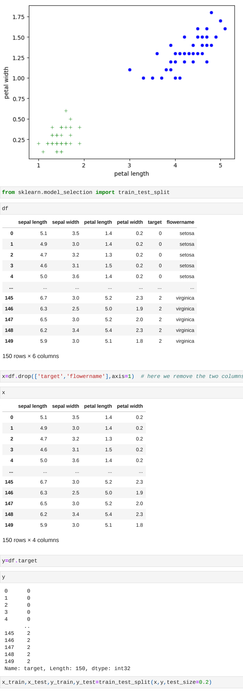
Out[108]:
```
<AxesSubplot: xlabel='sepal length', ylabel='sepal width'>
```



In [109]:
```
sns.scatterplot(x=df0['petal length'], y=df0['petal width'],color="green",marker="+")
sns.scatterplot(x=df1['petal length'], y=df1['petal width'],color="blue")

#here is of petal
```

Out[109]:
```
<AxesSubplot: xlabel='petal length', ylabel='petal width'>
```



In [110]:
```
from sklearn.model_selection import train_test_split
```

In [111]:
```
df
```

Out[111]:

	sepal length	sepal width	petal length	petal width	target	flowername
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 [112]:
```
x=df.drop(['target','flowername'],axis=1)  # here we remove the two columns for ttraining the data
```

In [113]:
```
x
```

Out[113]:

	sepal length	sepal width	petal length	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
...	...	...	...	...
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 [114]:
```
y=df.target
```

In [115]:
```
y
```

Out[115]:
```
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 [116]:
```
x_train,x_test,y_train,y_test=train_test_split(x,y,test_size=0.2)
```

In [117]:
```
from sklearn.svm import SVC
```

In [118]:
```
model=SVC()
```

In [119]:
```
model.fit(x_train,y_train)
```

Out[119]:
```
SVC()
```

In [120]:
```
model.predict([[2,4,5,1]])   # here we predict the flower by giving the sepal l,w and petal l,w .
```

```
C:\Users\Asus\AppData\Local\Programs\Python\Python311\Lib\site-packages\sklearn\base.py:464: UserWarning: X does not have valid feature names, but SVC was fitted with feature names
  warnings.warn(
```

Out[120]:
```
array([1])
```

In [121]:
```
model.score(x_test,y_test)
```

Out[121]:
```
1.0
```

the accuracy is high and i am proud of it.