In [1]:
```
import pandas as pd
import numpy as numpy
import seaborn as sns
from matplotlib import pyplot as plt
```

In [2]:
```
iris=pd.read_csv("C:\\Users\\Pranav\\Desktop\\DATA SCIENCE DATA\\CVC file\\Iris.csv")
```

In [3]:
```
iris.head()
```

Out[3]:

	Id	SepalLengthCm	SepalWidthCm	PetalLengthCm	PetalWidthCm	Species
0	1	5.1	3.5	1.4	0.2	Iris-setosa
1	2	4.9	3.0	1.4	0.2	Iris-setosa
2	3	4.7	3.2	1.3	0.2	Iris-setosa
3	4	4.6	3.1	1.5	0.2	Iris-setosa
4	5	5.0	3.6	1.4	0.2	Iris-setosa

In [4]:
```
iris[iris['SepalWidthCm']>4]
```

Out[4]:

	Id	SepalLengthCm	SepalWidthCm	PetalLengthCm	PetalWidthCm	Species
15	16	5.7	4.4	1.5	0.4	Iris-setosa
32	33	5.2	4.1	1.5	0.1	Iris-setosa
33	34	5.5	4.2	1.4	0.2	Iris-setosa

In [5]:
```
iris[iris['PetalWidthCm']>1]
```

Out[5]:

	Id	SepalLengthCm	SepalWidthCm	PetalLengthCm	PetalWidthCm	Species
50	51	7.0	3.2	4.7	1.4	Iris-versicolor
51	52	6.4	3.2	4.5	1.5	Iris-versicolor
52	53	6.9	3.1	4.9	1.5	Iris-versicolor
53	54	5.5	2.3	4.0	1.3	Iris-versicolor
54	55	6.5	2.8	4.6	1.5	Iris-versicolor
...	...	...	...	...	...	...
145	146	6.7	3.0	5.2	2.3	Iris-virginica
146	147	6.3	2.5	5.0	1.9	Iris-virginica
147	148	6.5	3.0	5.2	2.0	Iris-virginica
148	149	6.2	3.4	5.4	2.3	Iris-virginica
149	150	5.9	3.0	5.1	1.8	Iris-virginica

93 rows × 6 columns

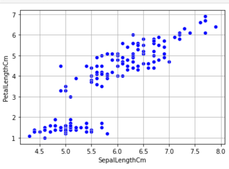
In [6]:
```
iris[iris['PetalLengthCm']>2]
```

Out[6]:

	Id	SepalLengthCm	SepalWidthCm	PetalLengthCm	PetalWidthCm	Species
50	51	7.0	3.2	4.7	1.4	Iris-versicolor
51	52	6.4	3.2	4.5	1.5	Iris-versicolor
52	53	6.9	3.1	4.9	1.5	Iris-versicolor
53	54	5.5	2.3	4.0	1.3	Iris-versicolor
54	55	6.5	2.8	4.6	1.5	Iris-versicolor
...	...	...	...	...	...	...
145	146	6.7	3.0	5.2	2.3	Iris-virginica
146	147	6.3	2.5	5.0	1.9	Iris-virginica
147	148	6.5	3.0	5.2	2.0	Iris-virginica
148	149	6.2	3.4	5.4	2.3	Iris-virginica
149	150	5.9	3.0	5.1	1.8	Iris-virginica

100 rows × 6 columns

In [7]:
```
sns.scatterplot(x='SepalLengthCm',y='PetalLengthCm',data=iris,color='blue')
plt.grid(True)
plt.show()
```



In [8]:
```
X=iris[['PetalWidthCm']]
```

In [9]:
```
y=iris[['PetalLengthCm']]
```

In [10]:
```
from sklearn.model_selection import train_test_split
X_train,X_test,y_train,y_test=train_test_split(X,y,test_size=0.3,random_state=10)
print("shape of X_train= ",X_train.shape)
print("shape of X_test= ",X_test.shape)
print("shape of y_train= ",y_train.shape)
print("shape of y_test= ",y_test.shape)
```

```
shape of X_train=  (105, 1)
shape of X_test=  (45, 1)
shape of y_train=  (105, 1)
shape of y_test=  (45, 1)
```

In [11]:
```
X_test.head()
```

Out[11]:

	PetalWidthCm
87	1.3
111	1.9
10	0.2
91	1.4
49	0.2

In [12]:
```
y_train.head()
```

Out[12]:

	PetalLengthCm
32	1.5
52	4.9
70	4.8
121	4.9
144	5.7

In [13]:
```
from sklearn.linear_model import  LinearRegression
```

In [14]:
```
model=LinearRegression()
model.fit(X_train,y_train)
```

Out[14]:
```
LinearRegression()
```

In [15]:
```
y_predict=model.predict(X_train)
```

In [16]:
```
y_test.head()
```

Out[16]:

	PetalLengthCm
87	4.4
111	5.3
10	1.5
91	4.6
49	1.4

In [17]:
```
y_predict[0:5]
```

Out[17]:
```
array([[1.32255782],
       [4.43104374],
       [5.09714787],
       [5.54121728],
       [6.65139083]])
```

In [23]:
```
y=iris[['SepalLengthCm']]
```

In [24]:
```
X=iris[['SepalWidthCm','PetalLengthCm','PetalWidthCm']]
```

In [25]:
```
X_train,X_test,y_train,y_test=train_test_split(X,y,test_size=0.3,random_state=10)
print("shape of X_train= ",X_train.shape)
print("shape of X_test= ",X_test.shape)
print("shape of y_train= ",y_train.shape)
print("shape of y_test= ",y_test.shape)
```

```
shape of X_train=  (105, 3)
shape of X_test=  (45, 3)
shape of y_train=  (105, 1)
shape of y_test=  (45, 1)
```

In [26]:
```
model2=LinearRegression()
model2.fit(X_train,y_train)
```

Out[26]:
```
LinearRegression()
```

In [27]:
```
y_pred=model2.predict(X_test)
```

In [28]:
```
y_pred
```

Out[28]:
```
array([[5.71466391],
       [6.2789183 ],
       [5.26327604],
       [6.30266762],
       [4.89916584],
       [5.01767286],
       [6.10312784],
       [5.97870202],
       [5.04734097],
       [6.15075247],
       [6.1582325 ],
       [6.12652474],
       [5.4098768 ],
       [4.68323077],
       [5.26701605],
       [6.51077025],
       [6.37790758],
       [4.60703399],
       [5.12679935],
       [4.67479392],
       [6.81555736],
       [6.37477197],
       [6.0381511 ],
       [5.35212809],
       [5.92964216],
       [4.7509907 ],
       [6.13435718],
       [5.99883732],
       [6.31110447],
       [7.0327201 ],
       [6.29892761],
       [6.07033727],
       [7.08055229],
       [5.85731139],
       [5.90637125],
       [4.82718748],
       [6.87909887],
       [6.67064383],
       [7.15313506],
       [6.1414848 ],
       [4.98706107],
       [4.92256274],
       [5.5533551 ],
       [4.03494716],
       [6.45832278]])
```

In [29]:
```
from sklearn.metrics import mean_squared_error
```

In [30]:
```
mean_squared_error(y_test,y_pred)
```

Out[30]:
```
0.09757755529011314
```

In [ ]:
```
```