LetsGrowMore

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Task :1-Iris Flower Classification ML Project

Dataset : http://archive.ics.uci.edu/ml/datasets/Iris

Importing Data Manipulation and Data Visualization Libraries

In [86]:
```
#importing the libraries required for the Data Manipulation
import numpy as np
import pandas as pd
```

In [100…
```
#importing the libraries required for the Data Visualization
import seaborn as sns
import matplotlib.pyplot as plt
```

In [15]:
```
filename = ("iris flower classification.csv")
```

In [16]:
```
df = pd.read_csv(filename)
```

In [17]:
```
df
```

Out[17]:

	Id	SepalLength	SepalWidth	PetalLength	PetalWidth	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
...	...	...	...	...	...	...
145	147	6.7	3.0	5.2	2.3	Iris-virginica
146	148	6.3	2.5	5.0	1.9	Iris-virginica
147	149	6.5	3.0	5.2	2.0	Iris-virginica
148	150	6.2	3.4	5.4	2.3	Iris-virginica
149	151	5.9	3.0	5.1	1.8	Iris-virginica

150 rows × 6 columns

In [18]:
```
df.info()
```

```
<class 'pandas.core.frame.DataFrame'>
RangeIndex: 150 entries, 0 to 149
Data columns (total 6 columns):
 #   Column       Non-Null Count  Dtype  
---  ------       --------------  -----  
 0   Id           150 non-null    int64  
 1   SepalLength  150 non-null    float64
 2   SepalWidth   150 non-null    float64
 3   PetalLength  150 non-null    float64
 4   PetalWidth   150 non-null    float64
 5   Species      150 non-null    object 
dtypes: float64(4), int64(1), object(1)
memory usage: 7.2+ KB
```

In [19]:
```
df.isnull().sum()
```

Out[19]:
```
Id             0
SepalLength    0
SepalWidth     0
PetalLength    0
PetalWidth     0
Species        0
dtype: int64
```

In [20]:
```
df.columns
```

Out[20]:
```
Index(['Id', 'SepalLength', 'SepalWidth', 'PetalLength', 'PetalWidth',
       'Species'],
      dtype='object')
```

In [21]:
```
df.describe()
```

Out[21]:

	Id	SepalLength	SepalWidth	PetalLength	PetalWidth
count	150.000000	150.000000	150.000000	150.000000	150.000000
mean	75.620000	5.843333	3.054000	3.758667	1.198667
std	43.629722	0.828066	0.433594	1.764420	0.763161
min	1.000000	4.300000	2.000000	1.000000	0.100000
25%	38.250000	5.100000	2.800000	1.600000	0.300000
50%	75.500000	5.800000	3.000000	4.350000	1.300000
75%	112.750000	6.400000	3.300000	5.100000	1.800000
max	151.000000	7.900000	4.400000	6.900000	2.500000

In [22]:
```
df = df.drop(columns="Id")
```

In [23]:
```
df
```

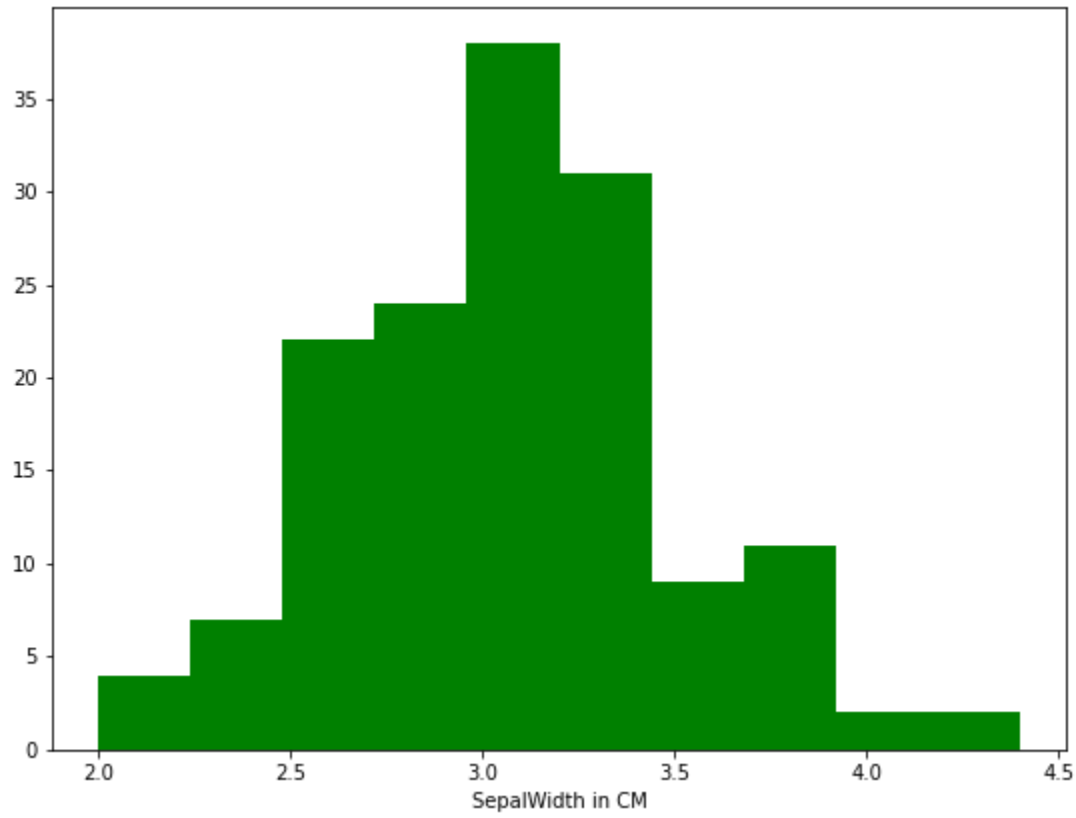
Out[23]:

	SepalLength	SepalWidth	PetalLength	PetalWidth	Species
0	5.1	3.5	1.4	0.2	Iris-setosa
1	4.9	3.0	1.4	0.2	Iris-setosa
2	4.7	3.2	1.3	0.2	Iris-setosa
3	4.6	3.1	1.5	0.2	Iris-setosa
4	5.0	3.6	1.4	0.2	Iris-setosa
...	...	...	...	...	...
145	6.7	3.0	5.2	2.3	Iris-virginica
146	6.3	2.5	5.0	1.9	Iris-virginica
147	6.5	3.0	5.2	2.0	Iris-virginica
148	6.2	3.4	5.4	2.3	Iris-virginica
149	5.9	3.0	5.1	1.8	Iris-virginica

150 rows × 5 columns

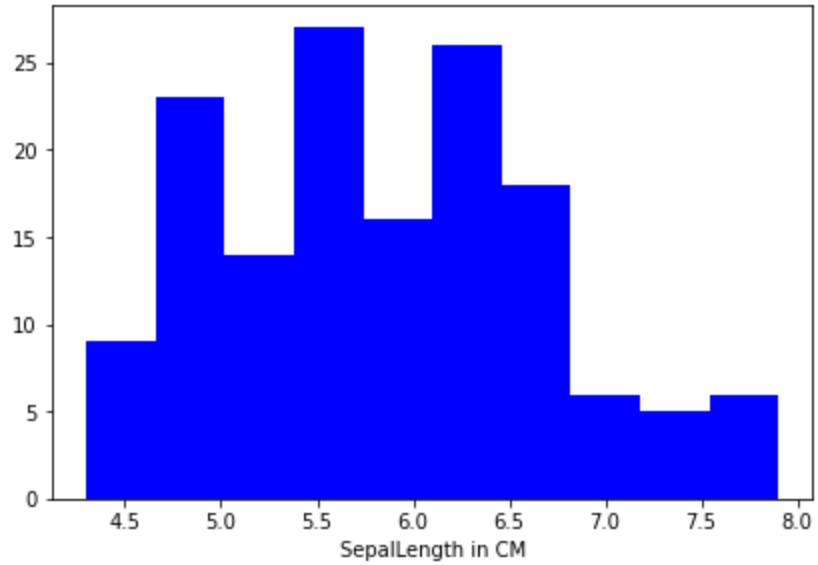
In [54]:

```
fig = plt.figure()
ax1 = fig.add_subplot(2,2,1)
ax1.hist(df['SepalWidth'],color = 'green')
ax1.set_xlabel('SepalWidth in CM')
fig.set_figheight(15)
fig.set_figwidth(20)
plt.show()
```



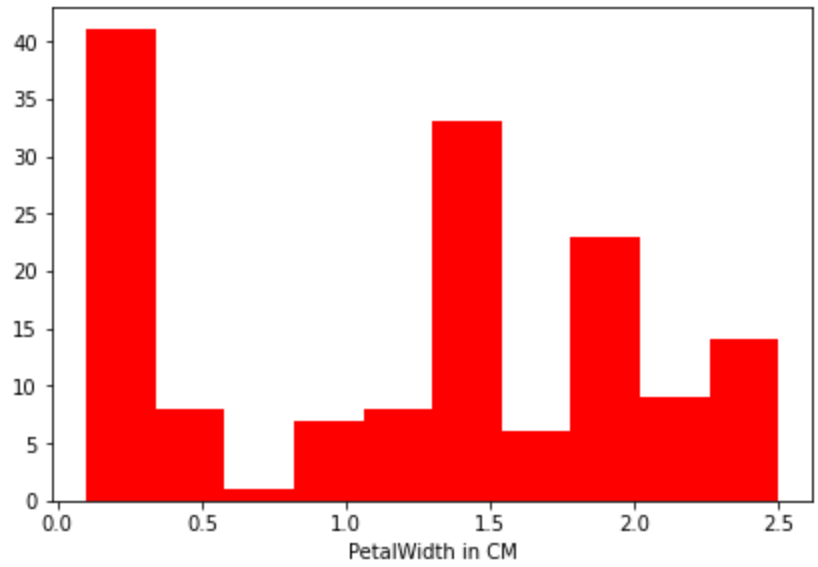
In [104…

```
fig = plt.figure()
ax2 = fig.add_subplot(2,2,1)
ax2.hist(df['SepalLength'],color = 'blue')
ax2.set_xlabel('SepalLength in CM')
fig.set_figheight(10)
fig.set_figwidth(15)
```



In [110…

```
fig = plt.figure()
ax3 = fig.add_subplot(2,2,1)
ax3.hist(df['PetalWidth'],color = 'red')
ax3.set_xlabel('PetalWidth in CM')
fig.set_figheight(10)
fig.set_figwidth(15)
plt.show()
```



Define X and Y

In [27]:

```
# defining x and y
x = df.iloc[:,:4]
y = df.iloc[:,4]
```

In [44]:

```
x
```

Out[44]:

	SepalLength	SepalWidth	PetalLength	PetalWidth
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 [43]:
```
y
```

Out[43]:
```
0         Iris-setosa
1         Iris-setosa
2         Iris-setosa
3         Iris-setosa
4         Iris-setosa
            ...
145    Iris-virginica
146    Iris-virginica
147    Iris-virginica
148    Iris-virginica
149    Iris-virginica
Name: Species, Length: 150, dtype: object
```

splitting the data into train and test datasets

In [78]:
```
from sklearn.model_selection import train_test_split
x_train,x_test,y_train,y_test=train_test_split(x,y,random_state = 0)
```

In [79]:
```
print("x_train:",x_train.shape)
```

```
x_train: (112, 4)
```

In [80]:
```
print("x_test:",x_test.shape)
```

```
x_test: (38, 4)
```

In [81]:
```
print("y_train:",y_train.shape)
```

```
y_train: (112,)
```

In [83]:
```
print("y_test:",y_train.shape)
```

```
y_test: (112,)
```

Create The Model

In [92]:
```
#creating the model
```

```
from sklearn.linear_model import LogisticRegression
clf = LogisticRegression()
```

Train the Model

In [94]:
```
clf.fit(x_train,y_train)
```

Out[94]:
```
LogisticRegression()
```

Predict The Results

In [95]:
```
clf.predict(x_test)
```

Out[95]:
```
array(['Iris-virginica', 'Iris-versicolor', 'Iris-setosa',
       'Iris-virginica', 'Iris-setosa', 'Iris-virginica', 'Iris-setosa',
       'Iris-versicolor', 'Iris-versicolor', 'Iris-versicolor',
       'Iris-virginica', 'Iris-versicolor', 'Iris-versicolor',
       'Iris-versicolor', 'Iris-versicolor', 'Iris-setosa',
       'Iris-versicolor', 'Iris-versicolor', 'Iris-setosa', 'Iris-setosa',
       'Iris-virginica', 'Iris-versicolor', 'Iris-setosa', 'Iris-setosa',
       'Iris-virginica', 'Iris-setosa', 'Iris-setosa', 'Iris-versicolor',
       'Iris-versicolor', 'Iris-setosa', 'Iris-virginica',
       'Iris-versicolor', 'Iris-setosa', 'Iris-virginica',
       'Iris-virginica', 'Iris-versicolor', 'Iris-setosa',
       'Iris-virginica'], dtype=object)
```

In [96]:
```
y_test
```

Out[96]:
```
114     Iris-virginica
62     Iris-versicolor
33         Iris-setosa
107     Iris-virginica
7          Iris-setosa
100     Iris-virginica
40         Iris-setosa
86     Iris-versicolor
76     Iris-versicolor
71     Iris-versicolor
134     Iris-virginica
51     Iris-versicolor
73     Iris-versicolor
54     Iris-versicolor
63     Iris-versicolor
37         Iris-setosa
78     Iris-versicolor
90     Iris-versicolor
45         Iris-setosa
16         Iris-setosa
121     Iris-virginica
66     Iris-versicolor
24         Iris-setosa
8          Iris-setosa
126     Iris-virginica
22         Iris-setosa
44         Iris-setosa
97     Iris-versicolor
93     Iris-versicolor
26         Iris-setosa
137     Iris-virginica
84     Iris-versicolor
27         Iris-setosa
127     Iris-virginica
132     Iris-virginica
59     Iris-versicolor
18         Iris-setosa
83     Iris-versicolor
Name: Species, dtype: object
```

In [99]:
```
clf.score(x_test,y_test)
```

Out[99]:
```
0.9736842105263158
```

In [ ]:
```

```