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

In [2]:
```
df=pd.read_csv("Iris.csv")
```

In [3]:
```
df.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]:
```
df=df.drop(columns=['Id'])
df.head()
```

Out[4]:

	SepalLengthCm	SepalWidthCm	PetalLengthCm	PetalWidthCm	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

In [5]:
```
# to display stats about data
df.describe()
```

Out[5]:

	SepalLengthCm	SepalWidthCm	PetalLengthCm	PetalWidthCm
count	150.000000	150.000000	150.000000	150.000000
mean	5.843333	3.054000	3.758667	1.198667
std	0.828066	0.433594	1.764420	0.763161
min	4.300000	2.000000	1.000000	0.100000
25%	5.100000	2.800000	1.600000	0.300000
50%	5.800000	3.000000	4.350000	1.300000
75%	6.400000	3.300000	5.100000	1.800000
max	7.900000	4.400000	6.900000	2.500000

In [6]:
```
# to basic info about datatype
df.info()
```

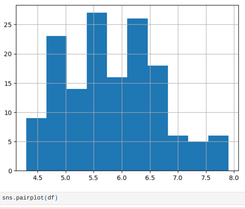
```
<class 'pandas.core.frame.DataFrame'>
RangeIndex: 150 entries, 0 to 149
Data columns (total 5 columns):
 #   Column         Non-Null Count  Dtype  
---  ------         --------------  -----  
 0   SepalLengthCm  150 non-null    float64
 1   SepalWidthCm   150 non-null    float64
 2   PetalLengthCm  150 non-null    float64
 3   PetalWidthCm   150 non-null    float64
 4   Species        150 non-null    object 
dtypes: float64(4), object(1)
memory usage: 6.0+ KB
```

In [7]:
```
df['Species'].value_counts()
```

Out[7]:
```
Species
Iris-setosa        50
Iris-versicolor    50
Iris-virginica     50
Name: count, dtype: int64
```

In [8]:
```
df['SepalLengthCm'].hist()
```

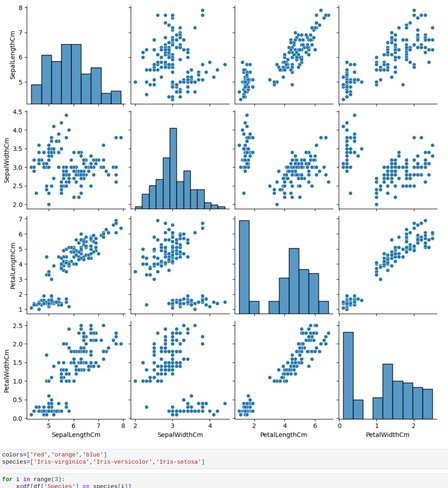
Out[8]:
```
<Axes: >
```



In [9]:
```
sns.pairplot(df)
```

```
C:\ProgramData\anaconda3\lib\site-packages\seaborn\axisgrid.py:118: UserWarning: The figure layout has changed to tight
  self._figure.tight_layout(*args, **kwargs)
<seaborn.axisgrid.PairGrid at 0x20a8639539>
```

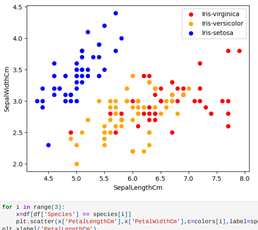
Out[9]:



In [10]:
```
colors=['red','orange','blue']
species=['Iris-virginica','Iris-versicolor','Iris-setosa']
```

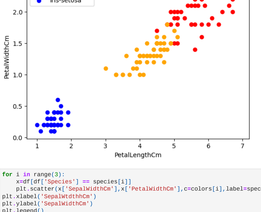
In [11]:
```
for i in range(3):
    x=df[df['Species'] == species[i]]
    plt.scatter(x['SepalLengthCm'],x['SepalWidthCm'],c=colors[i],label=species[i])
plt.xlabel('SepalLengthCm')
plt.ylabel('SepalWidthCm')
plt.legend()
```

Out[11]:
```
<matplotlib.legend.Legend at 0x20a8765cd0>
```



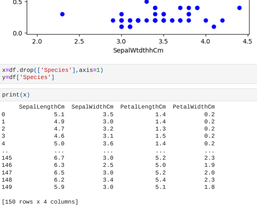
In [12]:
```
for i in range(3):
    x=df[df['Species'] == species[i]]
    plt.scatter(x['PetalLengthCm'],x['PetalWidthCm'],c=colors[i],label=species[i])
plt.xlabel('PetalLengthCm')
plt.ylabel('PetalWidthCm')
plt.legend()
```

Out[12]:
```
<matplotlib.legend.Legend at 0x20a87ac2650>
```



In [13]:
```
for i in range(3):
    x=df[df['Species'] == species[i]]
    plt.scatter(x['SepalWidthCm'],x['PetalWidthCm'],c=colors[i],label=species[i])
plt.xlabel('SepalWidthCm')
plt.ylabel('SepalWidthCm')
plt.legend()
```

Out[13]:
```
<matplotlib.legend.Legend at 0x20a87670750>
```



In [14]:
```
x=df.drop(['Species'],axis=1)
y=df['Species']
```

In [15]:
```
print(x)
```

```
     SepalLengthCm  SepalWidthCm  PetalLengthCm  PetalWidthCm
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 x 4 columns]
```

In [16]:
```
print(y)
```

```
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
```

In [17]:
```
from sklearn.model_selection import train_test_split
X_train,X_test,Y_train,Y_test = train_test_split(x,y,train_size=0.7,test_size=0.3)
```

In [18]:
```
from sklearn.neighbors import KNeighborsClassifier
Knn =KNeighborsClassifier(n_neighbors=3)
```

In [19]:
```
Knn.fit(X_train,Y_train)
```

Out[19]:
```
KNeighborsClassifier(n_neighbors=3)
```

In [20]:
```
#Evaluate Model
Y_pred = Knn.predict(X_test)
```

In [21]:
```
from sklearn.metrics import accuracy_score
accuracy_score(Y_test,Y_pred)
```

Out[21]:
```
0.9555555555555556
```

In [ ]:

In [ ]: