In [1]:

```
import pandas as pd
import warnings
warnings.filterwarnings("ignore")
import seaborn as sns
import matplotlib.pyplot as plt
sns.set(style="white", color_codes=True)
```

In [8]:

```
Iris_dataset=pd.read_csv("Iris.csv")
```

In [12]:

```
Iris_dataset
```

Out[12]:

	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
...	...	...	...	...	...	...
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

150 rows × 6 columns

In [16]:

```
Iris_dataset.info
```

Out[16]:

```
<bound method DataFrame.info of       Id  SepalLengthCm  SepalWidthCm  PetalLengthCm  PetalWidthCm  \
0      1            5.1           3.5            1.4           0.2   
1      2            4.9           3.0            1.4           0.2   
2      3            4.7           3.2            1.3           0.2   
3      4            4.6           3.1            1.5           0.2   
4      5            5.0           3.6            1.4           0.2   
..   ...            ...           ...            ...           ...   
145  146            6.7           3.0            5.2           2.3   
146  147            6.3           2.5            5.0           1.9   
147  148            6.5           3.0            5.2           2.0   
148  149            6.2           3.4            5.4           2.3   
149  150            5.9           3.0            5.1           1.8   

            Species  
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  

[150 rows x 6 columns]>
```

In [17]:

```
Iris_dataset.shape
```

Out[17]:

```
(150, 6)
```

In [18]:

```
Iris_dataset.describe()
```

Out[18]:

	Id	SepalLengthCm	SepalWidthCm	PetalLengthCm	PetalWidthCm
count	150.000000	150.000000	150.000000	150.000000	150.000000
mean	75.500000	5.843333	3.054000	3.758667	1.198667
std	43.445368	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	150.000000	7.900000	4.400000	6.900000	2.500000

In [24]:

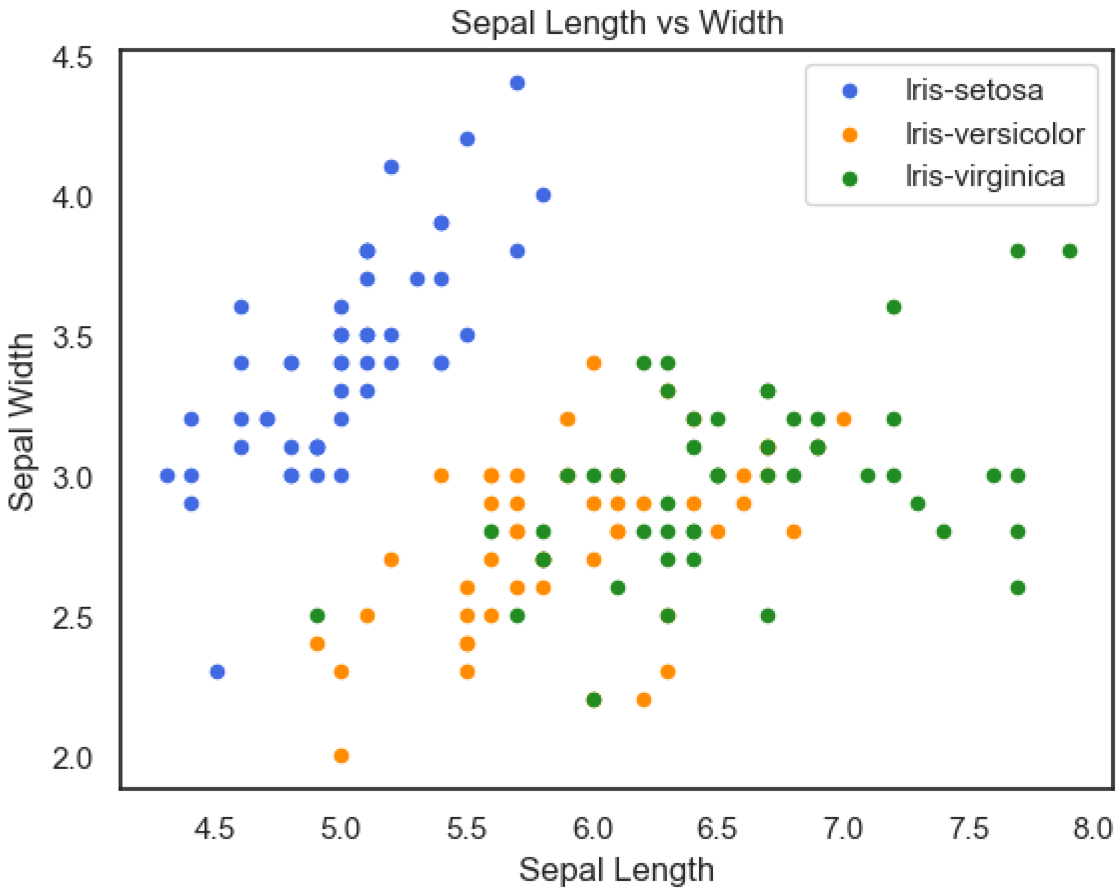
```
Iris_dataset["Species"].value_counts()
```

Out[24]:

```
Species
Iris-setosa        50
Iris-versicolor    50
Iris-virginica     50
Name: count, dtype: int64
```

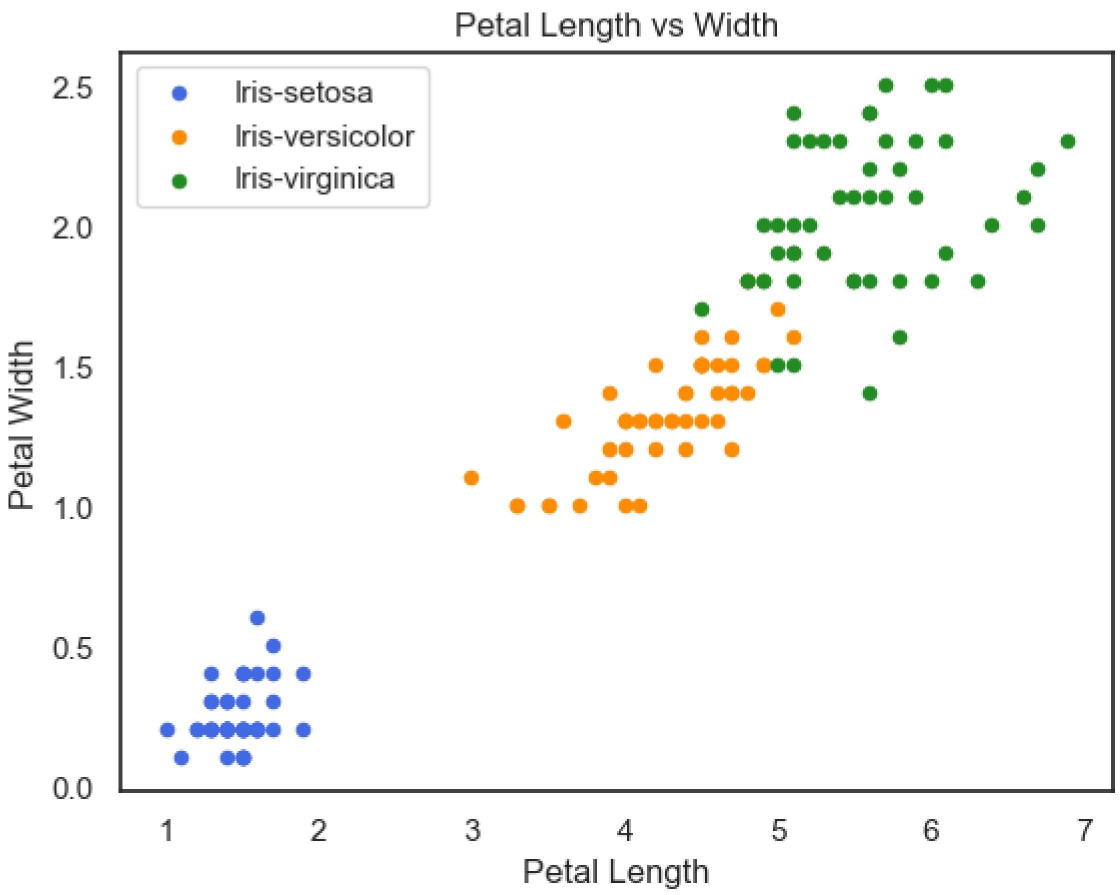
In [35]:

```
fig = Iris_dataset[Iris_dataset.Species == 'Iris-setosa'].plot(kind='scatter',x='SepalLengthCm',y='SepalWidthCm',c
Iris_dataset[Iris_dataset.Species == 'Iris-versicolor'].plot(kind='scatter',x='SepalLengthCm',y='SepalWidthCm',col
Iris_dataset[Iris_dataset.Species == 'Iris-virginica'].plot(kind='scatter',x='SepalLengthCm',y='SepalWidthCm',colo

fig.set_xlabel('Sepal Length')
fig.set_ylabel('Sepal Width')
fig.set_title('Sepal Length vs Width');
```

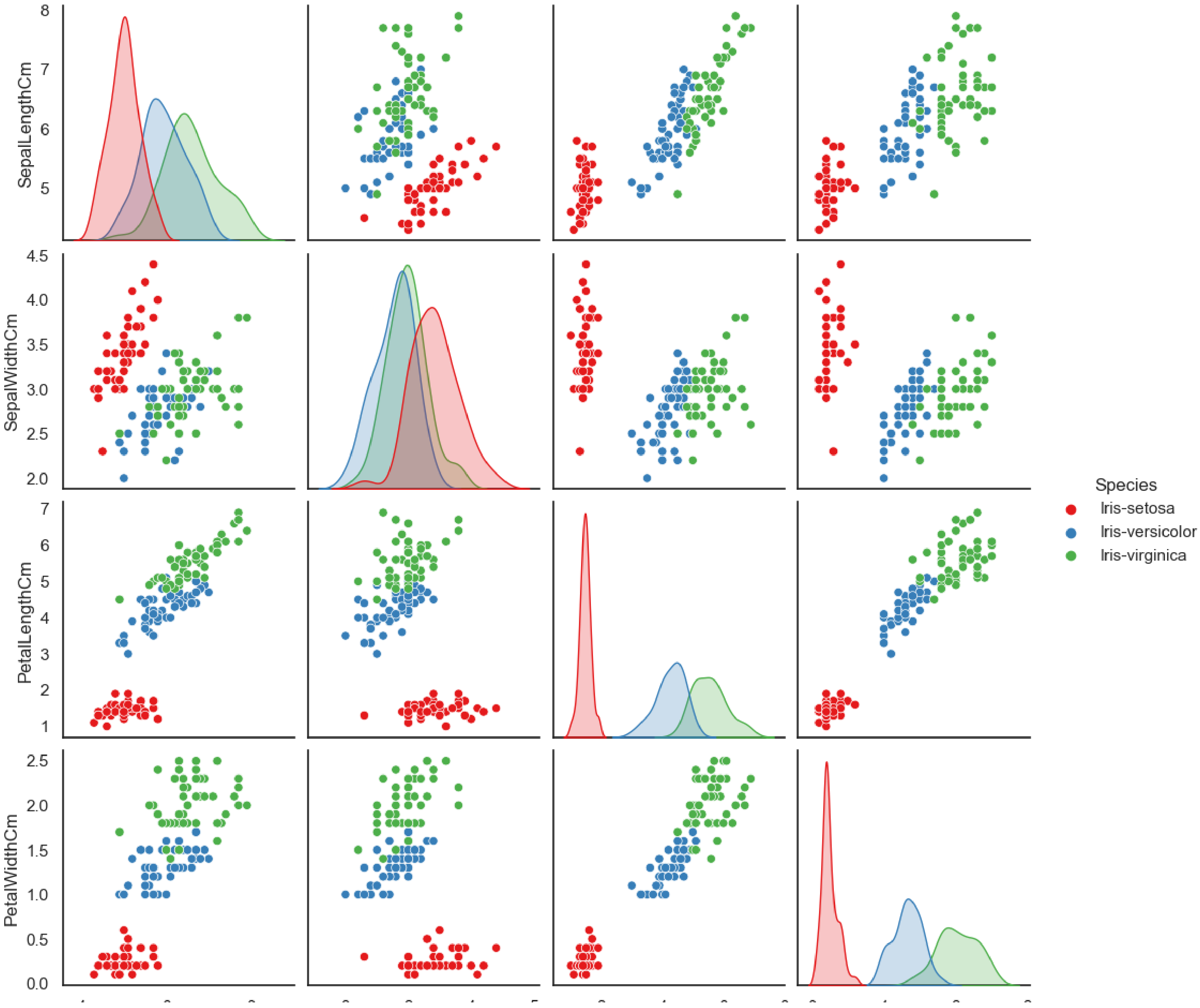


In [42]:

```
fig = Iris_dataset[Iris_dataset.Species == 'Iris-setosa'].plot(kind='scatter',x='PetalLengthCm',y='PetalWidthCm',c
Iris_dataset[Iris_dataset.Species == 'Iris-versicolor'].plot(kind='scatter',x='PetalLengthCm',y='PetalWidthCm',col
Iris_dataset[Iris_dataset.Species == 'Iris-virginica'].plot(kind='scatter',x='PetalLengthCm',y='PetalWidthCm',colo

fig.set_xlabel('Petal Length')
fig.set_ylabel('Petal Width')
fig.set_title('Petal Length vs Width');
```



```
In [43]:  sns.pairplot(Iris_dataset, hue='Species',palette='Set1');
```


SepalLengthCm
8
7
6
5
SepalWidthCm
4.5
4.0
3.5
3.0
2.5
2.0
PetalLengthCm
7
6
5
4
3
2
1
PetalWidthCm
2.5
2.0
1.5
1.0
0.5
0.0
Species
● Iris-setosa
● Iris-versicolor
● Iris-virginica

In [44]:

```
X = Iris_dataset.drop('Species', axis=1)
y = Iris_dataset['Species']

from sklearn.model_selection import train_test_split
X_train, X_test, y_train, y_test = train_test_split(X, y, test_size=0.25, random_state=0)
```

In [45]:

```
from sklearn.linear_model import LogisticRegression
classifier = LogisticRegression()
classifier.fit(X_train,y_train)
y_pred= classifier.predict(X_test)

# Evaluating the Algorithm
from sklearn.metrics import classification_report, confusion_matrix, accuracy_score
print(confusion_matrix(y_test, y_pred))
print(classification_report(y_test, y_pred))
print(accuracy_score(y_test,y_pred))
```

```
[[13  0  0]
 [ 0 15  1]
 [ 0  0  9]]
                 precision    recall  f1-score   support

    Iris-setosa       1.00      1.00      1.00        13
Iris-versicolor       1.00      0.94      0.97        16
 Iris-virginica       0.90      1.00      0.95         9

       accuracy                           0.97        38
      macro avg       0.97      0.98      0.97        38
   weighted avg       0.98      0.97      0.97        38

0.9736842105263158
```

In [46]:

```
from sklearn import svm
classifier1 = svm.SVC()
classifier1.fit(X_train,y_train)
y_pred1 = classifier1.predict(X_test)

# Evaluating the Algorithm
from sklearn.metrics import classification_report, confusion_matrix, accuracy_score
print(confusion_matrix(y_test, y_pred1))
print(classification_report(y_test, y_pred1))
print(accuracy_score(y_test,y_pred1))
```

```
[[13  0  0]
 [ 0 15  1]
 [ 0  0  9]]
                 precision    recall  f1-score   support

    Iris-setosa       1.00      1.00      1.00        13
Iris-versicolor       1.00      0.94      0.97        16
 Iris-virginica       0.90      1.00      0.95         9

       accuracy                           0.97        38
      macro avg       0.97      0.98      0.97        38
   weighted avg       0.98      0.97      0.97        38

0.9736842105263158
```

In [47]:

```
petal=Iris_dataset[['PetalLengthCm','PetalWidthCm','Species']]
sepal=Iris_dataset[['SepalLengthCm','SepalWidthCm','Species']]
```

In [48]:

```
train_p,test_p=train_test_split(petal,test_size=0.3,random_state=0)  #petals
train_x_p=train_p[['PetalWidthCm','PetalLengthCm']]
train_y_p=train_p.Species
test_x_p=test_p[['PetalWidthCm','PetalLengthCm']]
test_y_p=test_p.Species


train_s,test_s=train_test_split(sepal,test_size=0.3,random_state=0)  #Sepal
train_x_s=train_s[['SepalWidthCm','SepalLengthCm']]
train_y_s=train_s.Species
test_x_s=test_s[['SepalWidthCm','SepalLengthCm']]
test_y_s=test_s.Species
```

In [49]:

```
from sklearn import metrics
```

In [50]:

```
model = LogisticRegression()
model.fit(train_x_p,train_y_p)
prediction=model.predict(test_x_p)
# Evaluating the Algorithm
print('The accuracy of the Logistic Regression using Petals is:',metrics.accuracy_score(prediction,test_y_p))

model.fit(train_x_s,train_y_s)
prediction=model.predict(test_x_s)
# Evaluating the Algorithm
print('The accuracy of the Logistic Regression using Sepals is:',metrics.accuracy_score(prediction,test_y_s))
```

```
The accuracy of the Logistic Regression using Petals is: 0.9777777777777777
The accuracy of the Logistic Regression using Sepals is: 0.8222222222222222
```

In [51]:

```
model=svm.SVC()
model.fit(train_x_p,train_y_p)
prediction=model.predict(test_x_p)
# Evaluating the Algorithm
print('The accuracy of the SVM using Petals is:',metrics.accuracy_score(prediction,test_y_p))

model=svm.SVC()
model.fit(train_x_s,train_y_s)
prediction=model.predict(test_x_s)
# Evaluating the Algorithm
print('The accuracy of the SVM using Sepal is:',metrics.accuracy_score(prediction,test_y_s))
```

```
The accuracy of the SVM using Petals is: 0.9777777777777777
The accuracy of the SVM using Sepal is: 0.8
```

In [ ]:

In [ ]:

In [ ]:

In [ ]: