In [ ]:
```
Objectiveis is to classify the flower belong to which category amongs the all three?
```

In [ ]:
```
# Importing Libraries
```

In [5]:
```
import pandas as pd
import numpy as np
import seaborn as sns
import matplotlib.pyplot as plt
```

In [6]:
```
data = pd.read_csv(r'C:\Users\Hp\Desktop\Pyhton\Python Project_Raw file\IRIS Data\Iris.c
```

In [7]:
```
#Understand the data
data.head(2)
```

Out[7]:

	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

In [18]:
```
#To Get an Overview of No of column Present In dataset
data.columns
```

Out[18]:
```
Index(['Id', 'sepallength', 'sepalwidth', 'petallength', 'petalwidth',
       'Species'],
      dtype='object')
```

In [19]:
```
#rename the column name and Make it readable
data.rename(columns={'SepalLengthCm':'sepallength','SepalWidthCm':'sepalwidth','PetalLen
```

In [20]:
```
data.head(2)
```

Out[20]:

	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

In [21]:
```
#Get the statastical Insights of the data
data.describe()
```

Out[21]:

	Id	sepallength	sepalwidth	petallength	petalwidth
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 [22]:
```
#We observe from this above line that our dataset has 150 rows and 6 columns
data.shape
```

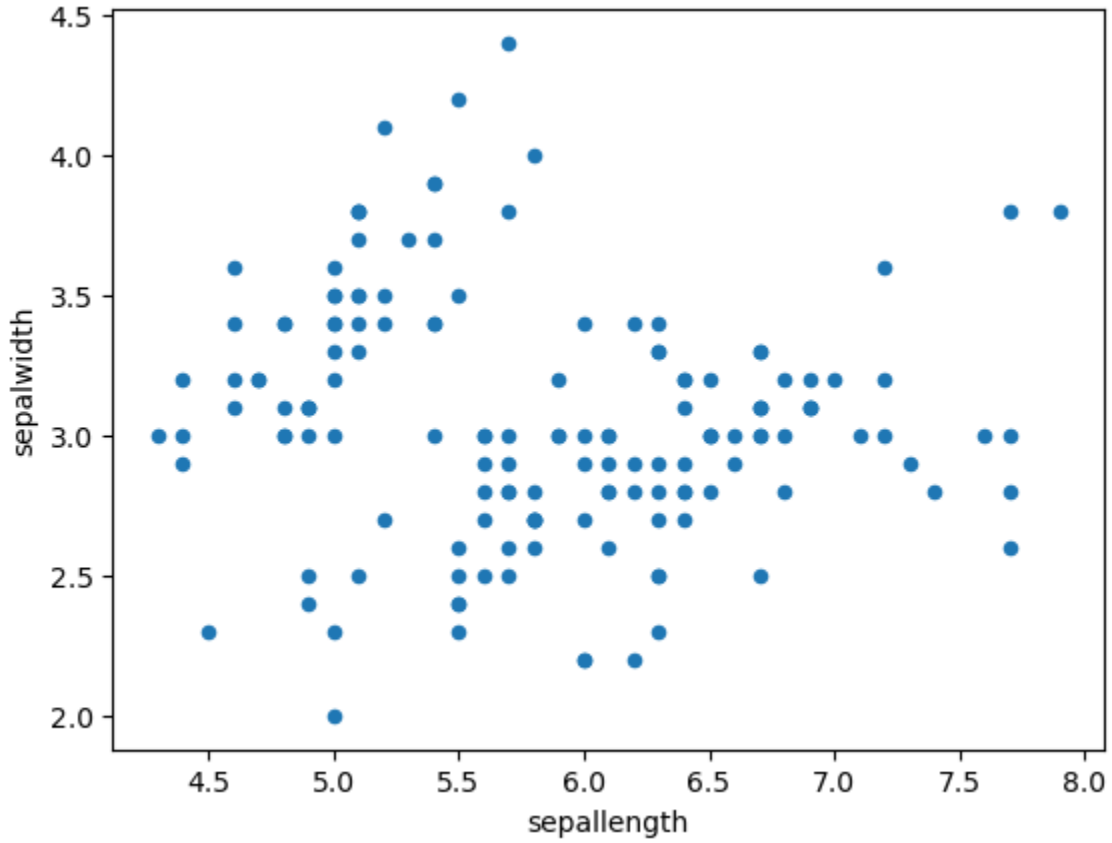
Out[22]:
```
(150, 6)
```

In [23]:
```
#to get more informatio about the dataset
#iris dataset is a balanced dataset no of datapoints are equal
data['Species'].value_counts()
```

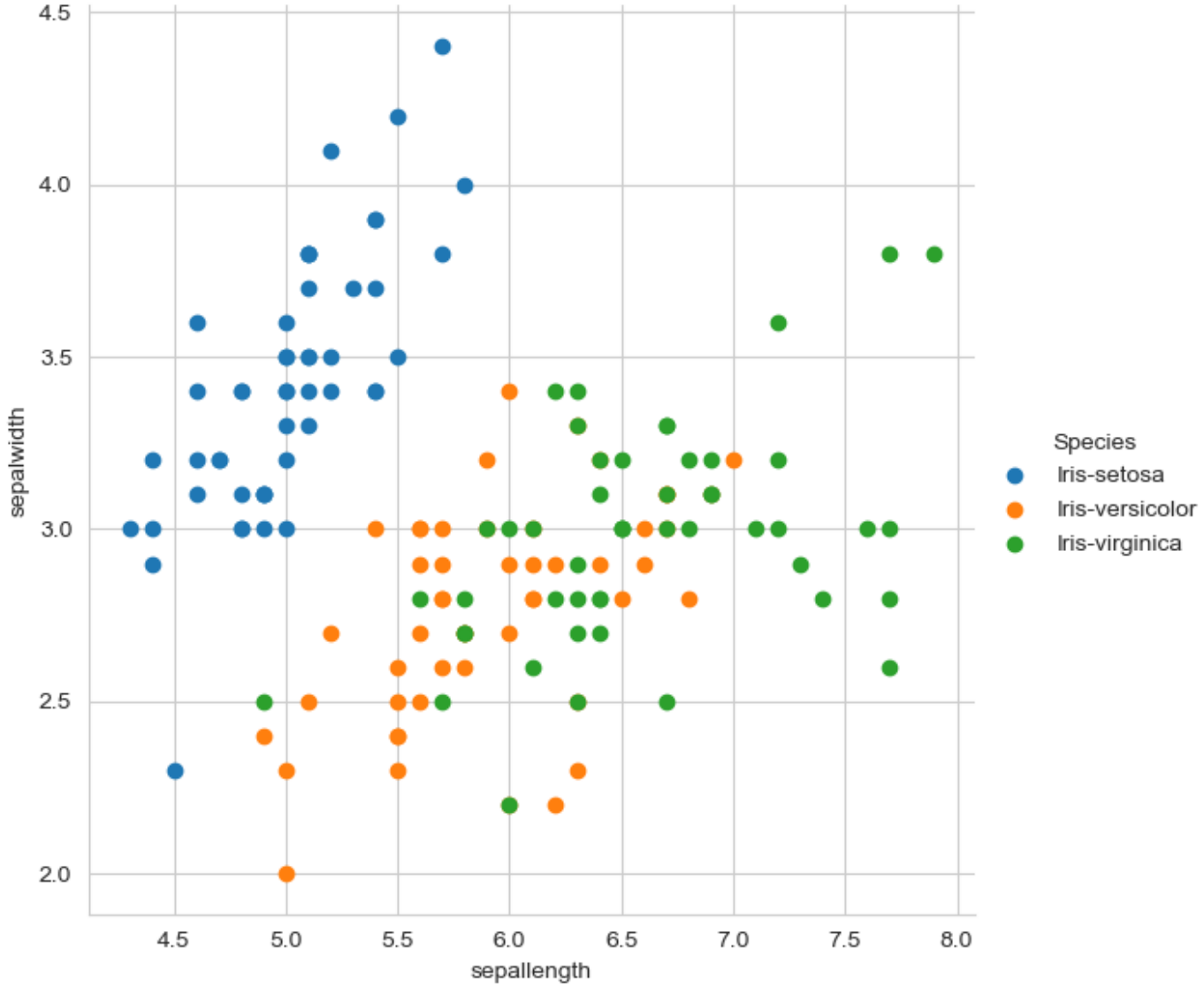
Out[23]:
```
Iris-setosa        50
Iris-versicolor    50
Iris-virginica     50
Name: Species, dtype: int64
```

In [ ]:
```
#2D Scatter plot
# to Understand the axis label scale
```

In [25]:
```
data.plot(kind='scatter',x='sepallength',y='sepalwidth')
plt.show()
```



In [45]:
```
sns.set_style("whitegrid"),
sns.FacetGrid(data, hue= "Species", height =6) \
.map(plt.scatter, "sepallength","sepalwidth") \
.add_legend();
plt.show()
```



In [31]:
```
data.head(1)
```

Out[31]:

	sepallength	sepalwidth	petallength	petalwidth	Species
0	5.1	3.5	1.4	0.2	Iris-setosa

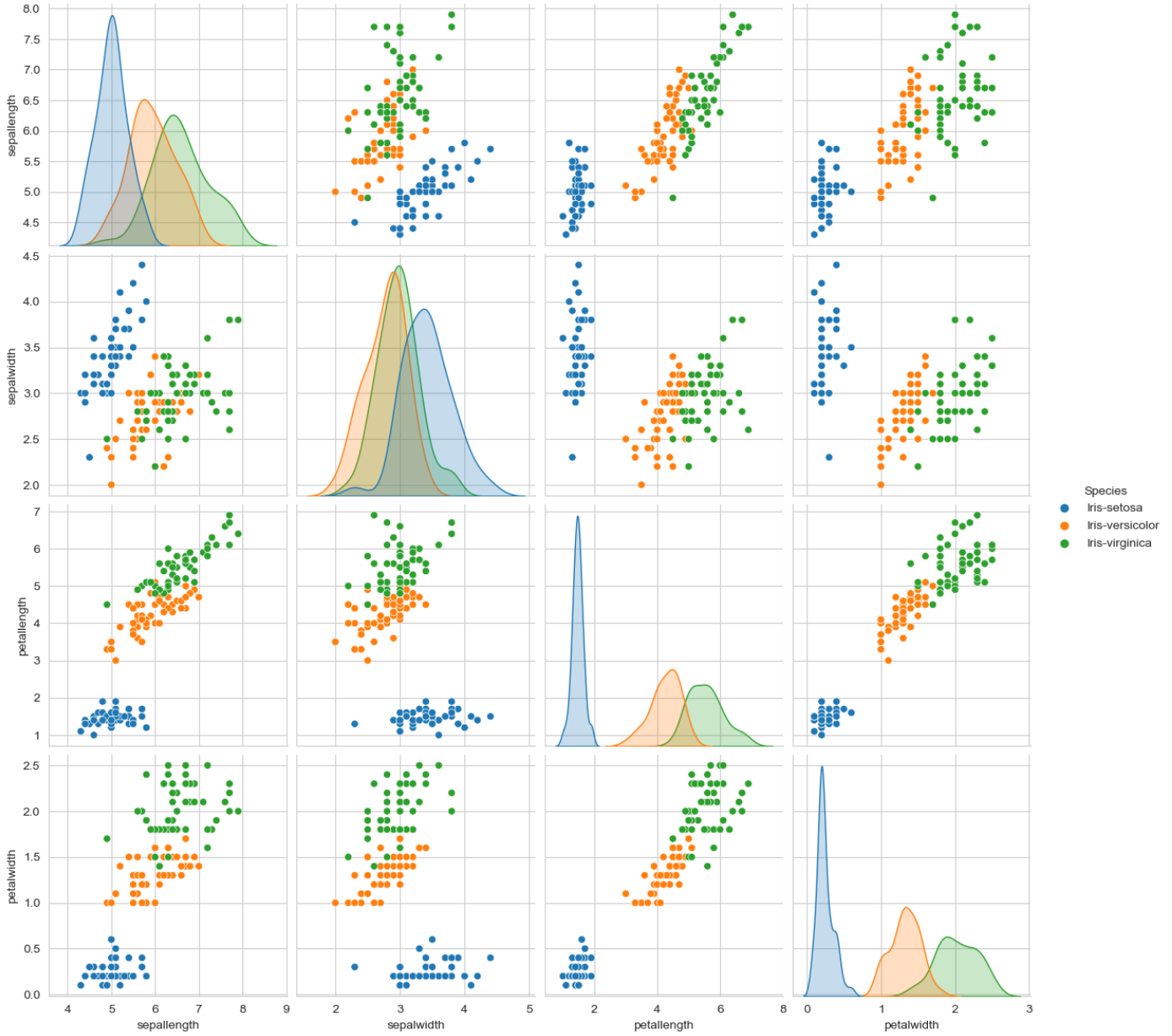
In [50]:
```
data.head()
```

Out[50]:

	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

In [ ]:
```
#Pair plot represents the relationship between our target and the variables
```

In [51]:
```
sns.set_style("whitegrid")
sns.pairplot(data, hue= "Species", height =3);
plt.show()
```



In [ ]:
```
Histogram PDF
```

In [62]:
```
data
```

Out[62]:

	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

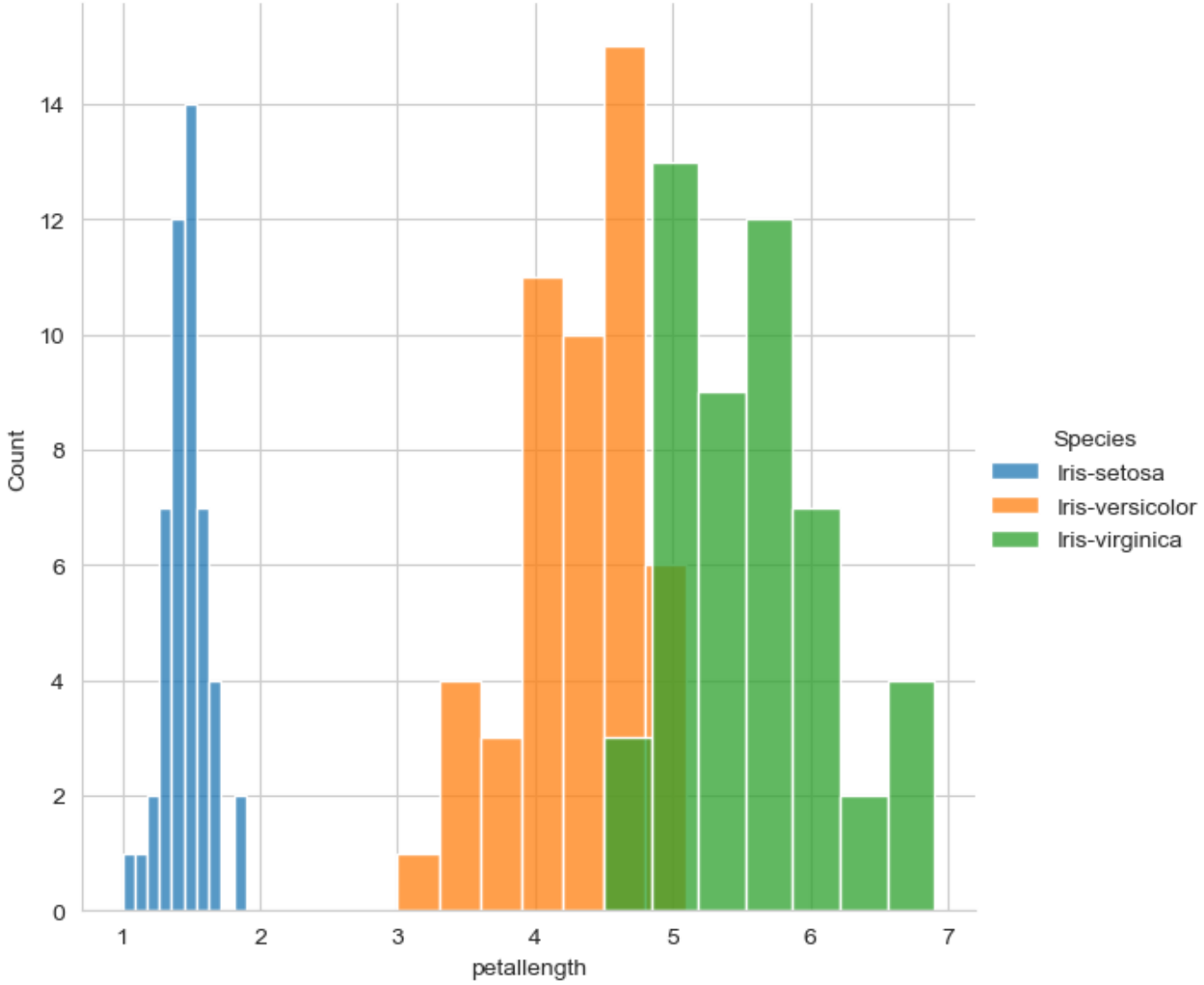
150 rows × 5 columns

In [105…

```
import numpy as np
iris_setosa = data.loc[data["Species"]== "iris-setosa"]
iris_virginica =data.loc[data["Species"]=="Iris-virginica"];
iris_versicolor = data.loc[data["Species"]=="Iris-versicolor"]
```

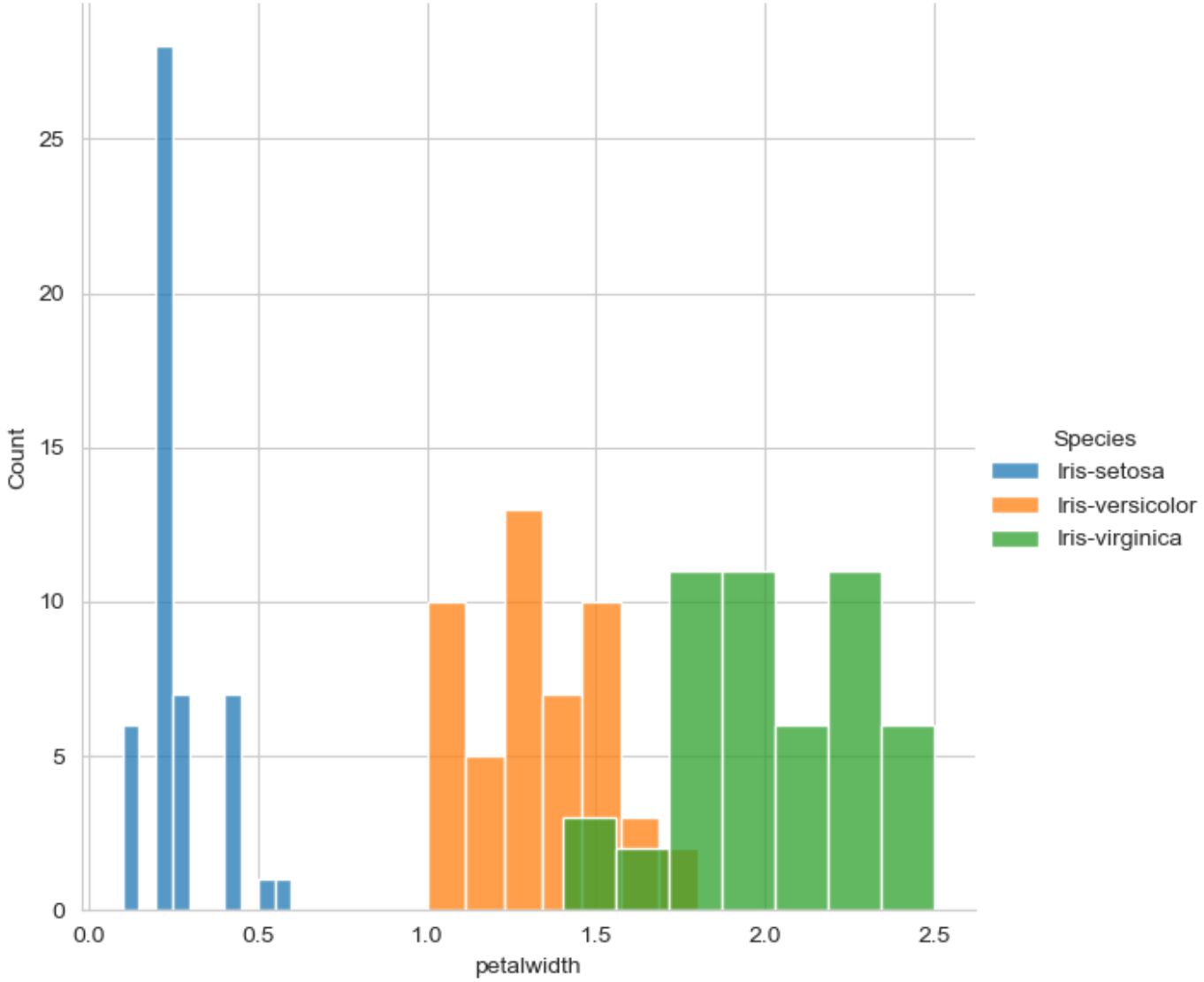
In [113…

```
#Univariate Analysis
sns.FacetGrid(data, hue="Species", height=6)\
.map(sns.histplot, "petallength")\
   .add_legend()
plt.show()
```



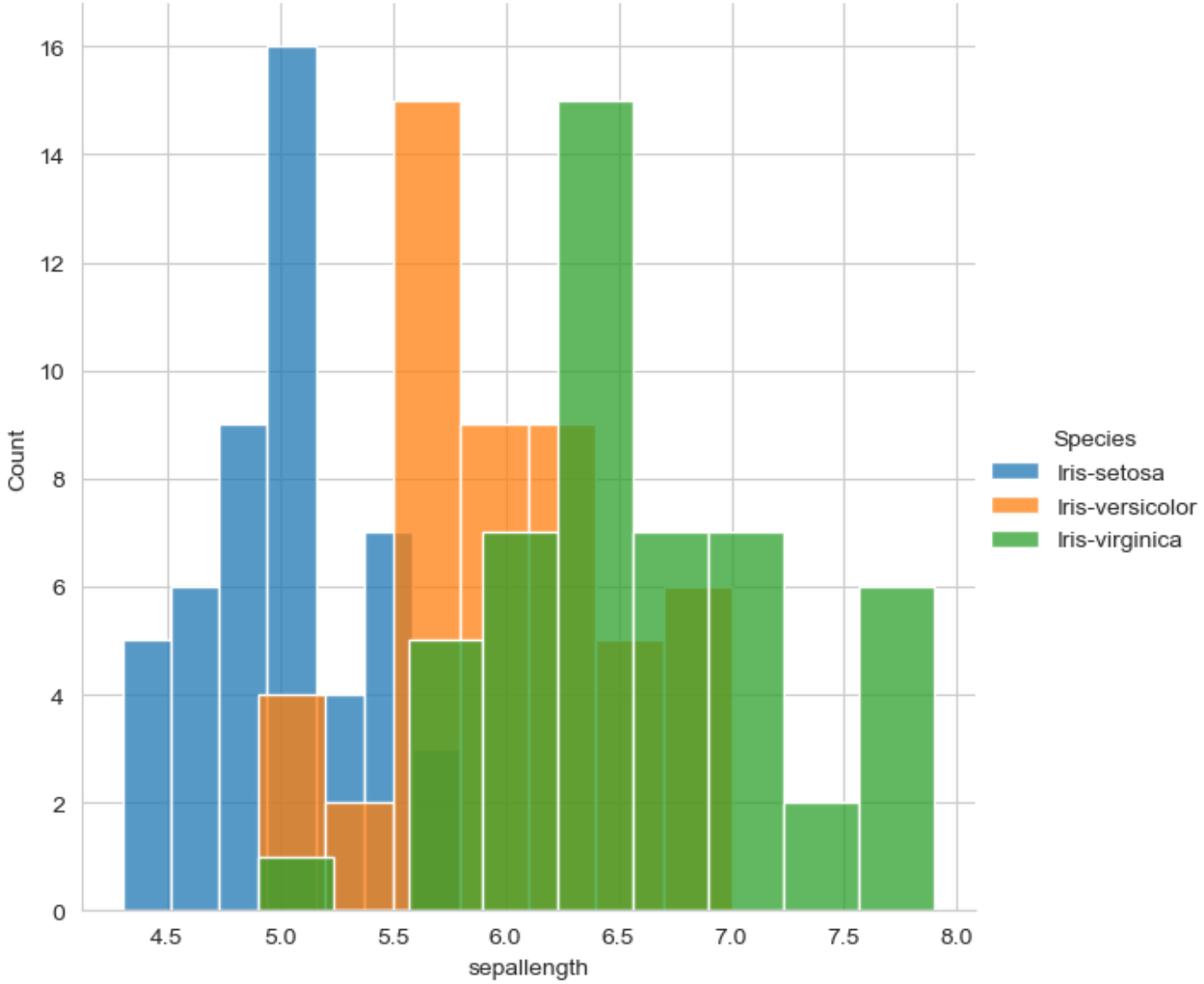
In [111…

```
sns.FacetGrid(data, hue="Species", height=6)\
.map(sns.histplot, "petalwidth")\
   .add_legend()
plt.show()
```



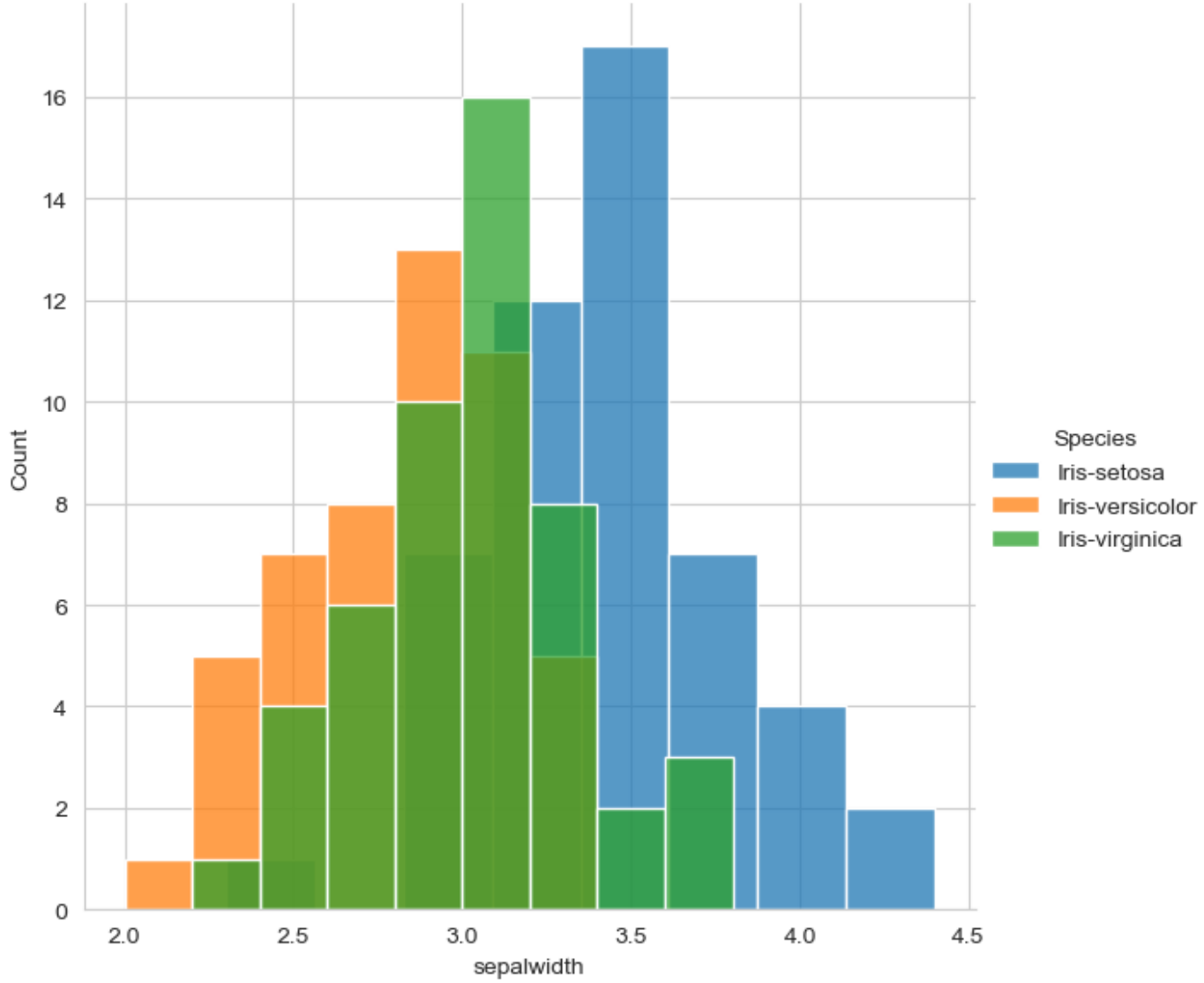
In [109…

```
sns.FacetGrid(data, hue="Species", height=6)\
.map(sns.histplot, "sepallength")\
   .add_legend()
plt.show()
```

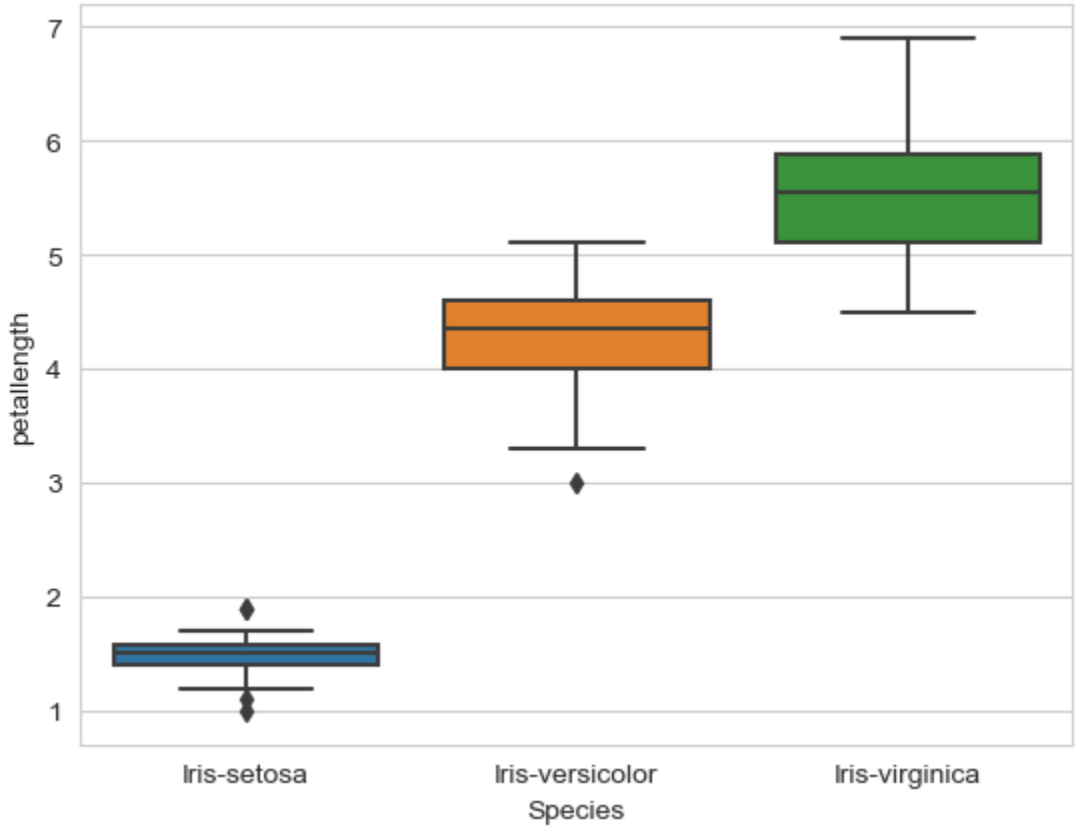


In [112…

```
sns.FacetGrid(data, hue="Species", height=6)\
.map(sns.histplot, "sepalwidth")\
   .add_legend()
plt.show()
```

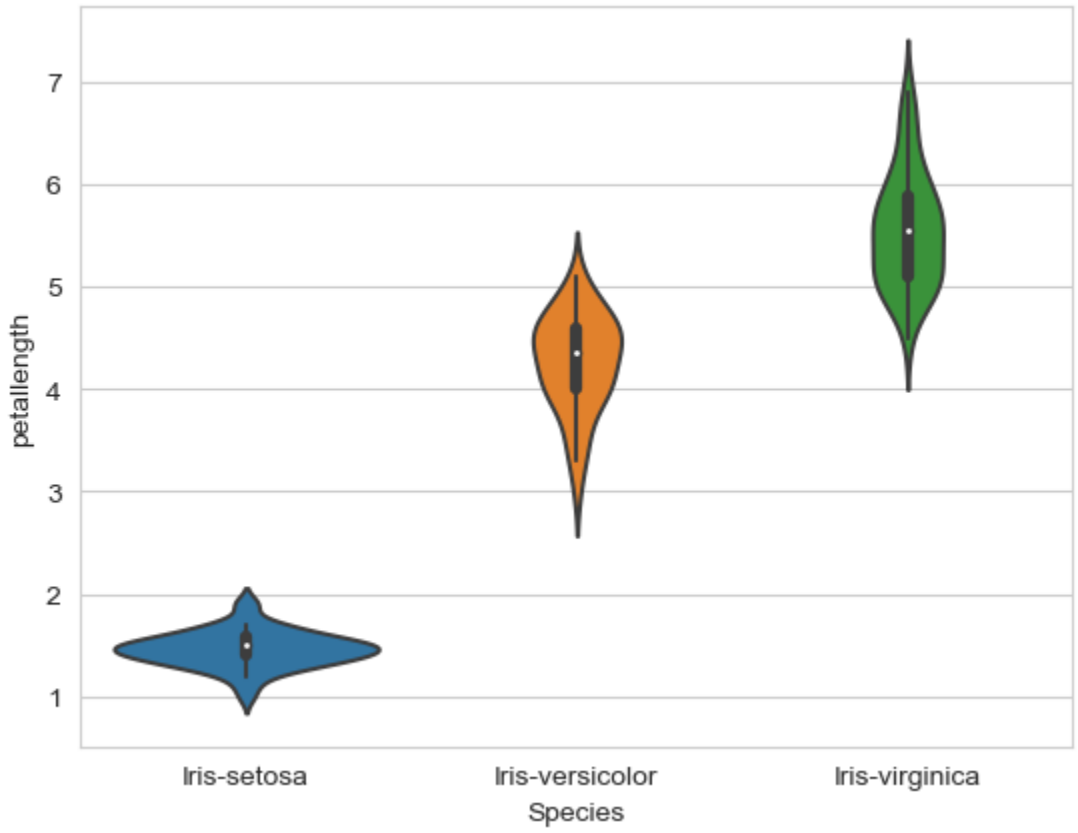


In [92]:
```
#Box Plot
#Box-plot can be visualized as a PDF on the side-ways
sns.boxplot(x= 'Species', y= 'petallength', data = data)
plt.show()
```



In [101…

```
#Violen plot
sns.violinplot(x= "Species", y= "petallength", data = data, height=8)
plt.show()
```



In [ ]: