Task 1: Exploring and Visualizing the Iris Dataset using Python, pandas, matplotlib, and seaborn.

1. Import Required Libraries

```
import pandas as pd
import seaborn as sns
import matplotlib.pyplot as plt
```

2. Load the Iris Dataset

```
# Load directly from the seaborn
df = sns.load_dataset('iris')
```

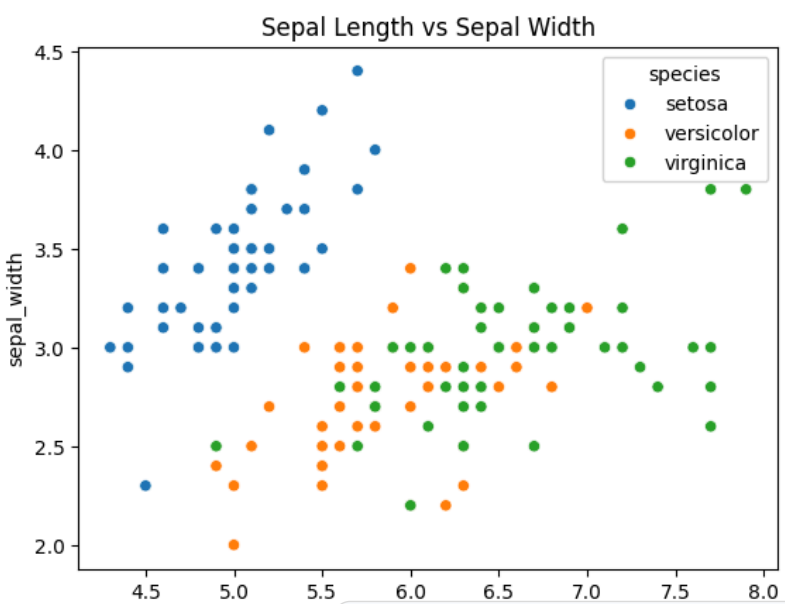
3. Inspect the Dataset

```
# Display the shape of the dataset
print("Shape:", df.shape)

# Display the column names
print("Columns:", df.columns.tolist())

# Show the first 5 rows
print(df.head())
```

```
Shape: (150, 5)
Columns: ['sepal_length', 'sepal_width', 'petal_length', 'petal_width', 'species']
   sepal_length  sepal_width  petal_length  petal_width species
0           5.1          3.5           1.4          0.2  setosa
1           4.9          3.0           1.4          0.2  setosa
2           4.7          3.2           1.3          0.2  setosa
3           4.6          3.1           1.5          0.2  setosa
4           5.0          3.6           1.4          0.2  setosa
```

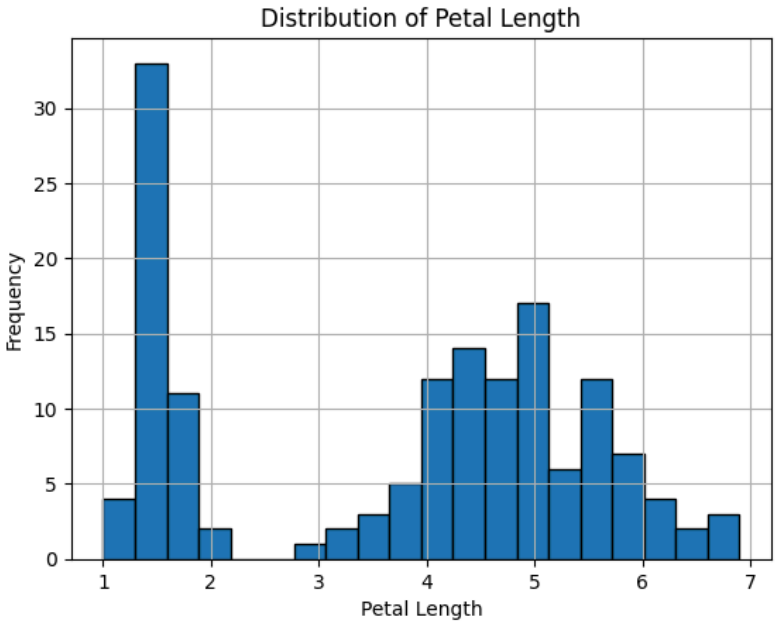
4. Scatter Plot

```
sns.scatterplot(data=df, x='sepal_length', y='sepal_width', hue='species')
plt.title('Sepal Length vs Sepal Width')
plt.show()
```



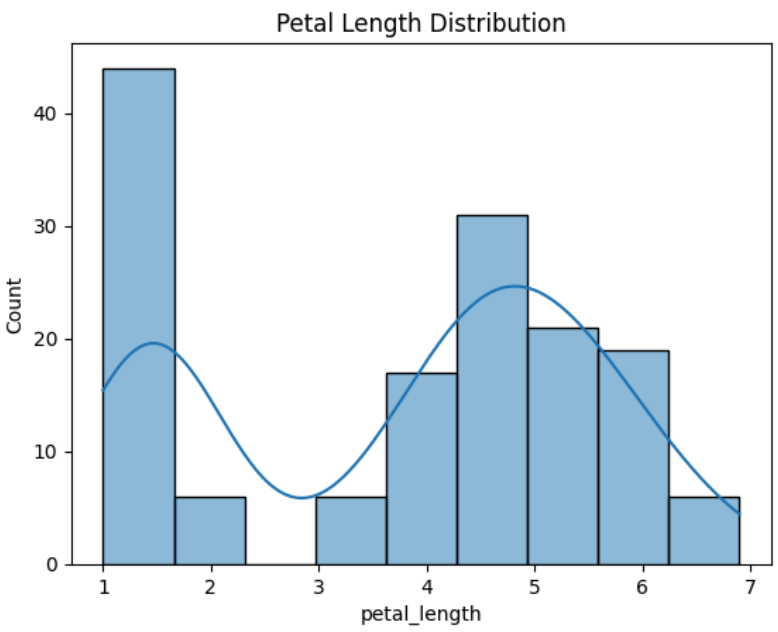
5. Histogram

```
df['petal_length'].hist(bins=20, edgecolor='black')
plt.title('Distribution of Petal Length')
plt.xlabel('Petal Length')
plt.ylabel('Frequency')
plt.show()
```



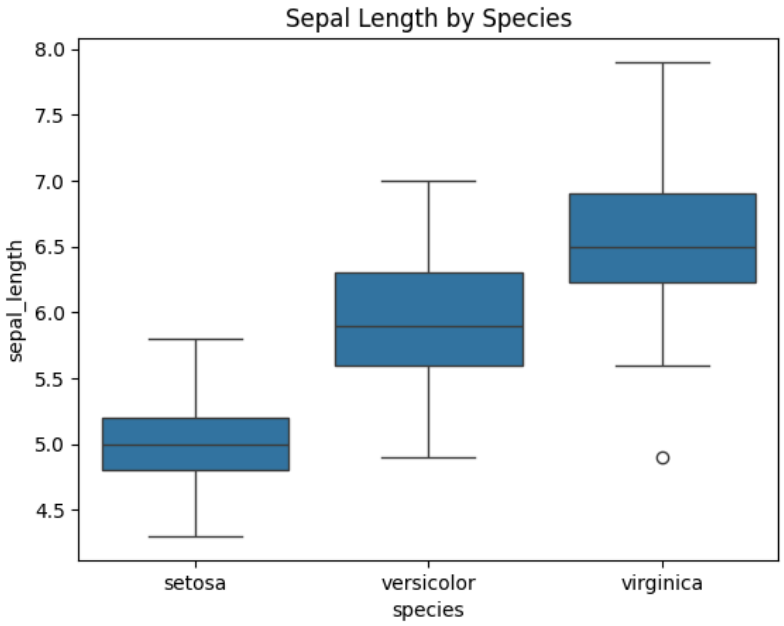
I can also use seaborn for prettier output:

```
sns.histplot(df['petal_length'], kde=True)
plt.title('Petal Length Distribution')
plt.show()
```



6. Box Plot

```
sns.boxplot(data=df, x='species', y='sepal_length')
plt.title('Sepal Length by Species')
plt.show()
```



Summary With this task, you will have:

Loaded and inspected a real dataset.

Created key visualizations:

Scatter plot to study relationships.

Histogram to see distributions.

Box plot to detect outliers and variation.