Q1. Data Visualization and Statistical Measures: ¶

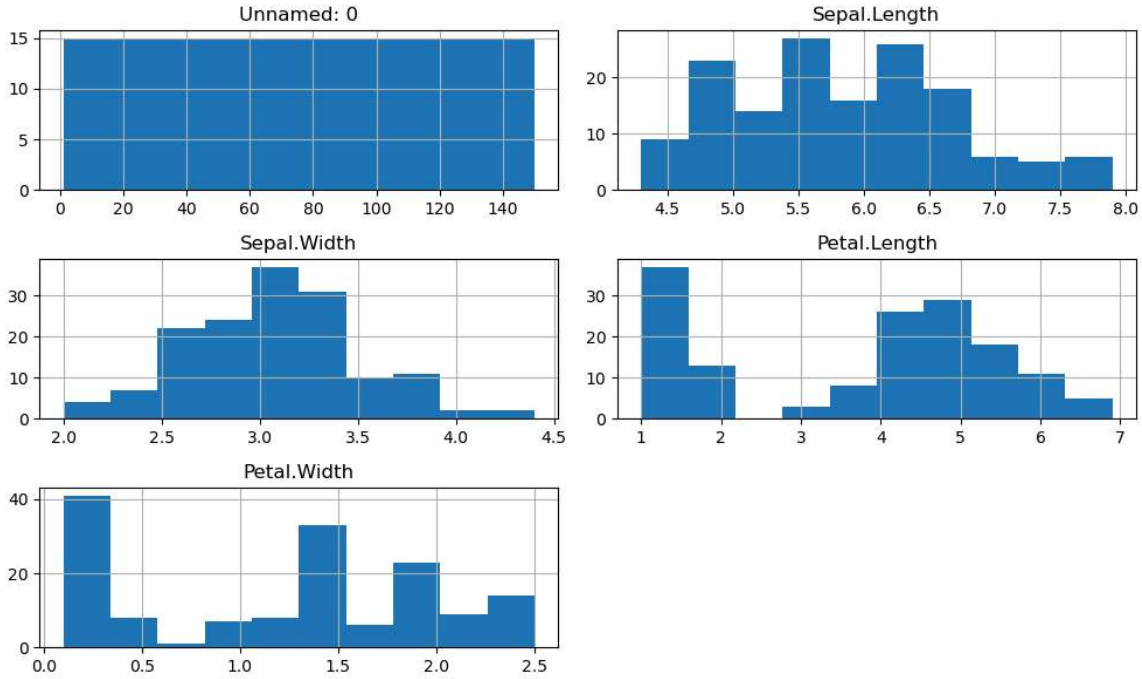
For this question, you are required to analyse the iris dataset (iris.csv) using Python. Perform all possible data visualization techniques (histograms, scatter plots, box plots, etc.) on all numerical columns of the dataset. Additionally, calculate all possible statistical measures (mean, median, mode, standard deviation, etc.) for each numerical column.

In [15]:
```
import pandas as pd
import matplotlib.pyplot as plt
import seaborn as sns
from scipy import stats
data = pd.read_csv(r"C:\Users\vaibhav wagalgave\AppData\Local\Microsoft\Windo
```

In [16]:
```
print(data.head())
```

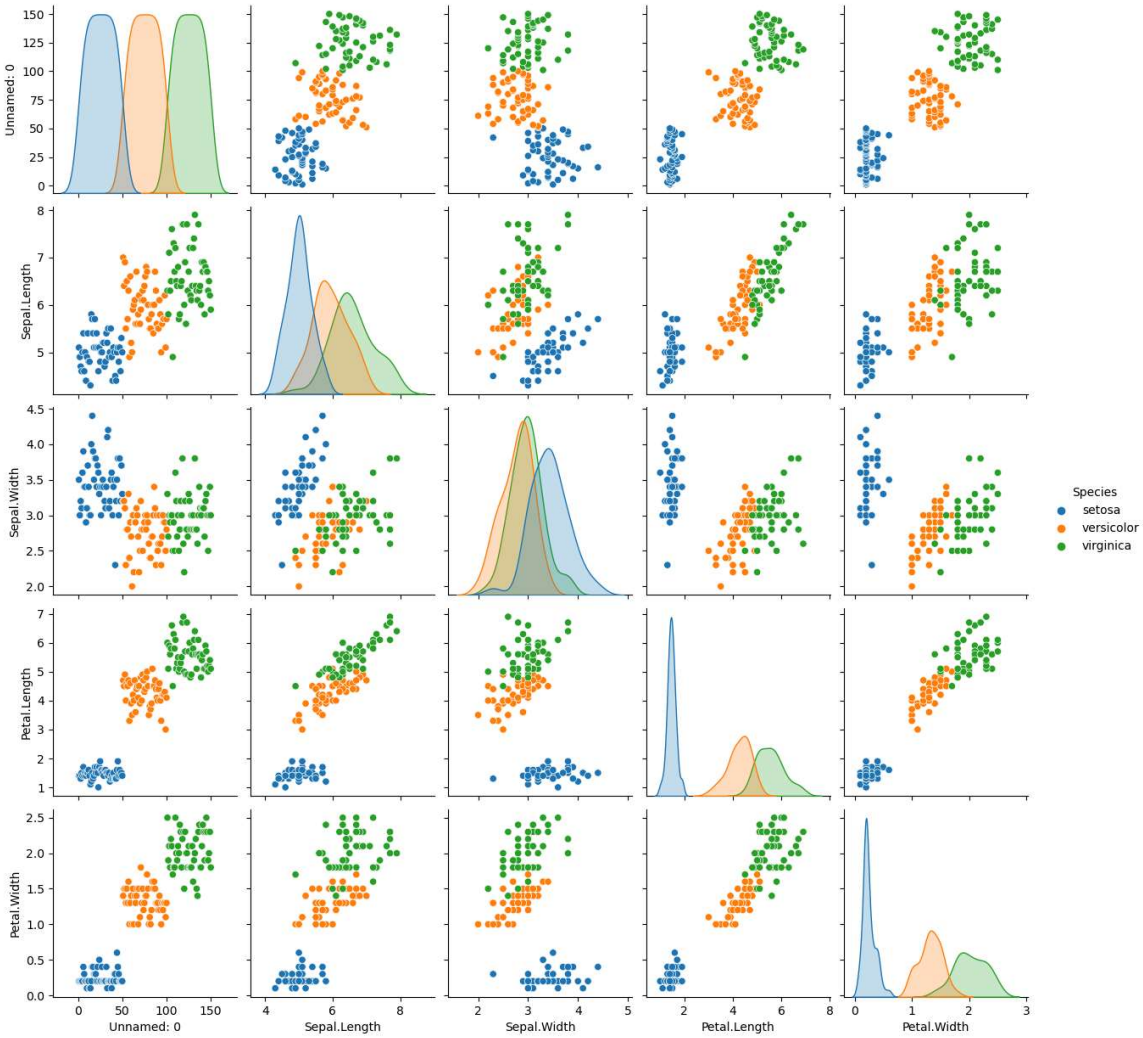
```
   Unnamed: 0  Sepal.Length  Sepal.Width  Petal.Length  Petal.Width Specie
s
0           1           5.1          3.5           1.4          0.2  setos
a
1           2           4.9          3.0           1.4          0.2  setos
a
2           3           4.7          3.2           1.3          0.2  setos
a
3           4           4.6          3.1           1.5          0.2  setos
a
4           5           5.0          3.6           1.4          0.2  setos
a
```

In [17]:
```
data.hist(figsize=(10, 6))
plt.tight_layout()
plt.show()
```

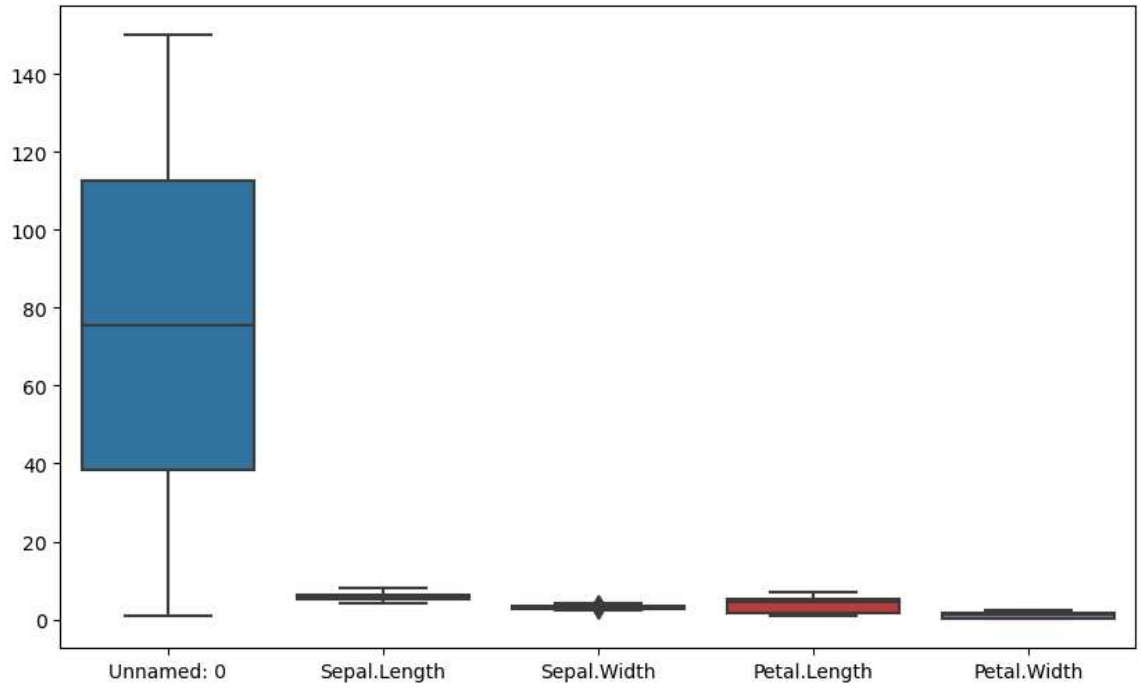


In [18]:
```
sns.pairplot(data, hue='Species', height=2.5)
plt.show()
```

```
D:\ProgramData\anaconda3\Lib\site-packages\seaborn\axisgrid.py:118: UserWa
rning: The figure layout has changed to tight
  self._figure.tight_layout(*args, **kwargs)
```



In [7]:
```
plt.figure(figsize=(10, 6))
sns.boxplot(data=data.drop('Species', axis=1))
plt.show()
```



In [31]:
```
data
```

Out[31]:

	Unnamed: 0	Sepal.Length	Sepal.Width	Petal.Length	Petal.Width	Species
0	1	5.1	3.5	1.4	0.2	setosa
1	2	4.9	3.0	1.4	0.2	setosa
2	3	4.7	3.2	1.3	0.2	setosa
3	4	4.6	3.1	1.5	0.2	setosa
4	5	5.0	3.6	1.4	0.2	setosa
...	...	...	...	...	...	...
145	146	6.7	3.0	5.2	2.3	virginica
146	147	6.3	2.5	5.0	1.9	virginica
147	148	6.5	3.0	5.2	2.0	virginica
148	149	6.2	3.4	5.4	2.3	virginica
149	150	5.9	3.0	5.1	1.8	virginica

150 rows × 6 columns

In [38]:
```
new1=data['Unnamed: 0']
new2=data['Sepal.Length']
new3=data['Sepal.Width']
new4=data['Petal.Length']
new5=data['Petal.Width']
```

In [73]:
```
print("mean of unnamed:",new1.mean())
print("mean of sepal length :",new2.mean())
print("mean of sepal width:",new3.mean())
print("mean of petal length :",new4.mean())
print("mean of petal width:",new5.mean())
```

```
mean of unnamed: 75.5
mean of sepal length : 5.843333333333334
mean of sepal width: 3.0573333333333337
mean of petal length : 3.7580000000000005
mean of petal width: 1.1993333333333336
```

In [75]:
```
print("median of unnamed:",new1.median())
print("median of sepal length :",new2.median())
print("median of sepal width:",new3.median())
print("median of petal length:",new4.median())
print("median of petal width:",new5.median())
```

```
median of unnamed: 75.5
median of sepal length : 5.8
median of sepal width: 3.0
median of petal length: 4.35
median of petal width: 1.3
```

In [77]:
```
print("mode of unnamed:",new1.mode().iloc[0])
print("mode of sepal length :",new2.mode().iloc[0])
print("mode of sepal width:",new3.mode().iloc[0])
print("mode of petal length:",new4.mode().iloc[0])
print("mode of petal width:",new5.mode().iloc[0])
```

```
mode of unnamed: 1
mode of sepal length : 5.0
mode of sepal width: 3.0
mode of petal length: 1.4
mode of petal width: 0.2
```

In [78]:
```
print("std_dev of unnamed:",new1.std())
print("std_dev of sepal length :",new2.std())
print("std_dev of sepal width:",new3.std())
print("std_dev of petal length:",new4.std())
print("std_dev of petal width:",new5.std())
```

```
std_dev of unnamed: 43.445367992456916
std_dev of sepal length : 0.8280661279778629
std_dev of sepal width: 0.435866284936698
std_dev of petal length: 1.7652982332594667
std_dev of petal width: 0.7622376689603465
```