**Performing analysis on Iris dataset

In [1]:
```
import datasets
```

```
c:\DSDBA-lab\venv\Lib\site-packages\tqdm\auto.py:21: TqdmWarning: IProgress not found. Please update jupyter and
ipywidgets. See https://ipywidgets.readthedocs.io/en/stable/user_install.html
  from .autonotebook import tqdm as notebook_tqdm
```

In [2]:
```
import pandas as pd
import numpy as np
import matplotlib.pyplot as plt
```

In [4]:
```
from sklearn.datasets import load_iris
iris = load_iris()
iris_df = pd.DataFrame(data= np.c_[iris['data'], iris['target']],
                       columns= iris['feature_names'] + ['target'])
iris_df
```

Out[4]:

	sepal length (cm)	sepal width (cm)	petal length (cm)	petal width (cm)	target
0	5.1	3.5	1.4	0.2	0.0
1	4.9	3.0	1.4	0.2	0.0
2	4.7	3.2	1.3	0.2	0.0
3	4.6	3.1	1.5	0.2	0.0
4	5.0	3.6	1.4	0.2	0.0
...	...	...	...	...	...
145	6.7	3.0	5.2	2.3	2.0
146	6.3	2.5	5.0	1.9	2.0
147	6.5	3.0	5.2	2.0	2.0
148	6.2	3.4	5.4	2.3	2.0
149	5.9	3.0	5.1	1.8	2.0

150 rows × 5 columns

In [5]:
```
#information about dataset
iris_df.info()
```

```
<class 'pandas.core.frame.DataFrame'>
RangeIndex: 150 entries, 0 to 149
Data columns (total 5 columns):
 #   Column             Non-Null Count  Dtype  
---  ------             --------------  -----  
 0   sepal length (cm)  150 non-null    float64
 1   sepal width (cm)   150 non-null    float64
 2   petal length (cm)  150 non-null    float64
 3   petal width (cm)   150 non-null    float64
 4   target             150 non-null    float64
dtypes: float64(5)
memory usage: 6.0 KB
```

In [6]:
```
iris_df.isna().sum()
```

Out[6]:
```
sepal length (cm)    0
sepal width (cm)     0
petal length (cm)    0
petal width (cm)     0
target               0
dtype: int64
```

In [ ]:
```
#describing the dataset
iris_df.describe()
```

Out[ ]:

	sepal length (cm)	sepal width (cm)	petal length (cm)	petal width (cm)	target
count	150.000000	150.000000	150.000000	150.000000	150.000000
mean	5.843333	3.057333	3.758000	1.199333	1.000000
std	0.828066	0.435866	1.765298	0.762238	0.819232
min	4.300000	2.000000	1.000000	0.100000	0.000000
25%	5.100000	2.800000	1.600000	0.300000	0.000000
50%	5.800000	3.000000	4.350000	1.300000	1.000000
75%	6.400000	3.300000	5.100000	1.800000	2.000000
max	7.900000	4.400000	6.900000	2.500000	2.000000

In [9]:
```
#checking the datatypes
iris_df.dtypes
```

Out[9]:
```
sepal length (cm)    float64
sepal width (cm)     float64
petal length (cm)    float64
petal width (cm)     float64
target               float64
dtype: object
```

Data Normalization

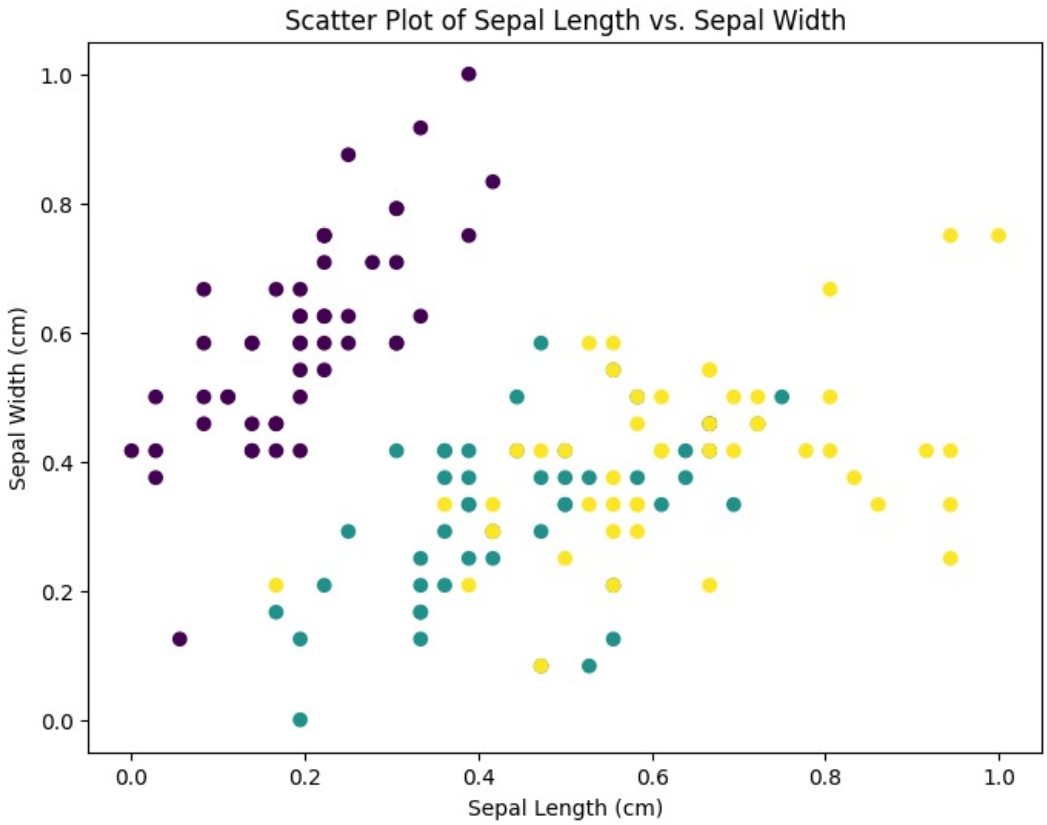
In [11]:
```
from sklearn.preprocessing import MinMaxScaler
columns_to_normalize = ['sepal length (cm)', 'sepal width (cm)', 'petal length (cm)', 'petal width (cm)']
scaler = MinMaxScaler()
iris_df[columns_to_normalize] = scaler.fit_transform(iris_df[columns_to_normalize])
iris_df
```

Out[11]:

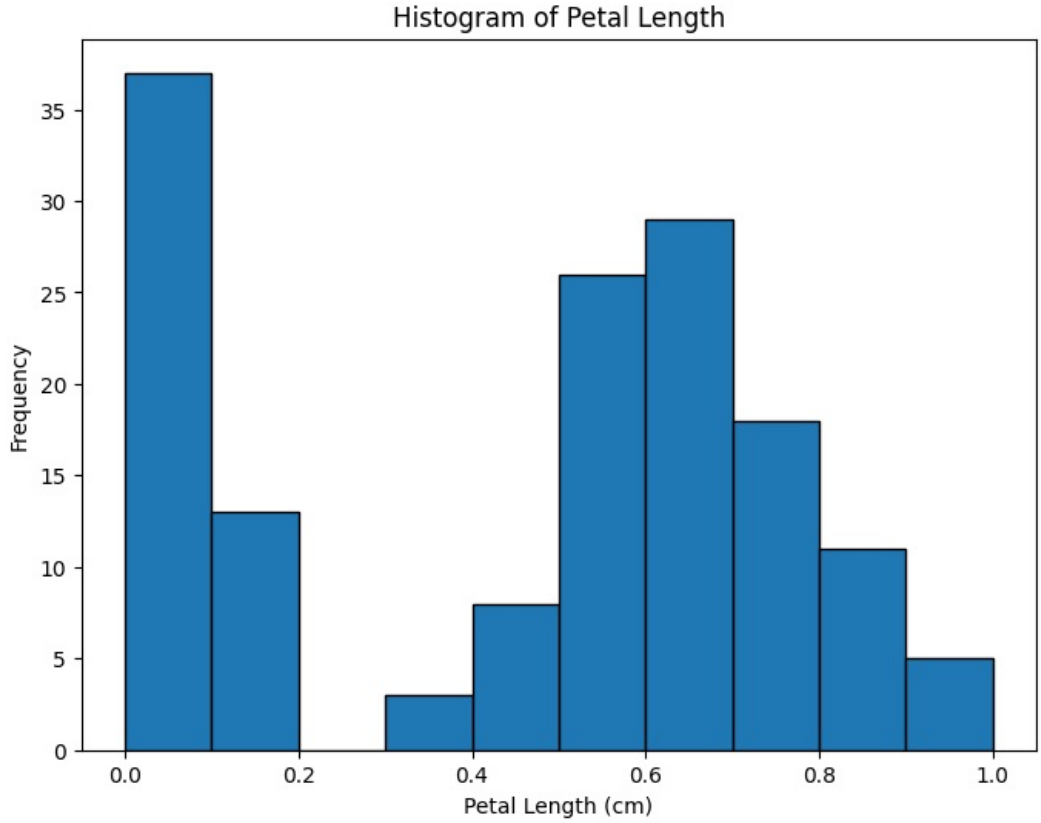
	sepal length (cm)	sepal width (cm)	petal length (cm)	petal width (cm)	target
0	0.222222	0.625000	0.067797	0.041667	0.0
1	0.166667	0.416667	0.067797	0.041667	0.0
2	0.111111	0.500000	0.050847	0.041667	0.0
3	0.083333	0.458333	0.084746	0.041667	0.0
4	0.194444	0.666667	0.067797	0.041667	0.0
...	...	...	...	...	...
145	0.666667	0.416667	0.711864	0.916667	2.0
146	0.555556	0.208333	0.677966	0.750000	2.0
147	0.611111	0.416667	0.711864	0.791667	2.0
148	0.527778	0.583333	0.745763	0.916667	2.0
149	0.444444	0.416667	0.694915	0.708333	2.0

150 rows × 5 columns

In [12]:
```
#scatter plot after standardizing the data between sepal lenght and width
plt.figure(figsize=(8,6))
plt.scatter(iris_df['sepal length (cm)'],iris_df['sepal width (cm)'],c=iris_df['target'])
plt.xlabel('Sepal Length (cm)')
plt.ylabel('Sepal Width (cm)')
plt.title('Scatter Plot of Sepal Length vs. Sepal Width')
plt.show()
```

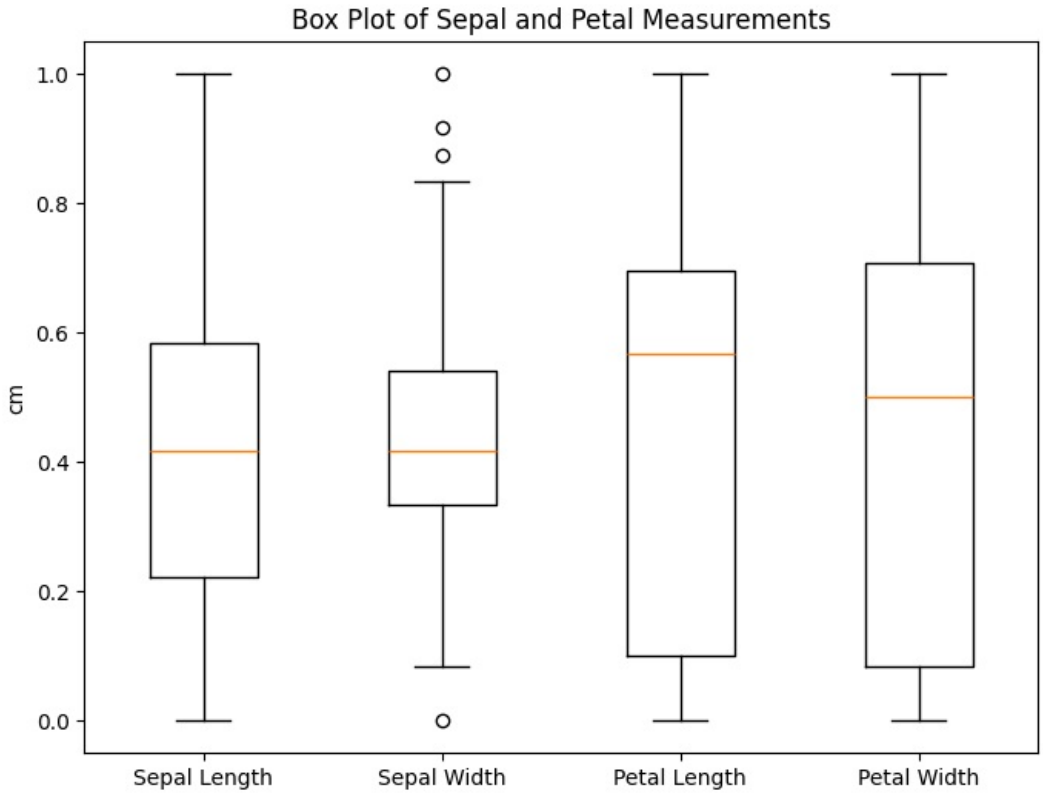


In [13]:
```
#histogram
plt.figure(figsize=(8, 6))
plt.hist(iris_df['petal length (cm)'], bins=10, edgecolor='black')
plt.xlabel('Petal Length (cm)')
plt.ylabel('Frequency')
plt.title('Histogram of Petal Length')
plt.show()
```



In [14]:
```
#box plot
plt.figure(figsize=(8, 6))
plt.boxplot([iris_df['sepal length (cm)'], iris_df['sepal width (cm)'], iris_df['petal length (cm)'], iris_df['
            labels=['Sepal Length', 'Sepal Width', 'Petal Length', 'Petal Width'])
plt.ylabel('cm')
plt.title('Box Plot of Sepal and Petal Measurements')
plt.show()
```

```
C:\Users\nisha\AppData\Local\Temp\ipykernel_31916\718024643.py:3: MatplotlibDeprecationWarning: The 'labels' par
ameter of boxplot() has been renamed 'tick_labels' since Matplotlib 3.9; support for the old name will be droppe
d in 3.11.
  plt.boxplot([iris_df['sepal length (cm)'], iris_df['sepal width (cm)'], iris_df['petal length (cm)'], iris_df[
'petal width (cm)']],
```



In [ ]: