In [16]:
```
import pandas as pd
import numpy as np
import seaborn as sb
import matplotlib.pyplot as plt

data = pd.read_csv("iris.csv")
```

In [17]:
```
data.head()
```

Out[17]:

	sepal_length	sepal_width	petal_length	petal_width	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 [18]:
```
data.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  150 non-null    float64
 1   sepal_width   150 non-null    float64
 2   petal_length  150 non-null    float64
 3   petal_width   150 non-null    float64
 4   species       150 non-null    object 
dtypes: float64(4), object(1)
memory usage: 6.0+ KB
```

In [19]:
```
data.describe()
```

Out[19]:

	sepal_length	sepal_width	petal_length	petal_width
count	150.000000	150.000000	150.000000	150.000000
mean	5.843333	3.054000	3.758667	1.198667
std	0.828066	0.433594	1.764420	0.763161
min	4.300000	2.000000	1.000000	0.100000
25%	5.100000	2.800000	1.600000	0.300000
50%	5.800000	3.000000	4.350000	1.300000
75%	6.400000	3.300000	5.100000	1.800000
max	7.900000	4.400000	6.900000	2.500000

In [20]:
```
data.isnull().sum()
```

Out[20]:
```
sepal_length    0
sepal_width     0
petal_length    0
petal_width     0
species         0
dtype: int64
```

In [21]:
```
data.shape
```

Out[21]:
```
(150, 5)
```

In [22]:
```
data.dtypes
```

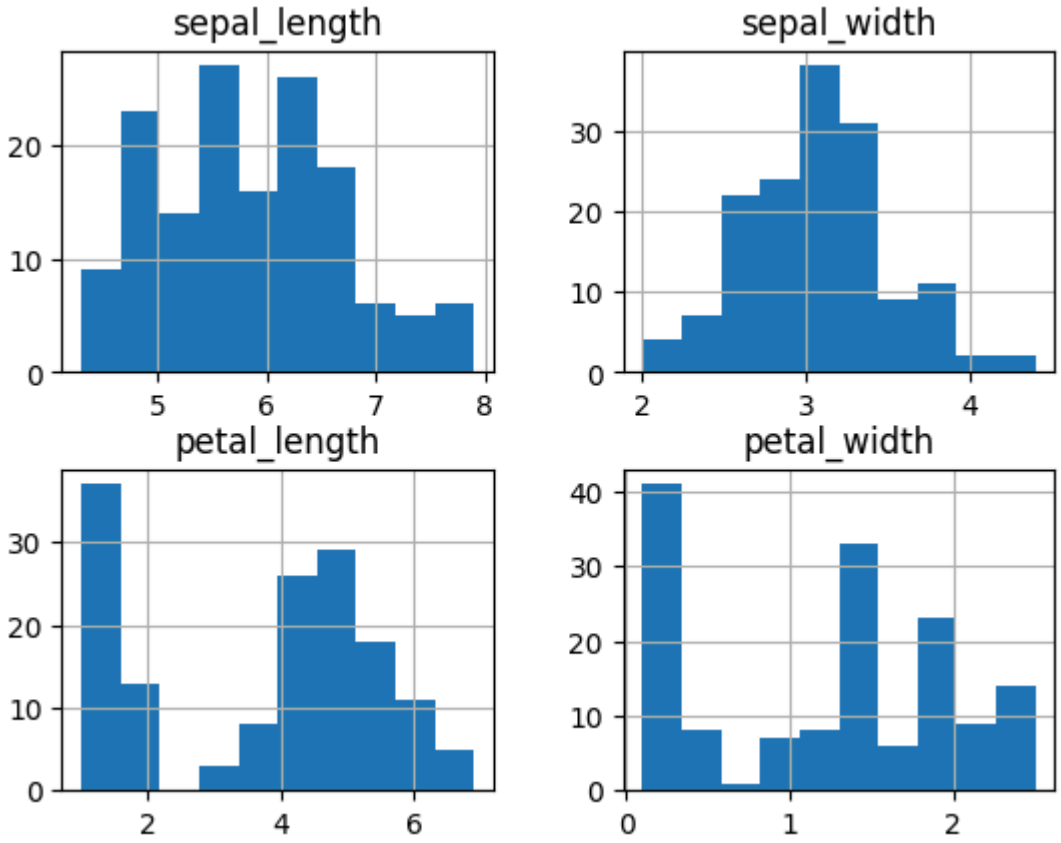
Out[22]:
```
sepal_length    float64
sepal_width     float64
petal_length    float64
petal_width     float64
species          object
dtype: object
```

In [23]:
```
data.tail()
```

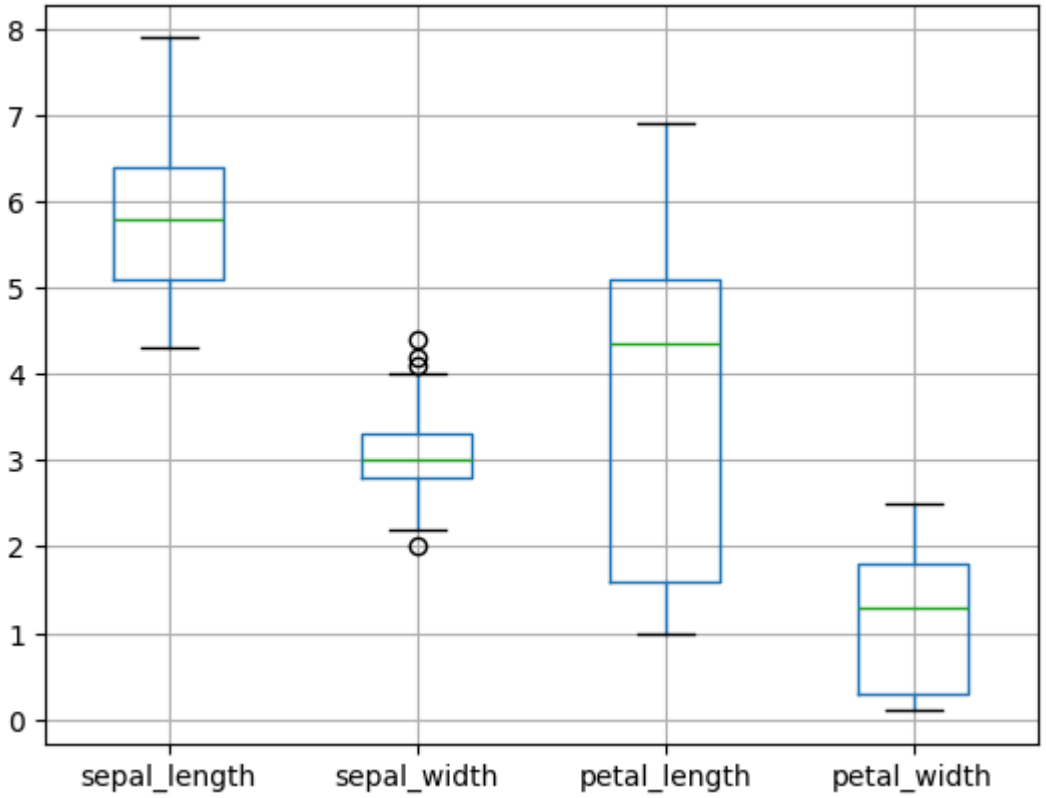
Out[23]:

	sepal_length	sepal_width	petal_length	petal_width	species
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

In [29]:
```
data.hist()
plt.show()
```

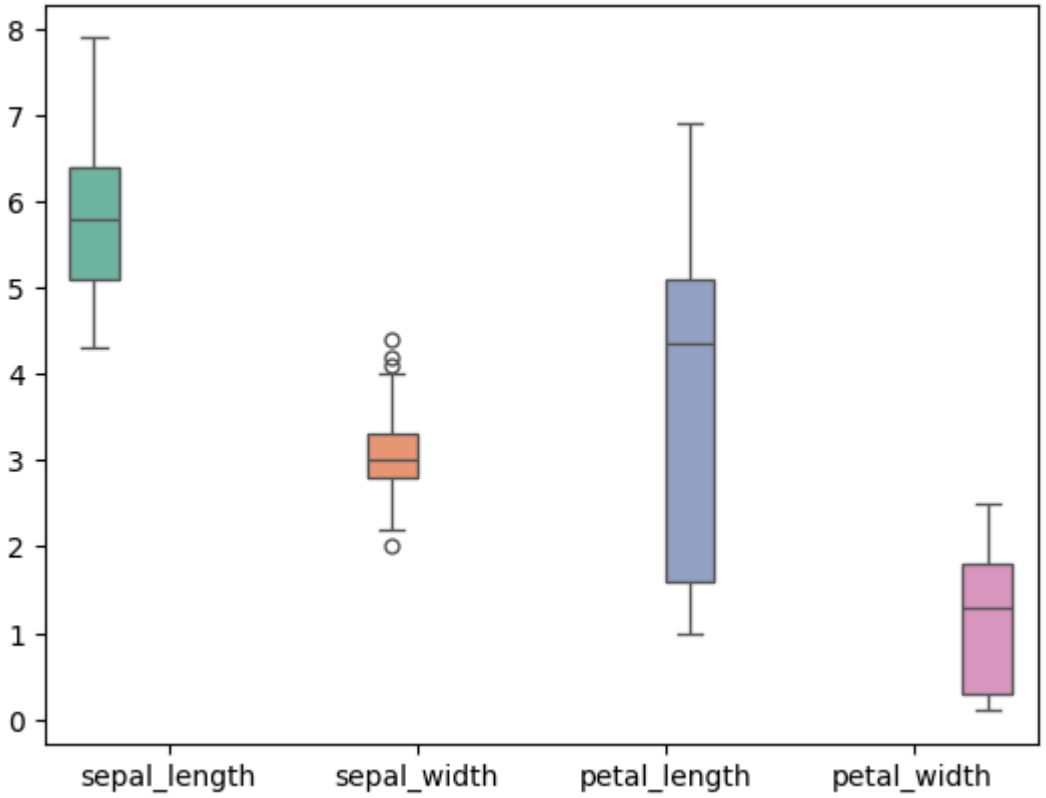


In [75]:
```
data.boxplot()
plt.show()
```

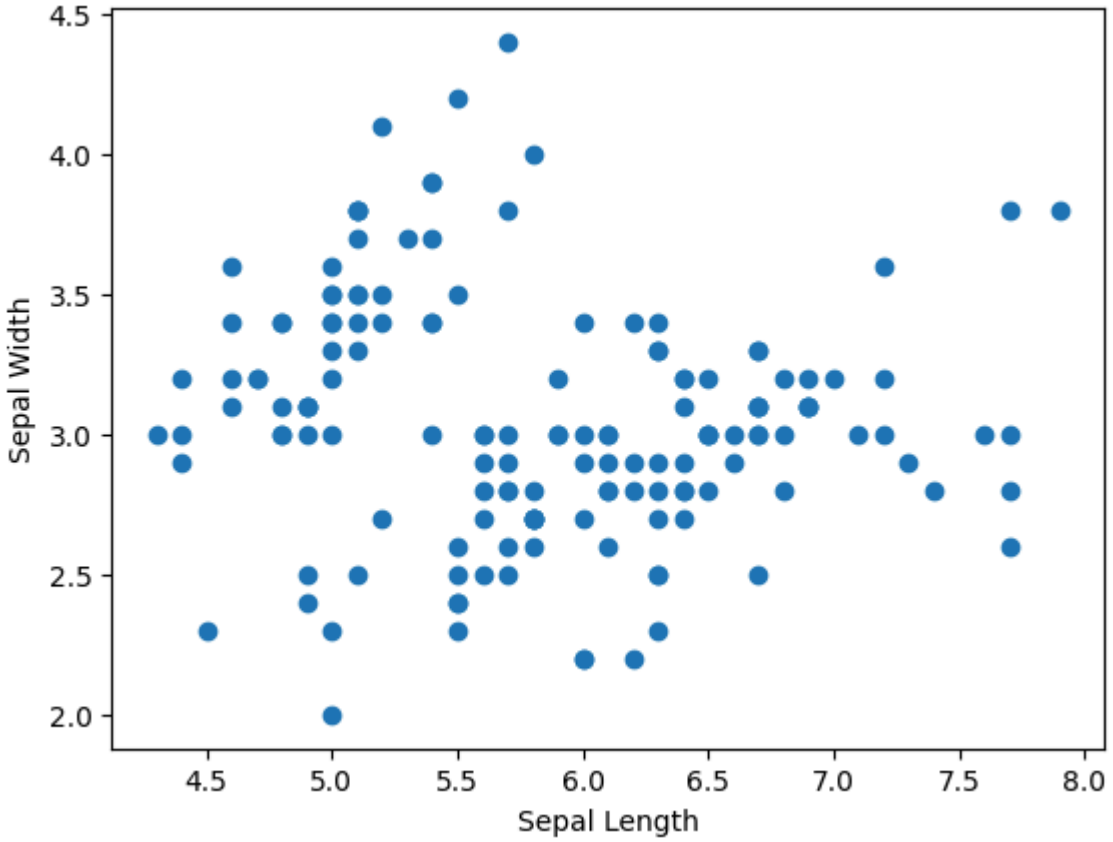


In [49]:
```
sb.boxplot(
    data=data,
    x=None, y=None, hue=None, order=None, hue_order=None,
    orient=None, color=None, palette="Set2", saturation=0.75,
    width=0.8, dodge=True, fliersize=5, linewidth=None,
    whis=1.5, ax=None
)
```

Out[49]: <Axes: >

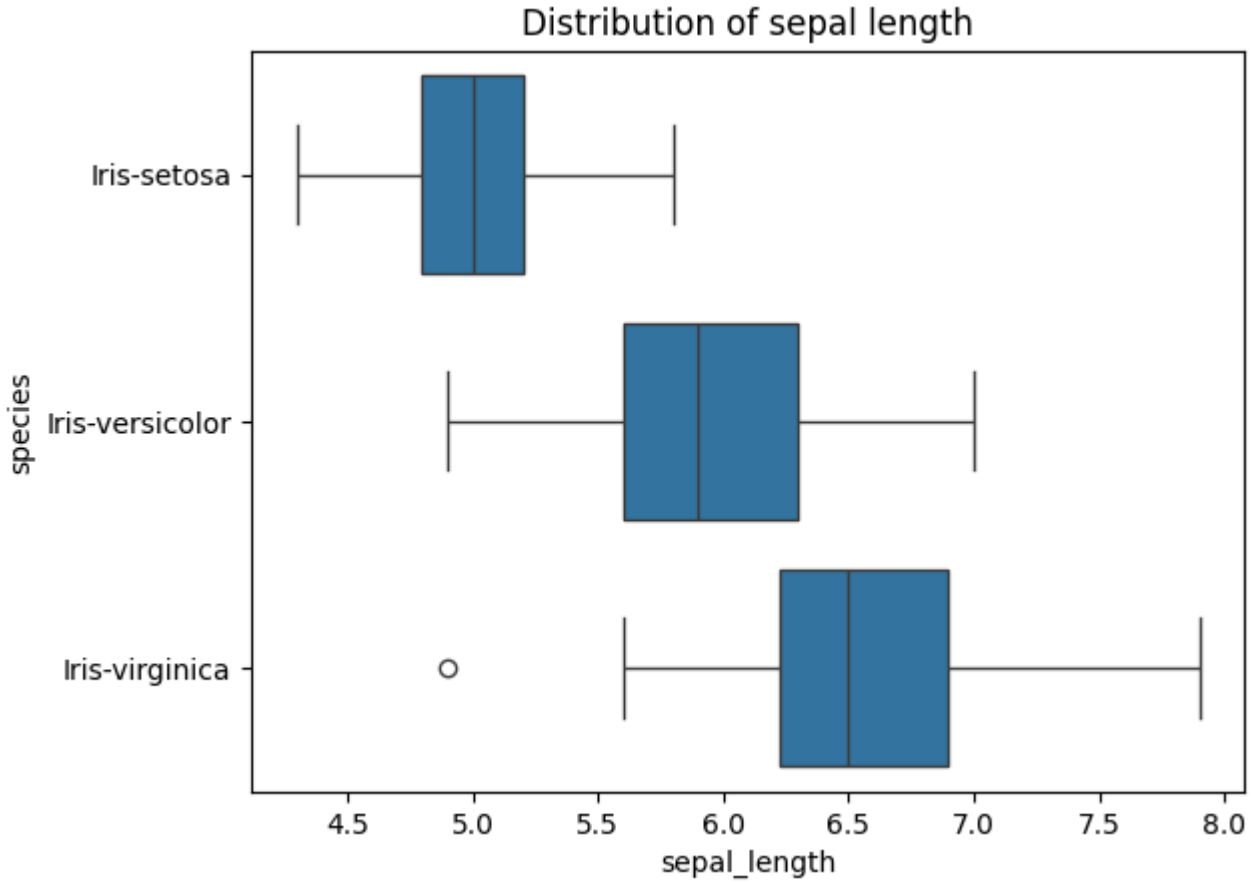


In [67]:
```
plt.scatter(data["sepal_length"], data["sepal_width"])
plt.xlabel('Sepal Length')
plt.ylabel('Sepal Width')
plt.show()
```



In [77]:
```
sb.boxplot(data=data, x="sepal_length", y="species")
plt.title('Distribution of sepal length')
```

Out[77]:
```
Text(0.5, 1.0, 'Distribution of sepal length')
```



In [78]:
```
Q1 = data.drop(columns=['species']).quantile(0.25)
Q3 = data.drop(columns=['species']).quantile(0.75)
IQR = Q3 - Q1
```

In [83]:
```
outliers = ((data.drop(columns=['species']) < (Q1 - 1.5 * IQR)) | (data.drop(columns=['species']) > (Q3 + 1.5 * IQR)
outlier_counts = outliers.sum()
```

In [84]:
```
print(outlier_counts)
```

```
sepal_length    0
sepal_width     4
petal_length    0
```

```
petal_width     0
dtype: int64
```

In [86]:
```
df_cleaned = data[~outliers.any(axis=1)]
```

In [88]:
```
print("Dataset before removing outliers:", data.shape)
print("Dataset after removing outliers:", df_cleaned.shape)
```

```
Dataset before removing outliers: (150, 5)
Dataset after removing outliers: (146, 5)
```

In [ ]:
```

```