Data Visualization III

- Download the Iris flower dataset or any other dataset into a DataFrame. (e.g., https://archive.ics.uci.edu/ml/datasets/Iris). Scan the dataset and give the inference as:
- List down the features and their types (e.g., numeric, nominal) available in the dataset.
- Create a histogram for each feature in the dataset to illustrate the feature distributions.
- Create a box plot for each feature in the dataset.
- Compare distributions and identify outliers.

In [10]:
```
import pandas as pd
import numpy as np
import seaborn as sns
```

In [2]:
```
df = pd.read_csv('Iris.csv')
```

In [ ]:
```
pd.
```

In [3]:
```
df.head()
```

Out [3]:

	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
2	3	4.7	3.2	1.3	0.2	Iris-setosa
3	4	4.6	3.1	1.5	0.2	Iris-setosa
4	5	5.0	3.6	1.4	0.2	Iris-setosa

In [4]:
```
df.info()
```

```
<class 'pandas.core.frame.DataFrame'>
RangeIndex: 150 entries, 0 to 149
Data columns (total 6 columns):
 #   Column         Non-Null Count  Dtype  
---  ------         --------------  -----  
 0   Id             150 non-null    int64  
 1   SepalLengthCm  150 non-null    float64
 2   SepalWidthCm   150 non-null    float64
 3   PetalLengthCm  150 non-null    float64
```

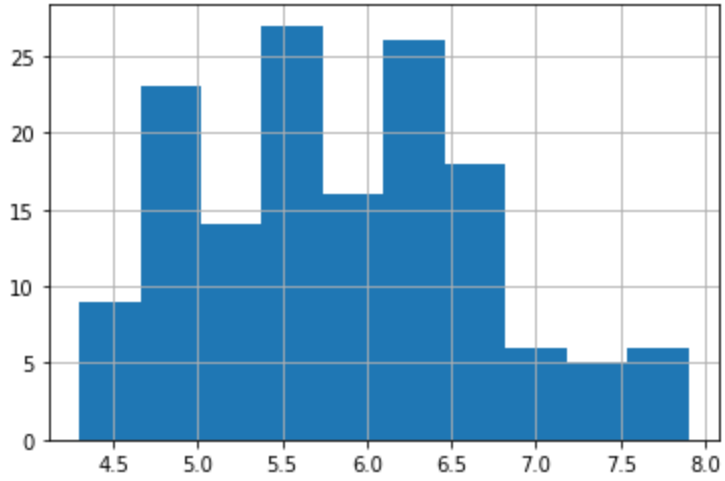
```
 4   PetalWidthCm   150 non-null    float64
 5   Species        150 non-null    object
dtypes: float64(4), int64(1), object(1)
memory usage: 7.2+ KB
```

In [16]:
```
df.isnull().sum()
```

Out [16]:
```
Id               0
SepalLengthCm    0
SepalWidthCm     0
PetalLengthCm    0
PetalWidthCm     0
Species          0
dtype: int64
```

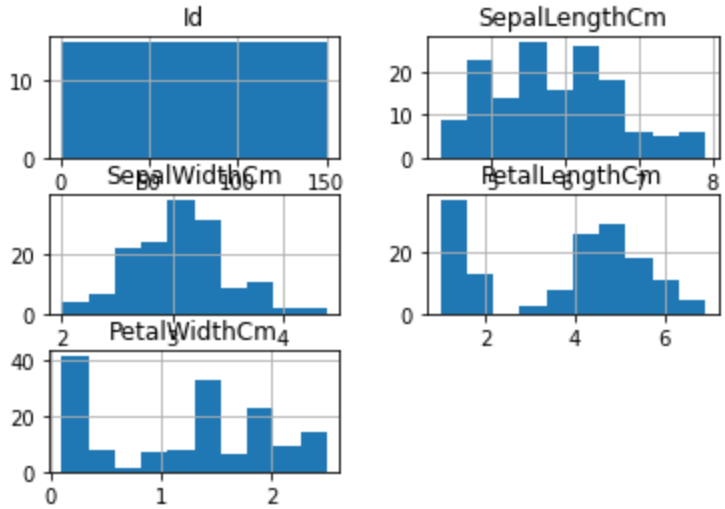
In [5]:
```
df['SepalLengthCm'].hist()
```

Out [5]:
```
<matplotlib.axes._subplots.AxesSubplot at 0x7f2891370b20>
```



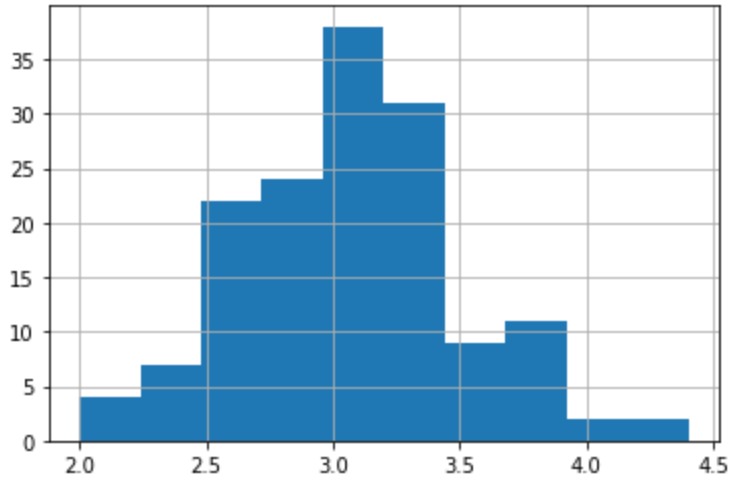
In [6]:
```
df.hist()
```

Out [6]:
```
array([[<matplotlib.axes._subplots.AxesSubplot object at 0x7f2883dc91c0>,
        <matplotlib.axes._subplots.AxesSubplot object at 0x7f28838fa7c0>],
       [<matplotlib.axes._subplots.AxesSubplot object at 0x7f2883926c70>,
        <matplotlib.axes._subplots.AxesSubplot object at 0x7f28838d3160>],
       [<matplotlib.axes._subplots.AxesSubplot object at 0x7f288388b550>,
        <matplotlib.axes._subplots.AxesSubplot object at 0x7f2883837a00>]],
      dtype=object)
```



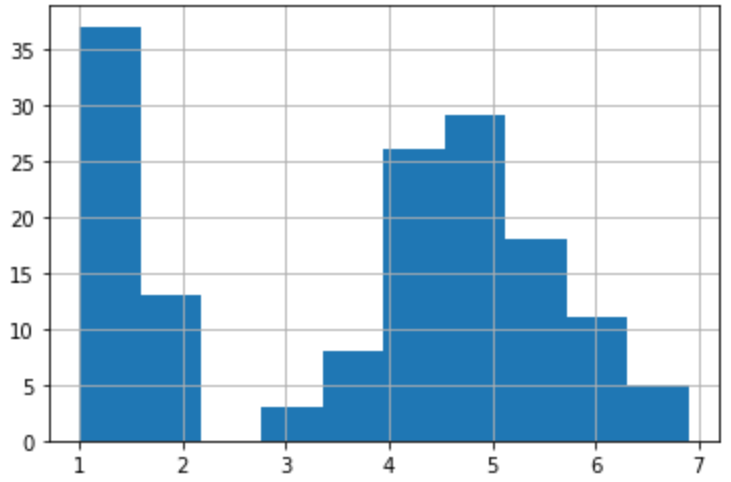
In [7]:
```
df['SepalWidthCm'].hist()
```

Out [7]: <matplotlib.axes._subplots.AxesSubplot at 0x7f28837c8fa0>



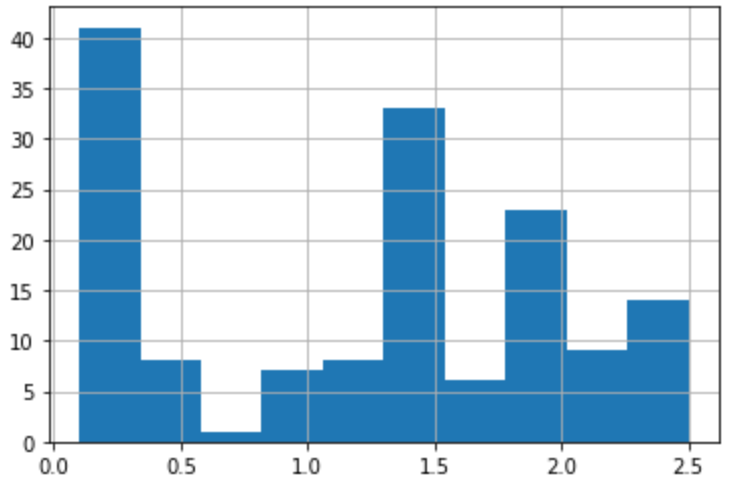
In [8]:
```
df['PetalLengthCm'].hist()
```

Out [8]: <matplotlib.axes._subplots.AxesSubplot at 0x7f28836d2400>



In [9]:
```
df['PetalWidthCm'].hist()
```

Out [9]: <matplotlib.axes._subplots.AxesSubplot at 0x7f28836d2700>

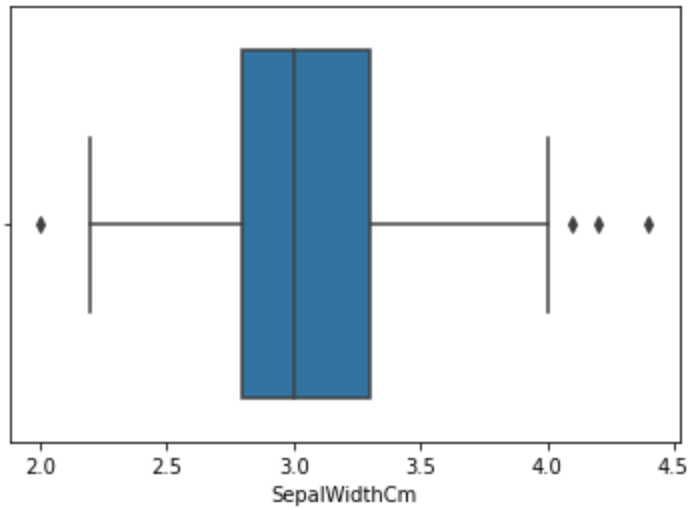


In [11]:
```
sns.boxplot(df['SepalWidthCm'])
```

```
/home/ihack-pc/.local/lib/python3.8/site-
packages/seaborn/_decorators.py:36: FutureWarning: Pass the following
variable as a keyword arg: x. From version 0.12, the only valid
```

```
positional argument will be `data`, and passing other arguments without
an explicit keyword will result in an error or misinterpretation.
  warnings.warn(
```

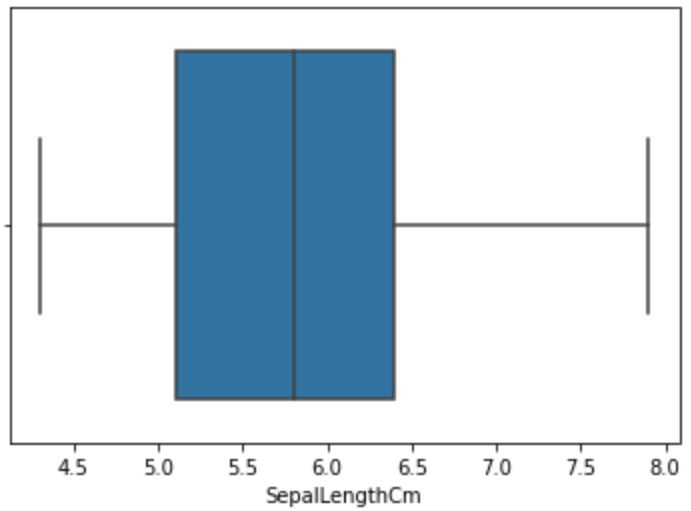
Out [11]: <matplotlib.axes._subplots.AxesSubplot at 0x7f2875d5ffa0>



In [12]:
```
sns.boxplot(df['SepalLengthCm'])
```

```
/home/ihack-pc/.local/lib/python3.8/site-
packages/seaborn/_decorators.py:36: FutureWarning: Pass the following
variable as a keyword arg: x. From version 0.12, the only valid
positional argument will be `data`, and passing other arguments without
an explicit keyword will result in an error or misinterpretation.
  warnings.warn(
```

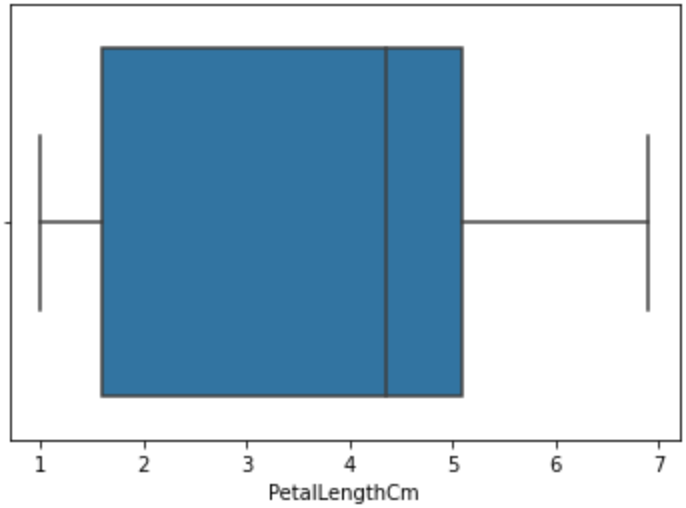
Out [12]: <matplotlib.axes._subplots.AxesSubplot at 0x7f2875d3da60>



In [13]:
```
sns.boxplot(df['PetalLengthCm'])
```

```
/home/ihack-pc/.local/lib/python3.8/site-
packages/seaborn/_decorators.py:36: FutureWarning: Pass the following
variable as a keyword arg: x. From version 0.12, the only valid
positional argument will be `data`, and passing other arguments without
an explicit keyword will result in an error or misinterpretation.
  warnings.warn(
```

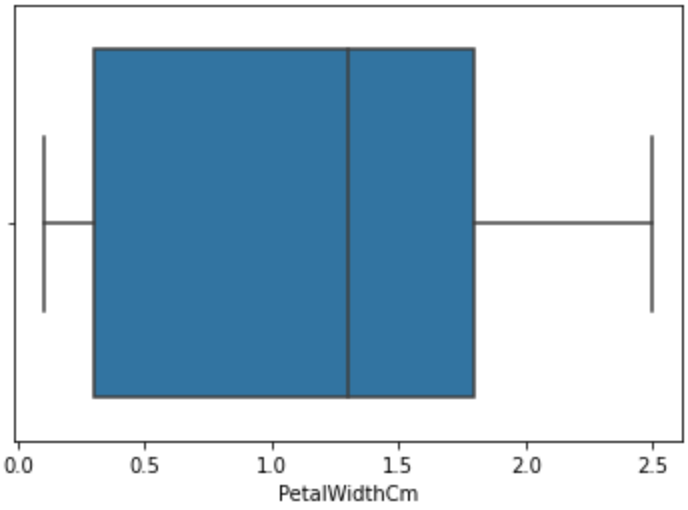
Out [13]: <matplotlib.axes._subplots.AxesSubplot at 0x7f2875cd8730>



In [14]:
```
sns.boxplot(df['PetalWidthCm'])
```

```
/home/ihack-pc/.local/lib/python3.8/site-
packages/seaborn/_decorators.py:36: FutureWarning: Pass the following
variable as a keyword arg: x. From version 0.12, the only valid
positional argument will be `data`, and passing other arguments without
an explicit keyword will result in an error or misinterpretation.
  warnings.warn(
```

Out [14]: <matplotlib.axes._subplots.AxesSubplot at 0x7f2875d896a0>



In [ ]:
```
```

In [15]:
```
from pandas_profiling import ProfileReport

report = ProfileReport(df, title = "Sample Report")

report
```

```
Summarize dataset:   0%|          | 0/5 [00:00<?, ?it/s]
Generate report structure:   0%|          | 0/1 [00:00<?, ?it/s]
Render HTML:   0%|          | 0/1 [00:00<?, ?it/s]
```

Overview

Dataset statistics

Number of variables	6
Number of observations	150
Missing cells	0
Missing cells (%)	0.0%
Duplicate rows	0
Duplicate rows (%)	0.0%
Total size in memory	7.2 KiB
Average record size in memory	48.9 B

Variable types

Numeric	5
Categorical	1

Alerts

`Id` is highly correlated with `SepalLengthCm` and 2 other fields (SepalLengthCm, PetalLengthCm, PetalWidthCm)	**High correlation**
`SepalLengthCm` is highly correlated with `Id` and 2 other fields (Id, PetalLengthCm, PetalWidthCm)	**High correlation**

Out [15]:

In [ ]:

In [ ]: