```python
In [1]: import pandas as pd
        import numpy as np
        import seaborn as sns
        import matplotlib.pyplot as plt
```

```python
In [2]: df = pd.read_csv("iris.data")
```

```python
In [3]: print("--------------Describe the Dataframe--------------------")
        print(df.describe())
        print("\n")
```

```
--------------Describe the Dataframe--------------------
              5.1         3.5         1.4         0.2
count  149.000000  149.000000  149.000000  149.000000
mean     5.848322    3.051007    3.774497    1.205369
std      0.828594    0.433499    1.759651    0.761292
min      4.300000    2.000000    1.000000    0.100000
25%      5.100000    2.800000    1.600000    0.300000
50%      5.800000    3.000000    4.400000    1.300000
75%      6.400000    3.300000    5.100000    1.800000
max      7.900000    4.400000    6.900000    2.500000
```

```python
In [4]: print("--------------Shape of the Dataframe--------------------")
        print(df.shape)
        print("\n")
```

```
--------------Shape of the Dataframe--------------------
(149, 5)
```

```python
In [5]: print("--------------First 5 rows of the Dataframe--------------------")
        print(df.head())
        print("\n")
```

```
--------------First 5 rows of the Dataframe--------------------
     5.1  3.5  1.4  0.2  Iris-setosa
0    4.9  3.0  1.4  0.2  Iris-setosa
1    4.7  3.2  1.3  0.2  Iris-setosa
2    4.6  3.1  1.5  0.2  Iris-setosa
3    5.0  3.6  1.4  0.2  Iris-setosa
4    5.4  3.9  1.7  0.4  Iris-setosa
```

```
In [6]: print("--------------Last 5 rows of the Dataframe---------------------")
        print(df.tail())
        print("\n")
```

```
--------------Last 5 rows of the Dataframe---------------------
      5.1  3.5  1.4  0.2       Iris-setosa
144  6.7  3.0  5.2  2.3  Iris-virginica
145  6.3  2.5  5.0  1.9  Iris-virginica
146  6.5  3.0  5.2  2.0  Iris-virginica
147  6.2  3.4  5.4  2.3  Iris-virginica
148  5.9  3.0  5.1  1.8  Iris-virginica
```
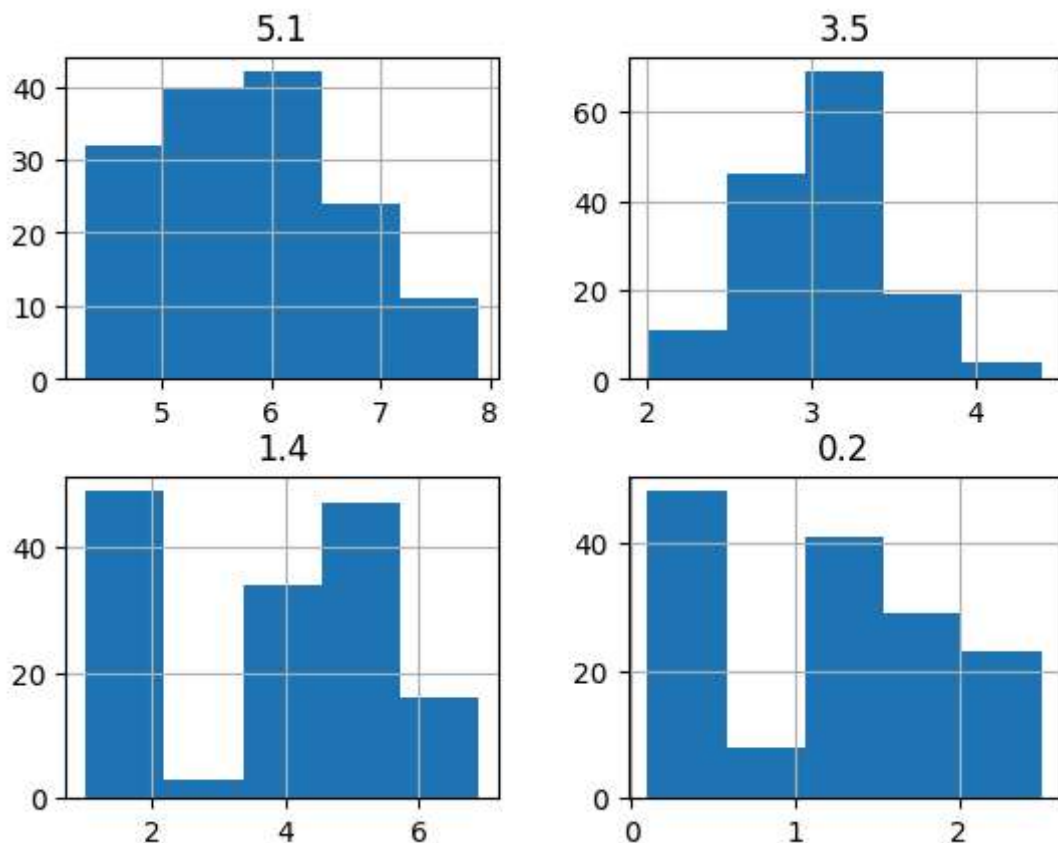
```
In [7]: print("--------------Mean of the First Column----------------------")
        print(df["5.1"].mean())
        print("\n")
```

```
--------------Mean of the First Column----------------------
5.8483221476510066
```

```
In [8]: print("--------------Histogram of the Dataframe (using 5 bins)-------------
        df.hist(bins=5)
        plt.show()
        print("\n")
```
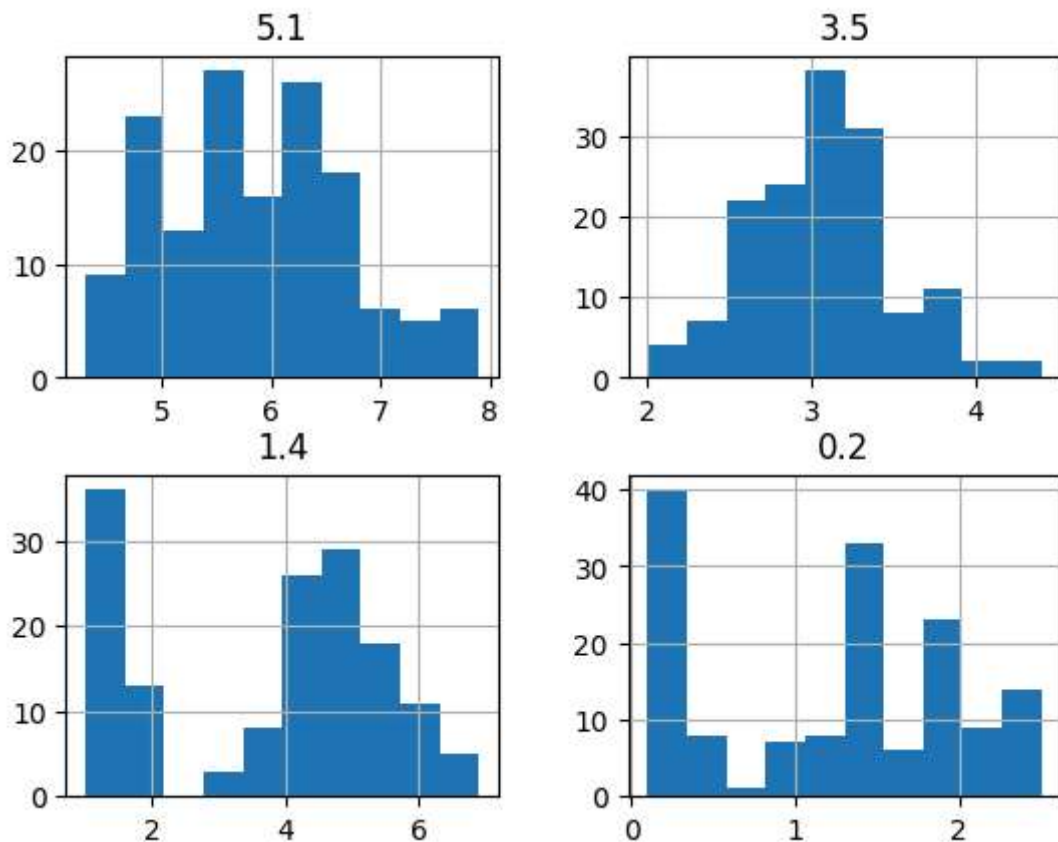
```
--------------Histogram of the Dataframe (using 5 bins)-------------------
---
```

```
In [9]: print("-------------Histogram of the Dataframe---------------------")
        df.hist()
        plt.show()
        print("\n")
```

-------------Histogram of the Dataframe---------------------


```
In [10]: print("--------------Columns of the Dataframe---------------------")
         print(df.columns)
         print("\n")
```

-------------Columns of the Dataframe---------------------
Index(['5.1', '3.5', '1.4', '0.2', 'Iris-setosa'], dtype='object')

```
In [11]: print("--------------Minimum value from Each Column---------------------")
         print(df.min())
         print("\n")
```

-------------Minimum value from Each Column---------------------
5.1   4.3
3.5   2.0
1.4   1.0
0.2   0.1
Iris-setosa   Iris-setosa
dtype: object

```
In [12]: print("--------------Maximum value from Each Column--------------------")
         print(df.max())
         print("\n")

         --------------Maximum value from Each Column--------------------
         5.1                7.9
         3.5                4.4
         1.4                6.9
         0.2                2.5
         Iris-setosa     Iris-virginica
         dtype: object
```
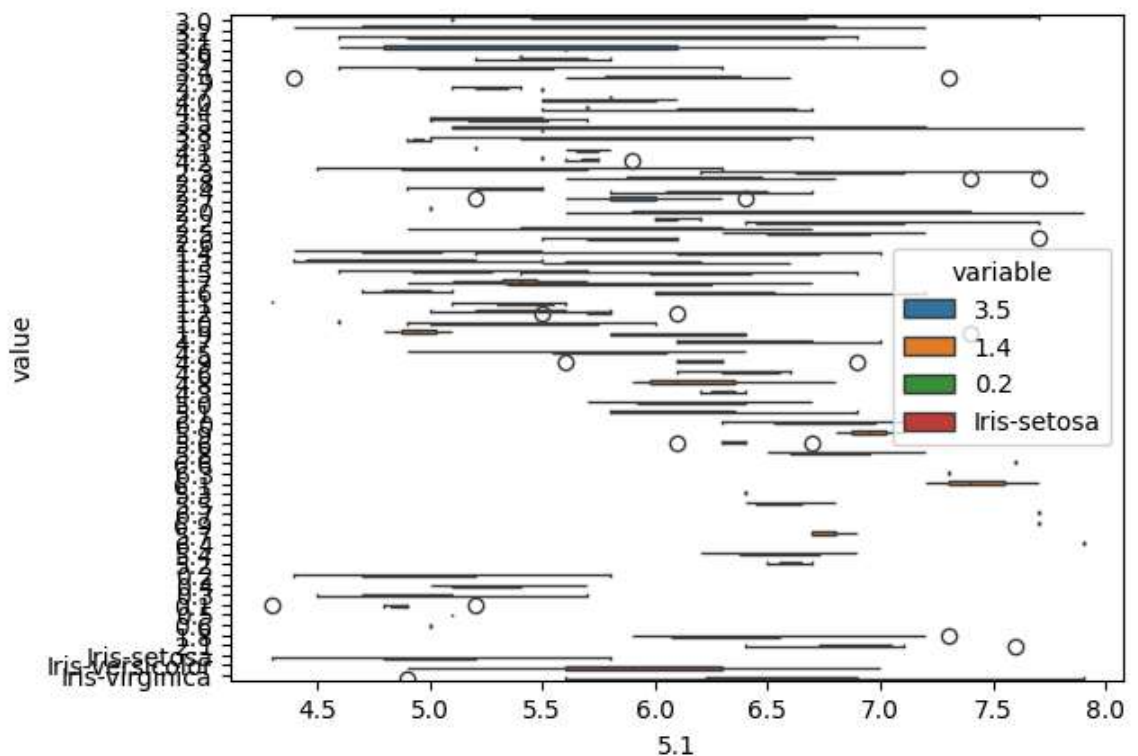
```
In [13]: print("--------------Quantile of the Dataframe--------------------")
         print(df.quantile([0, 0.25, 0.5, 0.75, 1.0], numeric_only=True))
         print("\n")

         --------------Quantile of the Dataframe--------------------
               5.1  3.5  1.4  0.2
         0.00  4.3  2.0  1.0  0.1
         0.25  5.1  2.8  1.6  0.3
         0.50  5.8  3.0  4.4  1.3
         0.75  6.4  3.3  5.1  1.8
         1.00  7.9  4.4  6.9  2.5
```

```
In [14]: print("--------------Correlation of the Dataframe--------------------")
         iris_long = pd.melt(df, id_vars='5.1')
         ax = sns.boxplot(x="5.1", y="value", hue="variable", data=iris_long)
         plt.show()
```

--------------Correlation of the Dataframe--------------------

```
In [15]: print("--------------Frequecy of each value in the first column------------
         print(df['5.1'].value_counts())
         print("\n")
```

```
--------------Frequecy of each value in the first column------------------
----
5.1
5.0    10
6.3     9
6.7     8
5.1     8
5.7     8
5.8     7
5.5     7
6.4     7
5.6     6
5.4     6
6.1     6
6.0     6
4.9     6
6.5     5
4.8     5
6.2     4
7.7     4
6.9     4
5.2     4
4.6     4
4.4     3
5.9     3
7.2     3
6.8     3
4.7     2
6.6     2
4.3     1
7.0     1
4.5     1
7.1     1
7.6     1
7.3     1
5.3     1
7.4     1
7.9     1
Name: count, dtype: int64
```
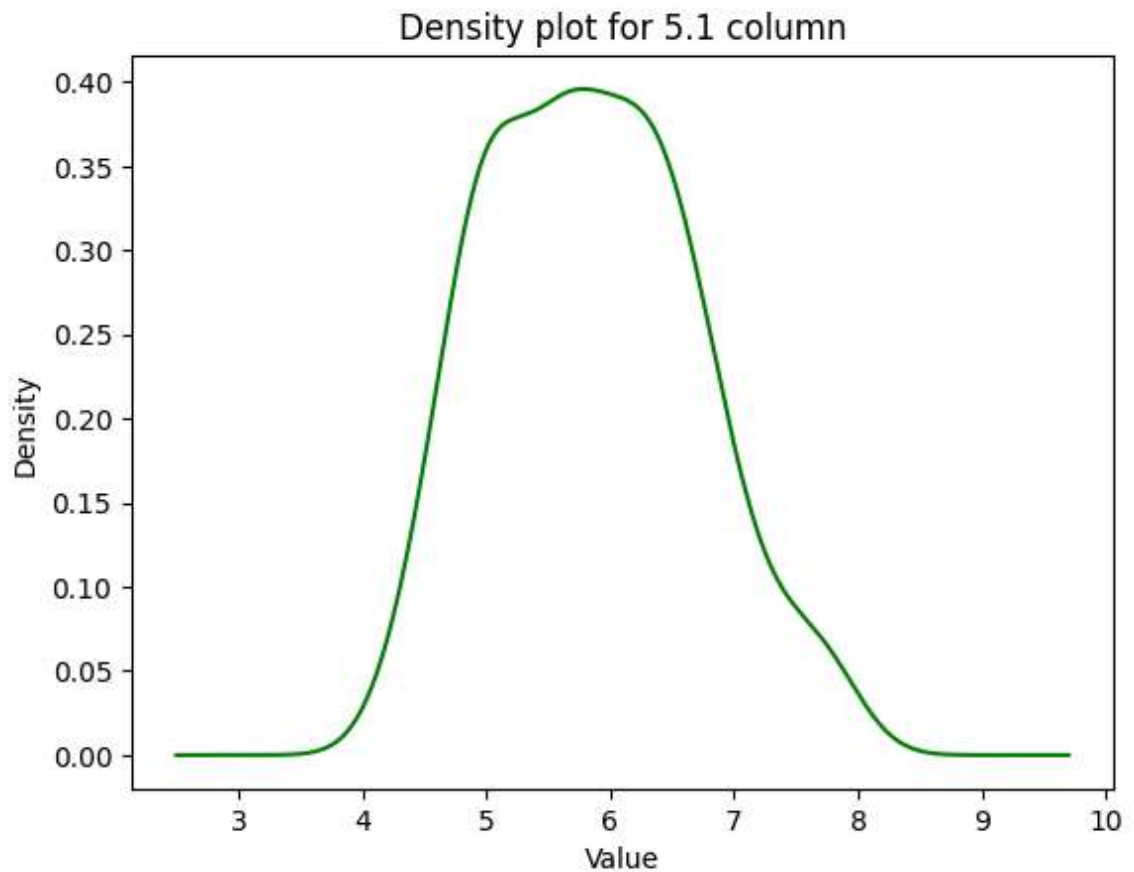
```
In [16]: print("--------------Density plot for 5.1 column---------------------")
         df['5.1'].plot.density(color='green')
         plt.title('Density plot for 5.1 column')
         plt.xlabel('Value')
         plt.ylabel('Density')
         plt.show()
         print("\n")
```

--------------Density plot for 5.1 column---------------------

Density plot for 5.1 column

```
In [17]: print("--------------Heatmap for the Correlation---------------------")
         subset_df = df.iloc[:, :4]
         plt.figure(figsize=(8, 6))
         sns.heatmap(subset_df.corr(), annot=True, cmap='coolwarm', linewidths=0.5)
         plt.title("Correlation Heatmap")
         plt.show()
```

--------------Heatmap for the Correlation---------------------

Correlation Heatmap