Data Cleaning data set with outliers

July 28, 2023

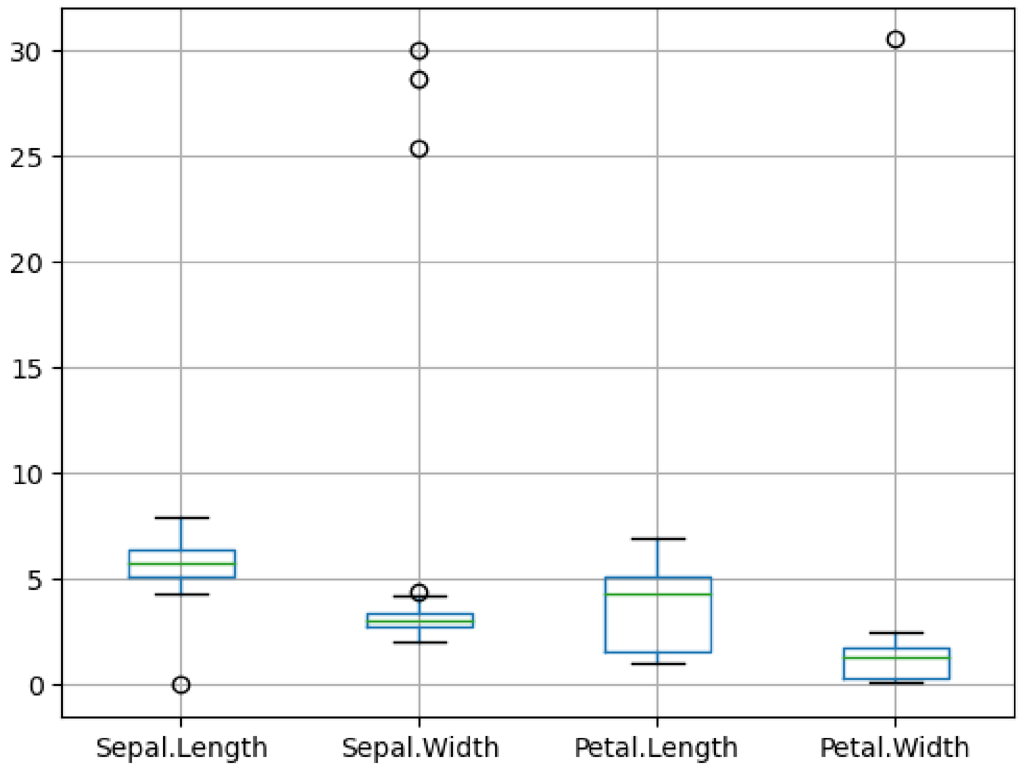
[55]:
```
import pandas as pd
import numpy as np
import matplotlib.pyplot as plt
```

[56]:
```
df=pd.read_csv("C:\\Users\\ASUS\\Desktop\\DS Course\Data Cleaning\\Day19\\iris␣
  ↪- Outliers.csv")
```

[57]:
```
df.head()
```

[57]:
```
   Sepal.Length  Sepal.Width  Petal.Length  Petal.Width Species
0           5.1          3.5           1.4          0.2  setosa
1           4.9         28.6           1.4          0.2  setosa
2           4.7          3.2           1.3          0.2  setosa
3           4.6          3.1           1.5          0.2  setosa
4           5.0          3.6           1.4          0.2  setosa
```

[58]:
```
df.iloc[:,:4].boxplot() #create a boxplot of the first four columns of a␣
  ↪dataframe df.
plt.show()
```



[59]:
```
Q1=df.quantile(0.25,numeric_only=True)
Q1

#calculate the first quartile (25th percentile) and third quartile (75th␣
 ↪percentile) of each column in a dataframe df.
```

[59]:
```
Sepal.Length    5.1
Sepal.Width     2.8
Petal.Length    1.6
Petal.Width     0.3
Name: 0.25, dtype: float64
```

[60]:
```
Q3=df.quantile(0.75,numeric_only=True)
Q3
```

[60]:
```
Sepal.Length    6.4
Sepal.Width     3.4
Petal.Length    5.1
Petal.Width     1.8
Name: 0.75, dtype: float64
```

[61]:
```
IQR=Q3-Q1
```

[62]:
```
IQR
```

[62]:
```
Sepal.Length    1.3
Sepal.Width     0.6
Petal.Length    3.5
Petal.Width     1.5
dtype: float64
```

[63]:
```
LL = Q1- 1.5 * IQR
UL = Q3 + 1.5 * IQR
```

[64]:
```
LL       # Lower Limit(Lower Bound)
```

[64]:
```
Sepal.Length    3.15
Sepal.Width     1.90
Petal.Length   -3.65
Petal.Width    -1.95
dtype: float64
```

[65]:
```
UL    #Upper Bound
```

[65]:
```
Sepal.Length     8.35
Sepal.Width      4.30
Petal.Length    10.35
Petal.Width      4.05
dtype: float64
```

[66]:
```
dfn=df.iloc[:,:4]
dfn.head()
```

[66]:
```
   Sepal.Length  Sepal.Width  Petal.Length  Petal.Width
0           5.1          3.5           1.4          0.2
1           4.9         28.6           1.4          0.2
2           4.7          3.2           1.3          0.2
3           4.6          3.1           1.5          0.2
4           5.0          3.6           1.4          0.2
```

[67]:
```
df
```

[67]:
```
     Sepal.Length  Sepal.Width  Petal.Length  Petal.Width    Species
0             5.1          3.5           1.4          0.2     setosa
1             4.9         28.6           1.4          0.2     setosa
2             4.7          3.2           1.3          0.2     setosa
3             4.6          3.1           1.5          0.2     setosa
4             5.0          3.6           1.4          0.2     setosa
..            …            …            …            …          …
145           6.7          3.0           5.2          2.3  virginica
146           6.3         30.0           5.0          1.9  virginica
```

```
147           6.5          3.0           5.2          2.0  virginica
148           6.2          3.4           5.4          2.3  virginica
149           5.9          3.0           5.1          1.8  virginica

[150 rows x 5 columns]
```

```
[68]: '''
      create a boolean mask that selects rows from a dataframe dfn
      where any value in the row is less than a lower limit LL or greater than an␣
       ↪upper limit UL.
      '''

      (dfn<LL)| (dfn>UL)
```

```
[68]:      Sepal.Length  Sepal.Width  Petal.Length  Petal.Width
      0           False        False         False        False
      1           False         True         False        False
      2           False        False         False        False
      3           False        False         False        False
      4           False        False         False        False
      ..            ...          ...           ...          ...
      145         False        False         False        False
      146         False         True         False        False
      147         False        False         False        False
      148         False        False         False        False
      149         False        False         False        False

      [150 rows x 4 columns]
```

```
[69]: out_rows=((dfn<LL)| (dfn>UL)).any(axis=1)
```

```
[77]: df_outfree = df[~out_rows]
      #create a new dataframe df_outfree that contains only the rows of a dataframe␣
       ↪df that do not have any outliers
```

```
[78]: df_outfree.head()
```

```
[78]:    Sepal.Length  Sepal.Width  Petal.Length  Petal.Width Species
      0           5.1          3.5           1.4          0.2  setosa
      2           4.7          3.2           1.3          0.2  setosa
      3           4.6          3.1           1.5          0.2  setosa
      4           5.0          3.6           1.4          0.2  setosa
      6           4.6          3.4           1.4          0.3  setosa
```

```
[ ]:
```