Chapter 5 - Outlier Analysis

Segment 8 - Extreme value analysis using univariate methods

```
import numpy as np
import pandas as pd

import matplotlib.pyplot as plt
from pylab import rcParams
```

```
%matplotlib inline
rcParams['figure.figsize'] = 5,4
```

```
address = 'C:/Users/Lillian/Desktop/ExerciseFiles/Data/iris.data.csv'
df = pd.read_csv(filepath_or_buffer=address, header=None, sep=',')

df.columns=['Sepal Length','Sepal Width','Petal Length','Petal Width', 'Species']
```

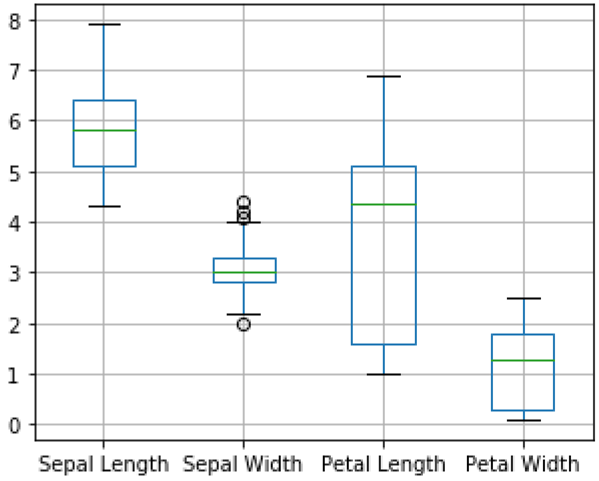
```
X = df.iloc[:,0:4].values
y = df.iloc[:,4].values
df[:5]
```

	Sepal Length	Sepal Width	Petal Length	Petal Width	Species
0	5.1	3.5	1.4	0.2	setosa
1	4.9	3.0	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

Identifying outliers from Tukey boxplots

```
df.boxplot(return_type='dict')
plt.plot()
```

```
[]
```



```
Sepal_Width = X[:,1]
iris_outliers = (Sepal_Width > 4)
df[iris_outliers]
```

	Sepal Length	Sepal Width	Petal Length	Petal Width	Species
15	5.7	4.4	1.5	0.4	setosa
32	5.2	4.1	1.5	0.1	setosa
33	5.5	4.2	1.4	0.2	setosa

```
Sepal_Width = X[:,1]
iris_outliers = (Sepal_Width < 2.05)
df[iris_outliers]
```

	Sepal Length	Sepal Width	Petal Length	Petal Width	Species
60	5.0	2.0	3.5	1.0	versicolor

Applying Tukey outlier labeling

```
pd.options.display.float_format = '{:.1f}'.format
X_df = pd.DataFrame(X)
print(X_df.describe())
```

```
          0     1     2     3
count 150.0 150.0 150.0 150.0
mean    5.8   3.1   3.8   1.2
std     0.8   0.4   1.8   0.8
min     4.3   2.0   1.0   0.1
25%     5.1   2.8   1.6   0.3
50%     5.8   3.0   4.3   1.3
75%     6.4   3.3   5.1   1.8
max     7.9   4.4   6.9   2.5
```