

# Deena 20104016

```
In [1]: import pandas as pd
import numpy as np
import matplotlib.pyplot as pp
```

## Problem Statement

## LINEAR REGRESSION

```
In [2]: a = pd.read_csv("14_Iris.csv")
```

Out[2]:

	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
...	...	...	...	...	...	...
145	146	6.7	3.0	5.2	2.3	Iris-virginica
146	147	6.3	2.5	5.0	1.9	Iris-virginica
147	148	6.5	3.0	5.2	2.0	Iris-virginica
148	149	6.2	3.4	5.4	2.3	Iris-virginica
149	150	5.9	3.0	5.1	1.8	Iris-virginica

150 rows × 6 columns

## HEAD

In [3]:

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

## Data Cleaning and Preprocessing

In [4]:

Out[4]:

	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 [5]:

Out[5]:

	Id	SepalLengthCm	SepalWidthCm	PetalLengthCm	PetalWidthCm
count	150.000000	150.000000	150.000000	150.000000	150.000000
mean	75.500000	5.843333	3.054000	3.758667	1.198667
std	43.445368	0.828066	0.433594	1.764420	0.763161
min	1.000000	4.300000	2.000000	1.000000	0.100000
25%	38.250000	5.100000	2.800000	1.600000	0.300000
50%	75.500000	5.800000	3.000000	4.350000	1.300000
75%	112.750000	6.400000	3.300000	5.100000	1.800000
max	150.000000	7.900000	4.400000	6.900000	2.500000

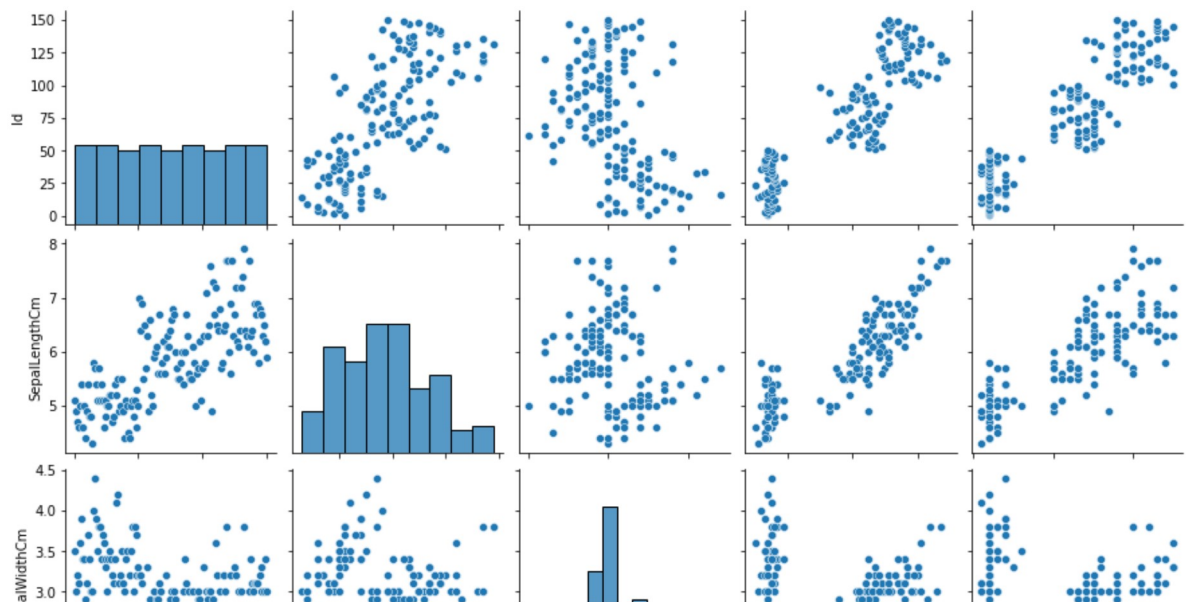
## To display heading

In [6]:

```
Out[6]: Index(['Id', 'SepalLengthCm', 'SepalWidthCm', 'PetalLengthCm', 'PetalWidthCm',  
             'Species'],  
          dtype='object')
```

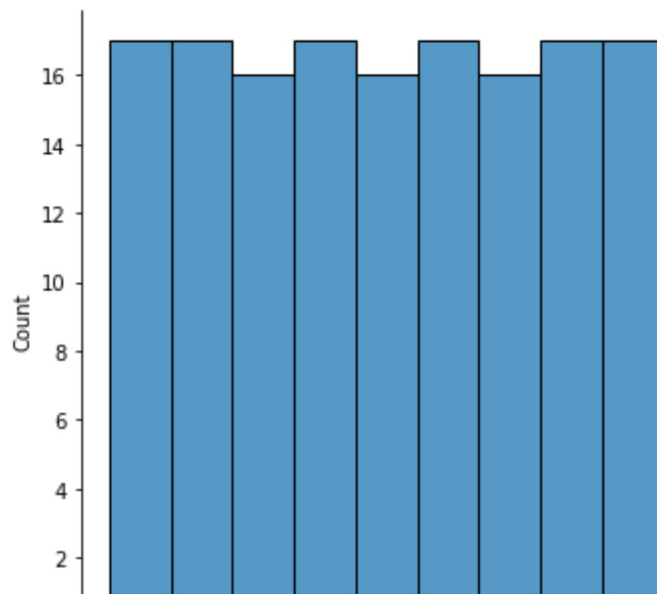
In [7]:

```
Out[7]: <seaborn.axisgrid.PairGrid at 0x2070c112b80>
```



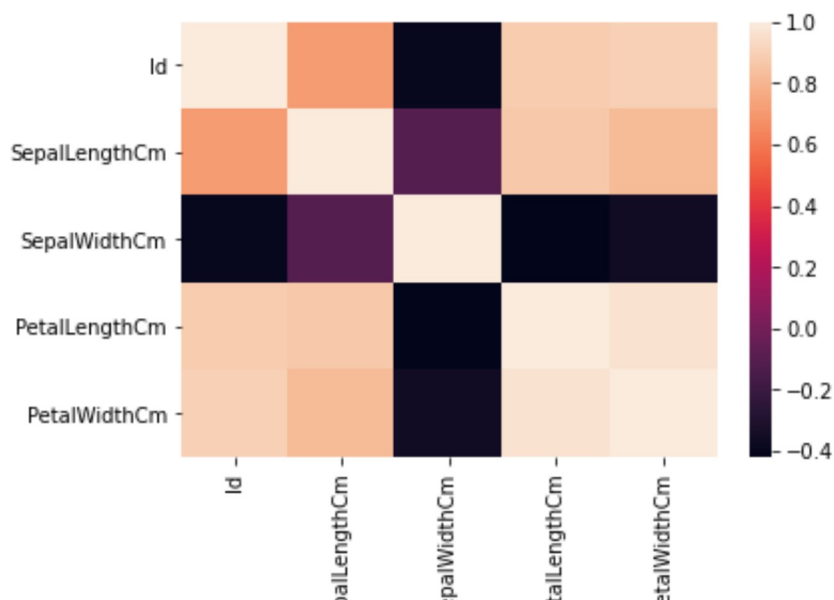
In [8]:

```
Out[8]: <seaborn.axisgrid.FacetGrid at 0x20708343490>
```



In [9]:

Out[9]: &lt;AxesSubplot:&gt;



## TO TRAIN THE MODEL - MODEL BUILDING

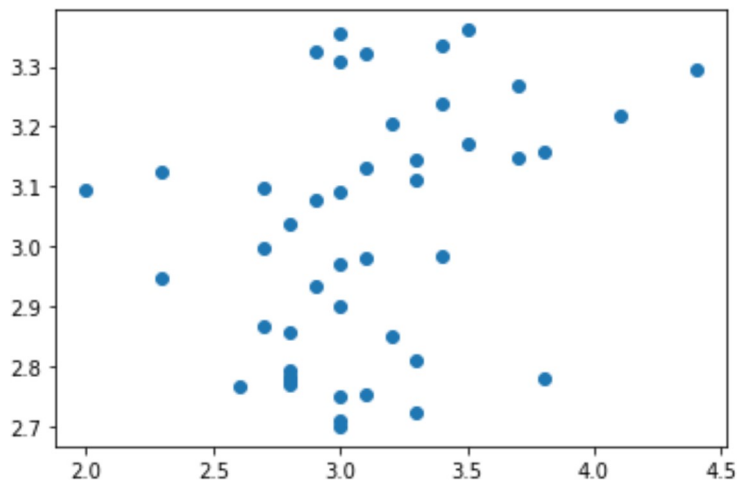
In [10]: `x = a[['Id']]`In [11]: `# to split my dataset into training and test data`  
`from sklearn.model_selection import train_test_split`In [12]: `from sklearn.linear_model import LinearRegression`  
`lr = LinearRegression()`Out[12]: `LinearRegression()`In [13]: `coeff = pd.DataFrame(lr.coef_, x.columns, columns=['Co-efficient'])`

Out[13]:

	Co-efficient
Id	-0.004431

```
In [14]: prediction= lr.predict(x_test)
```

```
Out[14]: <matplotlib.collections.PathCollection at 0x2070f11a520>
```



```
In [15]:
```

```
Out[15]: 0.06037423531783903
```

## RIDGE & LASSO

```
In [16]: from sklearn.linear_model import Ridge,Lasso  
rr=Ridge(alpha=10)
```

```
Out[16]: Ridge(alpha=10)
```

```
In [17]:
```

```
Out[17]: 0.06038123352927194
```

```
In [18]: la=Lasso(alpha=10)
```

```
Out[18]: Lasso(alpha=10)
```

```
In [19]:
```

```
Out[19]: -0.021307733619763125
```