```
In [1]:
          import numpy as np
          import pandas as pd
          import matplotlib.pyplot as py
          import seaborn as sns
In [2]:
          d=pd.read csv(r"C:\Users\user\Downloads\14 Iris - 14 Iris.csv")
                Id SepalLengthCm SepalWidthCm PetalLengthCm PetalWidthCm
                                                                                    Species
Out[2]:
            0
                1
                                              3.5
                                                                            0.2
                               5.1
                                                             1.4
                                                                                  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
                                              3.1
                                                             1.5
                                                                            0.2
                               4.6
                                                                                  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
In [3]:
          d.info()
         <class 'pandas.core.frame.DataFrame'>
         RangeIndex: 150 entries, 0 to 149
         Data columns (total 6 columns):
               Column
                               Non-Null Count Dtype
          #
               Id
                                150 non-null
                                                  int64
          0
               SepalLengthCm 150 non-null
                                                  float64
          1
               SepalWidthCm
                                150 non-null
                                                  float64
          2
          3
               PetalLengthCm 150 non-null
                                                  float64
               PetalWidthCm
                                150 non-null
                                                  float64
          4
          5
               Species
                                150 non-null
                                                  object
         dtypes: float64(4), int64(1), object(1)
         memory usage: 7.2+ KB
In [4]:
          d.isna()
Out[4]:
                 Id SepalLengthCm SepalWidthCm PetalLengthCm PetalWidthCm Species
            O False
                              False
                                             False
                                                             False
                                                                           False
                                                                                    False
            1 False
                              False
                                             False
                                                             False
                                                                           False
                                                                                    False
```

	Id	SepalLengthCm	SepalWidthCm	PetalLengthCm	PetalWidthCm	Species
2	False	False	False	False	False	False
3	False	False	False	False	False	False
4	False	False	False	False	False	False
•••				•••		
145	False	False	False	False	False	False
146	False	False	False	False	False	False
147	False	False	False	False	False	False
148	False	False	False	False	False	False
149	False	False	False	False	False	False

150 rows × 6 columns

```
In [5]: d.describe()
```

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

```
In [6]: d.columns
```

```
In [7]: d.index
```

Out[7]: RangeIndex(start=0, stop=150, step=1)

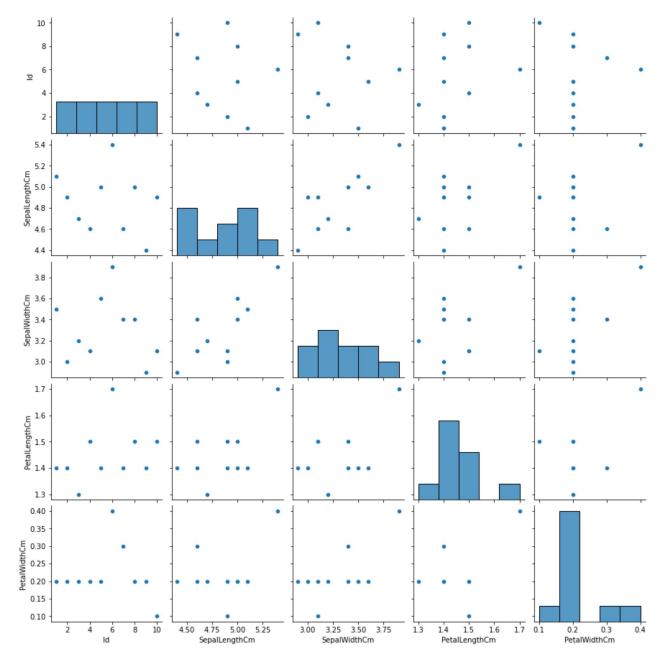
```
In [8]: d=d.head(10) d
```

Out[8]:	ld SepalLengt		SepalLengthCm	SepalWidthCm PetalLengthCm		PetalWidthCm	Species
	0	1	5.1	3.5	1.4	0.2	Iris-setosa

	Id	SepalLengthCm	SepalWidthCm	PetalLengthCm	PetalWidthCm	Species
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
5	6	5.4	3.9	1.7	0.4	Iris-setosa
6	7	4.6	3.4	1.4	0.3	Iris-setosa
7	8	5.0	3.4	1.5	0.2	Iris-setosa
8	9	4.4	2.9	1.4	0.2	Iris-setosa
9	10	4.9	3.1	1.5	0.1	Iris-setosa

In [9]: sns.pairplot(d)

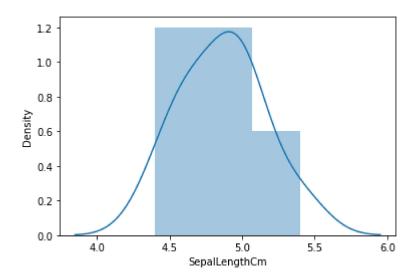
Out[9]: <seaborn.axisgrid.PairGrid at 0x1e0df7f3640>



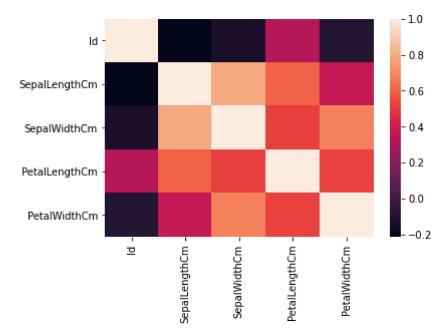
In [10]: sns.distplot(d['SepalLengthCm'])

C:\ProgramData\Anaconda3\lib\site-packages\seaborn\distributions.py:2557: FutureWarning:
`distplot` is a deprecated function and will be removed in a future version. Please adap
t your code to use either `displot` (a figure-level function with similar flexibility) o
r `histplot` (an axes-level function for histograms).
 warnings.warn(msg, FutureWarning)

Out[10]: <AxesSubplot:xlabel='SepalLengthCm', ylabel='Density'>



Out[11]: <AxesSubplot:>



```
In [25]: x=d1[['Id', 'SepalWidthCm', 'PetalLengthCm', 'PetalWidthCm']]
y=d1[ 'SepalLengthCm']
```

from sklearn.model_selection import train_test_split
x_train,x_test,y_train,y_test = train_test_split(x,y,test_size=0.3)

In [27]: from sklearn.linear_model import LinearRegression

In [28]: lr=LinearRegression()
lr.fit(x_train,y_train)

```
Out[28]: LinearRegression()
In [29]:
           print(lr.intercept_)
          0.1466220572853194
In [30]:
           coeff =pd.DataFrame(lr.coef_,x.columns,columns=["Co-efficient"])
           coeff
                         Co-efficient
Out[30]:
                     Id
                           -0.024053
          SepalWidthCm
                           1.097749
          PetalLengthCm
                           1.046166
           PetalWidthCm
                          -1.726584
In [31]:
           prediction =lr.predict(x_test)
           py.scatter(y_test,prediction)
Out[31]: <matplotlib.collections.PathCollection at 0x1e0e6848b20>
          4.7
          4.6
          4.5
          4.4
          4.3
                        4.5
                                 4.6
                                          4.7
                                                   4.8
                                                            4.9
In [32]:
           print(lr.score(x_test,y_test))
          -0.30153872660560554
In [33]:
           print(lr.score(x_train,y_train))
          0.9290828562654438
In [34]:
           from sklearn.linear_model import Ridge,Lasso
In [35]:
           rr=Ridge(alpha=10)
           rr.fit(x_train,y_train)
```

```
Out[35]: Ridge(alpha=10)

In [36]: rr.score(x_test,y_test)

Out[36]: -0.4890661720429623

In [37]: la=Lasso(alpha=10) la.fit(x_train,y_train)

Out[37]: Lasso(alpha=10)

In [38]: la.score(x_test,y_test)

Out[38]: -0.5893877551020346

In []:
```