

```
In [3]: # import libraries
import numpy as np
import pandas as pd
import matplotlib.pyplot as plt
```

```
In [183]: x=pd.read_csv(r"C:\Users\user\Downloads\14_Iris - 14_Iris.csv")
```

Out[183]:

|     | 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

```
In [184]: x=x.head(10)
```

Out[184]:

|   | 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 |
| 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 [185]:

```
<class 'pandas.core.frame.DataFrame'>
RangeIndex: 10 entries, 0 to 9
Data columns (total 6 columns):
#   Column             Non-Null Count  Dtype
---  -
0   Id                  10 non-null    int64
1   SepalLengthCm       10 non-null    float64
2   SepalWidthCm        10 non-null    float64
3   PetalLengthCm       10 non-null    float64
4   PetalWidthCm        10 non-null    float64
5   Species             10 non-null    object
dtypes: float64(4), int64(1), object(1)
memory usage: 608.0+ bytes
```

In [186]:

```
Out[186]: Index(['Id', 'SepalLengthCm', 'SepalWidthCm', 'PetalLengthCm', 'PetalWidthCm',
                'Species'],
                dtype='object')
```

In [187]:

```
d=x[['Id', 'SepalLengthCm', 'SepalWidthCm', 'PetalLengthCm', 'PetalWidthCm',
      'Species']]
```

Out[187]:

|          | <b>Id</b> | <b>SepalLengthCm</b> | <b>SepalWidthCm</b> | <b>PetalLengthCm</b> | <b>PetalWidthCm</b> | <b>Species</b> |
|----------|-----------|----------------------|---------------------|----------------------|---------------------|----------------|
| <b>0</b> | 1         | 5.1                  | 3.5                 | 1.4                  | 0.2                 | Iris-setosa    |
| <b>1</b> | 2         | 4.9                  | 3.0                 | 1.4                  | 0.2                 | Iris-setosa    |
| <b>2</b> | 3         | 4.7                  | 3.2                 | 1.3                  | 0.2                 | Iris-setosa    |
| <b>3</b> | 4         | 4.6                  | 3.1                 | 1.5                  | 0.2                 | Iris-setosa    |
| <b>4</b> | 5         | 5.0                  | 3.6                 | 1.4                  | 0.2                 | Iris-setosa    |
| <b>5</b> | 6         | 5.4                  | 3.9                 | 1.7                  | 0.4                 | Iris-setosa    |
| <b>6</b> | 7         | 4.6                  | 3.4                 | 1.4                  | 0.3                 | Iris-setosa    |
| <b>7</b> | 8         | 5.0                  | 3.4                 | 1.5                  | 0.2                 | Iris-setosa    |
| <b>8</b> | 9         | 4.4                  | 2.9                 | 1.4                  | 0.2                 | Iris-setosa    |
| <b>9</b> | 10        | 4.9                  | 3.1                 | 1.5                  | 0.1                 | Iris-setosa    |

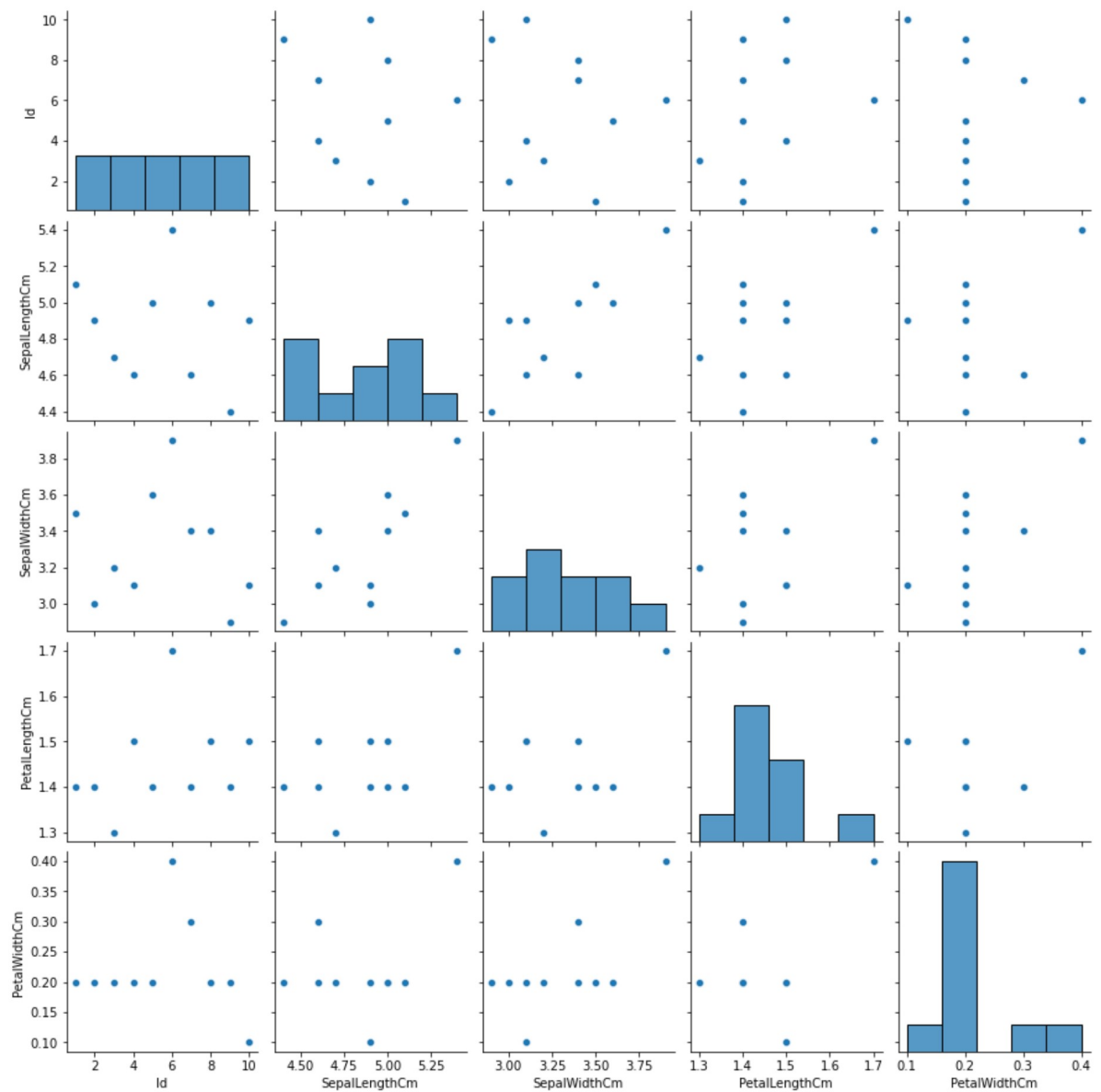
In [191]:

Out[191]:

|              | Id       | SepalLengthCm | SepalWidthCm | PetalLengthCm | PetalWidthCm |
|--------------|----------|---------------|--------------|---------------|--------------|
| <b>count</b> | 10.00000 | 10.000000     | 10.000000    | 10.000000     | 10.000000    |
| <b>mean</b>  | 5.50000  | 4.860000      | 3.310000     | 1.450000      | 0.220000     |
| <b>std</b>   | 3.02765  | 0.291357      | 0.307137     | 0.108012      | 0.078881     |
| <b>min</b>   | 1.00000  | 4.400000      | 2.900000     | 1.300000      | 0.100000     |
| <b>25%</b>   | 3.25000  | 4.625000      | 3.100000     | 1.400000      | 0.200000     |
| <b>50%</b>   | 5.50000  | 4.900000      | 3.300000     | 1.400000      | 0.200000     |
| <b>75%</b>   | 7.75000  | 5.000000      | 3.475000     | 1.500000      | 0.200000     |
| <b>max</b>   | 10.00000 | 5.400000      | 3.900000     | 1.700000      | 0.400000     |

In [192]:

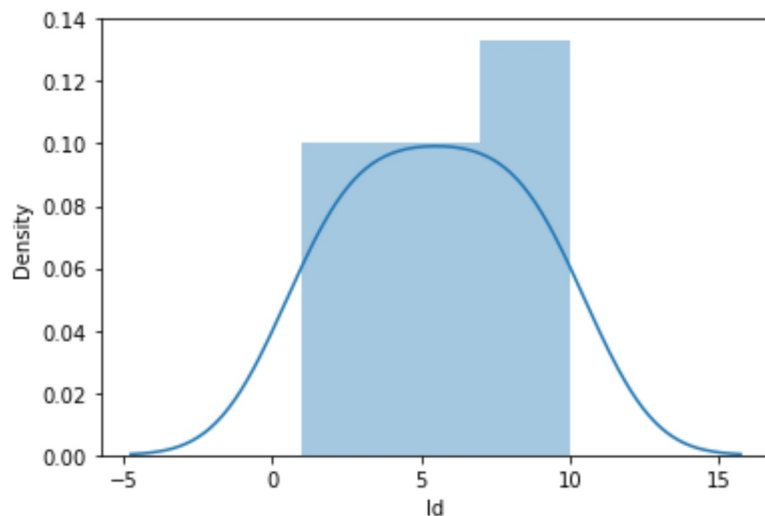
Out[192]: <seaborn.axisgrid.PairGrid at 0x1e664b8e400>



In [193]:

```
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 adapt your code to use either `displot` (a figure-level function with similar flexibility) or `histplot` (an axes-level function for histograms).
  warnings.warn(msg, FutureWarning)
```

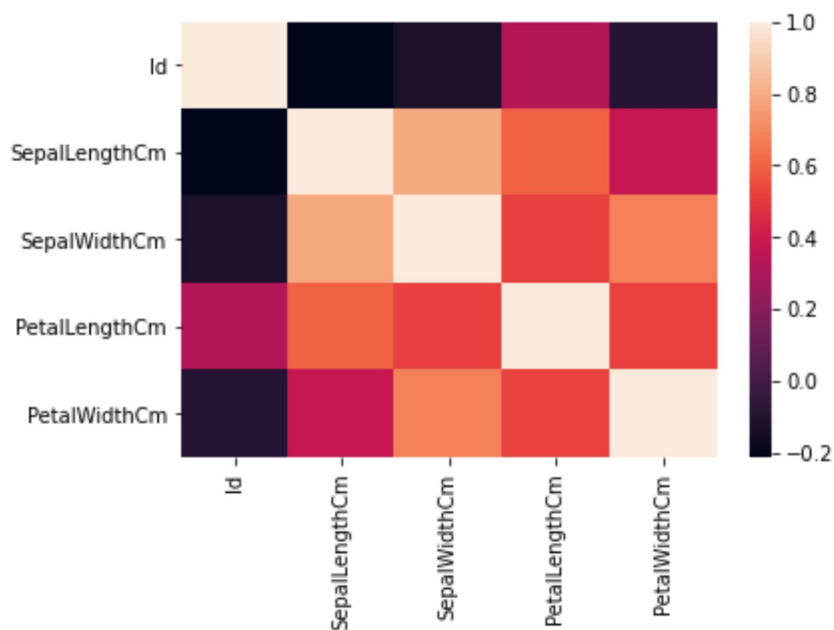
Out[193]: &lt;AxesSubplot:xlabel='Id', ylabel='Density'&gt;



In [194]: x1=x[['Id', 'SepalLengthCm', 'SepalWidthCm', 'PetalLengthCm', 'PetalWidthCm'],

In [195]:

Out[195]: &lt;AxesSubplot:&gt;



```
In [199]: x=x1[['Id', 'SepalLengthCm', 'SepalWidthCm', 'PetalLengthCm', 'PetalWidthCm']]
          y=x1['Id']
```

```
In [200]: # to split my dataset into training and test data
```

```
from sklearn.model_selection import train_test_split
```

```
In [201]: from sklearn.linear_model import LinearRegression
```

```
lr=LinearRegression()
```

```
Out[201]: LinearRegression()
```

```
In [202]:
```

```
4.440892098500626e-15
```

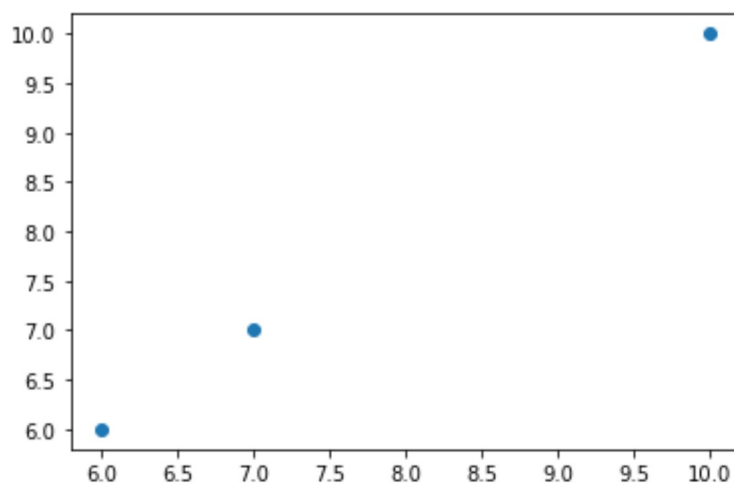
```
In [203]: coeff=pd.DataFrame(lr.coef_,x.columns,columns=['Co-efficient'])
```

```
Out[203]:
```

|                      | Co-efficient  |
|----------------------|---------------|
| <b>Id</b>            | 1.000000e+00  |
| <b>SepalLengthCm</b> | -3.648312e-16 |
| <b>SepalWidthCm</b>  | -1.569703e-16 |
| <b>PetalLengthCm</b> | -1.206599e-15 |
| <b>PetalWidthCm</b>  | 4.128791e-45  |

```
In [204]: prediction=lr.predict(x_test)
```

```
Out[204]: <matplotlib.collections.PathCollection at 0x1e66603b0a0>
```



```
In [205]:
```

```
Out[205]: 1.0
```

```
In [206]:
```

```
Out[206]: 1.0
```

In [207]:

In [208]:

```
rr=Ridge(alpha=10)
rr.fit(x_train,y_train)
```

Out[208]: 0.8909476693201309

In [209]:

```
la=Lasso(alpha=10)
```

Out[209]: Lasso(alpha=10)

In [210]:

Out[210]: -3.316326530612245

In [ ]: