# practicle6-1

April 7, 2025

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

[4]:
```
df=pd.read_csv("/content/Iris.csv")
df
```

[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 |
| .. | … | … | … | … | … | … |
| 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 x 6 columns]

```
[ ]: df['Species'].replace({"Iris-setosa":0,"Iris-versicolor":1,"Iris-virginica":
       ↪2},inplace=True)
     df
```

```
[ ]:       Id  SepalLengthCm  SepalWidthCm  PetalLengthCm  PetalWidthCm  Species
     0      1            5.1           3.5            1.4           0.2        0
     1      2            4.9           3.0            1.4           0.2        0
     2      3            4.7           3.2            1.3           0.2        0
     3      4            4.6           3.1            1.5           0.2        0
     4      5            5.0           3.6            1.4           0.2        0
     ..   …              …             …              …             …          …
     145  146            6.7           3.0            5.2           2.3        2
     146  147            6.3           2.5            5.0           1.9        2
     147  148            6.5           3.0            5.2           2.0        2
     148  149            6.2           3.4            5.4           2.3        2
     149  150            5.9           3.0            5.1           1.8        2

     [150 rows x 6 columns]
```

```
[ ]: df.isnull().sum()
```

```
[ ]: Id               0
     SepalLengthCm    0
     SepalWidthCm     0
     PetalLengthCm    0
     PetalWidthCm     0
     Species          0
     dtype: int64
```

```
[ ]: df.shape
```

```
[ ]: (150, 6)
```

```
[ ]: df.columns
```

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

```
[6]: x=df[['Id', 'SepalLengthCm', 'SepalWidthCm', 'PetalLengthCm', 'PetalWidthCm']]
     y=df['Species']
```

```
[ ]: from sklearn.model_selection import train_test_split
```

```
[ ]: X_train,x_test,y_train,y_test= train_test_split(x,y,test_size=0.
       ↪25,random_state=0)
```

[ ]:
```
from sklearn.naive_bayes import GaussianNB
model = GaussianNB()
model.fit(X_train, y_train)
```

[ ]:
```
GaussianNB()
```

[ ]:
```
y_pred = gaussian.predict(x_test)
```

[ ]:
```
from sklearn.metrics import␣
↪precision_score,confusion_matrix,accuracy_score,recall_score
```

[ ]:
```
cm= confusion_matrix(y_test, y_pred)
cm
```

[ ]:
```
array([[13,  0,  0],
       [ 0, 16,  0],
       [ 0,  0,  9]])
```

[ ]:
```
accuracy = accuracy_score(y_test, y_pred)
print("Accuracy:",accuracy)
```

```
Accuracy: 1.0
```

[ ]:
```
precision =precision_score(y_test, y_pred,average='micro')
print("Precision:",precision)
```

```
Precision: 1.0
```

[ ]:
```
recall = recall_score(y_test, y_pred,average='micro')
print("Recall:",recall)
```

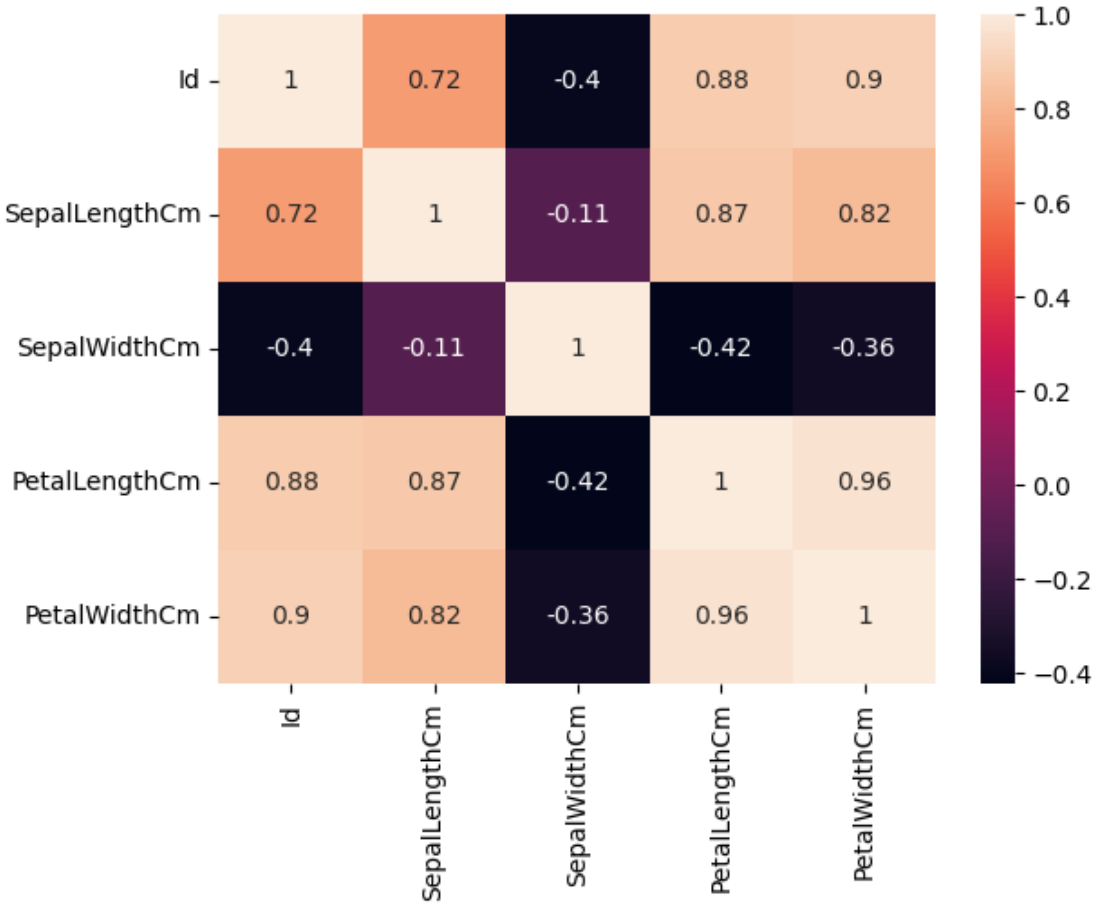
```
Recall: 1.0
```

[ ]:
```
error_rate = 1 - accuracy
print("Error Rate:",error_rate)
```

```
Error Rate: 0.0
```

[8]:
```
sns.heatmap(x.corr(),annot=True)
plt.show
```

[8]:
```
<function matplotlib.pyplot.show(close=None, block=None)>
```


Id
SepalLengthCm
SepalWidthCm
PetalLengthCm
PetalWidthCm
1
0.72
-0.4
0.88
0.9
0.72
1
-0.11
0.87
0.82
-0.4
-0.11
1
-0.42
-0.36
0.88
0.87
-0.42
1
0.96
0.9
0.82
-0.36
0.96
1
1.0
0.8
0.6
0.4
0.2
0.0
−0.2
−0.4

[ ]: