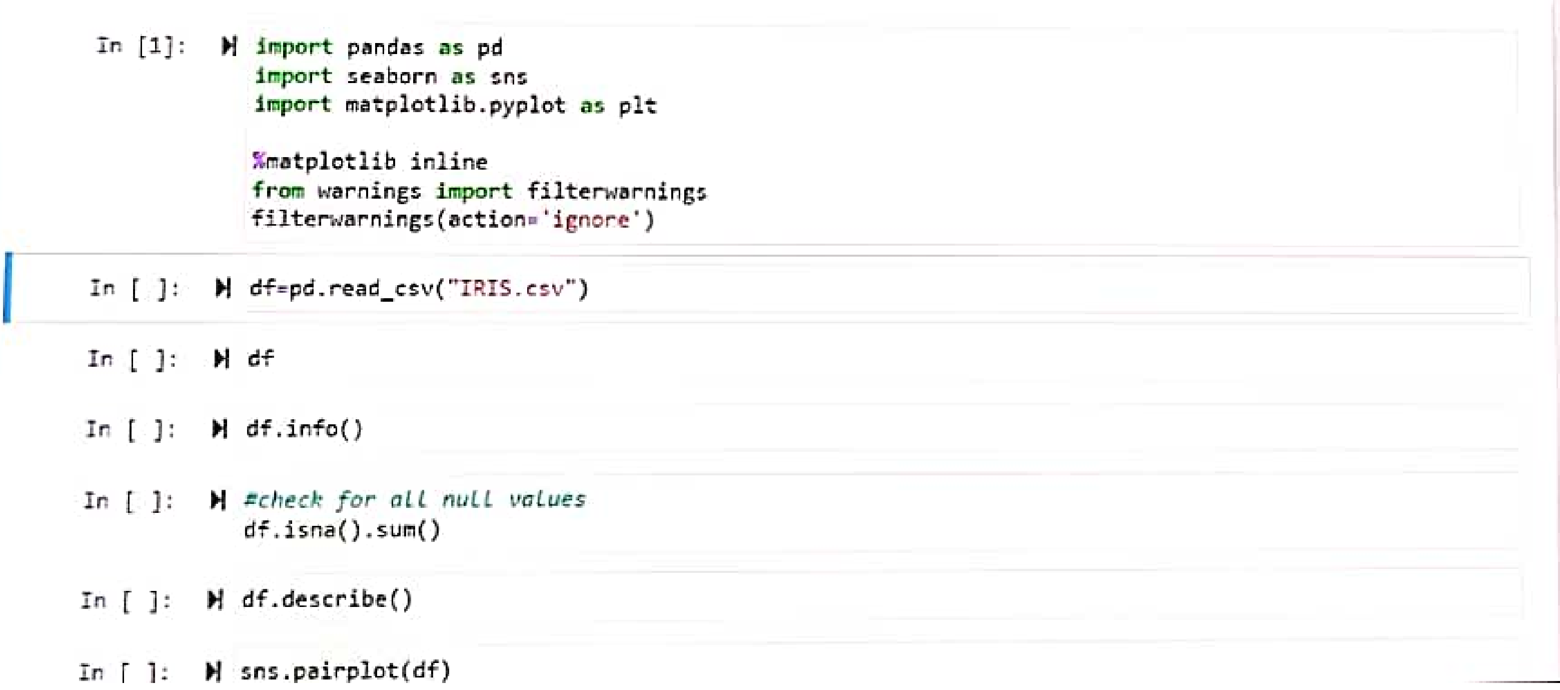
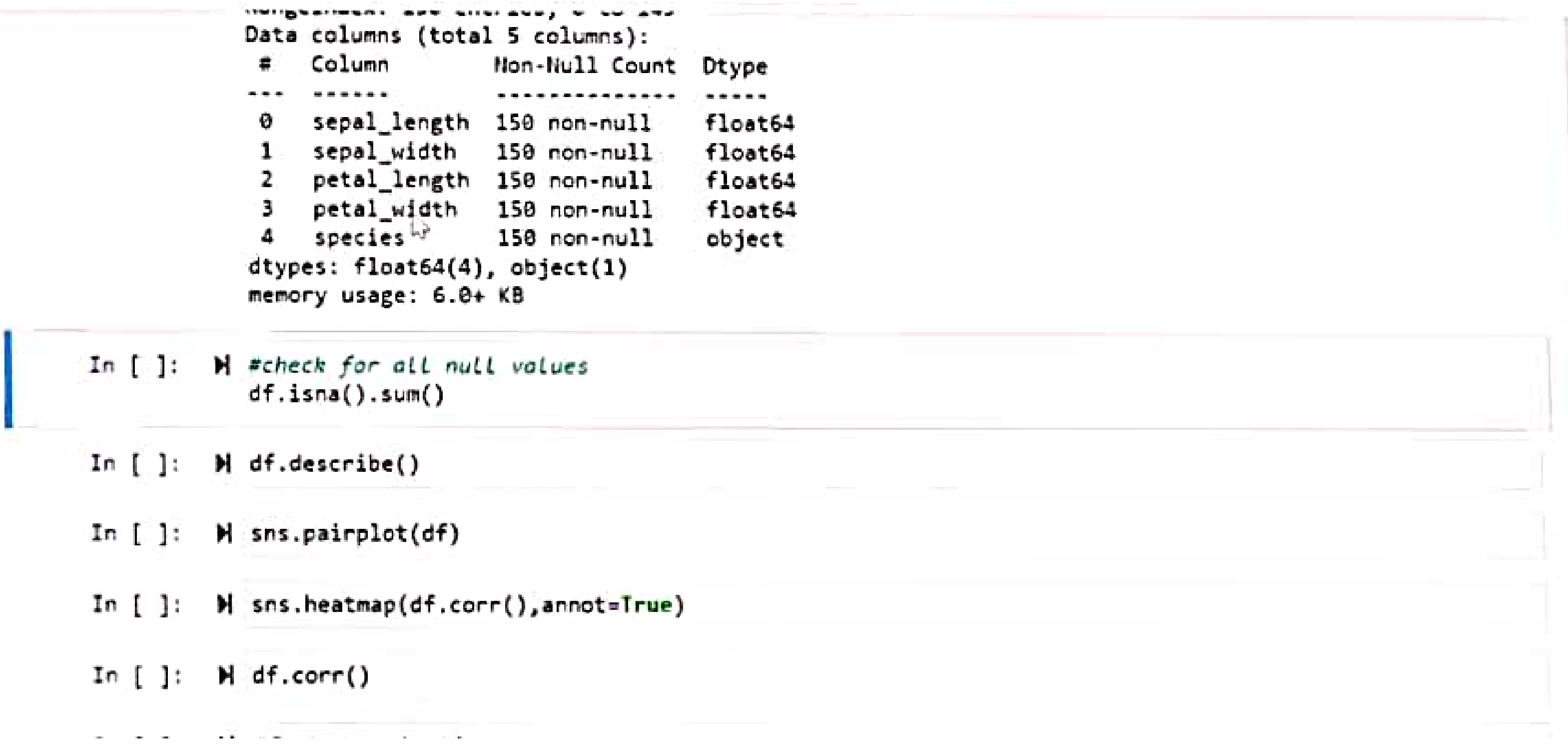
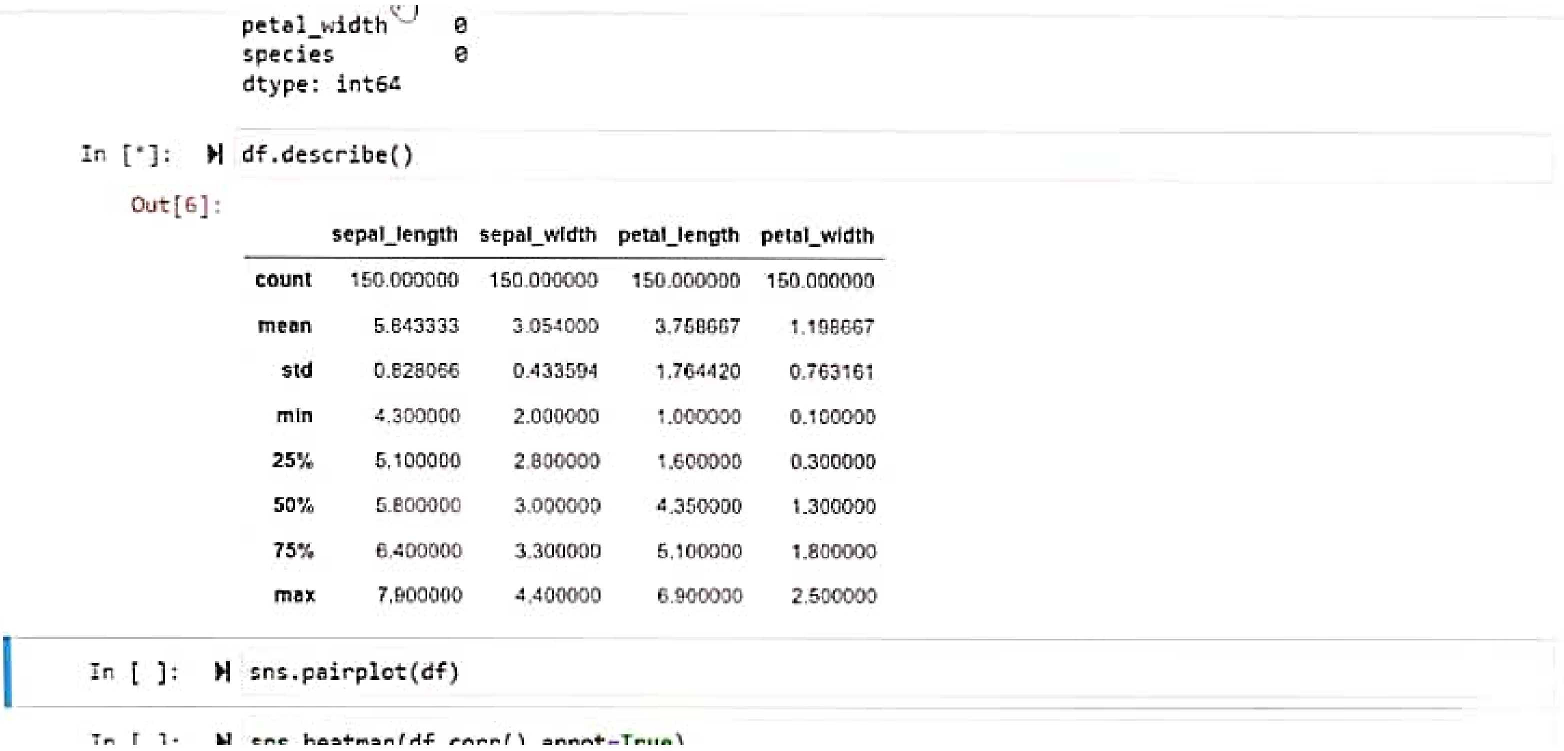


```
In [1]:    import pandas as pd
           import seaborn as sns
           import matplotlib.pyplot as plt

           %matplotlib inline
           from warnings import filterwarnings
           filterwarnings(action='ignore')

In [ ]:    df=pd.read_csv("IRIS.csv")

In [ ]:    df

In [ ]:    df.info()

In [ ]:    #check for all null values
           df.isna().sum()

In [ ]:    df.describe()

In [ ]:    sns.pairplot(df)
```



```
Data columns (total 5 columns):
 #   Column        Non-Null Count  Dtype
---  ------        --------------  -----
 0   sepal_length  150 non-null    float64
 1   sepal_width   150 non-null    float64
 2   petal_length  150 non-null    float64
 3   petal_width   150 non-null    float64
 4   species       150 non-null    object
dtypes: float64(4), object(1)
memory usage: 6.0+ KB
```

```
In [ ]:  #check for all null values
         df.isna().sum()

In [ ]:  df.describe()

In [ ]:  sns.pairplot(df)

In [ ]:  sns.heatmap(df.corr(),annot=True)

In [ ]:  df.corr()
```



```
petal_width     0
species         0
dtype: int64
```

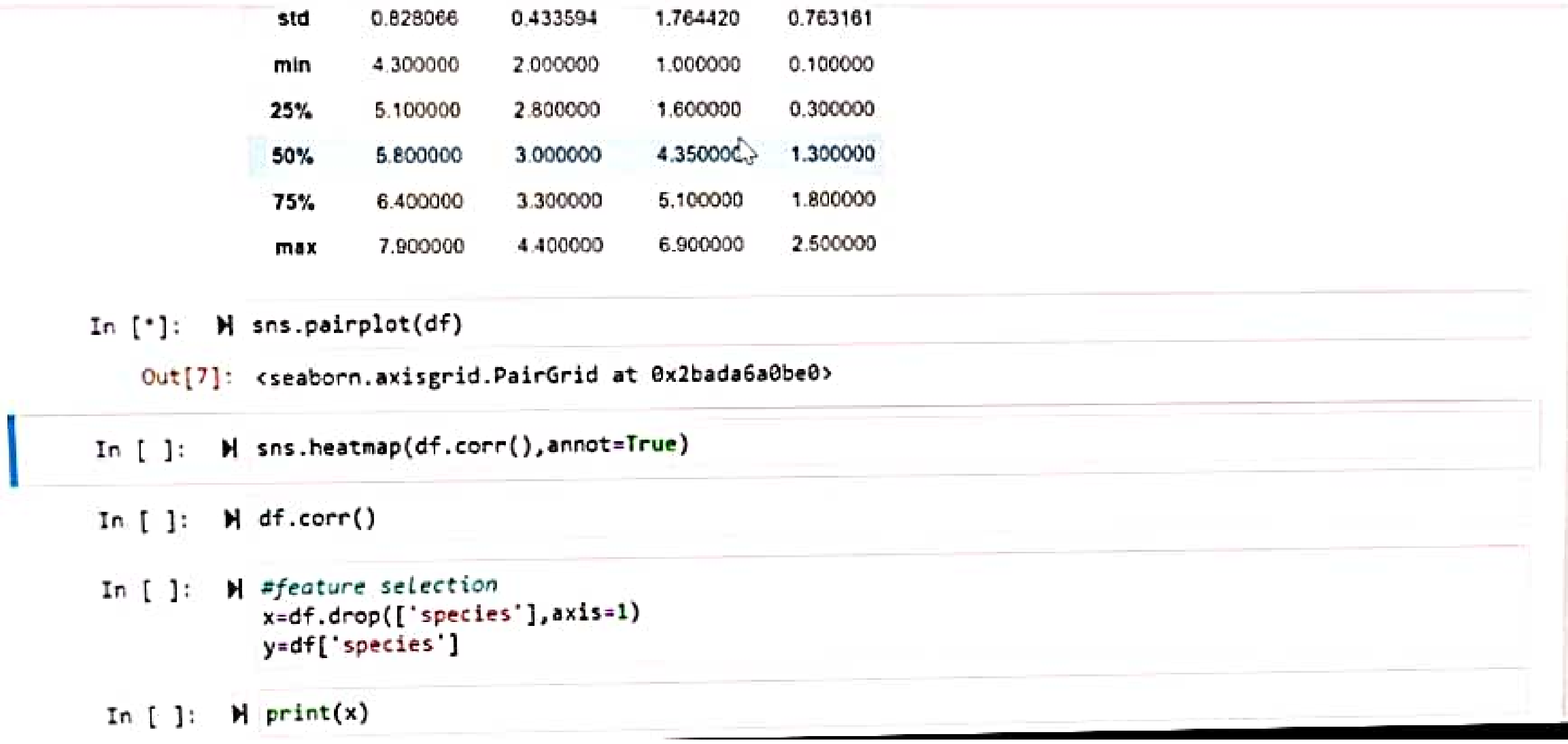
```
In [*]:  df.describe()
```

Out[6]:

	sepal_length	sepal_width	petal_length	petal_width
count	150.000000	150.000000	150.000000	150.000000
mean	5.843333	3.054000	3.758667	1.198667
std	0.828066	0.433594	1.764420	0.763161
min	4.300000	2.000000	1.000000	0.100000
25%	5.100000	2.800000	1.600000	0.300000
50%	5.800000	3.000000	4.350000	1.300000
75%	6.400000	3.300000	5.100000	1.800000
max	7.900000	4.400000	6.900000	2.500000

```
In [ ]:  sns.pairplot(df)
```

```
In [ ]:  sns.heatmap(df.corr(),annot=True)
```



std	0.828066	0.433594	1.764420	0.763161
min	4.300000	2.000000	1.000000	0.100000
25%	5.100000	2.800000	1.600000	0.300000
50%	5.800000	3.000000	4.350000	1.300000
75%	6.400000	3.300000	5.100000	1.800000
max	7.900000	4.400000	6.900000	2.500000

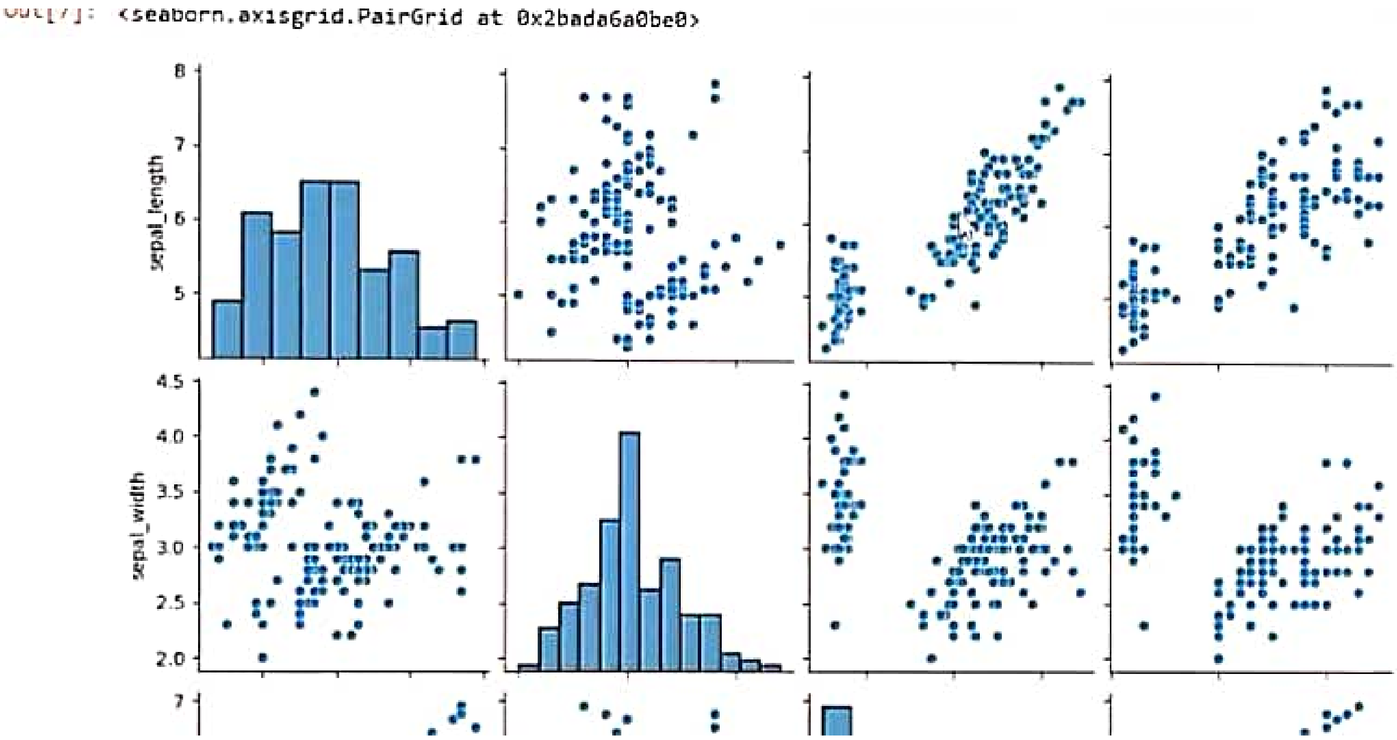
```
In [*]:  sns.pairplot(df)

Out[7]:  <seaborn.axisgrid.PairGrid at 0x2bada6a0be0>
```

```
In [ ]:  sns.heatmap(df.corr(),annot=True)
```

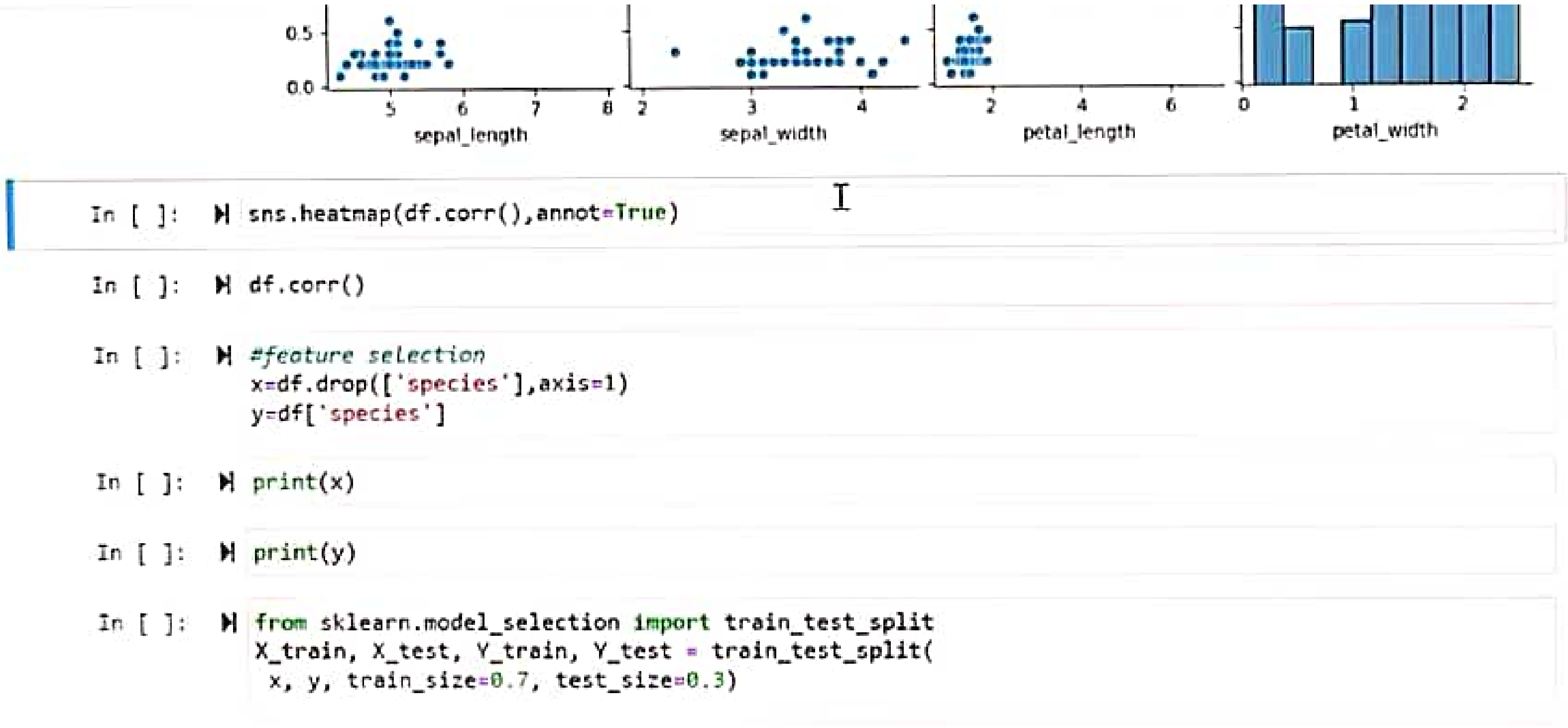
```
In [ ]:  df.corr()
```

```
In [ ]:  #feature selection
         x=df.drop(['species'],axis=1)
         y=df['species']
```

```
In [ ]:  print(x)
```



```
Out[7]: <seaborn.axisgrid.PairGrid at 0x2bada6a0be0>
```



```
In [ ]:  sns.heatmap(df.corr(),annot=True)
```

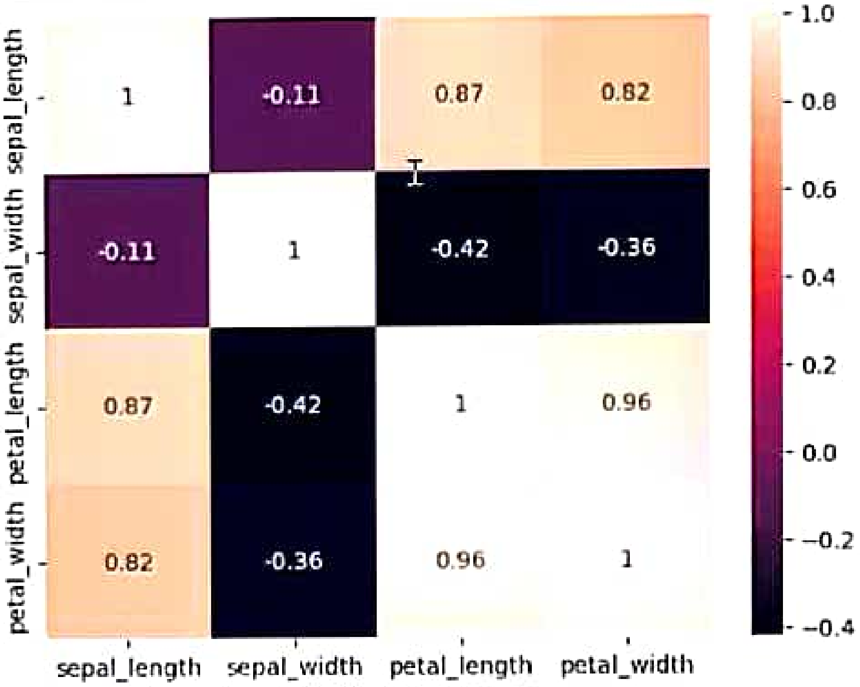
```
In [ ]:  df.corr()
```

```
In [ ]:  #feature selection
         x=df.drop(['species'],axis=1)
         y=df['species']
```

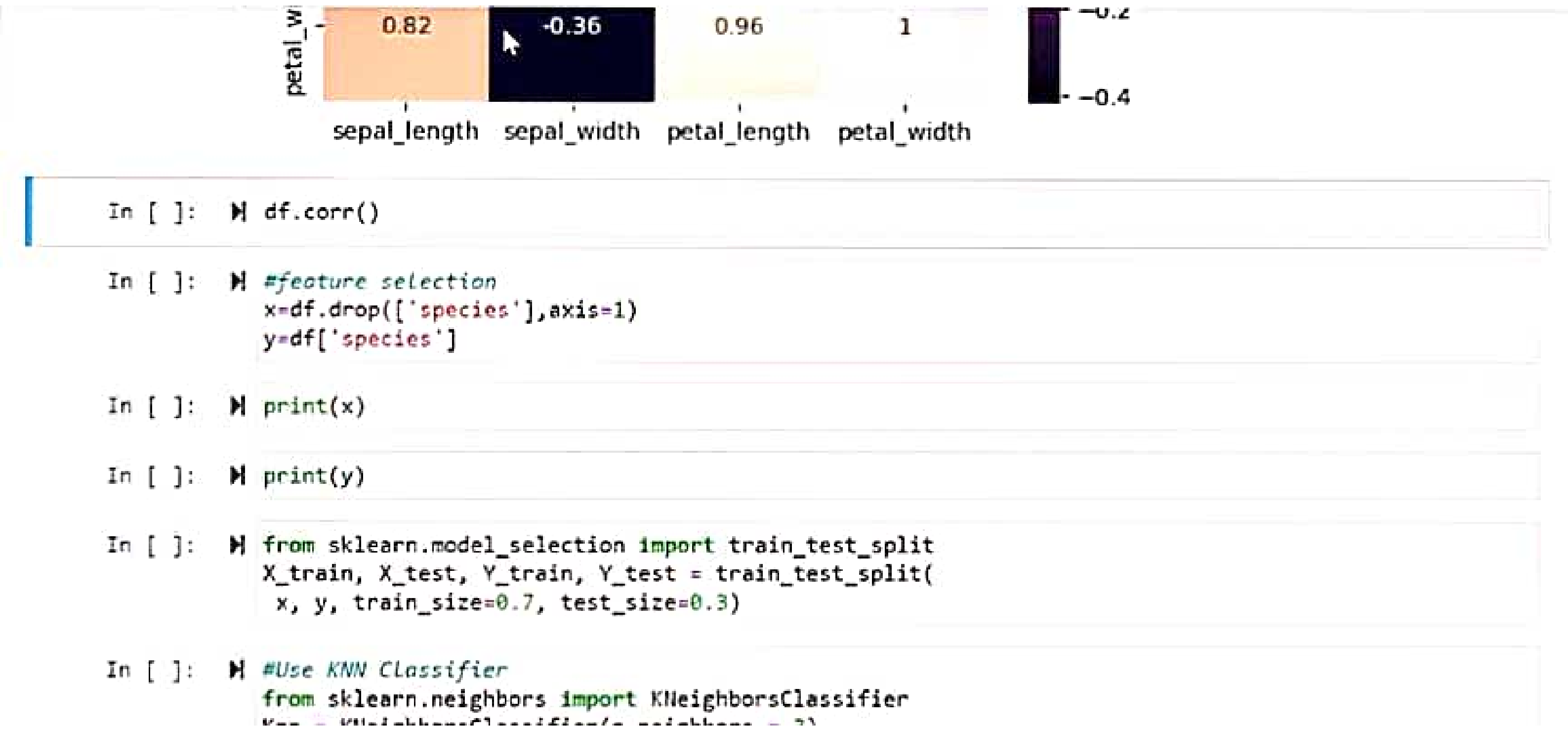
```
In [ ]:  print(x)
```

```
In [ ]:  print(y)
```

```
In [ ]:  from sklearn.model_selection import train_test_split
         X_train, X_test, Y_train, Y_test = train_test_split(
          x, y, train_size=0.7, test_size=0.3)
```



sepal_length
sepal_width
petal_length
petal_width
1
-0.11
0.87
0.82
-0.11
1
-0.42
-0.36
0.87
-0.42
1
0.96
0.82
-0.36
0.96
1
sepal_length
sepal_width
petal_length
petal_width
1.0
0.8
0.6
0.4
0.2
0.0
−0.2
−0.4



```
In [ ]:  df.corr()
```

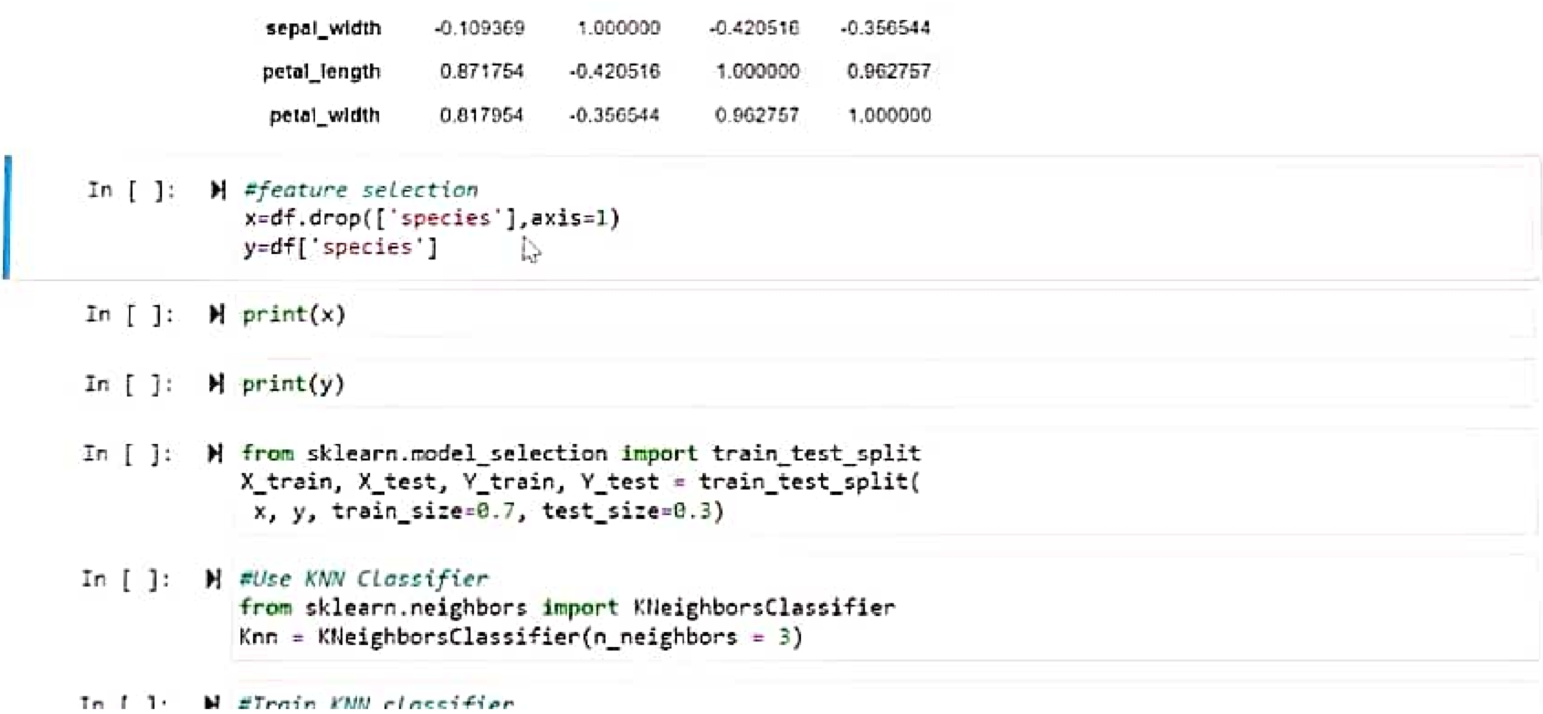
```
In [ ]:  #feature selection
         x=df.drop(['species'],axis=1)
         y=df['species']
```

```
In [ ]:  print(x)
```

```
In [ ]:  print(y)
```

```
In [ ]:  from sklearn.model_selection import train_test_split
         X_train, X_test, Y_train, Y_test = train_test_split(
          x, y, train_size=0.7, test_size=0.3)
```

```
In [ ]:  #Use KNN Classifier
         from sklearn.neighbors import KNeighborsClassifier
         Knn = KNeighborsClassifier(n_neighbors = 3)
```



sepal_width	-0.109369	1.000000	-0.420516	-0.356544
petal_length	0.871754	-0.420516	1.000000	0.962757
petal_width	0.817954	-0.356544	0.962757	1.000000

```
In [ ]:  #feature selection
         x=df.drop(['species'],axis=1)
         y=df['species']
```

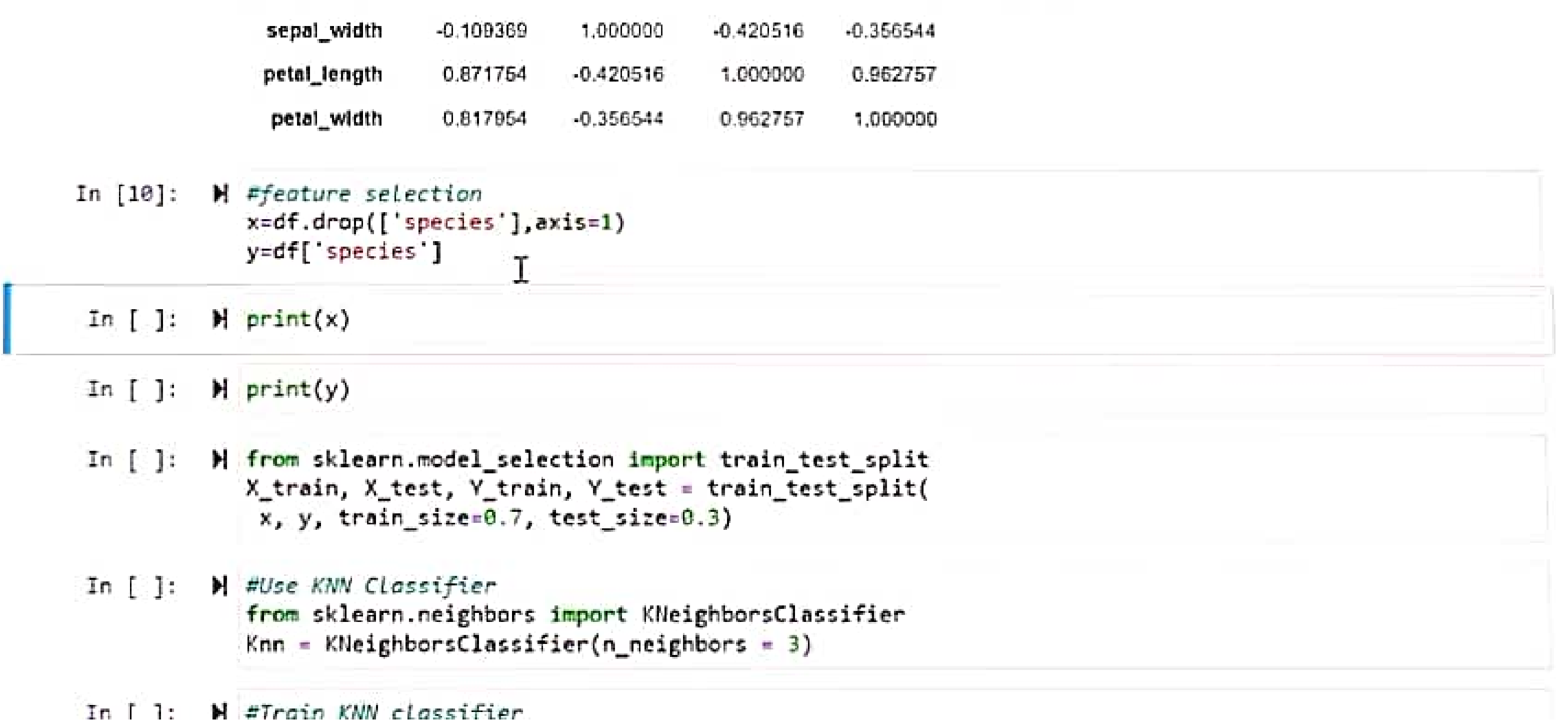
```
In [ ]:  print(x)
```

```
In [ ]:  print(y)
```

```
In [ ]:  from sklearn.model_selection import train_test_split
         X_train, X_test, Y_train, Y_test = train_test_split(
          x, y, train_size=0.7, test_size=0.3)
```

```
In [ ]:  #Use KNN Classifier
         from sklearn.neighbors import KNeighborsClassifier
         Knn = KNeighborsClassifier(n_neighbors = 3)
```

```
In [ ]:  #Train KNN classifier
```



sepal_width	-0.109369	1.000000	-0.420516	-0.356544
petal_length	0.871754	-0.420516	1.000000	0.962757
petal_width	0.817954	-0.356544	0.962757	1.000000

```
In [10]:  #feature selection
          x=df.drop(['species'],axis=1)
          y=df['species']
```

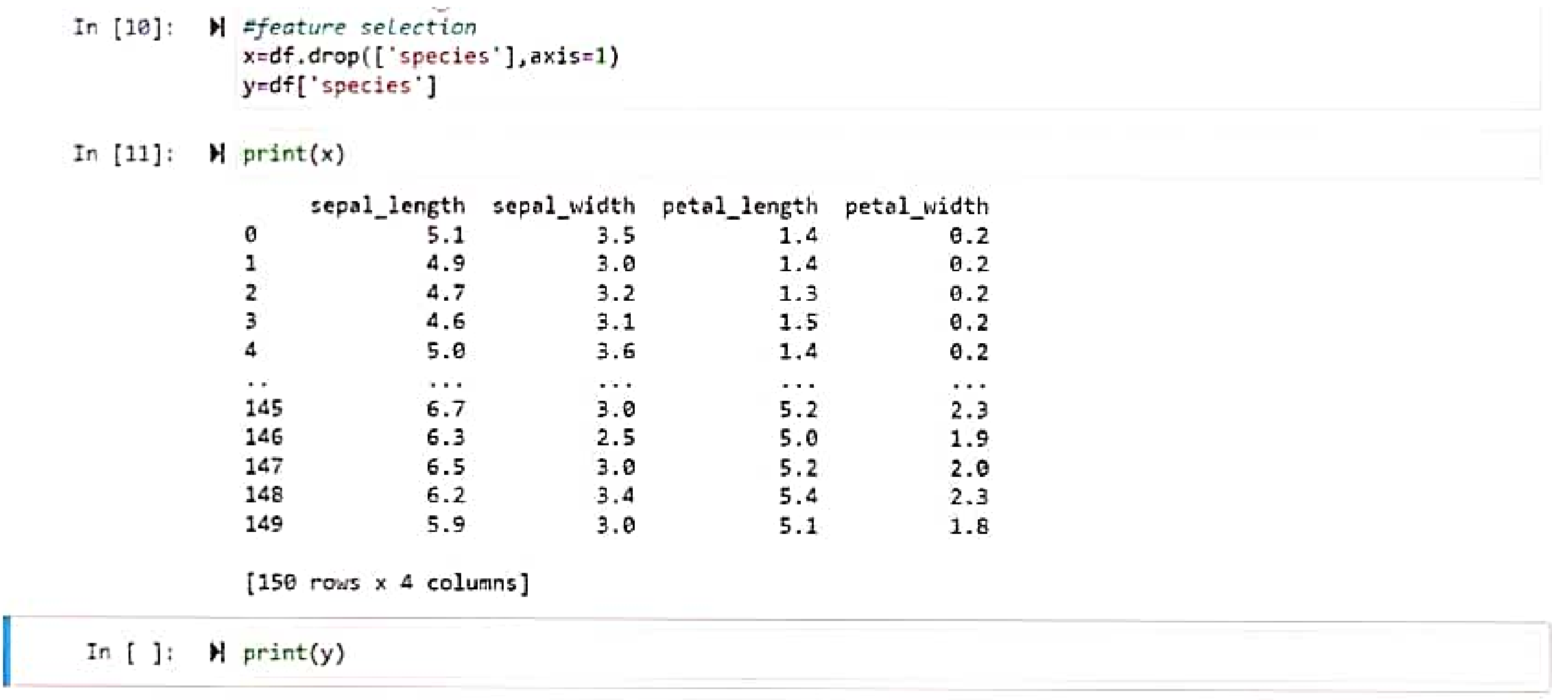
```
In [ ]:   print(x)
```

```
In [ ]:   print(y)
```

```
In [ ]:   from sklearn.model_selection import train_test_split
          X_train, X_test, Y_train, Y_test = train_test_split(
           x, y, train_size=0.7, test_size=0.3)
```

```
In [ ]:   #Use KNN Classifier
          from sklearn.neighbors import KNeighborsClassifier
          Knn = KNeighborsClassifier(n_neighbors = 3)
```

```
In [ ]:   #Train KNN classifier
```

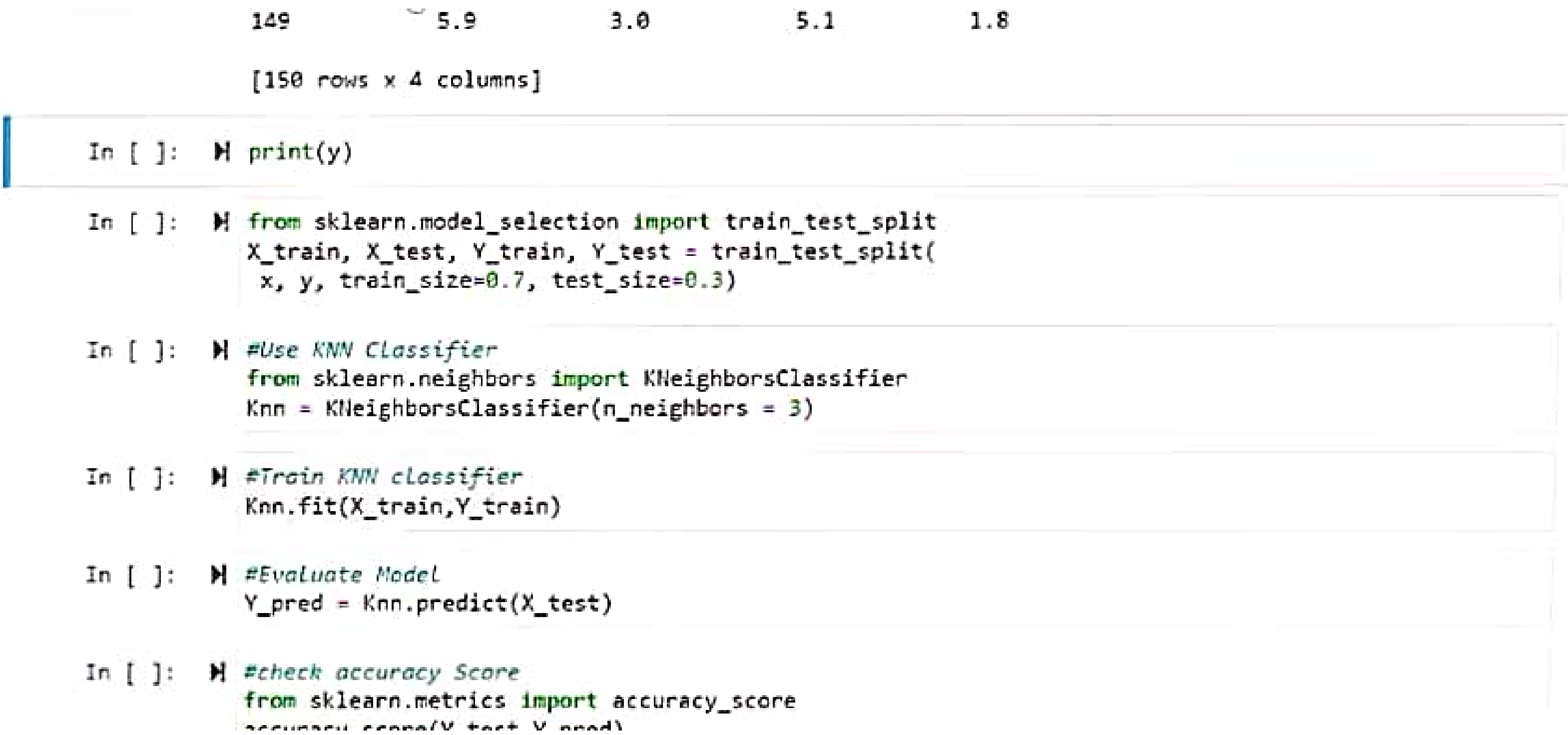


```
In [10]:    #feature selection
            x=df.drop(['species'],axis=1)
            y=df['species']
```

```
In [11]:    print(x)
```

```
     sepal_length  sepal_width  petal_length  petal_width
0             5.1          3.5           1.4          0.2
1             4.9          3.0           1.4          0.2
2             4.7          3.2           1.3          0.2
3             4.6          3.1           1.5          0.2
4             5.0          3.6           1.4          0.2
..            ...          ...           ...          ...
145           6.7          3.0           5.2          2.3
146           6.3          2.5           5.0          1.9
147           6.5          3.0           5.2          2.0
148           6.2          3.4           5.4          2.3
149           5.9          3.0           5.1          1.8

[150 rows x 4 columns]
```

```
In [ ]:     print(y)
```



```
149           5.9          3.0          5.1          1.8

[150 rows x 4 columns]
```

```
In [ ]:   print(y)
```

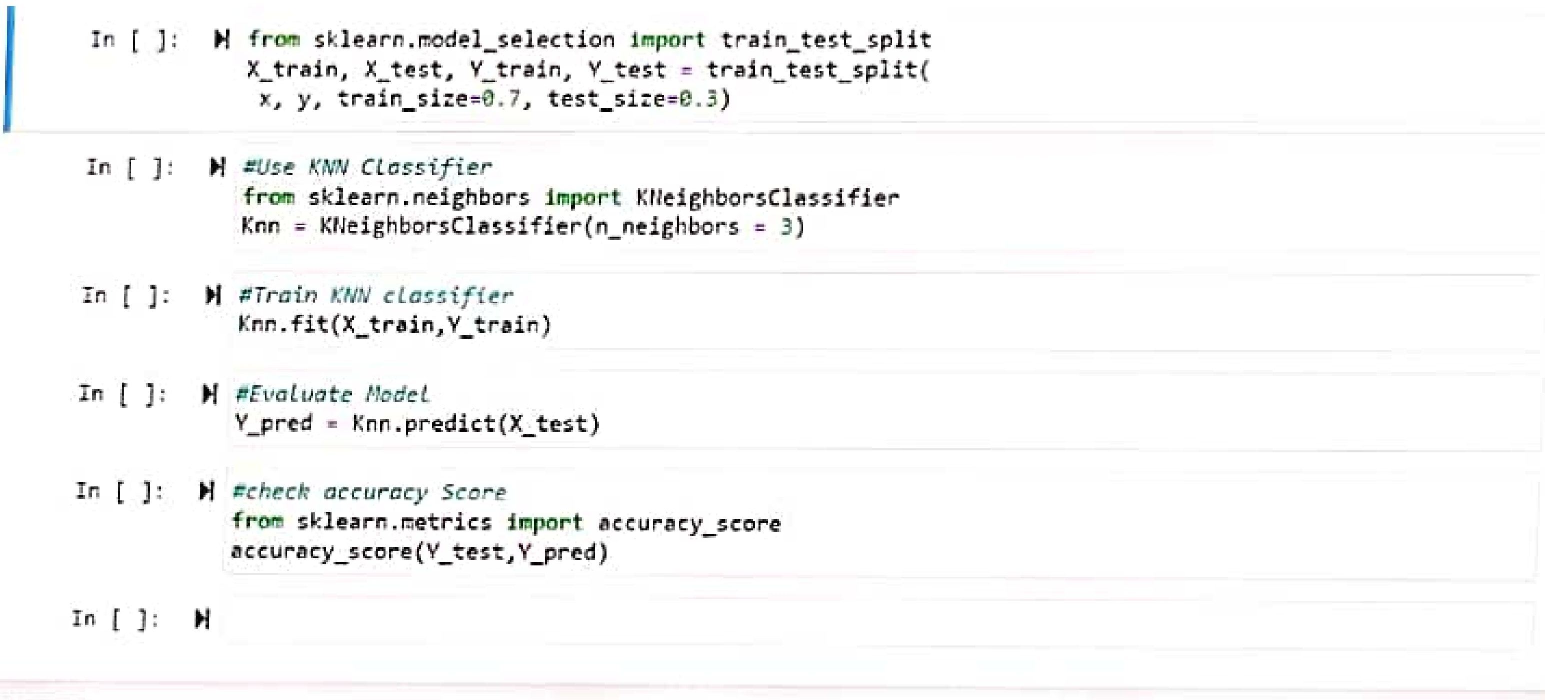
```
In [ ]:   from sklearn.model_selection import train_test_split
          X_train, X_test, Y_train, Y_test = train_test_split(
           x, y, train_size=0.7, test_size=0.3)
```

```
In [ ]:   #Use KNN Classifier
          from sklearn.neighbors import KNeighborsClassifier
          Knn = KNeighborsClassifier(n_neighbors = 3)
```

```
In [ ]:   #Train KNN classifier
          Knn.fit(X_train,Y_train)
```

```
In [ ]:   #Evaluate Model
          Y_pred = Knn.predict(X_test)
```

```
In [ ]:   #check accuracy Score
          from sklearn.metrics import accuracy_score
          accuracy_score(Y_test,Y_pred)
```



In [ ]:

```
from sklearn.model_selection import train_test_split
X_train, X_test, Y_train, Y_test = train_test_split(
 x, y, train_size=0.7, test_size=0.3)
```

In [ ]:

```
#Use KNN Classifier
from sklearn.neighbors import KNeighborsClassifier
Knn = KNeighborsClassifier(n_neighbors = 3)
```

In [ ]:

```
#Train KNN classifier
Knn.fit(X_train,Y_train)
```

In [ ]:

```
#Evaluate Model
Y_pred = Knn.predict(X_test)
```

In [ ]:

```
#check accuracy Score
from sklearn.metrics import accuracy_score
accuracy_score(Y_test,Y_pred)
```

In [ ]: