PE29 Vasu Kalariya IMLA Lab Assi 3

```
import numpy as np
import pandas as pd
import matplotlib.pyplot as plt
```

Creating the Dataset for problem 1

```
data1 = {'X':['2','4','4','4','6','6',],
        'Y':['4','6','4','3','4','3',],
        'Class':['N','N','P','N','N','P',]}

ds1 = pd.DataFrame.from_dict(data1)
ds1
```

	X	Y	Class
0	2	4	N
1	4	6	N
2	4	4	P
3	4	3	N
4	6	4	N
5	6	3	P

```
x1 = x = ds1.iloc[:, :-1].values
y1 = ds1.iloc[:, 2:3].values
print(x1)
```

```
[['2' '4']
 ['4' '6']
 ['4' '4']
 ['4' '3']
 ['6' '4']
 ['6' '3']]
```

Training the model for KNN with K = 3

```
from sklearn.neighbors import KNeighborsClassifier

classifier1 = KNeighborsClassifier(n_neighbors = 3)
classifier1.fit(x1, y1)
```

```
/usr/local/lib/python3.7/dist-packages/ipykernel_launcher.py:4: DataConversionWarning: A column-vector y was passed when a 1d array was expected. Please change the shape of y to (n_samples, ), f
  after removing the cwd from sys.path.
KNeighborsClassifier(algorithm='auto', leaf_size=30, metric='minkowski',
                     metric_params=None, n_jobs=None, n_neighbors=3, p=2,
                     weights='uniform')
```

Predicting the class Lable(P/N)

```
y_pred_class = classifier1.predict([[6,6]])
print('The predicted class of (6,6) : ',y_pred_class)
```

```
The predicted class of (6,6) :  ['N']
```

Creating dataset for problem 2

```
data2 = {'Height':['5','5.11','5.6','5.9','4.8','5.8','5.3','5.8','5.5','5.6'],
        'Age':['45','26','30','34','40','36','19','28','23','32'],
        'Weight':['77','47','55','59','72','60','40','60','45','58']}

ds2 = pd.DataFrame.from_dict(data2)
ds2
```

	Height	Age	Weight
0	5	45	77
1	5.11	26	47
2	5.6	30	55
3	5.9	34	59
4	4.8	40	72
5	5.8	36	60
6	5.3	19	40
7	5.8	28	60
8	5.5	23	45
9	5.6	32	58

```
x2 = x = ds2.iloc[:, :-1].values
y2 = ds2.iloc[:, 2:3].values
print(x2)
```

```
[['5' '45']
 ['5.11' '26']
```

```
['5.6' '30']
['5.9' '34']
['4.8' '40']
['5.8' '36']
['5.3' '19']
['5.8' '28']
['5.5' '23']
['5.6' '32']]
```

Training KNN model for K values 3,4,5

```
from sklearn.neighbors import KNeighborsClassifier

classifier_3 = KNeighborsClassifier(n_neighbors = 3)
classifier_3.fit(x2, y2)

classifier_4 = KNeighborsClassifier(n_neighbors = 4)
classifier_4.fit(x2, y2)

classifier_5 = KNeighborsClassifier(n_neighbors = 5)
classifier_5.fit(x2, y2)
```

```
/usr/local/lib/python3.7/dist-packages/ipykernel_launcher.py:4: DataConversionWarning: A column-vector y was passed when a 1d array was expected. Please change the shape of y to (n_samples, ), f
  after removing the cwd from sys.path.
/usr/local/lib/python3.7/dist-packages/ipykernel_launcher.py:7: DataConversionWarning: A column-vector y was passed when a 1d array was expected. Please change the shape of y to (n_samples, ), f
  import sys
/usr/local/lib/python3.7/dist-packages/ipykernel_launcher.py:10: DataConversionWarning: A column-vector y was passed when a 1d array was expected. Please change the shape of y to (n_samples, ),
  # Remove the CWD from sys.path while we load stuff.
KNeighborsClassifier(algorithm='auto', leaf_size=30, metric='minkowski',
                     metric_params=None, n_jobs=None, n_neighbors=5, p=2,
                     weights='uniform')
```

Predicting Weight for (5.50,26) with K = 3

```
y_pred_3 = classifier_3.predict([[5.50,26]])
print('The predicted Weight of (5.50,26) : ',y_pred_3)
```

```
The predicted Weight of (5.50,26) :  ['45']
```

Predicting Weight for (5.50,26) with K = 4

```
y_pred_4 = classifier_4.predict([[5.50,26]])
print('The predicted Weight of (5.50,26) : ',y_pred_4)
```

```
The predicted Weight of (5.50,26) :  ['45']
```

Predicting Weight for (5.50,26) with K = 5

```
y_pred_5 = classifier_5.predict([[5.50,26]])
print('The predicted Weight of (5.50,26) : ',y_pred_5)
```

```
     The predicted Weight of (5.50,26) :  ['45']
```