To perform and find the accuracy of Naive bayes Classifier

In [1]:
```
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#Roll No: 55
#Year :3rd year
#Section: B
#Date :17-03-2024
```

In [2]:
```
import pandas as pd
import os
import matplotlib.pyplot as plt
import numpy as np
import seaborn as sns
from sklearn.model_selection import train_test_split
import warnings
warnings.filterwarnings('ignore')
```

In [3]:
```
os.getcwd()
```

Out[3]:
```
'C:\\Users\\fatin'
```

In [4]:
```
os.chdir('C:\\Users\\fatin\\OneDrive\\Desktop')
```

In [5]:
```
df=pd.read_csv('CHD_preprocessed.csv')
```

In [6]:
```
df.head()
```

Out[6]:

	male	age	education	currentSmoker	cigsPerDay	BPMeds	prevalentStroke	prevalentHyp	diabetes	totChol	sysBP	diaBP	BMI	heartRate	glucose	TenYearCHD
0	1	39	1	0	0.0	0.0	0	0	0	195.0	106.0	70.0	26.97	80.0	77.0	0
1	0	46	0	0	0.0	0.0	0	0	0	250.0	121.0	81.0	28.73	95.0	76.0	0
2	1	48	0	1	20.0	0.0	0	0	0	245.0	127.5	80.0	25.34	75.0	70.0	0
3	0	61	1	1	30.0	0.0	0	1	0	225.0	150.0	95.0	28.58	65.0	103.0	1
4	0	46	1	1	23.0	0.0	0	0	0	285.0	130.0	84.0	23.10	85.0	85.0	0

In [7]:
```
df.tail()
```

Out[7]:

	male	age	education	currentSmoker	cigsPerDay	BPMeds	prevalentStroke	prevalentHyp	diabetes	totChol	sysBP	diaBP	BMI	heartRate	glucose	TenYearCHD
4128	1	50	0	1	1.0	0.0	0	1	0	313.0	179.0	92.0	25.97	66.0	86.0	1
4129	1	51	1	1	43.0	0.0	0	0	0	207.0	126.5	80.0	19.71	65.0	68.0	0
4130	0	48	0	1	20.0	0.0	0	0	0	248.0	131.0	72.0	22.00	84.0	86.0	0
4131	0	44	0	1	15.0	0.0	0	0	0	210.0	126.5	87.0	19.16	86.0	82.0	0
4132	0	52	0	0	0.0	0.0	0	0	0	269.0	133.5	83.0	21.47	80.0	107.0	0

In [8]:
```
df.size
```

Out[8]:
```
66128
```

In [9]:
```
df.shape
```

Out[9]:
```
(4133, 16)
```

In [10]:
```
df.isna().sum()
```

Out[10]:
```
male               0
age                0
education          0
currentSmoker      0
cigsPerDay         0
BPMeds             0
prevalentStroke    0
prevalentHyp       0
diabetes           0
totChol            0
sysBP              0
diaBP              0
BMI                0
heartRate          0
glucose            0
TenYearCHD         0
dtype: int64
```

In [11]:
```
df.describe()
```

Out[11]:

	male	age	education	currentSmoker	cigsPerDay	BPMeds	prevalentStroke	prevalentHyp	diabetes	totChol	sysBP	diaBP	BMI	heartRate	glucose	TenYearCHD
count	4133.000000	4133.000000	4133.000000	4133.000000	4133.000000	4133.000000	4133.000000	4133.000000	4133.000000	4133.000000	4133.000000	4133.000000	4133.000000	4133.000000	4133.000000	4133.000000
mean	0.427293	49.557222	0.280668	0.494798	9.101621	0.034358	0.006049	0.311154	0.025647	236.664408	132.367046	82.872248	25.778571	75.925236	81.946528	0.151948
std	0.494745	8.561628	0.449380	0.500033	11.918440	0.182168	0.077548	0.463022	0.158100	43.909188	22.080332	11.952654	4.074360	12.049188	22.860954	0.359014
min	0.000000	32.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	107.000000	83.500000	48.000000	15.540000	44.000000	40.000000	0.000000
25%	0.000000	42.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	206.000000	117.000000	75.000000	23.060000	68.000000	72.000000	0.000000
50%	0.000000	49.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	234.000000	128.000000	82.000000	25.380000	75.000000	80.000000	0.000000
75%	1.000000	56.000000	1.000000	1.000000	20.000000	0.000000	0.000000	1.000000	0.000000	262.000000	144.000000	89.500000	27.990000	83.000000	85.000000	0.000000
max	1.000000	70.000000	1.000000	1.000000	70.000000	1.000000	1.000000	1.000000	1.000000	600.000000	295.000000	142.500000	56.800000	143.000000	394.000000	1.000000

In [12]:
```
x = df.drop("TenYearCHD",axis=1)
y = df['TenYearCHD']
```

In [13]:
```
x
```

Out[13]:

	male	age	education	currentSmoker	cigsPerDay	BPMeds	prevalentStroke	prevalentHyp	diabetes	totChol	sysBP	diaBP	BMI	heartRate	glucose
0	1	39	1	0	0.0	0.0	0	0	0	195.0	106.0	70.0	26.97	80.0	77.0
1	0	46	0	0	0.0	0.0	0	0	0	250.0	121.0	81.0	28.73	95.0	76.0
2	1	48	0	1	20.0	0.0	0	0	0	245.0	127.5	80.0	25.34	75.0	70.0
3	0	61	1	1	30.0	0.0	0	1	0	225.0	150.0	95.0	28.58	65.0	103.0
4	0	46	1	1	23.0	0.0	0	0	0	285.0	130.0	84.0	23.10	85.0	85.0
...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
4128	1	50	0	1	1.0	0.0	0	1	0	313.0	179.0	92.0	25.97	66.0	86.0
4129	1	51	1	1	43.0	0.0	0	0	0	207.0	126.5	80.0	19.71	65.0	68.0
4130	0	48	0	1	20.0	0.0	0	0	0	248.0	131.0	72.0	22.00	84.0	86.0
4131	0	44	0	1	15.0	0.0	0	0	0	210.0	126.5	87.0	19.16	86.0	82.0
4132	0	52	0	0	0.0	0.0	0	0	0	269.0	133.5	83.0	21.47	80.0	107.0

4133 rows × 15 columns

In [14]:
```
y
```

Out[14]:
```
0       0
1       0
2       0
3       1
4       0
       ..
4128    1
4129    0
4130    0
4131    0
4132    0
Name: TenYearCHD, Length: 4133, dtype: int64
```

Train - Test Splitting

In [15]:
```
x_train,x_test,y_train,y_test = train_test_split(x,y,test_size=0.2,random_state=42)
```

In [16]:
```
y_train
```

Out[16]:
```
173     1
1022    0
3182    0
331     1
2222    0
       ..
3444    0
466     0
3092    0
3772    0
860     0
Name: TenYearCHD, Length: 3306, dtype: int64
```

In [17]:
```
y_test
```

Out[17]:
```
1864    0
1210    0
1924    0
1752    0
1095    0
       ..
881     0
25      1
3256    0
2269    0
1074    0
Name: TenYearCHD, Length: 827, dtype: int64
```

In [18]:
```
from sklearn.linear_model import LogisticRegression
model = LogisticRegression().fit(x_train,y_train)
model.score(x_train,y_train)
```

Out[18]:
```
0.8557168784029038
```

In [19]:
```
H = [1,1,1,2,3,3,4,5,6,4,4,4,5,6,6,6,7,7,8,8,9,9,9,10,10,10,10]
```

In [20]:
```
print(type(H))
```

```
<class 'list'>
```

In [ ]:
```

```