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

In [2]:
```
from sklearn.linear_model import LogisticRegression
```

In [3]:
```
df=pd.read_csv("C5_health care diabetes.csv")
df
```

Out[3]:

	Pregnancies	Glucose	BloodPressure	SkinThickness	Insulin	BMI	DiabetesPedigreeFunction	Age
0	6	148	72	35	0	33.6	0.627	50
1	1	85	66	29	0	26.6	0.351	31
2	8	183	64	0	0	23.3	0.672	32
3	1	89	66	23	94	28.1	0.167	21
4	0	137	40	35	168	43.1	2.288	33
...	...	...	...	...	...	...	...	...
763	10	101	76	48	180	32.9	0.171	63
764	2	122	70	27	0	36.8	0.340	27
765	5	121	72	23	112	26.2	0.245	30
766	1	126	60	0	0	30.1	0.349	47
767	1	93	70	31	0	30.4	0.315	23

768 rows × 9 columns

In [4]:
```
df=df.dropna()
df
```

Out[4]:

	Pregnancies	Glucose	BloodPressure	SkinThickness	Insulin	BMI	DiabetesPedigreeFunction	Age
0	6	148	72	35	0	33.6	0.627	50
1	1	85	66	29	0	26.6	0.351	31
2	8	183	64	0	0	23.3	0.672	32
3	1	89	66	23	94	28.1	0.167	21
4	0	137	40	35	168	43.1	2.288	33
...	...	...	...	...	...	...	...	...
763	10	101	76	48	180	32.9	0.171	63
764	2	122	70	27	0	36.8	0.340	27

	Pregnancies	Glucose	BloodPressure	SkinThickness	Insulin	BMI	DiabetesPedigreeFunction	Age
765	5	121	72	23	112	26.2	0.245	30
766	1	126	60	0	0	30.1	0.349	47
767	1	93	70	31	0	30.4	0.315	23

768 rows × 9 columns

In [5]:
```
df.info()
```

```
<class 'pandas.core.frame.DataFrame'>
Int64Index: 768 entries, 0 to 767
Data columns (total 9 columns):
 #   Column                    Non-Null Count  Dtype  
---  ------                    --------------  -----  
 0   Pregnancies               768 non-null    int64  
 1   Glucose                   768 non-null    int64  
 2   BloodPressure             768 non-null    int64  
 3   SkinThickness             768 non-null    int64  
 4   Insulin                   768 non-null    int64  
 5   BMI                       768 non-null    float64
 6   DiabetesPedigreeFunction  768 non-null    float64
 7   Age                       768 non-null    int64  
 8   Outcome                   768 non-null    int64  
dtypes: float64(2), int64(7)
memory usage: 60.0 KB
```

In [6]:
```
df.columns
```

Out[6]:
```
Index(['Pregnancies', 'Glucose', 'BloodPressure', 'SkinThickness', 'Insulin',
       'BMI', 'DiabetesPedigreeFunction', 'Age', 'Outcome'],
      dtype='object')
```

In [7]:
```
feature_matrix=df[['Pregnancies', 'Glucose', 'BloodPressure', 'SkinThickness', 'Insulin
       'BMI', 'DiabetesPedigreeFunction', 'Age']]
target_vector=df[ 'Outcome']
```

In [8]:
```
feature_matrix.shape
```

Out[8]:
```
(768, 8)
```

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

Out[9]:
```
(768,)
```

In [10]:
```
from sklearn.preprocessing import StandardScaler
```

In [11]:
```
fs=StandardScaler().fit_transform(feature_matrix)
```

In [12]:
```
logr=LogisticRegression()
logr.fit(fs,target_vector)
```

Out[12]:
```
LogisticRegression()
```

In [13]:
```
observation=[[1,2,3,4,5,6,7,8]]
```

In [14]:
```
prediction=logr.predict(observation)
print(prediction)
```

```
[1]
```

In [15]:
```
logr.classes_
```

Out[15]:
```
array([0, 1], dtype=int64)
```

In [16]:
```
logr.predict_proba(observation)[0][0]
```

Out[16]:
```
0.00029236948687560993
```

In [17]:
```
logr.predict_proba(observation)
```

Out[17]:
```
array([[2.92369487e-04, 9.99707631e-01]])
```