In [1]:

```
import pandas as pd
import numpy as np
from sklearn.linear_model import LogisticRegression
from sklearn.preprocessing import StandardScaler
```

In [2]:

```
df=pd.read_csv(r"C:\Users\pucha\OneDrive\Documents\Downloads\ionosphere.csv")
df
```

Out[2]:

	1	0	0.99539	-0.05889	0.85243	0.02306	0.83398	-0.37708	1.1	0.03760	...
0	1	0	1.00000	-0.18829	0.93035	-0.36156	-0.10868	-0.93597	1.00000	-0.04549	...
1	1	0	1.00000	-0.03365	1.00000	0.00485	1.00000	-0.12062	0.88965	0.01198	...
2	1	0	1.00000	-0.45161	1.00000	1.00000	0.71216	-1.00000	0.00000	0.00000	...
3	1	0	1.00000	-0.02401	0.94140	0.06531	0.92106	-0.23255	0.77152	-0.16399	...
4	1	0	0.02337	-0.00592	-0.09924	-0.11949	-0.00763	-0.11824	0.14706	0.06637	...
...	...	...	...	...	...	...	...	...	...	...	...
345	1	0	0.83508	0.08298	0.73739	-0.14706	0.84349	-0.05567	0.90441	-0.04622	...
346	1	0	0.95113	0.00419	0.95183	-0.02723	0.93438	-0.01920	0.94590	0.01606	...
347	1	0	0.94701	-0.00034	0.93207	-0.03227	0.95177	-0.03431	0.95584	0.02446	...
348	1	0	0.90608	-0.01657	0.98122	-0.01989	0.95691	-0.03646	0.85746	0.00110	...
349	1	0	0.84710	0.13533	0.73638	-0.06151	0.87873	0.08260	0.88928	-0.09139	...

350 rows × 35 columns

In [3]:

```
pd.set_option('display.max_rows',10000000000)
pd.set_option('display.max_columns',10000000000)
pd.set_option('display.width',95)
```

In [4]:

```
print('The DataFrame has %d Rows and %d Columns'%(df.shape))
```

```
The DataFrame has 350 Rows and 35 Columns
```

In [5]:

```
df.head()
```

Out[5]:

	1	0	0.99539	-0.05889	0.85243	0.02306	0.83398	-0.37708	1.1	0.03760	0.8524
0	1	0	1.00000	-0.18829	0.93035	-0.36156	-0.10868	-0.93597	1.00000	-0.04549	0.508
1	1	0	1.00000	-0.03365	1.00000	0.00485	1.00000	-0.12062	0.88965	0.01198	0.730
2	1	0	1.00000	-0.45161	1.00000	1.00000	0.71216	-1.00000	0.00000	0.00000	0.000
3	1	0	1.00000	-0.02401	0.94140	0.06531	0.92106	-0.23255	0.77152	-0.16399	0.527
4	1	0	0.02337	-0.00592	-0.09924	-0.11949	-0.00763	-0.11824	0.14706	0.06637	0.037

In [6]:

```
features_matrix=df.iloc[:,0:34]
```

In [7]:

```
target_vector=df.iloc[:,-1]
```

In [8]:

```
print('The Features Matrix Has %d Rows and %d Columns'%(features_matrix.shape))
print('The Target Matrix Has %d Rows and %d Columns'%(np.array(target_vector).reshape
```

```
The Features Matrix Has 350 Rows and 34 Columns
The Target Matrix Has 350 Rows and 1 Columns
```

In [9]:

```
features_matrix_standardized=StandardScaler().fit_transform(features_matrix)
```

In [22]:

```
algorithm =LogisticRegression(penalty =None,dual =False,tol=1e-4,C=1.0,fit_intercept
solver = 'lbfgs',max_iter =1000,multi_class ='auto',verbose=0, warm_start = False, n_
```

In [23]:

```
Logistic_Regression_Model=algorithm.fit(features_matrix_standardized,target_vector)
```

In [29]:

```
observation=[[1,0,0.99539,-0.05889,0.8524299999999999,0.02306,0.8337999999999999,-0.377
             0.8524299999999999,-0.17755,0.56755,-0.44945,0.60536,-0.38223,0.8435600
             0.36946,-0.47357,0.56811,-0.51171,0.4107800000000003,-0.4616800000000003
```

In [30]:

```
predictions=Logistic_Regression_Model.predict(observation)
print('The Model Predicted The Observation To Belong To Class %s'%(predictions))
```

```
The Model Predicted The Observation To Belong To Class ['g']
```

In [32]:

```
print('The Algorithm Was trained to predict one of two classes:%s'%(algorithm.classes
```

```
The Algorithm Was trained to predict one of two classes:['b' 'g']
```

In [33]:

```
print("""The model says the probability of the observation we passed belonging to cla
print()
print("""The model says the probability of the observation we passed belonging to cla
```

```
The model says the probability of the observation we passed belonging t
o class['b']is 3.834551231873817e-06

The model says the probability of the observation we passed belonging t
o class['b']is 0.9999961654487681
```

In [ ]: