

```
In [3]: import pandas as pd
import numpy as np
from sklearn.linear_model import LogisticRegression
from sklearn.preprocessing import StandardScaler
```

```
In [4]: df=pd.read_csv(r"C:\Users\arshiha\Downloads\archive.zip")
df
```

```
Out[4]:
```

	1	0	0.99539	-0.05889	0.85243	0.02306	0.83398	-0.37708	1.1	0.03760	...	-0.51171	0.41078	-0.46168	0.21266	-0.34
0	1	0	1.00000	-0.18829	0.93035	-0.36156	-0.10868	-0.93597	1.00000	-0.04549	...	-0.26569	-0.20468	-0.18401	-0.19040	-0.11
1	1	0	1.00000	-0.03365	1.00000	0.00485	1.00000	-0.12062	0.88965	0.01198	...	-0.40220	0.58984	-0.22145	0.43100	-0.17
2	1	0	1.00000	-0.45161	1.00000	1.00000	0.71216	-1.00000	0.00000	0.00000	...	0.90695	0.51613	1.00000	1.00000	-0.20
3	1	0	1.00000	-0.02401	0.94140	0.06531	0.92106	-0.23255	0.77152	-0.16399	...	-0.65158	0.13290	-0.53206	0.02431	-0.62
4	1	0	0.02337	-0.00592	-0.09924	-0.11949	-0.00763	-0.11824	0.14706	0.06637	...	-0.01535	-0.03240	0.09223	-0.07859	0.00
...
345	1	0	0.83508	0.08298	0.73739	-0.14706	0.84349	-0.05567	0.90441	-0.04622	...	-0.04202	0.83479	0.00123	1.00000	0.12
346	1	0	0.95113	0.00419	0.95183	-0.02723	0.93438	-0.01920	0.94590	0.01606	...	0.01361	0.93522	0.04925	0.93159	0.08
347	1	0	0.94701	-0.00034	0.93207	-0.03227	0.95177	-0.03431	0.95584	0.02446	...	0.03193	0.92489	0.02542	0.92120	0.02
348	1	0	0.90608	-0.01657	0.98122	-0.01989	0.95691	-0.03646	0.85746	0.00110	...	-0.02099	0.89147	-0.07760	0.82983	-0.17
349	1	0	0.84710	0.13533	0.73638	-0.06151	0.87873	0.08260	0.88928	-0.09139	...	-0.15114	0.81147	-0.04822	0.78207	-0.00

350 rows × 35 columns



```
In [5]: pd.set_option('display.max_rows',10000000000)
pd.set_option('display.max_columns',10000000000)
pd.set_option('display.width',95)
```

```
In [6]: print('This DataFrame has %d Rows and %d columns'%(df.shape))
```

This DataFrame has 350 Rows and 35 columns

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

```
Out[7]:
```

	1	0	0.99539	-0.05889	0.85243	0.02306	0.83398	-0.37708	1.1	0.03760	0.85243.1	-0.17755	0.59755	-0.44945	0.60536	-0.04572
0	1	0	1.00000	-0.18829	0.93035	-0.36156	-0.10868	-0.93597	1.00000	-0.04549	0.50874	-0.67743	0.34432	-0.69707	-0.51685	-0.04572
1	1	0	1.00000	-0.03365	1.00000	0.00485	1.00000	-0.12062	0.88965	0.01198	0.73082	0.05346	0.85443	0.00827	0.54591	-0.04572
2	1	0	1.00000	-0.45161	1.00000	1.00000	0.71216	-1.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	-1.00000	-0.04572
3	1	0	1.00000	-0.02401	0.94140	0.06531	0.92106	-0.23255	0.77152	-0.16399	0.52798	-0.20275	0.56409	-0.00712	0.34395	-0.04572
4	1	0	0.02337	-0.00592	-0.09924	-0.11949	-0.00763	-0.11824	0.14706	0.06637	0.03786	-0.06302	0.00000	0.00000	-0.04572	-0.04572

```
In [8]: features_matrix=df.iloc[:, 0:34]
```

```
In [9]: target_vector=df.iloc[:, -1]
```

```
In [12]: print('The Features Matrix Has %d Rows And %d Column(s)'%(features_matrix.shape))
print('Features Matrix Has %d Rows And %d Column(s)'%(np.array(target_vector).reshape(-1,1).shape))
```

The Features Matrix Has 350 Rows And 34 Column(s)
Features Matrix Has 350 Rows And 1 Column(s)

```
In [15]: features_matrix_standardized=StandardScaler().fit_transform(features_matrix)
```

```
In [26]: algorithm=LogisticRegression(penalty=None,dual=False,tol=1e-4,C=1.0,fit_intercept=True,intercept_scaling=1,c
```

```
In [27]: Logistic_Regression_Model = algorithm.fit(features_matrix_standardized,target_vector)
```

C:\Users\arshiha\AppData\Local\Programs\Python\Python311\Lib\site-packages\sklearn\linear_model_logistic.py:458: ConvergenceWarning: lbfgs failed to converge (status=1):
STOP: TOTAL NO. of ITERATIONS REACHED LIMIT.

Increase the number of iterations (max_iter) or scale the data as shown in:

<https://scikit-learn.org/stable/modules/preprocessing.html> (<https://scikit-learn.org/stable/modules/preprocessing.html>)

Please also refer to the documentation for alternative solver options:

https://scikit-learn.org/stable/modules/linear_model.html#logistic-regression (https://scikit-learn.org/stable/modules/linear_model.html#logistic-regression)

```
n_iter_i = _check_optimize_result(
```

```
In [28]: observation=[[1,0,0.99539,-0.05889,0.8524299999999999,0.02306,0.8339799999999999,-0.37708,1.0,0.0376,0.852429
0.605316,-0.38223,0.8435600000000001,-0.38542,0.58212,-0.32192,0.56971,-0.29674,0.36946,-0.47357
0.4107800000000003,-0.4616800000000003,0.21266,-0.3409,0.42267,-0.54487,0.18641,-0.453]]
```

```
In [29]: 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 [31]: print('The Algorithm Was Trained To Predict One Of The Two Classes:%s'%(algorithm.classes_))
```

The Algorithm Was Trained To Predict One Of The Two Classes:['b' 'g']

```
In [32]: print("""The Model Says The Probability Of The Observation We Passed Belonging To Class['b'] is %s""%(algorithm.predict_proba(observation)[0][0]))
print()
print("""The Model Says The Probabiliy Of The Observation We Passed Belonging To Class['g'] is %s""%(algorithm.predict_proba(observation)[0][1]))
```

The Model Says The Probability Of The Observation We Passed Belonging To Class['b'] is 5.971150877803755e-05

The Model Says The Probabiliy Of The Observation We Passed Belonging To Class['g'] is 0.999940288491222

In []: