import Libraries

In [23]:

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

import Linear Regression

In [37]:

```
from sklearn.linear_model import LogisticRegression
```

In [38]:

```
lgr=LogisticRegression()
```

Select Required data from certain columns

In [42]:

```
a=pd.read_csv("titanic.csv")
a
```

Out[42]:

	PassengerId	Survived	Pclass	Name	Sex	Age	SibSp	Parch	Ticket	Far
0	1	0	3	Braund, Mr. Owen Harris	male	22.0	1	0	A/5 21171	7.250
1	2	1	1	Cumings, Mrs. John Bradley (Florence Briggs Th...	female	38.0	1	0	PC 17599	71.283
2	3	1	3	Heikkinen, Miss. Laina	female	26.0	0	0	STON/O2. 3101282	7.925
3	4	1	1	Futrelle, Mrs. Jacques Heath (Lily May Peel)	female	35.0	1	0	113803	53.100
4	5	0	3	Allen, Mr. William Henry	male	35.0	0	0	373450	8.050
...	...	...	...	...	...	...	...	...	...	.
886	887	0	2	Montvila, Rev. Juozas	male	27.0	0	0	211536	13.000
887	888	1	1	Graham, Miss. Margaret Edith	female	19.0	0	0	112053	30.000
888	889	0	3	Johnston, Miss. Catherine Helen "Carrie"	female	NaN	1	2	W./C. 6607	23.450
889	890	1	1	Behr, Mr. Karl Howell	male	26.0	0	0	111369	30.000
890	891	0	3	Dooley, Mr. Patrick	male	32.0	0	0	370376	7.750

891 rows × 12 columns

In [43]:

```
b=pd.read_csv("titanic_test.csv")
b
```

Out[43]:

	PassengerId	Pclass	Name	Sex	Age	SibSp	Parch	Ticket	Fare	Cab
0	892	3	Kelly, Mr. James	male	34.5	0	0	330911	7.8292	Na
1	893	3	Wilkes, Mrs. James (Ellen Needs)	female	47.0	1	0	363272	7.0000	Na
2	894	2	Myles, Mr. Thomas Francis	male	62.0	0	0	240276	9.6875	Na
3	895	3	Wirz, Mr. Albert	male	27.0	0	0	315154	8.6625	Na
4	896	3	Hirvonen, Mrs. Alexander (Helga E Lindqvist)	female	22.0	1	1	3101298	12.2875	Na
...	...	...	...	...	...	...	...	...	...	
413	1305	3	Spector, Mr. Woolf	male	NaN	0	0	A.5. 3236	8.0500	Na
414	1306	1	Oliva y Ocana, Dona. Fermina	female	39.0	0	0	PC 17758	108.9000	C1(
415	1307	3	Saether, Mr. Simon Sivertsen	male	38.5	0	0	SOTON/O.Q. 3101262	7.2500	Na
416	1308	3	Ware, Mr. Frederick	male	NaN	0	0	359309	8.0500	Na
417	1309	3	Peter, Master. Michael J	male	NaN	1	1	2668	22.3583	Na

418 rows × 11 columns

In [45]:

```
c=a.dropna()
```

In [46]:

```
d=b.dropna()
```

In [47]:

```
c.columns
```

Out[47]:

```
Index(['PassengerId', 'Survived', 'Pclass', 'Name', 'Sex', 'Age', 'SibSp',
       'Parch', 'Ticket', 'Fare', 'Cabin', 'Embarked'],
      dtype='object')
```

In [80]:

```
fm=c[['PassengerId', 'Survived','Age','SibSp','Parch','Fare' ]]
tv=c[['Embarked']]
```

Shape

In [81]:

```
fm.shape
```

Out[81]:

```
(183, 6)
```

In [82]:

```
tv.shape
```

Out[82]:

```
(183, 1)
```

To make the data in order (feature matrix)

In [83]:

```
from sklearn.preprocessing import StandardScaler
```

In [84]:

```
fs=StandardScaler().fit_transform(fm)
```

Imply Logistic Regression

In [85]:

```
lgr.fit(fs,tv)
```

```
C:\ProgramData\Anaconda3\lib\site-packages\sklearn\utils\validation.py:63:
DataConversionWarning: A column-vector y was passed when a 1d array was ex
pected. Please change the shape of y to (n_samples, ), for example using r
avel().
  return f(*args, **kwargs)
```

Out[85]:

```
LogisticRegression()
```

In [86]:

```
d.info
```

Out[86]:

```
<bound method DataFrame.info of      PassengerId  Pclass
Name  \
12           904       1      Snyder, Mrs. John Pillsbury (Nelle Stevenso
n)
14           906       1  Chaffee, Mrs. Herbert Fuller (Carrie Constanc
e...
24           916       1    Ryerson, Mrs. Arthur Larned (Emily Maria Bori
e)
26           918       1                        Ostby, Miss. Helene Ragnhil
d
28           920       1                             Brady, Mr. John Bertra
m
..           ...     ...
...
404         1296       1                        Frauenthal, Mr. Isaac Geral
d
405         1297       2       Nourney, Mr. Alfred (Baron von Drachsted
t")"
407         1299       1                          Widener, Mr. George Dunto
n
411         1303       1    Minahan, Mrs. William Edward (Lillian E Thorp
e)
414         1306       1                        Oliva y Ocana, Dona. Fermin
a

        Sex   Age  SibSp  Parch         Ticket      Fare            Cabin
\
12   female  23.0      1      0          21228   82.2667              B45
14   female  47.0      1      0    W.E.P. 5734   61.1750              E31
24   female  48.0      1      3       PC 17608  262.3750  B57 B59 B63 B66
26   female  22.0      0      1         113509   61.9792              B36
28     male  41.0      0      0         113054   30.5000              A21
..      ...   ...    ...    ...            ...       ...              ...
404    male  43.0      1      0          17765   27.7208              D40
405    male  20.0      0      0  SC/PARIS 2166   13.8625              D38
407    male  50.0      1      1         113503  211.5000              C80
411  female  37.0      1      0          19928   90.0000              C78
414  female  39.0      0      0       PC 17758  108.9000             C105

    Embarked
12         S
14         S
24         C
26         C
28         S
..       ...
404        C
405        C
407        C
411        Q
414        C

[87 rows x 11 columns]>
```

In [87]:

```
d.columns
```

Out[87]:

```
Index(['PassengerId', 'Pclass', 'Name', 'Sex', 'Age', 'SibSp', 'Parch',
       'Ticket', 'Fare', 'Cabin', 'Embarked'],
      dtype='object')
```

In [88]:

```
ab=d[['PassengerId', 'Pclass','Age', 'SibSp','Parch','Fare']]
```

Prediction

In [89]:

```
pre=lgr.predict(ab)
```

In [90]:

```
print(pre)
```

```
['S' 'S' 'C' 'S' 'S' 'S' 'S' 'S' 'S' 'S' 'C' 'S' 'C' 'C' 'S' 'C' 'S' 'C'
 'C' 'S' 'C' 'S' 'S' 'S' 'S' 'S' 'C' 'S' 'S' 'S' 'S' 'C' 'S' 'C' 'S' 'S'
 'S' 'S' 'S' 'S' 'S' 'C' 'S' 'C' 'S' 'S' 'C' 'S' 'S' 'S' 'S' 'S' 'S' 'S'
 'S' 'S' 'S' 'S' 'S' 'S' 'S' 'S' 'S' 'S' 'S' 'S' 'S' 'S' 'C' 'S' 'S' 'S'
 'S' 'S' 'S' 'S' 'S' 'S' 'S' 'S' 'S' 'S' 'S' 'S' 'S' 'S' 'S' 'S']
```

To check the output var we have got

In [91]:

```
lgr.classes_
```

Out[91]:

```
array(['C', 'Q', 'S'], dtype=object)
```

Prediction in Probablity value

In [92]:

```
lgr.predict_proba(ab)[0][1]
```

Out[92]:

```
1.8438585166969872e-115
```

In [ ]:

```
```