In [2]:
```
import pandas as pd
```

In [3]:
```
import warnings
warnings.filterwarnings("ignore")
```

In [4]:
```
data=pd.read_csv("/home/placement/Downloads/Titanic Dataset.csv")
```

In [5]:
```
data.describe()
```

Out[5]:

	PassengerId	Survived	Pclass	Age	SibSp	Parch	Fare
count	891.000000	891.000000	891.000000	714.000000	891.000000	891.000000	891.000000
mean	446.000000	0.383838	2.308642	29.699118	0.523008	0.381594	32.204208
std	257.353842	0.486592	0.836071	14.526497	1.102743	0.806057	49.693429
min	1.000000	0.000000	1.000000	0.420000	0.000000	0.000000	0.000000
25%	223.500000	0.000000	2.000000	20.125000	0.000000	0.000000	7.910400
50%	446.000000	0.000000	3.000000	28.000000	0.000000	0.000000	14.454200
75%	668.500000	1.000000	3.000000	38.000000	1.000000	0.000000	31.000000
max	891.000000	1.000000	3.000000	80.000000	8.000000	6.000000	512.329200

In [6]:
```
data.isna().sum()
```

Out[6]:
```
PassengerId      0
Survived         0
Pclass           0
Name             0
Sex              0
Age            177
SibSp            0
Parch            0
Ticket           0
Fare             0
Cabin          687
Embarked         2
dtype: int64
```

In [7]:
```
data.head(10)
```

Out[7]:

	PassengerId	Survived	Pclass	Name	Sex	Age	SibSp	Parch	Ticket	Fare	Cabin	Embarked
0	1	0	3	Braund, Mr. Owen Harris	male	22.0	1	0	A/5 21171	7.2500	NaN	S
1	2	1	1	Cumings, Mrs. John Bradley (Florence Briggs Th...	female	38.0	1	0	PC 17599	71.2833	C85	C
2	3	1	3	Heikkinen, Miss. Laina	female	26.0	0	0	STON/O2. 3101282	7.9250	NaN	S
3	4	1	1	Futrelle, Mrs. Jacques Heath (Lily May Peel)	female	35.0	1	0	113803	53.1000	C123	S
4	5	0	3	Allen, Mr. William Henry	male	35.0	0	0	373450	8.0500	NaN	S
5	6	0	3	Moran, Mr. James	male	NaN	0	0	330877	8.4583	NaN	Q
6	7	0	1	McCarthy, Mr. Timothy J	male	54.0	0	0	17463	51.8625	E46	S
7	8	0	3	Palsson, Master. Gosta Leonard	male	2.0	3	1	349909	21.0750	NaN	S
8	9	1	3	Johnson, Mrs. Oscar W (Elisabeth Vilhelmina Berg)	female	27.0	0	2	347742	11.1333	NaN	S
9	10	1	2	Nasser, Mrs. Nicholas (Adele Achem)	female	14.0	1	0	237736	30.0708	NaN	C

```
In [8]:  data['Pclass'].unique()

Out[8]:  array([3, 1, 2])
```

```
In [9]:  data['Survived'].unique()

Out[9]:  array([0, 1])
```

```
In [10]: data['SibSp'].unique()

Out[10]: array([1, 0, 3, 4, 2, 5, 8])
```

In [11]:
```
data['Fare'].unique()
```

Out[11]:
```
array([  7.25  ,  71.2833,   7.925 ,  53.1   ,   8.05  ,   8.4583,
        51.8625,  21.075 ,  11.1333,  30.0708,  16.7   ,  26.55  ,
        31.275 ,   7.8542,  16.    ,  29.125 ,  13.    ,  18.    ,
         7.225 ,  26.    ,   8.0292,  35.5   ,  31.3875, 263.    ,
         7.8792,   7.8958,  27.7208, 146.5208,   7.75  ,  10.5   ,
        82.1708,  52.    ,   7.2292,  11.2417,   9.475 ,  21.    ,
        41.5792,  15.5   ,  21.6792,  17.8   ,  39.6875,   7.8   ,
        76.7292,  61.9792,  27.75  ,  46.9   ,  80.    ,  83.475 ,
        27.9   ,  15.2458,   8.1583,   8.6625,  73.5   ,  14.4542,
        56.4958,   7.65  ,  29.    ,  12.475 ,   9.    ,   9.5   ,
         7.7875,  47.1   ,  15.85  ,  34.375 ,  61.175 ,  20.575 ,
        34.6542,  63.3583,  23.    ,  77.2875,   8.6542,   7.775 ,
        24.15  ,   9.825 ,  14.4583, 247.5208,   7.1417,  22.3583,
         6.975 ,   7.05  ,  14.5   ,  15.0458,  26.2833,   9.2167,
        79.2   ,   6.75  ,  11.5   ,  36.75  ,   7.7958,  12.525 ,
        66.6   ,   7.3125,  61.3792,   7.7333,  69.55  ,  16.1   ,
        15.75  ,  20.525 ,  55.    ,  25.925 ,  33.5   ,  30.6958,
        25.4667,  28.7125,   0.    ,  15.05  ,  39.    ,  22.025 ,
        50.    ,   8.4042,   6.4958,  10.4625,  18.7875,  31.    ,
       113.275 ,  27.    ,  76.2917,  90.    ,   9.35  ,  13.5   ,
         7.55  ,  26.25  ,  12.275 ,   7.125 ,  52.5542,  20.2125,
        86.5   , 512.3292,  79.65  , 153.4625, 135.6333,  19.5   ,
        29.7   ,  77.9583,  20.25  ,  78.85  ,  91.0792,  12.875 ,
         8.85  , 151.55  ,  30.5   ,  23.25  ,  12.35  , 110.8833,
       108.9   ,  24.    ,  56.9292,  83.1583, 262.375 ,  14.    ,
       164.8667, 134.5   ,   6.2375,  57.9792,  28.5   , 133.65  ,
        15.9   ,   9.225 ,  35.    ,  75.25  ,  69.3   ,  55.4417,
       211.5   ,   4.0125, 227.525 ,  15.7417,   7.7292,  12.    ,
       120.    ,  12.65  ,  18.75  ,   6.8583,  32.5   ,   7.875 ,
        14.4   ,  55.9   ,   8.1125,  81.8583,  19.2583,  19.9667,
        89.1042,  38.5   ,   7.725 ,  13.7917,   9.8375,   7.0458,
         7.5208,  12.2875,   9.5875,  49.5042,  78.2667,  15.1   ,
         7.6292,  22.525 ,  26.2875,  59.4   ,   7.4958,  34.0208,
        93.5   , 221.7792, 106.425 ,  49.5   ,  71.    ,  13.8625,
         7.8292,  39.6   ,  17.4   ,  51.4792,  26.3875,  30.    ,
        40.125 ,   8.7125,  15.    ,  33.    ,  42.4   ,  15.55  ,
        65.    ,  32.3208,   7.0542,   8.4333,  25.5875,   9.8417,
         8.1375,  10.1708, 211.3375,  57.    ,  13.4167,   7.7417,
         9.4833,   7.7375,   8.3625,  23.45  ,  25.9292,   8.6833,
         8.5167,   7.8875,  37.0042,   6.45  ,   6.95  ,   8.3   ,
         6.4375,  39.4   ,  14.1083,  13.8583,  50.4958,   5.    ,
         9.8458,  10.5167])
```

In [12]:
```
data['Parch'].unique()
```

Out[12]:
```
array([0, 1, 2, 5, 3, 4, 6])
```

In [13]:
```
data['Age'].unique()
```

Out[13]:
```
array([22.  , 38.  , 26.  , 35.  ,   nan, 54.  ,  2.  , 27.  , 14.  ,
        4.  , 58.  , 20.  , 39.  , 55.  , 31.  , 34.  , 15.  , 28.  ,
        8.  , 19.  , 40.  , 66.  , 42.  , 21.  , 18.  ,  3.  ,  7.  ,
       49.  , 29.  , 65.  , 28.5 ,  5.  , 11.  , 45.  , 17.  , 32.  ,
       16.  , 25.  ,  0.83, 30.  , 33.  , 23.  , 24.  , 46.  , 59.  ,
       71.  , 37.  , 47.  , 14.5 , 70.5 , 32.5 , 12.  ,  9.  , 36.5 ,
       51.  , 55.5 , 40.5 , 44.  ,  1.  , 61.  , 56.  , 50.  , 36.  ,
       45.5 , 20.5 , 62.  , 41.  , 52.  , 63.  , 23.5 ,  0.92, 43.  ,
       60.  , 10.  , 64.  , 13.  , 48.  ,  0.75, 53.  , 57.  , 80.  ,
       70.  , 24.5 ,  6.  ,  0.67, 30.5 ,  0.42, 34.5 , 74.  ])
```

In [14]:
```
data['Embarked'].unique()
```

Out[14]:
```
array(['S', 'C', 'Q', nan], dtype=object)
```

In [15]:
```
data1=data.drop(['PassengerId','Name','Ticket','Cabin','SibSp','Parch'],axis=1)
```

In [16]:
```
data1
```

Out[16]:
```
     Survived  Pclass     Sex   Age     Fare  Embarked
  0         0       3    male  22.0   7.2500         S
  1         1       1  female  38.0  71.2833         C
  2         1       3  female  26.0   7.9250         S
  3         1       1  female  35.0  53.1000         S
  4         0       3    male  35.0   8.0500         S
...       ...     ...     ...   ...      ...       ...
886         0       2    male  27.0  13.0000         S
887         1       1  female  19.0  30.0000         S
888         0       3  female   NaN  23.4500         S
889         1       1    male  26.0  30.0000         C
890         0       3    male  32.0   7.7500         Q

891 rows × 6 columns
```

In [17]:
```
data1['Sex']=data1['Sex'].map({'male':1,'female':0})
```

In [18]:
```
data1
```

Out[18]:

	Survived	Pclass	Sex	Age	Fare	Embarked
0	0	3	1	22.0	7.2500	S
1	1	1	0	38.0	71.2833	C
2	1	3	0	26.0	7.9250	S
3	1	1	0	35.0	53.1000	S
4	0	3	1	35.0	8.0500	S
...	...	...	...	...	...	...
886	0	2	1	27.0	13.0000	S
887	1	1	0	19.0	30.0000	S
888	0	3	0	NaN	23.4500	S
889	1	1	1	26.0	30.0000	C
890	0	3	1	32.0	7.7500	Q

891 rows × 6 columns

In [19]:
```
data1['Pclass'].unique()
```

Out[19]:
```
array([3, 1, 2])
```

In [20]:
```
data1
```

Out[20]:

	Survived	Pclass	Sex	Age	Fare	Embarked
0	0	3	1	22.0	7.2500	S
1	1	1	0	38.0	71.2833	C
2	1	3	0	26.0	7.9250	S
3	1	1	0	35.0	53.1000	S
4	0	3	1	35.0	8.0500	S
...	...	...	...	...	...	...
886	0	2	1	27.0	13.0000	S
887	1	1	0	19.0	30.0000	S
888	0	3	0	NaN	23.4500	S
889	1	1	1	26.0	30.0000	C
890	0	3	1	32.0	7.7500	Q

891 rows × 6 columns

In [21]:
```
data1.fillna(35,inplace=True)
```

In [22]:

```
data1
```

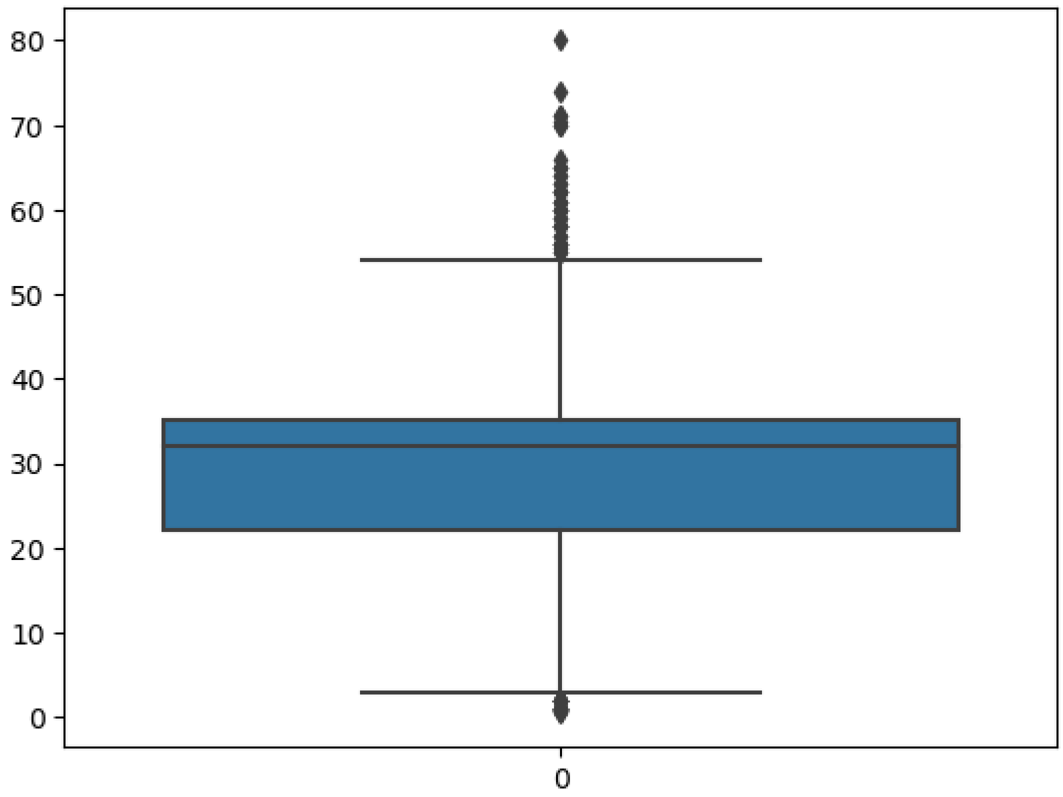
Out[22]:

	Survived	Pclass	Sex	Age	Fare	Embarked
0	0	3	1	22.0	7.2500	S
1	1	1	0	38.0	71.2833	C
2	1	3	0	26.0	7.9250	S
3	1	1	0	35.0	53.1000	S
4	0	3	1	35.0	8.0500	S
...	...	...	...	...	...	...
886	0	2	1	27.0	13.0000	S
887	1	1	0	19.0	30.0000	S
888	0	3	0	35.0	23.4500	S
889	1	1	1	26.0	30.0000	C
890	0	3	1	32.0	7.7500	Q

891 rows × 6 columns

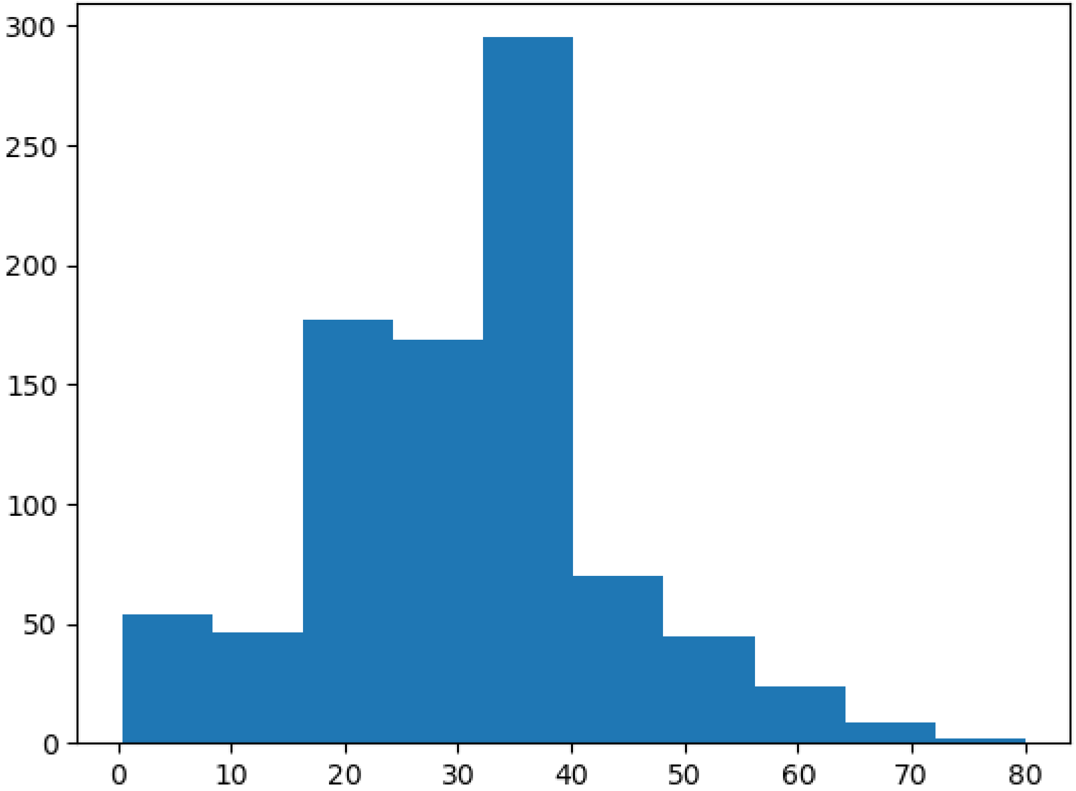
In [23]:
```
import seaborn as hh
import matplotlib.pyplot as plt
hh.boxplot(data1['Age'])
```

Out[23]:
```
<Axes: >
```



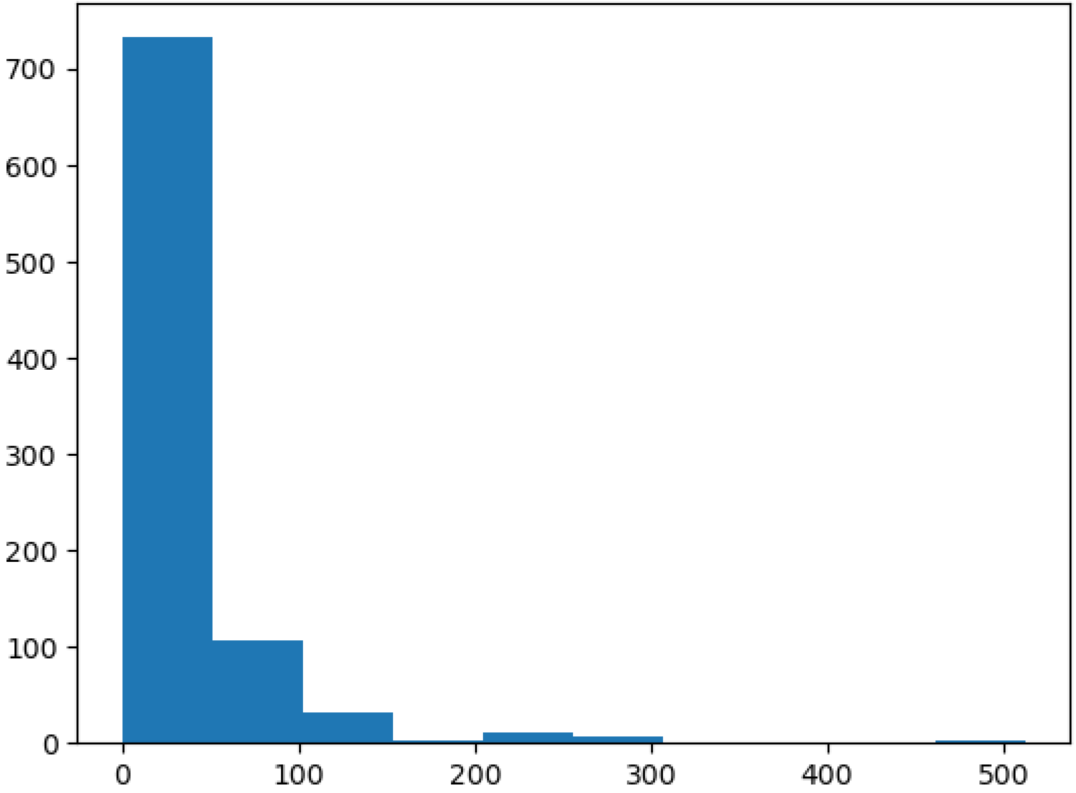
```
In [24]: plt.hist(data1['Age'])
```

```
Out[24]: (array([ 54.,  46., 177., 169., 295.,  70.,  45.,  24.,   9.,   2.]),
          array([ 0.42 ,  8.378, 16.336, 24.294, 32.252, 40.21 , 48.168, 56.126,
                 64.084, 72.042, 80.   ]),
          <BarContainer object of 10 artists>)
```



```
In [25]: plt.hist(data1['Fare'])
```

```
Out[25]: (array([732., 106.,  31.,   2.,  11.,   6.,   0.,   0.,   0.,   3.]),
          array([  0.     ,  51.23292, 102.46584, 153.69876, 204.93168, 256.1646 ,
                 307.39752, 358.63044, 409.86336, 461.09628, 512.3292 ]),
          <BarContainer object of 10 artists>)
```



In [26]:
```
data1.isna().sum()
```

Out[26]:
```
Survived    0
Pclass      0
Sex         0
Age         0
Fare        0
Embarked    0
dtype: int64
```

In [27]:
```
data1.describe()
```

Out[27]:

	Survived	Pclass	Sex	Age	Fare
count	891.000000	891.000000	891.000000	891.000000	891.000000
mean	0.383838	2.308642	0.647587	30.752155	32.204208
std	0.486592	0.836071	0.477990	13.173100	49.693429
min	0.000000	1.000000	0.000000	0.420000	0.000000
25%	0.000000	2.000000	0.000000	22.000000	7.910400
50%	0.000000	3.000000	1.000000	32.000000	14.454200
75%	1.000000	3.000000	1.000000	35.000000	31.000000
max	1.000000	3.000000	1.000000	80.000000	512.329200

In [28]:
```
data1['Age'].unique()
```

Out[28]:
```
array([22.  , 38.  , 26.  , 35.  , 54.  ,  2.  , 27.  , 14.  ,  4.  ,
       58.  , 20.  , 39.  , 55.  , 31.  , 34.  , 15.  , 28.  ,  8.  ,
       19.  , 40.  , 66.  , 42.  , 21.  , 18.  ,  3.  ,  7.  , 49.  ,
       29.  , 65.  , 28.5 ,  5.  , 11.  , 45.  , 17.  , 32.  , 16.  ,
       25.  ,  0.83, 30.  , 33.  , 23.  , 24.  , 46.  , 59.  , 71.  ,
       37.  , 47.  , 14.5 , 70.5 , 32.5 , 12.  ,  9.  , 36.5 , 51.  ,
       55.5 , 40.5 , 44.  ,  1.  , 61.  , 56.  , 50.  , 36.  , 45.5 ,
       20.5 , 62.  , 41.  , 52.  , 63.  , 23.5 ,  0.92, 43.  , 60.  ,
       10.  , 64.  , 13.  , 48.  ,  0.75, 53.  , 57.  , 80.  , 70.  ,
       24.5 ,  6.  ,  0.67, 30.5 ,  0.42, 34.5 , 74.  ])
```

In [29]:
```
data2=data1.groupby(['Age']).count()
```

In [30]:
```
data2
```

Out[30]:

Age	Survived	Pclass	Sex	Fare	Embarked
0.42	1	1	1	1	1
0.67	1	1	1	1	1
0.75	2	2	2	2	2
0.83	2	2	2	2	2
0.92	1	1	1	1	1
...	...	...	...	...	...
70.00	2	2	2	2	2
70.50	1	1	1	1	1
71.00	2	2	2	2	2
74.00	1	1	1	1	1
80.00	1	1	1	1	1

88 rows × 5 columns

In [31]:
```
list(data1)
```

Out[31]:
```
['Survived', 'Pclass', 'Sex', 'Age', 'Fare', 'Embarked']
```

In [32]:
```
data1['Pclass']=data1['Pclass'].map({1:'F',2:'S',3:'Third'})
```

In [33]:
```
data1
```

Out[33]:

	Survived	Pclass	Sex	Age	Fare	Embarked
0	0	Third	1	22.0	7.2500	S
1	1	F	0	38.0	71.2833	C
2	1	Third	0	26.0	7.9250	S
3	1	F	0	35.0	53.1000	S
4	0	Third	1	35.0	8.0500	S
...	...	...	...	...	...	...
886	0	S	1	27.0	13.0000	S
887	1	F	0	19.0	30.0000	S
888	0	Third	0	35.0	23.4500	S
889	1	F	1	26.0	30.0000	C
890	0	Third	1	32.0	7.7500	Q

891 rows × 6 columns

In [34]:
```
data1.head(5)
```

Out[34]:

	Survived	Pclass	Sex	Age	Fare	Embarked
0	0	Third	1	22.0	7.2500	S
1	1	F	0	38.0	71.2833	C
2	1	Third	0	26.0	7.9250	S
3	1	F	0	35.0	53.1000	S
4	0	Third	1	35.0	8.0500	S

In [35]:
```
data1=pd.get_dummies(data1)
```

```
In [36]: data1
```

```
Out[36]:
     Survived  Sex  Age   Fare     Pclass_F  Pclass_S  Pclass_Third  Embarked_35  Embarked_C  Embarked_Q  Embarked_S
  0         0    1  22.0   7.2500         0         0             1            0           0           0           1
  1         1    0  38.0  71.2833         1         0             0            0           1           0           0
  2         1    0  26.0   7.9250         0         0             1            0           0           0           1
  3         1    0  35.0  53.1000         1         0             0            0           0           0           1
  4         0    1  35.0   8.0500         0         0             1            0           0           0           1
...       ...  ...   ...      ...       ...       ...           ...          ...         ...         ...         ...
886         0    1  27.0  13.0000         0         1             0            0           0           0           1
887         1    0  19.0  30.0000         1         0             0            0           0           0           1
888         0    0  35.0  23.4500         0         0             1            0           0           0           1
889         1    1  26.0  30.0000         1         0             0            0           1           0           0
890         0    1  32.0   7.7500         0         0             1            0           0           1           0

891 rows × 11 columns
```

```
In [37]: data1.head(500)
```

```
Out[37]:
     Survived  Sex   Age      Fare  Pclass_F  Pclass_S  Pclass_Third  Embarked_35  Embarked_C  Embarked_Q  Embarked_S
  0         0    1  22.0    7.2500         0         0             1            0           0           0           1
  1         1    0  38.0   71.2833         1         0             0            0           1           0           0
  2         1    0  26.0    7.9250         0         0             1            0           0           0           1
  3         1    0  35.0   53.1000         1         0             0            0           0           0           1
  4         0    1  35.0    8.0500         0         0             1            0           0           0           1
...       ...  ...   ...       ...       ...       ...           ...          ...         ...         ...         ...
495         0    1  35.0   14.4583         0         0             1            0           1           0           0
496         1    0  54.0   78.2667         1         0             0            0           1           0           0
497         0    1  35.0   15.1000         0         0             1            0           0           0           1
498         0    0  25.0  151.5500         1         0             0            0           0           0           1
499         0    1  24.0    7.7958         0         0             1            0           0           0           1

500 rows × 11 columns
```

In [38]:

```
cor_mat=data1.corr()
cor_mat
```

Out[38]:

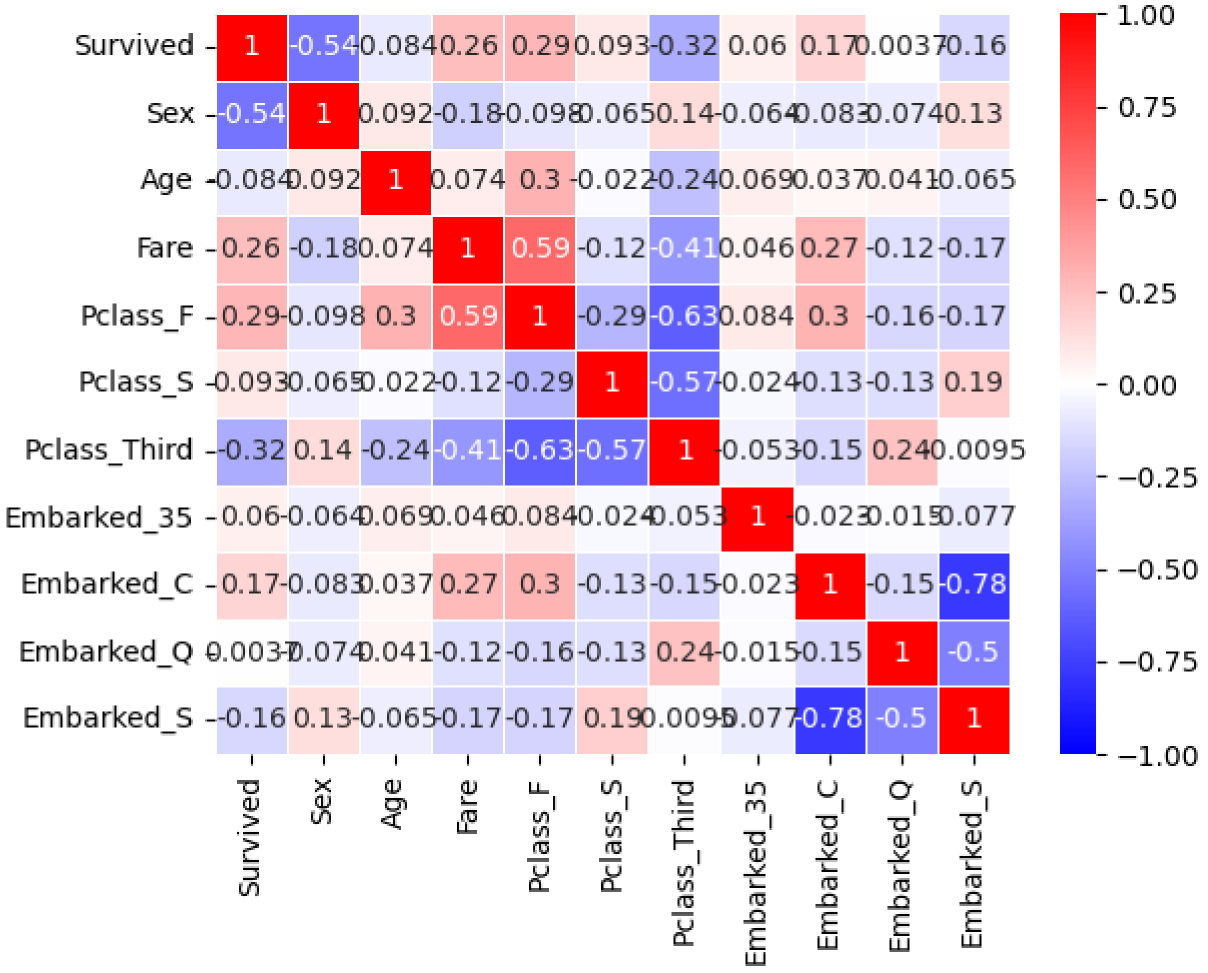
	Survived	Sex	Age	Fare	Pclass_F	Pclass_S	Pclass_Third	Embarked_35	Embarked_C	Embarked_Q	Embarked
Survived	1.000000	-0.543351	-0.083713	0.257307	0.285904	0.093349	-0.322308	0.060095	0.168240	0.003650	-0.1556
Sex	-0.543351	1.000000	0.091930	-0.182333	-0.098013	-0.064746	0.137143	-0.064296	-0.082853	-0.074115	0.1257
Age	-0.083713	0.091930	1.000000	0.074199	0.302149	-0.022021	-0.242412	0.069343	0.036953	0.040528	-0.0650
Fare	0.257307	-0.182333	0.074199	1.000000	0.591711	-0.118557	-0.413333	0.045646	0.269335	-0.117216	-0.1666
Pclass_F	0.285904	-0.098013	0.302149	0.591711	1.000000	-0.288585	-0.626738	0.083847	0.296423	-0.155342	-0.1703
Pclass_S	0.093349	-0.064746	-0.022021	-0.118557	-0.288585	1.000000	-0.565210	-0.024197	-0.125416	-0.127301	0.1920
Pclass_Third	-0.322308	0.137143	-0.242412	-0.413333	-0.626738	-0.565210	1.000000	-0.052550	-0.153329	0.237449	-0.0095
Embarked_35	0.060095	-0.064296	0.069343	0.045646	0.083847	-0.024197	-0.052550	1.000000	-0.022864	-0.014588	-0.0765
Embarked_C	0.168240	-0.082853	0.036953	0.269335	0.296423	-0.125416	-0.153329	-0.022864	1.000000	-0.148258	-0.7783
Embarked_Q	0.003650	-0.074115	0.040528	-0.117216	-0.155342	-0.127301	0.237449	-0.014588	-0.148258	1.000000	-0.4966
Embarked_S	-0.155660	0.125722	-0.065062	-0.166603	-0.170379	0.192061	-0.009511	-0.076588	-0.778359	-0.496624	1.0000

In [39]:
```
cor=data1.corr()
cor
```

Out[39]:
```
              Survived       Sex       Age      Fare  Pclass_F  Pclass_S  Pclass_Third  Embarked_35  Embarked_C  Embarked_Q  Embarked
    Survived  1.000000 -0.543351 -0.083713  0.257307  0.285904  0.093349     -0.322308     0.060095    0.168240    0.003650   -0.1556
         Sex -0.543351  1.000000  0.091930 -0.182333 -0.098013 -0.064746      0.137143    -0.064296   -0.082853   -0.074115    0.1257
         Age -0.083713  0.091930  1.000000  0.074199  0.302149 -0.022021     -0.242412     0.069343    0.036953    0.040528   -0.0650
        Fare  0.257307 -0.182333  0.074199  1.000000  0.591711 -0.118557     -0.413333     0.045646    0.269335   -0.117216   -0.1666
    Pclass_F  0.285904 -0.098013  0.302149  0.591711  1.000000 -0.288585     -0.626738     0.083847    0.296423   -0.155342   -0.1703
    Pclass_S  0.093349 -0.064746 -0.022021 -0.118557 -0.288585  1.000000     -0.565210    -0.024197   -0.125416   -0.127301    0.1920
Pclass_Third -0.322308  0.137143 -0.242412 -0.413333 -0.626738 -0.565210      1.000000    -0.052550   -0.153329    0.237449   -0.0095
 Embarked_35  0.060095 -0.064296  0.069343  0.045646  0.083847 -0.024197     -0.052550     1.000000   -0.022864   -0.014588   -0.0765
  Embarked_C  0.168240 -0.082853  0.036953  0.269335  0.296423 -0.125416     -0.153329    -0.022864    1.000000   -0.148258   -0.7783
  Embarked_Q  0.003650 -0.074115  0.040528 -0.117216 -0.155342 -0.127301      0.237449    -0.014588   -0.148258    1.000000   -0.4966
  Embarked_S -0.155660  0.125722 -0.065062 -0.166603 -0.170379  0.192061     -0.009511    -0.076588   -0.778359   -0.496624    1.0000
```

In [40]:
```
import seaborn as sns
sns.heatmap(cor,vmax=1,vmin=-1,annot=True,linewidths=.5,cmap='bwr')
```

Out[40]:
```
<Axes: >
```



	Survived	Sex	Age	Fare	Pclass_F	Pclass_S	Pclass_Third	Embarked_35	Embarked_C	Embarked_Q	Embarked_S
Survived	1	-0.54	-0.084	0.26	0.29	0.093	-0.32	0.06	0.17	0.0037	-0.16
Sex	-0.54	1	0.092	-0.18	-0.098	-0.065	0.14	-0.064	-0.083	-0.074	0.13
Age	-0.084	0.092	1	0.074	0.3	-0.022	-0.24	0.069	0.037	0.041	-0.065
Fare	0.26	-0.18	0.074	1	0.59	-0.12	-0.41	0.046	0.27	-0.12	-0.17
Pclass_F	0.29	-0.098	0.3	0.59	1	-0.29	-0.63	0.084	0.3	-0.16	-0.17
Pclass_S	0.093	-0.065	-0.022	-0.12	-0.29	1	-0.57	-0.024	-0.13	-0.13	0.19
Pclass_Third	-0.32	0.14	-0.24	-0.41	-0.63	-0.57	1	-0.053	-0.15	0.24	0.0095
Embarked_35	0.06	-0.064	0.069	0.046	0.084	-0.024	-0.053	1	-0.023	-0.015	-0.077
Embarked_C	0.17	-0.083	0.037	0.27	0.3	-0.13	-0.15	-0.023	1	-0.15	-0.78
Embarked_Q	0.0037	-0.074	0.041	-0.12	-0.16	-0.13	0.24	-0.015	-0.15	1	-0.5
Embarked_S	-0.16	0.13	-0.065	-0.17	-0.17	0.19	0.0095	-0.077	-0.78	-0.5	1

```
In [41]: data.groupby('Survived').count()
```

```
Out[41]:
          PassengerId  Pclass  Name  Sex  Age  SibSp  Parch  Ticket  Fare  Cabin  Embarked
Survived
       0          549     549   549  549  424    549    549     549   549     68       549
       1          342     342   342  342  290    342    342     342   342    136       340
```

```
In [42]: y=data1['Survived']
         x=data1.drop('Survived',axis=1)
```

In [49]:
```
x_test
```

Out[49]:

	Sex	Age	Fare	Pclass_F	Pclass_S	Pclass_Third	Embarked_35	Embarked_C	Embarked_Q	Embarked_S
709	1	35.0	15.2458	0	0	1	0	1	0	0
439	1	31.0	10.5000	0	1	0	0	0	0	1
840	1	20.0	7.9250	0	0	1	0	0	0	1
720	0	6.0	33.0000	0	1	0	0	0	0	1
39	0	14.0	11.2417	0	0	1	0	1	0	0
...	...	...	...	...	...	...	...	...	...	...
715	1	19.0	7.6500	0	0	1	0	0	0	1
525	1	40.5	7.7500	0	0	1	0	0	1	0
381	0	1.0	15.7417	0	0	1	0	1	0	0
140	0	35.0	15.2458	0	0	1	0	1	0	0
173	1	21.0	7.9250	0	0	1	0	0	0	1

295 rows × 10 columns

In [43]:
```
x
```

Out[43]:

	Sex	Age	Fare	Pclass_F	Pclass_S	Pclass_Third	Embarked_35	Embarked_C	Embarked_Q	Embarked_S
0	1	22.0	7.2500	0	0	1	0	0	0	1
1	0	38.0	71.2833	1	0	0	0	1	0	0
2	0	26.0	7.9250	0	0	1	0	0	0	1
3	0	35.0	53.1000	1	0	0	0	0	0	1
4	1	35.0	8.0500	0	0	1	0	0	0	1
...	...	...	...	...	...	...	...	...	...	...
886	1	27.0	13.0000	0	1	0	0	0	0	1
887	0	19.0	30.0000	1	0	0	0	0	0	1
888	0	35.0	23.4500	0	0	1	0	0	0	1
889	1	26.0	30.0000	1	0	0	0	1	0	0
890	1	32.0	7.7500	0	0	1	0	0	1	0

891 rows × 10 columns

In [44]:
```
y
```

Out[44]:
```
0      0
1      1
2      1
3      1
4      0
      ..
886    0
887    1
888    0
889    1
890    0
Name: Survived, Length: 891, dtype: int64
```

In [45]:

```
from sklearn.model_selection import train_test_split
x_train,x_test,y_train,y_test=train_test_split(x,y,test_size=0.33,random_state=42)
```

In [46]:

```
from sklearn.linear_model import LogisticRegression
classifier=LogisticRegression()
classifier.fit(x_train,y_train)# command for traning / fitting the mode
```

Out[46]:

```
LogisticRegression()
```

In a Jupyter environment, please rerun this cell to show the HTML representation or trust the notebook.
On GitHub, the HTML representation is unable to render, please try loading this page with nbviewer.org.

In [47]:

```
y_pred=classifier.predict(x_test)
```

In [48]:

```
y_pred
```

Out[48]:

```
array([0, 0, 0, 1, 1, 1, 1, 0, 1, 1, 0, 0, 0, 0, 0, 1, 0, 1, 0, 0, 0, 0,
       1, 0, 0, 0, 0, 0, 0, 0, 0, 1, 0, 0, 0, 0, 0, 1, 1, 0, 0, 0, 0, 0,
       1, 0, 0, 0, 0, 0, 1, 1, 0, 0, 0, 1, 0, 1, 1, 1, 0, 1, 1, 0, 0, 1,
       0, 0, 0, 1, 1, 1, 1, 1, 0, 0, 1, 1, 1, 0, 0, 1, 1, 0, 0, 0, 1, 1,
       0, 0, 0, 1, 0, 0, 0, 0, 0, 0, 1, 0, 0, 0, 1, 0, 0, 0, 1, 0, 0, 0,
       1, 0, 1, 0, 0, 0, 0, 0, 1, 0, 0, 1, 1, 0, 0, 0, 1, 1, 1, 0, 1, 0,
       0, 1, 0, 1, 1, 0, 0, 1, 0, 1, 0, 0, 1, 1, 0, 0, 1, 0, 0, 0, 0, 1,
       0, 0, 0, 1, 1, 1, 0, 0, 0, 1, 0, 0, 0, 1, 0, 0, 1, 1, 0, 1, 0, 0,
       0, 1, 1, 0, 0, 0, 0, 1, 1, 0, 0, 0, 0, 1, 0, 0, 0, 0, 1, 1, 1, 0,
       1, 1, 0, 0, 1, 0, 0, 1, 0, 0, 0, 0, 1, 0, 1, 0, 0, 0, 1, 0, 1, 0,
       0, 1, 0, 0, 0, 1, 0, 1, 1, 0, 0, 1, 0, 1, 0, 1, 1, 1, 1, 0, 0, 1,
       0, 1, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 1, 0, 1, 1, 0, 1, 0,
       0, 0, 0, 0, 0, 0, 1, 0, 0, 0, 1, 0, 0, 0, 1, 0, 0, 0, 1, 0, 0, 0,
       1, 0, 0, 0, 0, 0, 1, 1, 0])
```

In [50]:

```
from sklearn.metrics import confusion_matrix
confusion_matrix(y_test,y_pred)
```

Out[50]:

```
array([[155,  20],
       [ 37,  83]])
```

In [51]:

```
from sklearn.metrics import accuracy_score
accuracy_score(y_test,y_pred)
```

Out[51]:

```
0.8067796610169492
```

In [ ]: