importing data set from kaggle

In [1]:

```
# This Python 3 environment comes with many helpful analytics libraries installed
# It is defined by the kaggle/python Docker image: https://github.com/kaggle/docker-python
# For example, here's several helpful packages to load

import numpy as np # linear algebra
import pandas as pd # data processing, CSV file I/O (e.g. pd.read_csv)

# Input data files are available in the read-only "../input/" directory
# For example, running this (by clicking run or pressing Shift+Enter) will list all files u
nder the input directory

import os
for dirname, _, filenames in os.walk('/kaggle/input'):
    for filename in filenames:
        print(os.path.join(dirname, filename))

# You can write up to 5GB to the current directory (/kaggle/working/) that gets preserved a
s output when you create a version using "Save & Run All"
# You can also write temporary files to /kaggle/temp/, but they won't be saved outside of t
he current session
```

```
/kaggle/input/titanic/gender_submission.csv
/kaggle/input/titanic/test.csv
/kaggle/input/titanic/train.csv
```

reading the data set to dataframe

In [2]:

```
df=pd.read_csv("../input/titanic/train.csv")
df
```

Out[2]:

	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
...	...	...	...	...	...	...	...	...	...	...	...	...
886	887	0	2	Montvila, Rev. Juozas	male	27.0	0	0	211536	13.0000	NaN	S
887	888	1	1	Graham, Miss. Margaret Edith	female	19.0	0	0	112053	30.0000	B42	S
888	889	0	3	Johnston, Miss. Catherine Helen "Carrie"	female	NaN	1	2	W./C. 6607	23.4500	NaN	S
889	890	1	1	Behr, Mr. Karl Howell	male	26.0	0	0	111369	30.0000	C148	C
890	891	0	3	Dooley, Mr. Patrick	male	32.0	0	0	370376	7.7500	NaN	Q

891 rows × 12 columns

checking for null values

In [3]:

```
Null=[]
for i in df:
    Null.append((i,df[i].isna().mean()*100))
Null=pd.DataFrame(Null,columns=['class','per'])
Null
```

Out[3]:

	class	per
0	PassengerId	0.000000
1	Survived	0.000000
2	Pclass	0.000000
3	Name	0.000000
4	Sex	0.000000
5	Age	19.865320
6	SibSp	0.000000
7	Parch	0.000000
8	Ticket	0.000000
9	Fare	0.000000
10	Cabin	77.104377
11	Embarked	0.224467

we can remove canbin as it has 77% of null values

Name and Ticke will not be useful in decison making so we can drop them too

In [4]:

```
df=df.drop(["Cabin","Name","Ticket"],axis=1)
df.dtypes
```

Out[4]:

```
PassengerId      int64
Survived         int64
Pclass           int64
Sex             object
Age            float64
SibSp            int64
Parch            int64
Fare           float64
Embarked        object
dtype: object
```

filling other na values with mode

In [5]:

```
df=df.fillna(df.mode)
df.isna().sum()
```

Out[5]:

```
PassengerId    0
Survived       0
Pclass         0
Sex            0
```

```
Age          0
SibSp        0
Parch        0
Fare         0
Embarked     0
dtype: int64
```

Handling Object data type

label encoding the Sex column

In [6]:

```
df.Sex.unique()
```

Out[6]:

```
array(['male', 'female'], dtype=object)
```

In [7]:

```
df.Sex=df.Sex.replace("male",1)
df.Sex=df.Sex.replace("female",2)
df.Sex.unique()
```

Out[7]:

```
array([1, 2])
```

in Embarked column values are stored with unwanted values shown below

In [8]:

```
df.Embarked = df.Embarked.apply(str)
k=df.Embarked.unique()
k[-1]
```

Out[8]:

```
'<bound method DataFrame.mode of       PassengerId  Survived  Pclass     Sex   Age  SibSp  
Parch     Fare  \\\n0            1         0       3    male  22.0      1      0   7.25
00   \n1            2         1       1  female  38.0      1      0  71.2833   \n2      
3         1       3  female  26.0      0      0   7.9250   \n3            4         1  
1  female  35.0      1      0  53.1000   \n4            5         0       3    male  35.
0      0      0   8.0500   \n..         ...       ...     ...     ...   ...    ...    ..
.       ...   \n886          887         0       2    male  27.0      0      0  13.0000   \
n887          888         1       1  female  19.0      0      0  30.0000   \n888      
889         0       3  female   NaN      1      2  23.4500   \n889          890         1  
1    male  26.0      0      0  30.0000   \n890          891         0       3    male  32.
0      0      0   7.7500   \n\n     Embarked  \n0           S  \n1           C  \n2      
S  \n3           S  \n4           S  \n..        ...  \n886         S  \n887         S  \n888      
S  \n889         C  \n890         Q  \n\n[891 rows x 9 columns]>'
```

label encoding the column and replacing unwanted values with most frequent value i.e. 'S'

In [9]:

```
df.Embarked=df.Embarked.replace('S',1)
df.Embarked=df.Embarked.replace('C',2)
df.Embarked=df.Embarked.replace('Q',3)
df.Embarked=df.Embarked.replace(k[-1],1)
```

similar problem with Age attribute, so replacing the unk value with 28 and converting into float

In [10]:

```
df.Age=df.Age.apply(str)
```

```
k=df.Age.unique()
df.Age=df.Age.replace(k[4],"28.0")
df.Age=df.Age.apply(float)
```

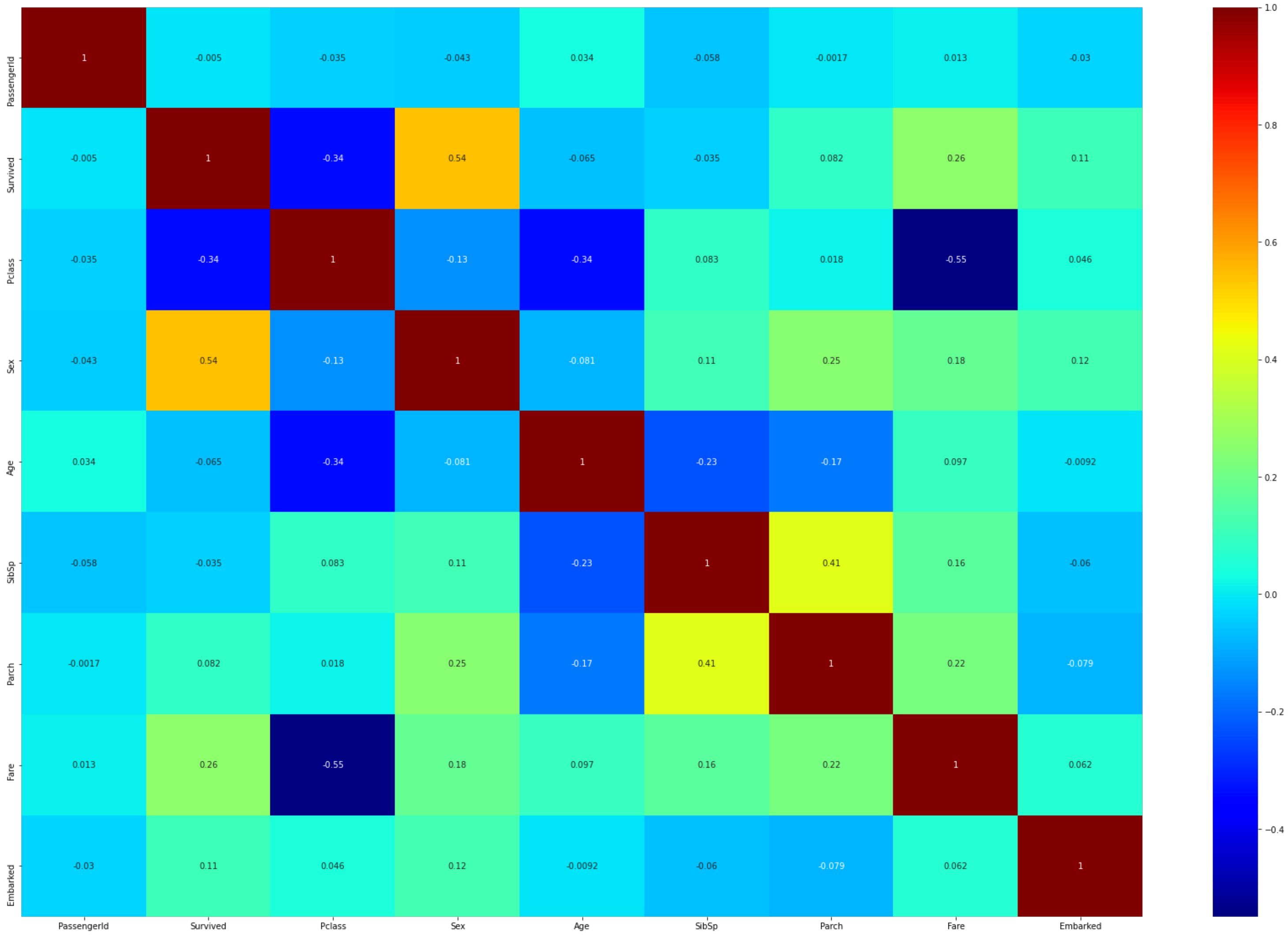
correlation heatmap

In [11]:

```
import seaborn as sns
import matplotlib.pyplot as plt
plt.figure(figsize=(30,20))
sns.heatmap(df.corr(),annot = True,cmap="jet")
```

Out[11]:

```
<matplotlib.axes._subplots.AxesSubplot at 0x7fcfacbc84d0>
```



seperating X and Y values

In [12]:

```
cols = [col for col in df.columns if col not in ["Survived"]]
X = df[cols]
y = df["Survived"]
```

stroring the feature used for training in l

In [13]:

```
l=list(X)
```

using Logirithmic Regression for fitting the model

In [14]:

```
from sklearn.linear_model import LogisticRegression as LR
model = LR()
model.fit(X,y)
model.score(X,y)
```

```
/opt/conda/lib/python3.7/site-packages/sklearn/linear_model/_logistic.py:764: ConvergenceWa
rning: 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
Please also refer to the documentation for alternative solver options:
    https://scikit-learn.org/stable/modules/linear_model.html#logistic-regression
  extra_warning_msg=_LOGISTIC_SOLVER_CONVERGENCE_MSG)
```

Out[14]:

```
0.8013468013468014
```

inputing the test data and selecting required features

In [15]:

```
df=pd.read_csv("../input/titanic/test.csv")
l
df=df[l]
```

label encoding the Sex column

In [16]:

```
df.Sex=df.Sex.replace("male",1)
df.Sex=df.Sex.replace("female",2)
df.Sex.unique()
```

Out[16]:

```
array([1, 2])
```

In [17]:

```
df.Embarked = df.Embarked.apply(str)
k=df.Embarked.unique()
```

label encoding embarked column

In [18]:

```
df.Embarked=df.Embarked.replace('S',1)
df.Embarked=df.Embarked.replace('C',2)
df.Embarked=df.Embarked.replace('Q',3)
```

filling null values mode

In [19]:

```
df=df.fillna(df.mode)
df.isna().sum()
```

Out[19]:

```
PassengerId    0
Pclass         0
Sex            0
Age            0
SibSp          0
Parch          0
```

```
Fare          0
Embarked      0
dtype: int64
```

In [20]:

```
df.dtypes
```

Out[20]:

```
PassengerId     int64
Pclass          int64
Sex             int64
Age            object
SibSp           int64
Parch           int64
Fare           object
Embarked        int64
dtype: object
```

handling unkown or garbage values in Fare

In [21]:

```
df.Fare=df.Fare.apply(str)
df.Fare.unique()
```

Out[21]:

```
array(['7.8292', '7.0', '9.6875', '8.6625', '12.2875', '9.225', '7.6292',
       '29.0', '7.2292', '24.15', '7.8958', '26.0', '82.2667', '61.175',
       '27.7208', '12.35', '7.225', '7.925', '59.4', '3.1708', '31.6833',
       '61.3792', '262.375', '14.5', '61.9792', '30.5', '21.6792', '31.5',
       '20.575', '23.45', '57.75', '8.05', '9.5', '56.4958', '13.4167',
       '26.55', '7.85', '13.0', '52.5542', '29.7', '7.75', '76.2917',
       '15.9', '60.0', '15.0333', '23.0', '263.0', '15.5792', '29.125',
       '7.65', '16.1', '13.5', '7.725', '21.0', '7.8792', '42.4',
       '28.5375', '211.5', '25.7', '15.2458', '221.7792', '10.7083',
       '14.4542', '13.9', '7.775', '52.0', '7.7958', '78.85', '7.8542',
       '55.4417', '8.5167', '22.525', '7.8208', '8.7125', '15.0458',
       '7.7792', '31.6792', '7.2833', '6.4375', '16.7', '75.2417',
       '15.75', '7.25', '23.25', '28.5', '25.4667', '46.9', '151.55',
       '18.0', '51.8625', '83.1583',
       '<bound method DataFrame.mode of      PassengerId  Pclass  Sex   Age  SibSp  Parch
Fare  Embarked\n0            892       3    1  34.5      0      0    7.8292         3\n1
893       3    2  47.0      1      0    7.0000         1\n2            894       2    1
62.0      0      0    9.6875         3\n3            895       3    1  27.0      0      0
8.6625         1\n4            896       3    2  22.0      1      1   12.2875         1\n.
.          ...      ...  ...   ...    ...    ...      ...          ...\n413          1305
3    1   NaN      0      0    8.0500         1\n414         1306       1    2  39.0
0      0  108.9000         2\n415         1307       3    1  38.5      0      0    7.2500
1\n416         1308       3    1   NaN      0      0    8.0500         1\n417         130
9       3    1   NaN      1      1   22.3583         2\n\n[418 rows x 8 columns]>',
       '12.1833', '31.3875', '7.55', '13.775', '7.7333', '22.025',
       '50.4958', '34.375', '8.9625', '39.0', '36.75', '53.1', '247.5208',
       '16.0', '69.55', '32.5', '134.5', '10.5', '8.1125', '15.5', '14.4',
       '227.525', '25.7417', '7.05', '73.5', '42.5', '164.8667',
       '13.8583', '27.4458', '15.1', '65.0', '6.4958', '71.2833', '75.25',
       '106.425', '30.0', '7.8875', '27.75', '136.7792', '9.325', '17.4',
       '12.7375', '0.0', '20.2125', '39.6', '6.95', '81.8583', '41.5792',
       '45.5', '9.35', '93.5', '14.1083', '7.575', '135.6333', '146.5208',
       '211.3375', '79.2', '15.7417', '7.5792', '512.3292', '63.3583',
       '51.4792', '15.55', '37.0042', '14.4583', '39.6875', '11.5',
       '50.0', '12.875', '21.075', '39.4', '20.25', '47.1', '13.8625',
       '7.7208', '90.0', '108.9', '22.3583'], dtype=object)
```

In [22]:

```
s='<bound method DataFrame.mode of      PassengerId  Pclass  Sex   Age  SibSp  Parch
Fare  Embarked\n0            892       3    1  34.5      0      0    7.8292         3\n1
893       3    2  47.0      1      0    7.0000         1\n2            894       2    1
62.0      0      0    9.6875         3\n3            895       3    1  27.0      0      0
```

```
8.6625          1\n4              896        3     2   22.0       1       1    12.2875          1\n
..           ...       ...  ...    ...      ...     ...          ...        ...\n413          1305
3     1    NaN       0       0     8.0500          1\n414          1306         1     2   39.0
0       0   108.9000          2\n415          1307         3     1   38.5       0       0     7.2500
1\n416          1308         3     1    NaN       0       0     8.0500          1\n417          130
9        3     1    NaN       1       1     22.3583          2\n\n[418 rows x 8 columns]>'
```

replacing it with most frequent value 7.75

In [23]:

```
df.Fare=df.Fare.replace(s,'7.75')
```

converting fare to float datatye

In [24]:

```
df.Fare=df.Fare.apply(float)
```

replacing garbage value in age with 34.5

In [25]:

```
df.Age=df.Age.apply(str)
k=df.Age.unique()[10]
df.Age=df.Age.replace(k,"34.5")
df.Age=df.Age.apply(float)
```

predicting the test values

In [26]:

```
pred=model.predict(df)
```

In [27]:

```
Id=df.PassengerId.values
l=[]
for i ,j in zip(Id,pred):
    l.append([i,j])
```

converting them to a dataframe

In [28]:

```
sub=pd.DataFrame(l,columns=["PassengerId","Survived"])
```

In [29]:

```
sub
```

Out[29]:

	PassengerId	Survived
0	892	0
1	893	0
2	894	0
3	895	0
4	896	1
...	...	...
413	1305	0

	PassengerId	Survived
414	1306	1
415	1307	0
416	1308	0
417	1309	0

418 rows × 2 columns

storing as a dataframe

In [30]:

```
filename = 'Titanic Predictions 1.csv'

sub.to_csv(filename,index=False)

print('Saved file: ' + filename)
```

```
Saved file: Titanic Predictions 1.csv
```

In [ ]: