assignment-3-21bec0496

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IMPORTING THE LIBRARIES

[1]:
```
import numpy as np
import pandas as pd
import matplotlib.pyplot as plt
import seaborn as sns
```

IMPORTING THE DATASET

[2]:
```
data=pd.read_csv("Titanic-Dataset.csv")
```

[3]:
```
data.head()
```

[3]:

	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

[4]:
```
data.info()
```

```
<class 'pandas.core.frame.DataFrame'>
```

```
RangeIndex: 891 entries, 0 to 890
Data columns (total 12 columns):
 #   Column       Non-Null Count  Dtype
---  ------       --------------  -----
 0   PassengerId  891 non-null    int64
 1   Survived     891 non-null    int64
 2   Pclass       891 non-null    int64
 3   Name         891 non-null    object
 4   Sex          891 non-null    object
 5   Age          714 non-null    float64
 6   SibSp        891 non-null    int64
 7   Parch        891 non-null    int64
 8   Ticket       891 non-null    object
 9   Fare         891 non-null    float64
 10  Cabin        204 non-null    object
 11  Embarked     889 non-null    object
dtypes: float64(2), int64(5), object(5)
memory usage: 83.7+ KB
```

[5]:
```
data.shape
```

[5]:
```
(891, 12)
```

[6]:
```
data.describe()
```

[6]:

	PassengerId	Survived	Pclass	Age	SibSp	\
count	891.000000	891.000000	891.000000	714.000000	891.000000	
mean	446.000000	0.383838	2.308642	29.699118	0.523008	
std	257.353842	0.486592	0.836071	14.526497	1.102743	
min	1.000000	0.000000	1.000000	0.420000	0.000000	
25%	223.500000	0.000000	2.000000	20.125000	0.000000	
50%	446.000000	0.000000	3.000000	28.000000	0.000000	
75%	668.500000	1.000000	3.000000	38.000000	1.000000	
max	891.000000	1.000000	3.000000	80.000000	8.000000	

	Parch	Fare
count	891.000000	891.000000
mean	0.381594	32.204208
std	0.806057	49.693429
min	0.000000	0.000000
25%	0.000000	7.910400
50%	0.000000	14.454200
75%	0.000000	31.000000
max	6.000000	512.329200

CHECKING FOR NULL VALUES

[7]:
```
data.isnull().any()
```

[7]:
```
PassengerId    False
Survived       False
Pclass         False
Name           False
Sex            False
Age             True
SibSp          False
Parch          False
Ticket         False
Fare           False
Cabin           True
Embarked        True
dtype: bool
```

[8]:
```
data.isnull().sum()
```

[8]:
```
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
```

[9]:
```
data.corr()
```

```
<ipython-input-9-c44ded798807>:1: FutureWarning: The default value of
numeric_only in DataFrame.corr is deprecated. In a future version, it will
default to False. Select only valid columns or specify the value of numeric_only
to silence this warning.
  data.corr()
```

[9]:

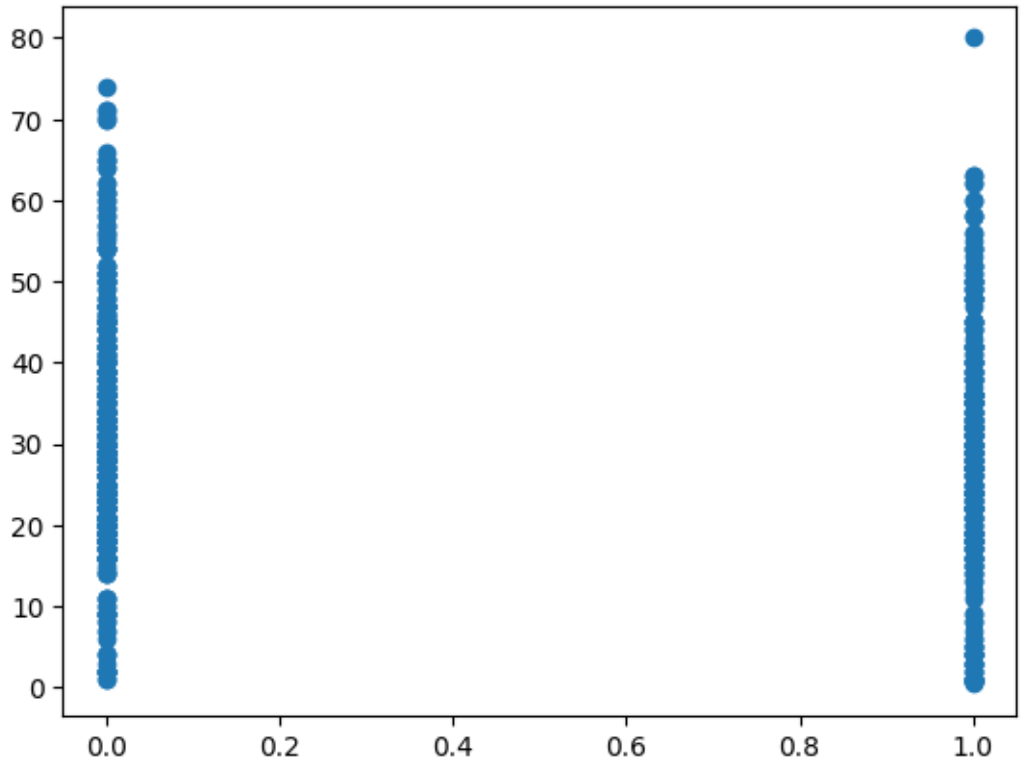
	PassengerId	Survived	Pclass	Age	SibSp	Parch	\
PassengerId	1.000000	-0.005007	-0.035144	0.036847	-0.057527	-0.001652	
Survived	-0.005007	1.000000	-0.338481	-0.077221	-0.035322	0.081629	
Pclass	-0.035144	-0.338481	1.000000	-0.369226	0.083081	0.018443	
Age	0.036847	-0.077221	-0.369226	1.000000	-0.308247	-0.189119	
SibSp	-0.057527	-0.035322	0.083081	-0.308247	1.000000	0.414838	
Parch	-0.001652	0.081629	0.018443	-0.189119	0.414838	1.000000	
Fare	0.012658	0.257307	-0.549500	0.096067	0.159651	0.216225	

```
                Fare
PassengerId  0.012658
Survived     0.257307
Pclass      -0.549500
Age          0.096067
SibSp        0.159651
Parch        0.216225
Fare         1.000000
```

DATA VISUALIZATION

[10]:
```
plt.scatter(data["Survived"],data["Age"])
```

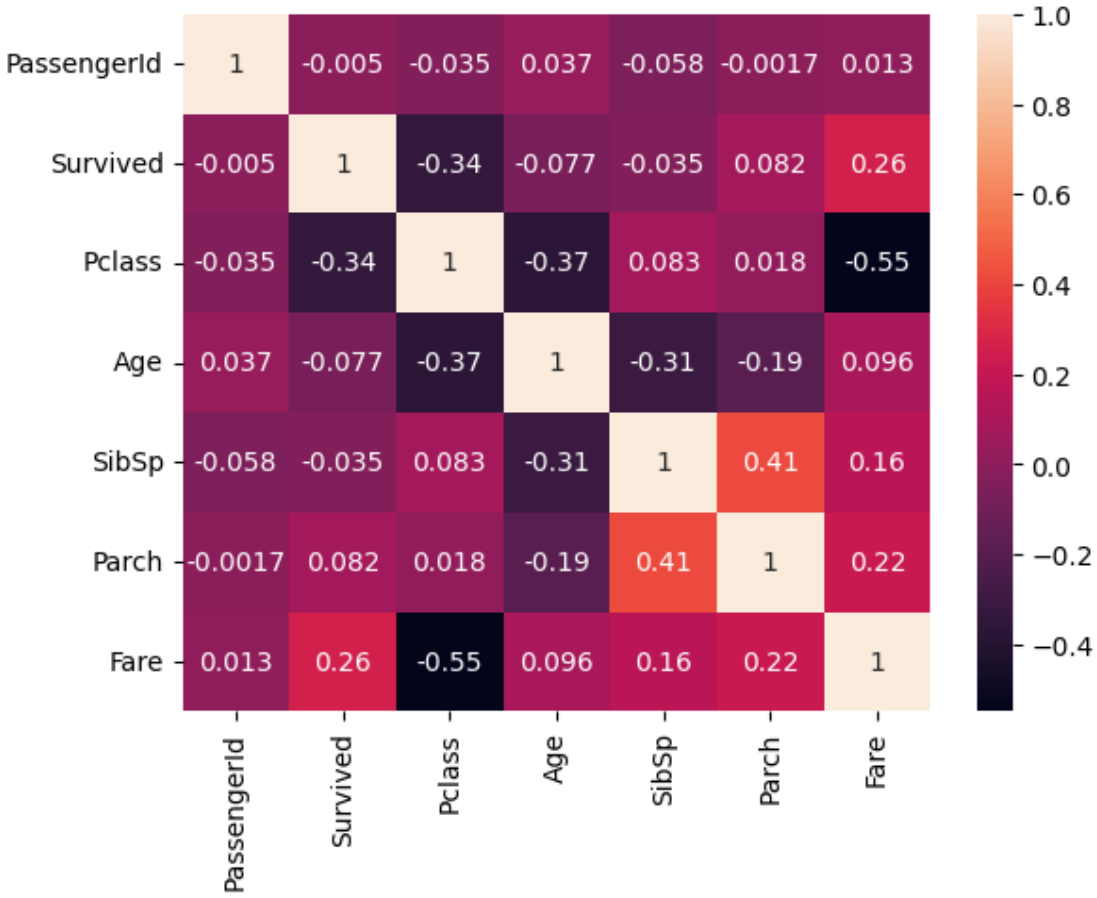
[10]:
```
<matplotlib.collections.PathCollection at 0x7b8530220400>
```



[11]:
```
sns.heatmap(data.corr(),annot=True)
```

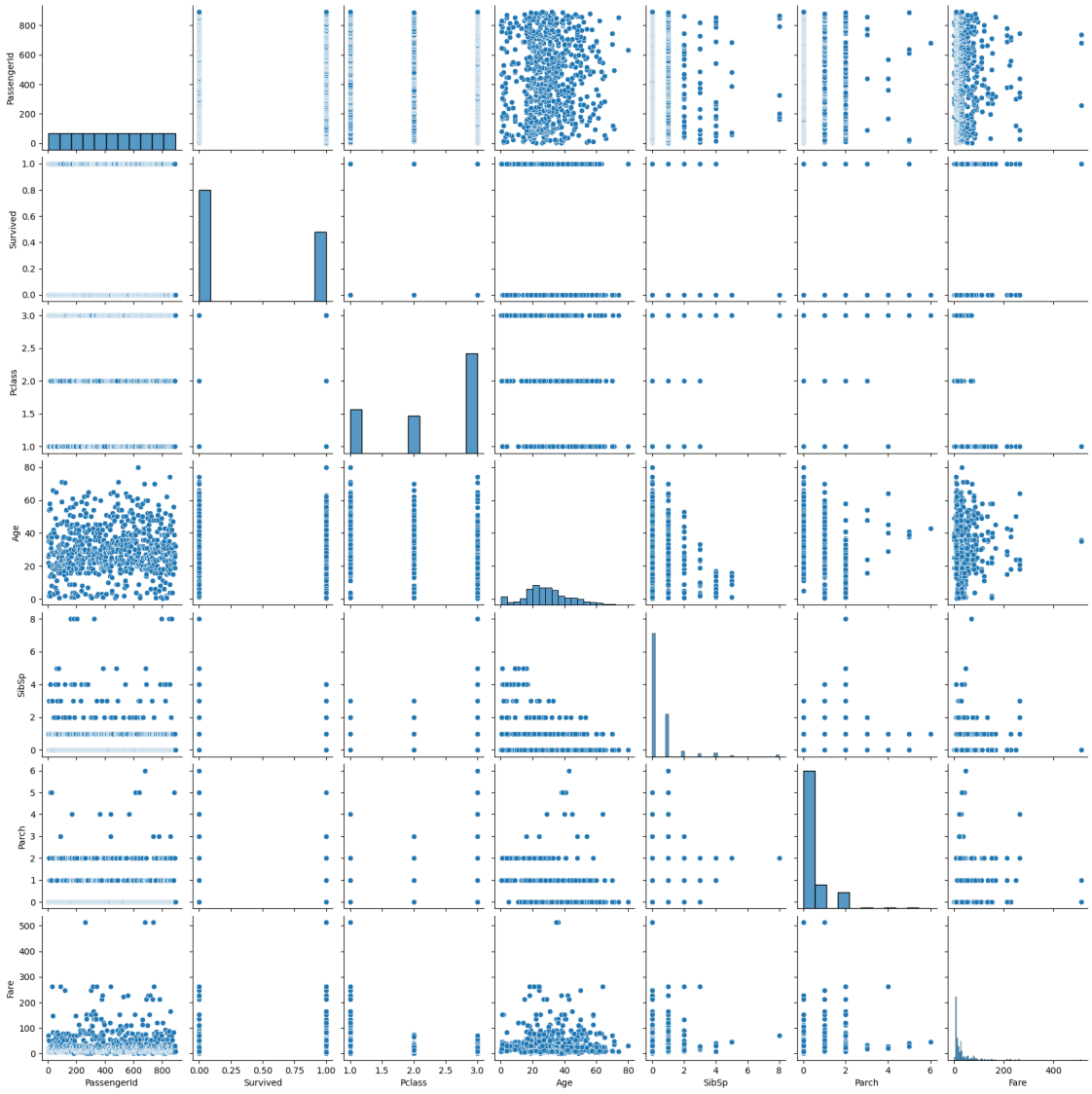
```
<ipython-input-11-6c71ac866e2e>:1: FutureWarning: The default value of
numeric_only in DataFrame.corr is deprecated. In a future version, it will
default to False. Select only valid columns or specify the value of numeric_only
to silence this warning.
  sns.heatmap(data.corr(),annot=True)
```

[11]: <Axes: >



[12]:
```
sns.pairplot(data)
```

[12]: <seaborn.axisgrid.PairGrid at 0x7b852e0849a0>



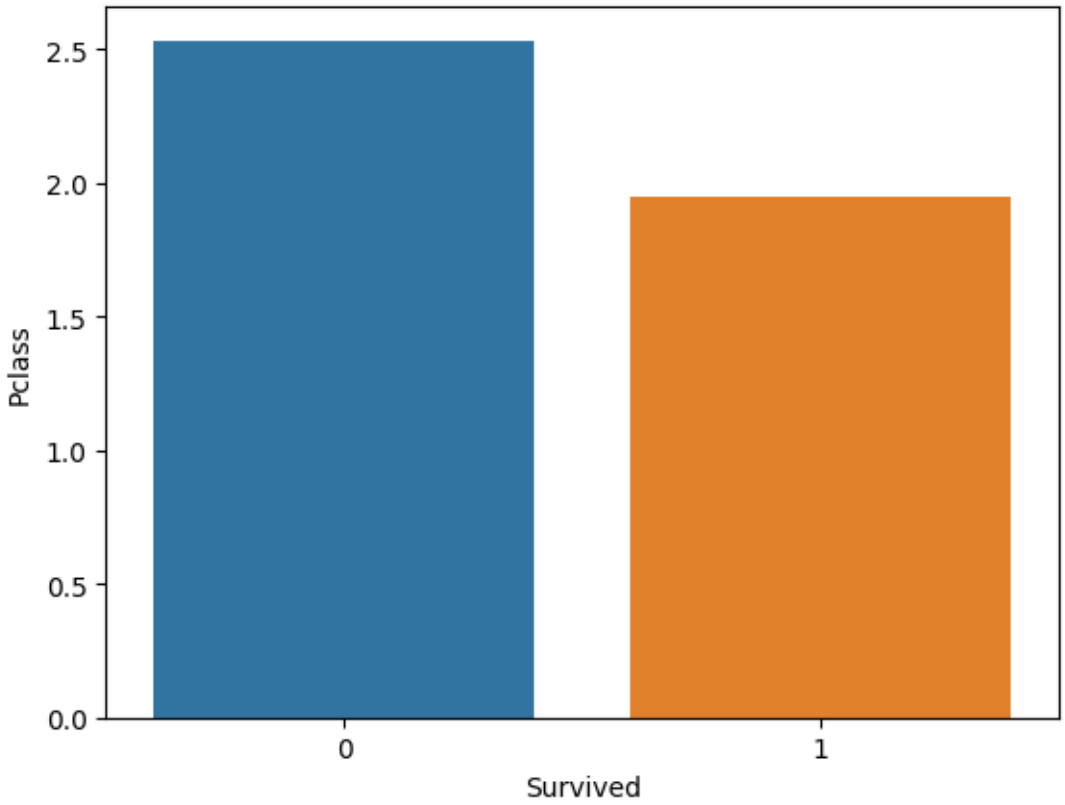
[13]:
```
sns.barplot(x=data["Survived"],y=data["Pclass"],ci=0)
```

```
<ipython-input-13-0a7b02de1ba7>:1: FutureWarning:

The `ci` parameter is deprecated. Use `errorbar=('ci', 0)` for the same effect.

  sns.barplot(x=data["Survived"],y=data["Pclass"],ci=0)
```

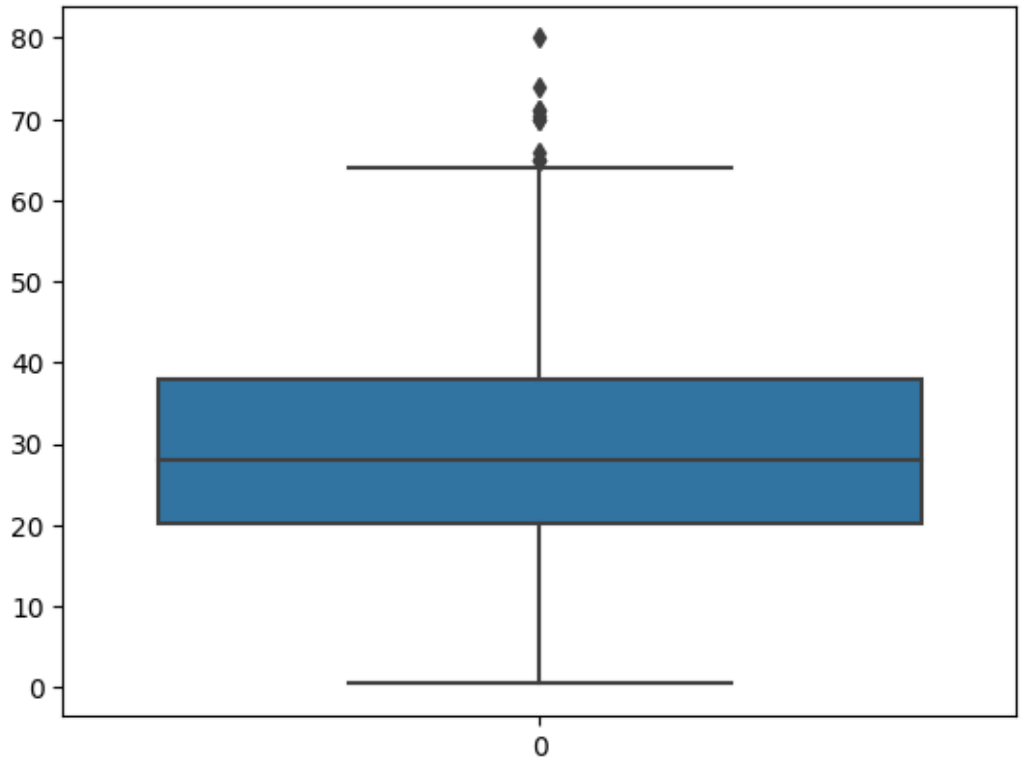
[13]: <Axes: xlabel='Survived', ylabel='Pclass'>



OUTLIER DETECTION

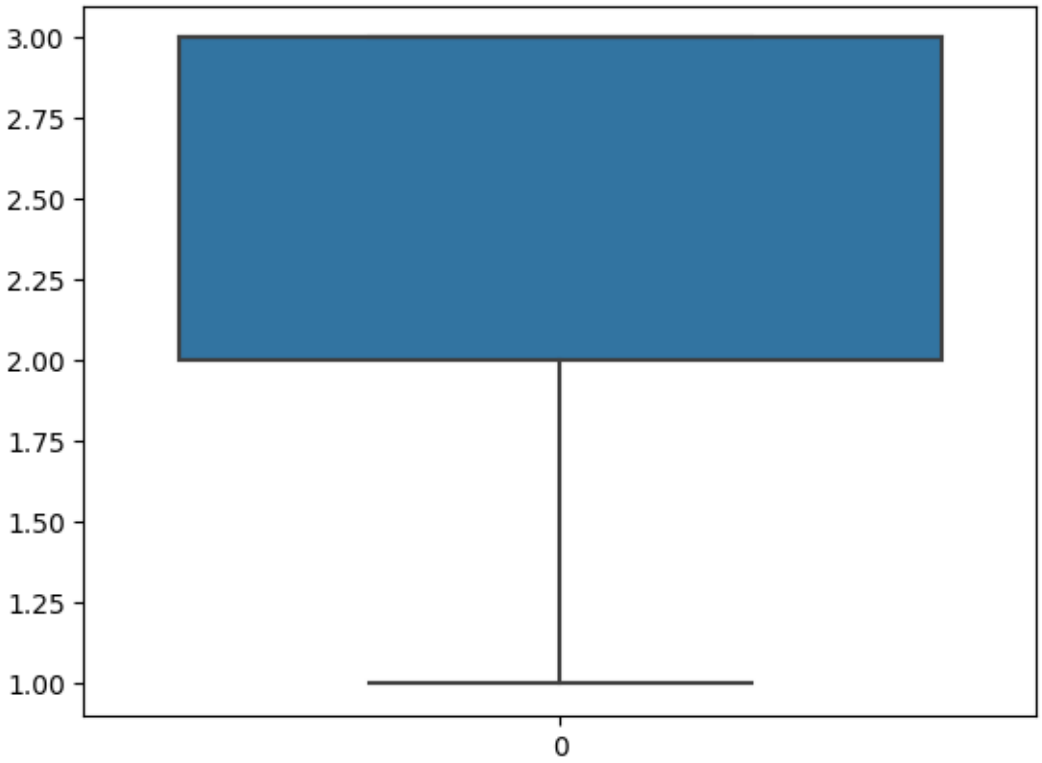
[14]:
```
sns.boxplot(data.Age)
```

[14]: <Axes: >



[15]:
```
sns.boxplot(data.Pclass)
```

[15]: <Axes: >



SPLITTING DEPENDENT AND INDEPENDENT VARIABLES

[16]:
```
data.head()
```

[16]:

	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					
4	5	0	3	Allen, Mr. William Henry	male	35.0	0					

```
3      0            113803  53.1000  C123        S
4      0            373450   8.0500   NaN        S
```

[17]:
```
x=data.drop(columns=["Survived","PassengerId","Name","Ticket","Cabin"])
```

[18]:
```
x
```

[18]:
```
     Pclass     Sex   Age  SibSp  Parch     Fare Embarked
0         3    male  22.0      1      0   7.2500        S
1         1  female  38.0      1      0  71.2833        C
2         3  female  26.0      0      0   7.9250        S
3         1  female  35.0      1      0  53.1000        S
4         3    male  35.0      0      0   8.0500        S
..      …     …   …    …     …       …       …
886       2    male  27.0      0      0  13.0000        S
887       1  female  19.0      0      0  30.0000        S
888       3  female   NaN      1      2  23.4500        S
889       1    male  26.0      0      0  30.0000        C
890       3    male  32.0      0      0   7.7500        Q

[891 rows x 7 columns]
```

[19]:
```
x.shape
```

[19]:
```
(891, 7)
```

[20]:
```
type(x)
```

[20]:
```
pandas.core.frame.DataFrame
```

[21]:
```
y=data["Survived"]
```

[22]:
```
y.head
```

[22]:
```
<bound method NDFrame.head of 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>
```

[23]:
```
type(y)
```

[23]:
```
pandas.core.series.Series
```

ENCODING

[24]:
```
x.head()
```

[24]:

	Pclass	Sex	Age	SibSp	Parch	Fare	Embarked
0	3	male	22.0	1	0	7.2500	S
1	1	female	38.0	1	0	71.2833	C
2	3	female	26.0	0	0	7.9250	S
3	1	female	35.0	1	0	53.1000	S
4	3	male	35.0	0	0	8.0500	S

[25]:
```
from sklearn.preprocessing import LabelEncoder
le=LabelEncoder()
```

[26]:
```
x["Sex"]=le.fit_transform(x["Sex"])
```

[27]:
```
x.head()
```

[27]:

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

[28]:
```
print(le.classes_)
```

```
['female' 'male']
```

[29]:
```
mapping=dict(zip(le.classes_,range(len(le.classes_))))
mapping
```

[29]:
```
{'female': 0, 'male': 1}
```

[30]:
```
x["Embarked"]=le.fit_transform(x["Embarked"])
```

[31]:
```
x.head()
```

[31]:

	Pclass	Sex	Age	SibSp	Parch	Fare	Embarked
0	3	1	22.0	1	0	7.2500	2
1	1	0	38.0	1	0	71.2833	0
2	3	0	26.0	0	0	7.9250	2
3	1	0	35.0	1	0	53.1000	2
4	3	1	35.0	0	0	8.0500	2

[32]:
```
print(le.classes_)
```

```
['C' 'Q' 'S' nan]
```

[33]:
```
mapping=dict(zip(le.classes_,range(len(le.classes_))))
mapping
```

[33]:
```
{'C': 0, 'Q': 1, 'S': 2, nan: 3}
```

[34]:
```
x.head()
```

[34]:

	Pclass	Sex	Age	SibSp	Parch	Fare	Embarked
0	3	1	22.0	1	0	7.2500	2
1	1	0	38.0	1	0	71.2833	0
2	3	0	26.0	0	0	7.9250	2
3	1	0	35.0	1	0	53.1000	2
4	3	1	35.0	0	0	8.0500	2

Feature Scaling

[35]:
```
from sklearn.preprocessing import MinMaxScaler
ms=MinMaxScaler()
```

[36]:
```
x_Scaled=pd.DataFrame(ms.fit_transform(x),columns=x.columns)
```

[37]:
```
x_Scaled.head()
```

[37]:

	Pclass	Sex	Age	SibSp	Parch	Fare	Embarked
0	1.0	1.0	0.271174	0.125	0.0	0.014151	0.666667
1	0.0	0.0	0.472229	0.125	0.0	0.139136	0.000000
2	1.0	0.0	0.321438	0.000	0.0	0.015469	0.666667
3	0.0	0.0	0.434531	0.125	0.0	0.103644	0.666667
4	1.0	1.0	0.434531	0.000	0.0	0.015713	0.666667

SPLITTING DATA INTO TRAINING AND TESTING

[38]:
```
from sklearn.model_selection import train_test_split
X_train,X_test,y_train,y_test = train_test_split(x_Scaled,y,test_size =0.
↪2,random_state =0)
```

[39]:
```
print(X_train.shape,X_test.shape,y_train.shape,y_test.shape)
```

```
(712, 7) (179, 7) (712,) (179,)
```