1. Import the Libraries

```
import numpy as np
import pandas as pd
import matplotlib.pyplot as plt
import seaborn as sns
from sklearn.preprocessing import LabelEncoder, StandardScaler
from sklearn.model_selection import train_test_split
```

2. Importing the dataset

```
dataset=pd.read_csv("Titanic-Dataset.csv")
dataset.shape
```

```
(891, 12)
```

```
dataset.head()
```

	PassengerId	Survived	Pclass	Name	Sex	Age	SibSp	Parch	Ticket	Fare	Cab
0	1	0	3	Braund, Mr. Owen Harris	male	22.0	1	0	A/5 21171	7.2500	N
1	2	1	1	Cumings, Mrs. John Bradley (Florence Briggs Th...	female	38.0	1	0	PC 17599	71.2833	C
2	3	1	3	Heikkinen, Miss. Laina	female	26.0	0	0	STON/O2. 3101282	7.9250	N
3	4	1	1	Futrelle, Mrs. Jacques Heath (Lily May Peel)	female	35.0	1	0	113803	53.1000	C1
4	5	0	3	Allen, Mr. William Henry	male	35.0	0	0	373450	8.0500	N

3. Checking for Null Values

```
dataset.isnull().any()
```

```
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
```

```
dataset.isnull().sum()
```

```
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
```

```
dataset['Age'].fillna(dataset['Age'].median(), inplace=True)
dataset['Cabin_missing'] = dataset['Cabin'].isnull().astype(int)
dataset['Embarked'].fillna(dataset['Embarked'].mode()[0], inplace=True)
dataset.drop('Cabin', axis=1, inplace=True)
```

```
dataset.head()
```

	PassengerId	Survived	Pclass	Name	Sex	Age	SibSp	Parch	Ticket	Fare	Embarked	C
0	1	0	3	Braund, Mr. Owen Harris	male	22.0	1	0	A/5 21171	7.2500	S	
1	2	1	1	Cumings, Mrs. John Bradley (Florence Briggs Th...	female	38.0	1	0	PC 17599	71.2833	C	
2	3	1	3	Heikkinen, Miss. Laina	female	26.0	0	0	STON/O2. 3101282	7.9250	S	
3	4	1	1	Futrelle, Mrs. Jacques Heath (Lily May Peel)	female	35.0	1	0	113803	53.1000	S	
4	5	0	3	Allen, Mr. William Henry	male	35.0	0	0	373450	8.0500	S	

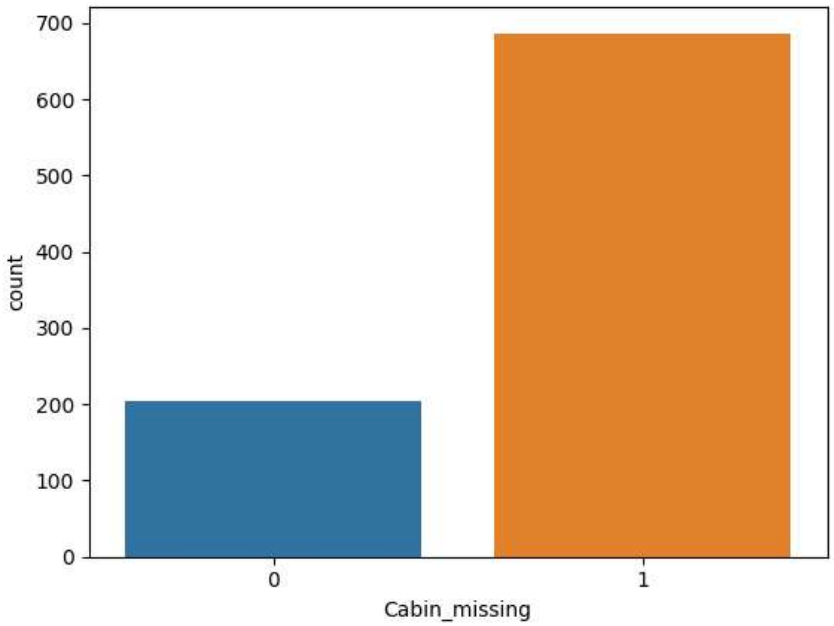
```
dataset.isnull().sum()
```

```
PassengerId      0
Survived         0
Pclass           0
Name             0
Sex              0
Age              0
SibSp            0
Parch            0
Ticket           0
Fare             0
Embarked         0
Cabin_missing    0
dtype: int64
```

4. Data Visualization

```
sns.countplot(x='Survived', data=dataset)
plt.show()
```

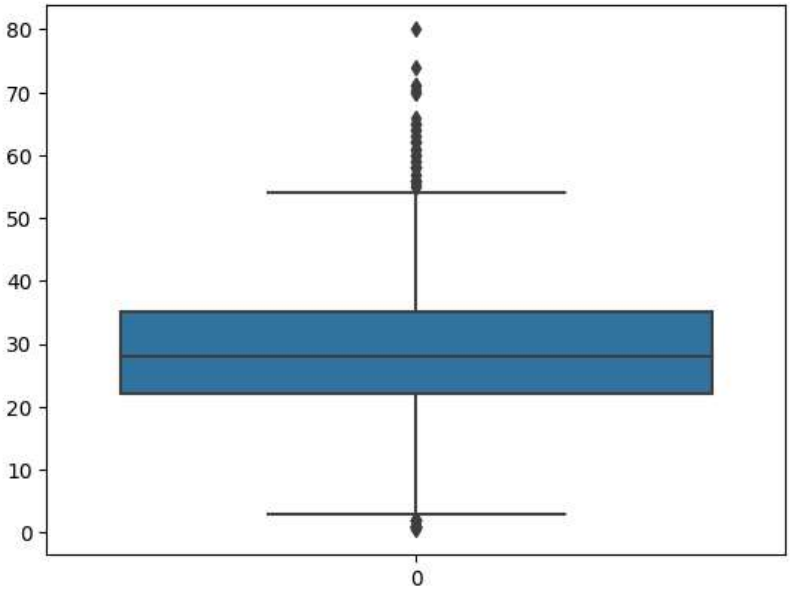
```
sns.countplot(x='Cabin_missing', data=dataset)
plt.show()
```



5. Outlier Detection

```
sns.boxplot(dataset.Age)
```

```
<Axes: >
```




```
from scipy import stats
```

```
age_zscore = stats.zscore(dataset.Age)
age_zscore
```

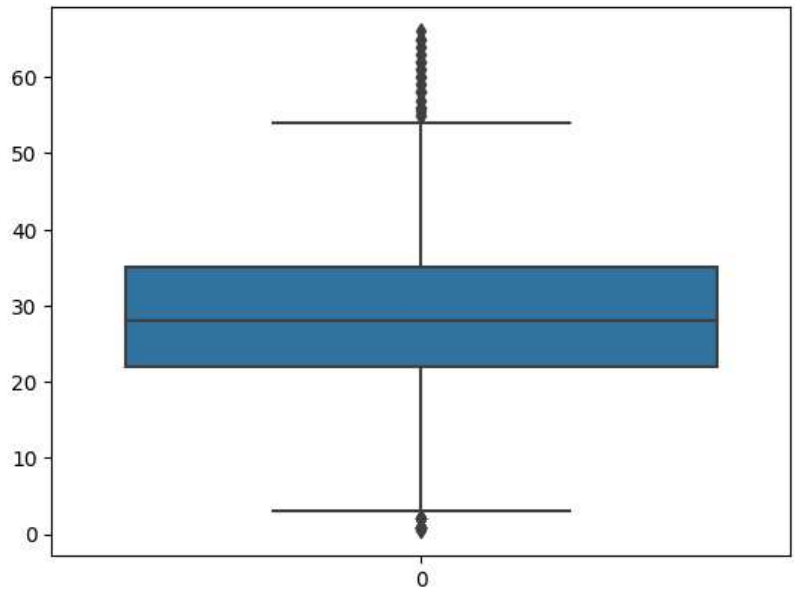
```
0     -0.565736
1      0.663861
2     -0.258337
3      0.433312
```

```
4      0.433312
         ...
886   -0.181487
887   -0.796286
888   -0.104637
889   -0.258337
890    0.202762
Name: Age, Length: 891, dtype: float64
```

```
df_z = dataset[np.abs(age_zscore)<=3]
```

```
sns.boxplot(df_z.Age)
```

```
<Axes: >
```



6. Splitting Dependent and Independent variables

```
x = df_z.iloc[:,[2,4,5,6,7,10,11]]
y = df_z["Survived"]
```

```
print(x.shape,y.shape)
```

```
(884, 7) (884,)
```

7. Perform Encoding

```
le = LabelEncoder()
x['Sex'] = le.fit_transform(x['Sex'])
```

```
<ipython-input-37-8d8648880710>:2: SettingWithCopyWarning:
A value is trying to be set on a copy of a slice from a DataFrame.
Try using .loc[row_indexer,col_indexer] = value instead

See the caveats in the documentation: https://pandas.pydata.org/pandas-docs/stable/user_guide/indexing.html#returning-a-v
  x['Sex'] = le.fit_transform(x['Sex'])
```

```
x['Sex']
```

```
0      1
1      0
2      0
```

```
3      0
4      1
      ..
886    1
887    0
888    0
889    1
890    1
Name: Sex, Length: 884, dtype: int64
```

```
x.Embarked.value_counts()
```

```
S    642
C    166
Q     76
Name: Embarked, dtype: int64
```

```
x = pd.get_dummies(x, columns=['Embarked'], drop_first=True)
```

```
x.head()
```

	Pclass	Sex	Age	SibSp	Parch	Cabin_missing	Embarked_Q	Embarked_S
0	3	1	22.0	1	0	1	0	1
1	1	0	38.0	1	0	0	0	0
2	3	0	26.0	0	0	1	0	1
3	1	0	35.0	1	0	0	0	1
4	3	1	35.0	0	0	1	0	1

8. Feature Scaling

```
scaler = StandardScaler()
x[['Age']] = scaler.fit_transform(x[['Age']])
```

```
x.head()
```

	Pclass	Sex	Age	SibSp	Parch	Cabin_missing	Embarked_Q	Embarked_S
0	3	1	-0.562466	1	0	1	0	1
1	1	0	0.719303	1	0	0	0	0
2	3	0	-0.242024	0	0	1	0	1
3	1	0	0.478972	1	0	0	0	1
4	3	1	0.478972	0	0	1	0	1

9. Splitting Data into Train and Test

```
x_train,x_test,y_train,y_test=train_test_split(x,y,test_size=0.3,random_state=0)
```

```
print(x_train.shape,x_test.shape,y_train.shape,y_test.shape)
```

```
(618, 8) (266, 8) (618,) (266,)
```