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

```
#1. Read the dataset
df = pd.read_csv("/content/titanic.csv")
df
```

	PassengerId	Survived	Pclass	Name	Sex	Age	SibSp	Parch	Ticket	Fa
0	1	0	3	Braund, Mr. Owen Harris	male	22.0	1	0	A/5 21171	7.25
1	2	1	1	Cumings, Mrs. John Bradley (Florence Briggs Th...	female	38.0	1	0	PC 17599	71.28
2	3	1	3	Heikkinen, Miss. Laina	female	26.0	0	0	STON/O2. 3101282	7.92
3	4	1	1	Futrelle, Mrs. Jacques Heath (Lily May Peel)	female	35.0	1	0	113803	53.10

```
#2. Observe the shape of dataset
df.shape
```

```
(891, 12)
```

```
#3. Observe the statistics of the dataset
df.describe()
```

	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

```
#4. Observe the number of Non-NULL and datatype of each feature of the dataset
df.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. Bifurcate the categorical and numerical features of the dataset
cat_cols = df.select_dtypes(include=['object']).columns.tolist()
num_cols = df.select_dtypes(include=['int64', 'float64']).columns.tolist()

print("Categorical columns:", cat_cols)
print("Numerical colums:", num_cols)
```

```
Categorical columns: ['Sex', 'Cabin', 'Embarked']
Numerical colums: ['PassengerId', 'Survived', 'Pclass', 'Age', 'SibSp', 'Parch', 'Fare']
```

```
#6. Observe the number of null (N/A) values for each feature
df.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
```

```
#7. Observe the percentage of null (N/A) values for each feature
df.isnull().sum() * 100 / len(df)
```

```
PassengerId     0.000000
Survived        0.000000
Pclass          0.000000
Name            0.000000
Sex             0.000000
Age            19.865320
SibSp           0.000000
Parch           0.000000
Ticket          0.000000
Fare            0.000000
Cabin          77.104377
Embarked        0.224467
dtype: float64
```

```
#8. Drop the "Ticket" and "Name" features from the dataset
drop_cat=['Ticket','Name']
df.drop(drop_cat, inplace=True, axis=1)
df
```

	PassengerId	Survived	Pclass	Sex	Age	SibSp	Parch	Fare	Cabin	Embarked
0	1	0	3	male	22.0	1	0	7.2500	NaN	S
1	2	1	1	female	38.0	1	0	71.2833	C85	C
2	3	1	3	female	26.0	0	0	7.9250	NaN	S
3	4	1	1	female	35.0	1	0	53.1000	C123	S
4	5	0	3	male	35.0	0	0	8.0500	NaN	S
...	...	...	...	...	...	...	...	...	...	...
886	887	0	2	male	27.0	0	0	13.0000	NaN	S
887	888	1	1	female	19.0	0	0	30.0000	B42	S
888	889	0	3	female	NaN	1	2	23.4500	NaN	S
889	890	1	1	male	26.0	0	0	30.0000	C148	C
890	891	0	3	male	32.0	0	0	7.7500	NaN	Q

891 rows × 10 columns

```
#9. Drop the feature corresponding to the highest missing values
df1= df.drop(df[df["Cabin"].isnull()].index)
df1
```

	PassengerId	Survived	Pclass	Sex	Age	SibSp	Parch	Fare	Cabin	Embarked
1	2	1	1	female	38.0	1	0	71.2833	C85	C
3	4	1	1	female	35.0	1	0	53.1000	C123	S
6	7	0	1	male	54.0	0	0	51.8625	E46	S
10	11	1	3	female	4.0	1	1	16.7000	G6	S
11	12	1	1	female	58.0	0	0	26.5500	C103	S
...	...	...	...	...	...	...	...	...	...	...
871	872	1	1	female	47.0	1	1	52.5542	D35	S
872	873	0	1	male	33.0	0	0	5.0000	B51 B53 B55	S
879	880	1	1	female	56.0	0	1	83.1583	C50	C
887	888	1	1	female	19.0	0	0	30.0000	B42	S
889	890	1	1	male	26.0	0	0	30.0000	C148	C

```
#10. Drop the observations with missing values in the "Embarked" feature
df.dropna(subset=['Embarked'], inplace=True)
df
```

	PassengerId	Survived	Pclass	Sex	Age	SibSp	Parch	Fare	Cabin	Embarked
1	2	1	1	female	38.0	1	0	71.2833	C85	C
3	4	1	1	female	35.0	1	0	53.1000	C123	S
6	7	0	1	male	54.0	0	0	51.8625	E46	S
10	11	1	3	female	4.0	1	1	16.7000	G6	S
11	12	1	1	female	58.0	0	0	26.5500	C103	S
...	...	...	...	...	...	...	...	...	...	...
871	872	1	1	female	47.0	1	1	52.5542	D35	S
872	873	0	1	male	33.0	0	0	5.0000	B51 B53 B55	S
879	880	1	1	female	56.0	0	1	83.1583	C50	C
887	888	1	1	female	19.0	0	0	30.0000	B42	S
889	890	1	1	male	26.0	0	0	30.0000	C148	C

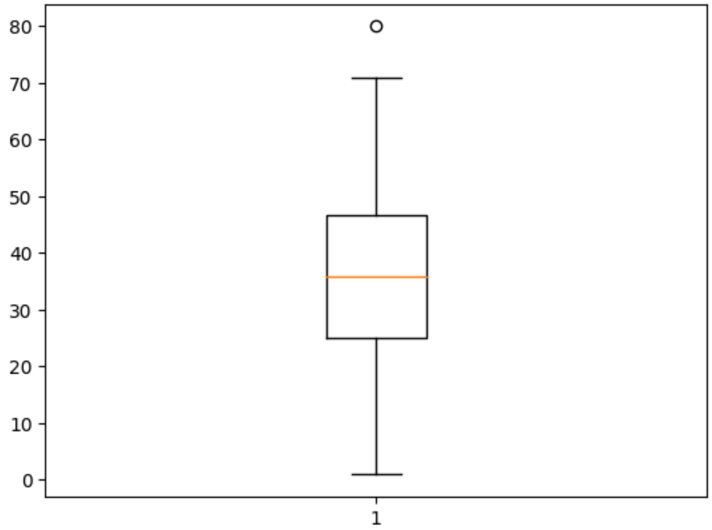
```
#11. Fill the missing values of the "Age" feature with mean value

df["Age"].fillna(df["Age"].mean(), inplace=True)
df
```

	PassengerId	Survived	Pclass	Sex	Age	SibSp	Parch	Fare	Cabin	Embarked
1	2	1	1	female	38.0	1	0	71.2833	C85	C
3	4	1	1	female	35.0	1	0	53.1000	C123	S
6	7	0	1	male	54.0	0	0	51.8625	E46	S
10	11	1	3	female	4.0	1	1	16.7000	G6	S
11	12	1	1	female	58.0	0	0	26.5500	C103	S
...	...	...	...	...	...	...	...	...	...	...
871	872	1	1	female	47.0	1	1	52.5542	D35	S
872	873	0	1	male	33.0	0	0	5.0000	B51 B53 B55	S
879	880	1	1	female	56.0	0	1	83.1583	C50	C
887	888	1	1	female	19.0	0	0	30.0000	B42	S
889	890	1	1	male	26.0	0	0	30.0000	C148	C

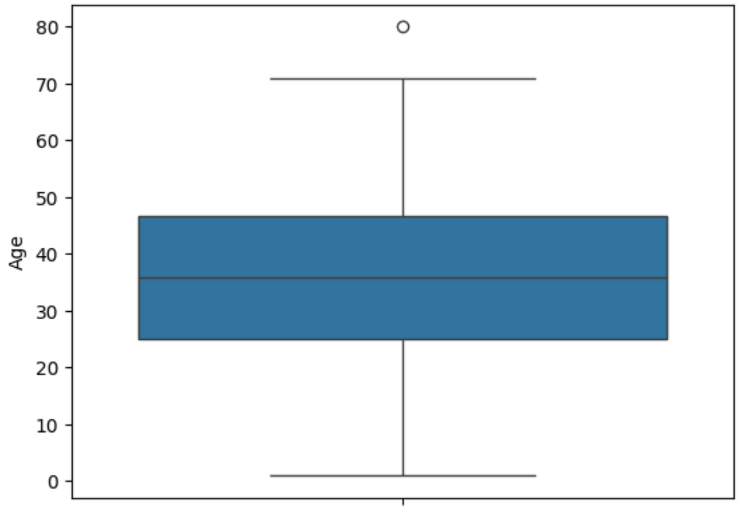
```
plt.boxplot(df['Age'])
```

```
{'whiskers': [<matplotlib.lines.Line2D at 0x7a027ed53e80>,
  <matplotlib.lines.Line2D at 0x7a027ed51ea0>],
 'caps': [<matplotlib.lines.Line2D at 0x7a027ed53790>,
  <matplotlib.lines.Line2D at 0x7a027ed529e0>],
 'boxes': [<matplotlib.lines.Line2D at 0x7a027ed53e20>],
 'medians': [<matplotlib.lines.Line2D at 0x7a027ed506d0>],
 'fliers': [<matplotlib.lines.Line2D at 0x7a02818e7a00>],
 'means': []}
```



```
#12. Observe the boxplot of the "Age" feature
sns.boxplot(df['Age'])
```

```
<Axes: ylabel='Age'>
```



```
#13. Nomalize the features with the numerical values using MinMaxScaler
from sklearn.preprocessing import MinMaxScaler
scaler = MinMaxScaler(feature_range=(0, 1))
numeric = [col for col in df.columns if df[col].dtype != 'object']
x=df
x[numeric] = scaler.fit_transform(x[numeric])
x.describe()
```

```
          PassengerId   Survived     Pclass        Age      SibSp      Parch       Fare
```