Question 3 Titanic

Python for Data Science - Perform Data Science on Titanic Dataset

a)Load the Titanic dataset into one of the data structures (NumPy or Pandas).

b)Display header rows and description of the loaded dataset.

c) Remove unnecessary features (E.g. drop unwanted columns) from the dataset.

d) Manipulate data by replacing empty column values with a default value.

e) Perform the following visualizations on the loaded dataset:

i) Passenger status (Survived/Died) against Passenger Class

ii) Survival rate of male vs female

iii) No of passengers in each age group

Click here to download dataset

In [13]:

```
#numpy - Deals multi-dimensional arrays and matrices
#seaborn - Deals with data visualization
#matplotlib - Plotting; pyplot-interactive plotting
#pandas - data structures and data analysis tools
import seaborn as sns
import matplotlib.pyplot as plt
import pandas as pd
```

In [14]:

```
#Import csv file into variable
titanic_df = pd.read_csv('titanictrain.csv')
titanic_df.head()
#Shows first 5 rows then tail() is obvious
#If we specify a number in argument that number of rows will be displayed
```

Out[14]:

	PassengerId	Survived	Pclass	Name	Sex	Age	SibSp	Parch	Ticket	Fare	Cabin
0	1	0	3	Braund, Mr. Owen Harris	male	22.0	1	0	A/5 21171	7.2500	NaN
1	2	1	1	Cumings, Mrs. John Bradley (Florence Briggs Th...	female	38.0	1	0	PC 17599	71.2833	C85
2	3	1	3	Heikkinen, Miss. Laina	female	26.0	0	0	STON/O2. 3101282	7.9250	NaN
3	4	1	1	Futrelle, Mrs. Jacques Heath (Lily May Peel)	female	35.0	1	0	113803	53.1000	C123
4	5	0	3	Allen, Mr. William Henry	male	35.0	0	0	373450	8.0500	NaN

In [15]:

```
#Mapping the survived values 0->Died and 1->Survived
titanic_df ['Survived'] = titanic_df ['Survived'].map({
    0: 'Died',
    1: 'Survived'
})
titanic_df.head(5)
```

Out[15]:

	PassengerId	Survived	Pclass	Name	Sex	Age	SibSp	Parch	Ticket	Fare	Cabin
0	1	Died	3	Braund, Mr. Owen Harris	male	22.0	1	0	A/5 21171	7.2500	NaN
1	2	Survived	1	Cumings, Mrs. John Bradley (Florence Briggs Th...	female	38.0	1	0	PC 17599	71.2833	C85
2	3	Survived	3	Heikkinen, Miss. Laina	female	26.0	0	0	STON/O2. 3101282	7.9250	NaN
3	4	Survived	1	Futrelle, Mrs. Jacques Heath (Lily May Peel)	female	35.0	1	0	113803	53.1000	C123
4	5	Died	3	Allen, Mr. William Henry	male	35.0	0	0	373450	8.0500	NaN

In [16]:

```
#Deleting the uneccessary rows
#axis=Whether to drop labels from the index (0 or ‘index’) or columns (1 or ‘column
#inplace=If False, return a copy. Otherwise, do operation inplace and return None.
titanic_df.drop(['Parch','PassengerId','Name','Ticket'], axis=1, inplace=True)
titanic_df.head(5)
```

Out[16]:

	Survived	Pclass	Sex	Age	SibSp	Fare	Cabin	Embarked
0	Died	3	male	22.0	1	7.2500	NaN	NaN
1	Survived	1	female	38.0	1	71.2833	C85	C
2	Survived	3	female	26.0	0	7.9250	NaN	NaN
3	Survived	1	female	35.0	1	53.1000	C123	NaN
4	Died	3	male	35.0	0	8.0500	NaN	S

In [17]:

```
#second way without inplace
titanic_df = titanic_df.drop(['SibSp','Fare'], axis=1)
titanic_df.head(5)
```

Out[17]:

	Survived	Pclass	Sex	Age	Cabin	Embarked
0	Died	3	male	22.0	NaN	NaN
1	Survived	1	female	38.0	C85	C
2	Survived	3	female	26.0	NaN	NaN
3	Survived	1	female	35.0	C123	NaN
4	Died	3	male	35.0	NaN	S

In [18]:

```
#mapping 1->Luxury Class , 2->Economy Class and 3->Lower Class
titanic_df ['Pclass'] = titanic_df ['Pclass'].map({
    1: 'Luxury Class',
    2: 'Economy Class',
    3: 'Lower Class'
})
titanic_df.head(5)
```

Out[18]:

	Survived	Pclass	Sex	Age	Cabin	Embarked
0	Died	Lower Class	male	22.0	NaN	NaN
1	Survived	Luxury Class	female	38.0	C85	C
2	Survived	Lower Class	female	26.0	NaN	NaN
3	Survived	Luxury Class	female	35.0	C123	NaN
4	Died	Lower Class	male	35.0	NaN	S

In [19]:

```
#Replace NaN values in embarked with S
titanic_df["Embarked"] = titanic_df["Embarked"].fillna("S")
titanic_df.head(5)
```

Out[19]:

	Survived	Pclass	Sex	Age	Cabin	Embarked
0	Died	Lower Class	male	22.0	NaN	S
1	Survived	Luxury Class	female	38.0	C85	C
2	Survived	Lower Class	female	26.0	NaN	S
3	Survived	Luxury Class	female	35.0	C123	S
4	Died	Lower Class	male	35.0	NaN	S

In [20]:

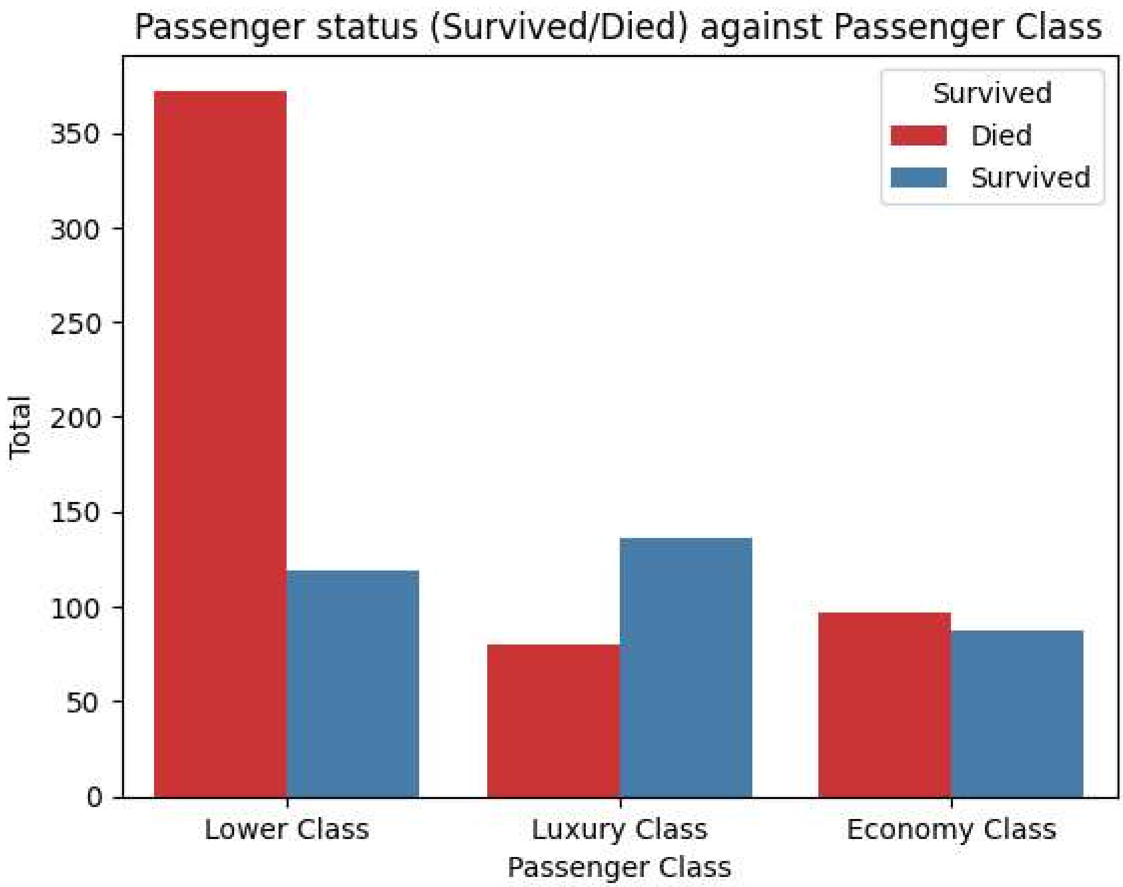
```
#Map Embarked accordingly
titanic_df ['Embarked'] = titanic_df ['Embarked'].map({
    'C':'Cherbourg',
    'Q':'Queenstown',
    'S':'Southampton'
})
titanic_df.head(5)
```

Out[20]:

	Survived	Pclass	Sex	Age	Cabin	Embarked
0	Died	Lower Class	male	22.0	NaN	Southampton
1	Survived	Luxury Class	female	38.0	C85	Cherbourg
2	Survived	Lower Class	female	26.0	NaN	Southampton
3	Survived	Luxury Class	female	35.0	C123	Southampton
4	Died	Lower Class	male	35.0	NaN	Southampton

In [21]:

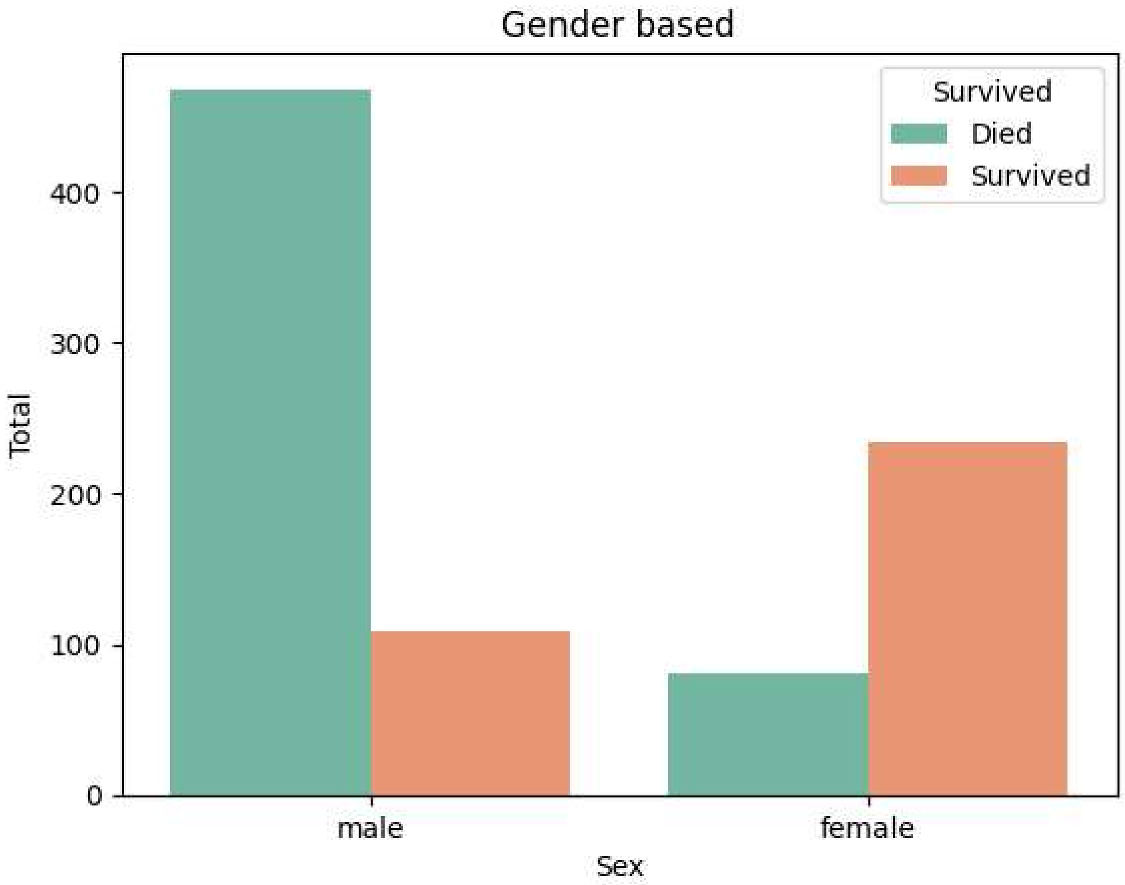
```
#Plotting graph of Survived/Dead Against Passenger Class
ax = sns.countplot(x = 'Pclass', hue = 'Survived', palette = 'Set1',data = titanic_
ax.set(title = 'Passenger status (Survived/Died) against Passenger Class',
       xlabel = 'Passenger Class', ylabel = 'Total')
plt.show()
```



In [22]:

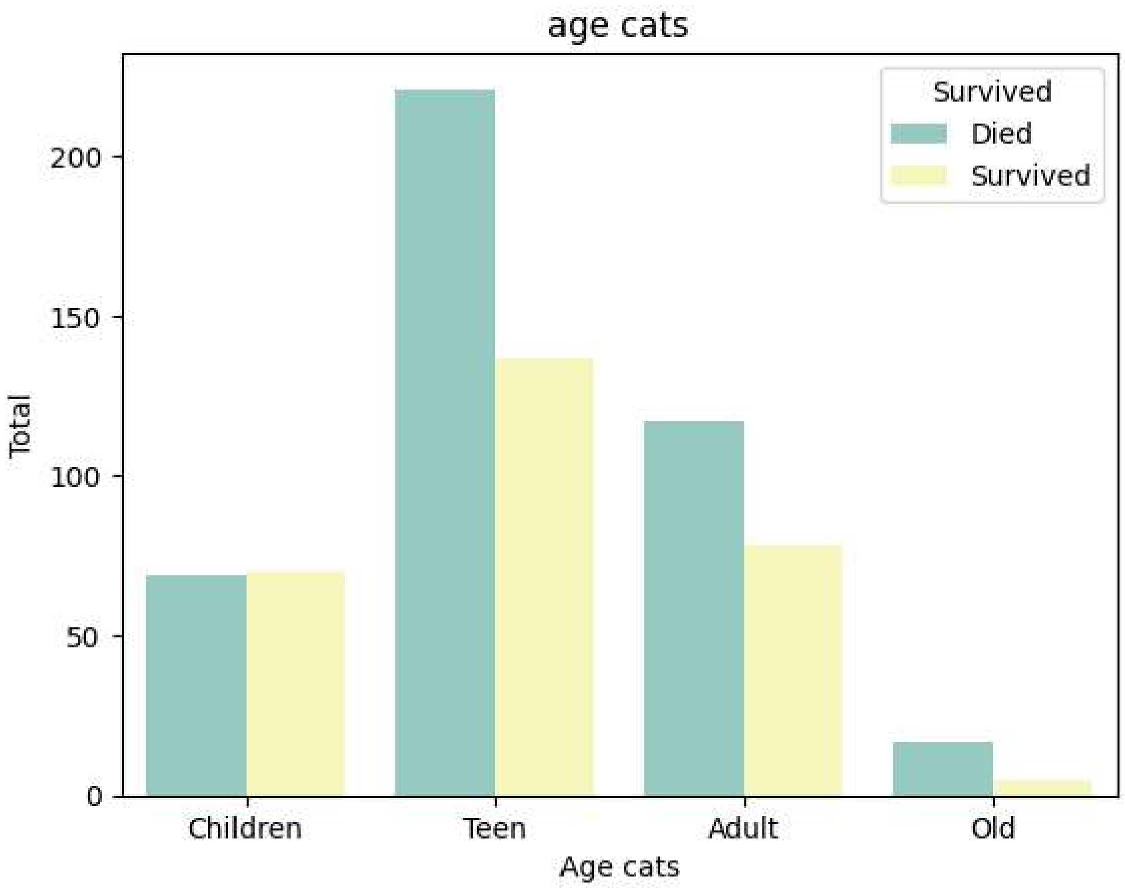
```
#Plotting graph of Survived/Dead Against Passenger Gender
#crosstab=This method is used to compute a simple cross-tabulation of two (or more)
print(pd.crosstab(titanic_df['Sex'],titanic_df.Survived))
ax=sns.countplot(x='Sex',hue='Survived',palette='Set2',data=titanic_df)
ax.set(title='Gender based',xlabel='Sex',ylabel='Total')
plt.show()
```

```
Survived  Died  Survived
Sex
female      81       233
male       468       109
```



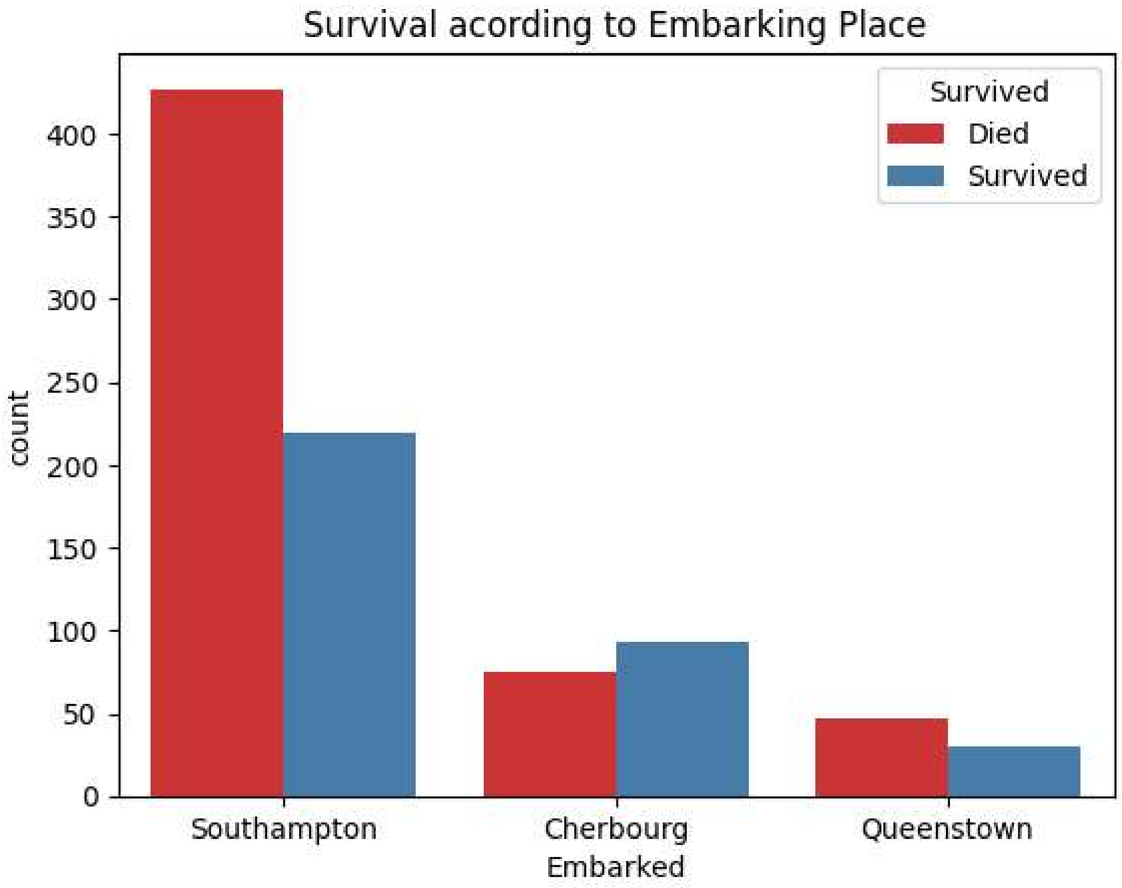
In [23]:
```
#Mapping age categories using cut() from pandas and
#Plotting graph of Survived/Dead Against Passenger Age Category
interval = (0,18,35,60,120)
categories = ['Children','Teen','Adult','Old']
titanic_df["Age_categories"]=pd.cut(titanic_df.Age,interval,labels=categories)
ax = sns.countplot(x="Age_categories",data=titanic_df,hue='Survived',palette='Set3'
ax.set(xlabel='Age cats',ylabel='Total',title="age cats")
print(pd.crosstab(titanic_df['Age_categories'],titanic_df.Survived))
plt.show()
```

```
Survived        Died  Survived
Age_categories
Children          69        70
Teen             221       137
Adult            117        78
Old               17         5
```



In [24]:

```
#Plotting graph of Survived/Dead Against Embarked place
ax = sns.countplot(x='Embarked',hue='Survived',palette='Set1',data=titanic_df)
ax.set(title='Survival acording to Embarking Place')
plt.show()
```


Survival acording to Embarking Place
Survived
Died
Survived
count
0
50
100
150
200
250
300
350
400
Southampton
Cherbourg
Queenstown
Embarked