```
from IPython.display import Image
Image(url= "https://th.bing.com/th/id/R.78e8a1b7448b01564bb6cbd44f176c2d?rik=l1rJcDqjjqf4rg&riu=http%3a%2f%2fredcrosschat.org%2fwp-content
```

Import and depending

```
import numpy as np
import pandas as pd
import matplotlib.pyplot as plt
import seaborn as sns
import matplotlib.pyplot as mpl
from sklearn.model_selection import train_test_split
from sklearn.linear_model import LogisticRegression
from sklearn.linear_model import LinearRegression

from sklearn.metrics import accuracy_score
```

Data Collection & Processing

```
#load data
Titanic_data = pd.read_csv('/content/tested.csv')
```

```
# printing the first 5 rows of the dataframe

Titanic_data.head()
```

	PassengerId	Survived	Pclass	Name	Sex	Age	SibSp	Parch	Ticket	Fare	Cabin	Embarked
0	892	0	3	Kelly, Mr. James	male	34.5	0	0	330911	7.8292	NaN	Q
1	893	1	3	Wilkes, Mrs. James (Ellen	female	47.0	1	0	363272	7.0000	NaN	S

```
1 #num of row and column
2 Titanic_data.shape
```

```
(413, 12)
```

```
1 Titanic_data.info()
```

```
<class 'pandas.core.frame.DataFrame'>
RangeIndex: 413 entries, 0 to 412
Data columns (total 12 columns):
 #   Column       Non-Null Count  Dtype  
---  ------       --------------  -----  
 0   PassengerId  413 non-null    int64  
 1   Survived     413 non-null    int64  
 2   Pclass       413 non-null    int64  
 3   Name         413 non-null    object 
 4   Sex          413 non-null    object 
 5   Age          328 non-null    float64
 6   SibSp        413 non-null    int64  
 7   Parch        413 non-null    int64  
 8   Ticket       413 non-null    object 
 9   Fare         412 non-null    float64
 10  Cabin        89 non-null     object 
 11  Embarked     413 non-null    object 
dtypes: float64(2), int64(5), object(5)
memory usage: 38.8+ KB
```

```
1 # check the number of missing values in each column
2 Titanic_data.isnull().sum()
```

```
PassengerId      0
Survived         0
Pclass           0
Name             0
Sex              0
Age             85
SibSp            0
Parch            0
Ticket           0
Fare             1
Cabin          324
Embarked         0
dtype: int64
```

Handling missing value

```
1
```

```
1 # replacing the missing values in "Age" column with mean value
2 Titanic_data['Age'].fillna(Titanic_data['Age'].mean(), inplace=True)
```

```
1 Titanic_data.info()
```

```
<class 'pandas.core.frame.DataFrame'>
RangeIndex: 413 entries, 0 to 412
Data columns (total 12 columns):
 #   Column       Non-Null Count  Dtype  
---  ------       --------------  -----  
 0   PassengerId  413 non-null    int64  
 1   Survived     413 non-null    int64  
 2   Pclass       413 non-null    int64  
 3   Name         413 non-null    object 
 4   Sex          413 non-null    object 
 5   Age          413 non-null    float64
 6   SibSp        413 non-null    int64  
 7   Parch        413 non-null    int64  
 8   Ticket       413 non-null    object 
 9   Fare         412 non-null    float64
```

```
 10  Cabin        89 non-null     object
 11  Embarked     413 non-null    object
dtypes: float64(2), int64(5), object(5)
memory usage: 38.8+ KB
```

```
# finding the mode value of "Embarked" column
print(Titanic_data['Embarked'].mode())
```

```
0    S
Name: Embarked, dtype: object
```

```
print(Titanic_data['Embarked'].mode()[0])
```

```
S
```

```
Titanic_data.isnull().sum()
```

```
PassengerId      0
Survived         0
Pclass           0
Name             0
Sex              0
Age              0
SibSp            0
Parch            0
Ticket           0
Fare             1
Cabin          324
Embarked         0
dtype: int64
```

Data Analysis

```
Titanic_data.describe()
```

	PassengerId	Survived	Pclass	Age	SibSp	Parch	Fare
count	413.000000	413.000000	413.000000	413.000000	413.000000	413.000000	412.000000
mean	1102.358354	0.365617	2.263923	30.342988	0.435835	0.389831	35.274970
std	120.344741	0.482187	0.842201	12.666215	0.875156	0.983156	55.071904
min	892.000000	0.000000	1.000000	0.170000	0.000000	0.000000	0.000000
25%	1000.000000	0.000000	1.000000	23.000000	0.000000	0.000000	7.895800
50%	1103.000000	0.000000	3.000000	30.342988	0.000000	0.000000	14.454200
75%	1206.000000	1.000000	3.000000	36.000000	1.000000	0.000000	31.500000
max	1309.000000	1.000000	3.000000	76.000000	8.000000	9.000000	512.329200

```
# finding the number of people survived and not survived
Titanic_data["Survived"].value_counts()
```

```
0    262
1    151
Name: Survived, dtype: int64
```

```
Embarked = Titanic_data['Embarked'].unique()
for Embarkeds in Embarked:
    print("->",Embarkeds)
```

```
-> Q
-> S
-> C
```

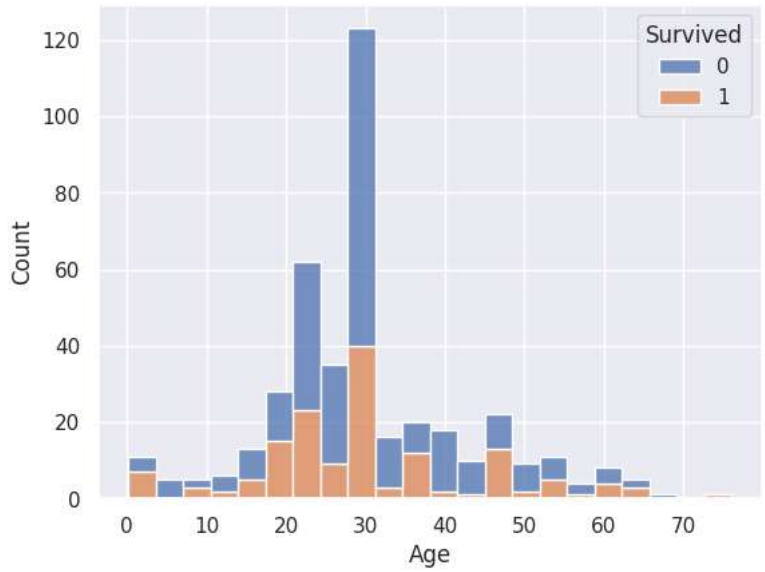
Data Visualization

```
sns.set()
```

```
1 import matplotlib.pyplot as plt
2
3
```

```
1 sns.histplot(data = Titanic_data, x = "Age", hue = "Survived", multiple = "stack",)
2 ax.set_title("Histogram for Age with Survival")
3 ax.set_xlabel("Age")
4 ax.set_ylabel("Number of passengers")
5 ax.legend(title = "Legends", labels = ["Survived", "Not survived"])
6 mpl.plot()
```

```
[]
```

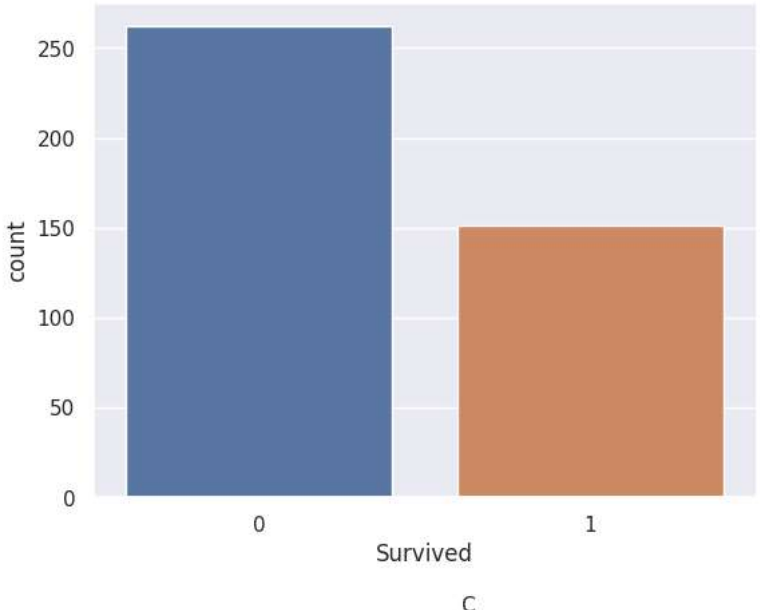



```
1 embarked_counts = Titanic_data['Embarked'].value_counts()
2 mpl.figure(figsize=(8, 8))
3 mpl.pie(embarked_counts, labels=embarked_counts.index, autopct='%1.1f%%', colors=['#66b3ff', '#99ff99', '#ff9999'])
4 mpl.title("Distribution of Passengers by Embarked")
5 mpl.legend(["Q", "S", "C"])
6 mpl.show()
```

Distribution of Passengers by Embarked

```
1 # making a count plot for "Survived" column
2 sns.countplot(x='Survived', data=Titanic_data)
3
```

```
<Axes: xlabel='Survived', ylabel='count'>
```



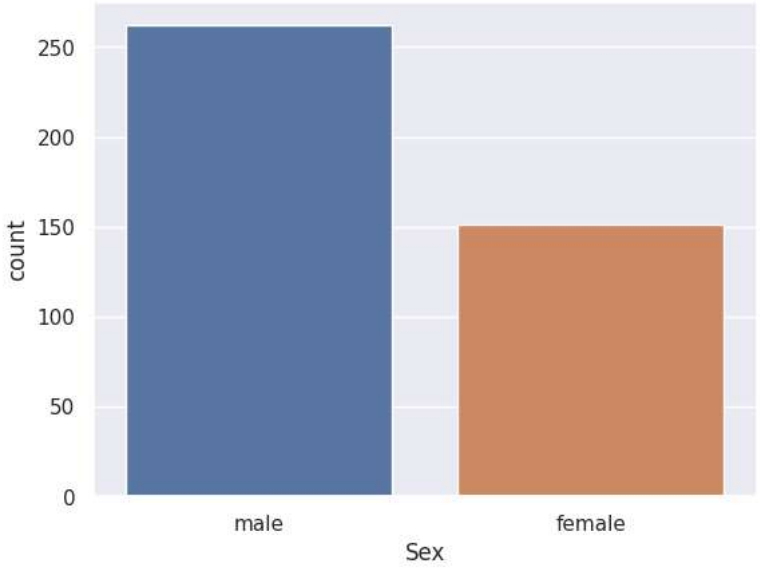
C

```
1 #count num of male and female
2 Titanic_data['Sex'].value_counts()
```

```
male      262
female    151
Name: Sex, dtype: int64
```

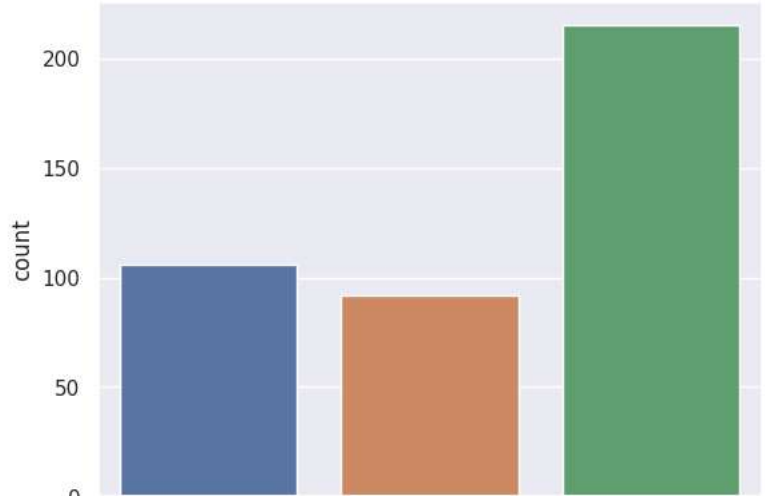
```
1 # making a count plot for "SEX" column
2 sns.countplot(x='Sex', data=Titanic_data)
3
```

```
<Axes: xlabel='Sex', ylabel='count'>
```



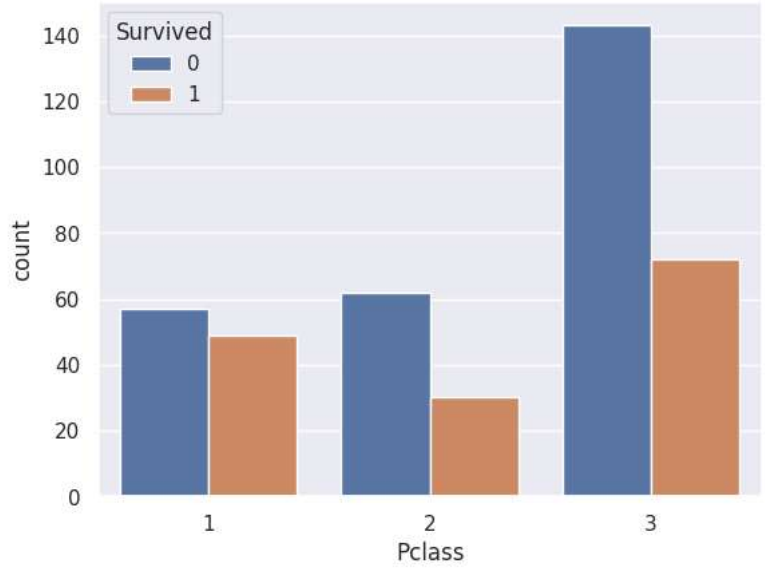

```
1 # making a count plot for "Pclass" column
2 sns.countplot(x='Pclass', data=Titanic_data)
```

```
<Axes: xlabel='Pclass', ylabel='count'>
```



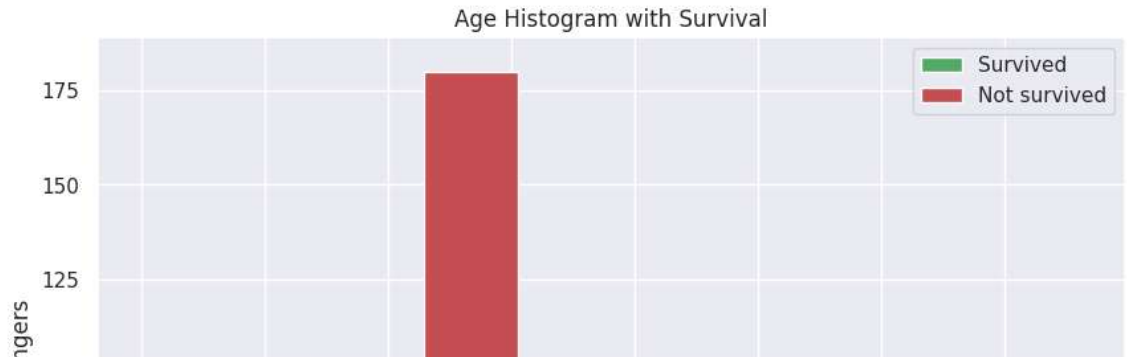

```
1 sns.countplot(x='Pclass', hue='Survived', data=Titanic_data)
```

```
<Axes: xlabel='Pclass', ylabel='count'>
```




```
1 fig = plt.figure(figsize =(10, 7))
2 plt.hist(x = [Titanic_data[Titanic_data['Survived']==1]['Age'], Titanic_data[Titanic_data['Survived']==0]['Age']],stacked=True, color = ['
3 plt.title('Age Histogram with Survival')
4 plt.xlabel('Age')
5 plt.ylabel('No of passengers')
6 plt.legend()
7
```

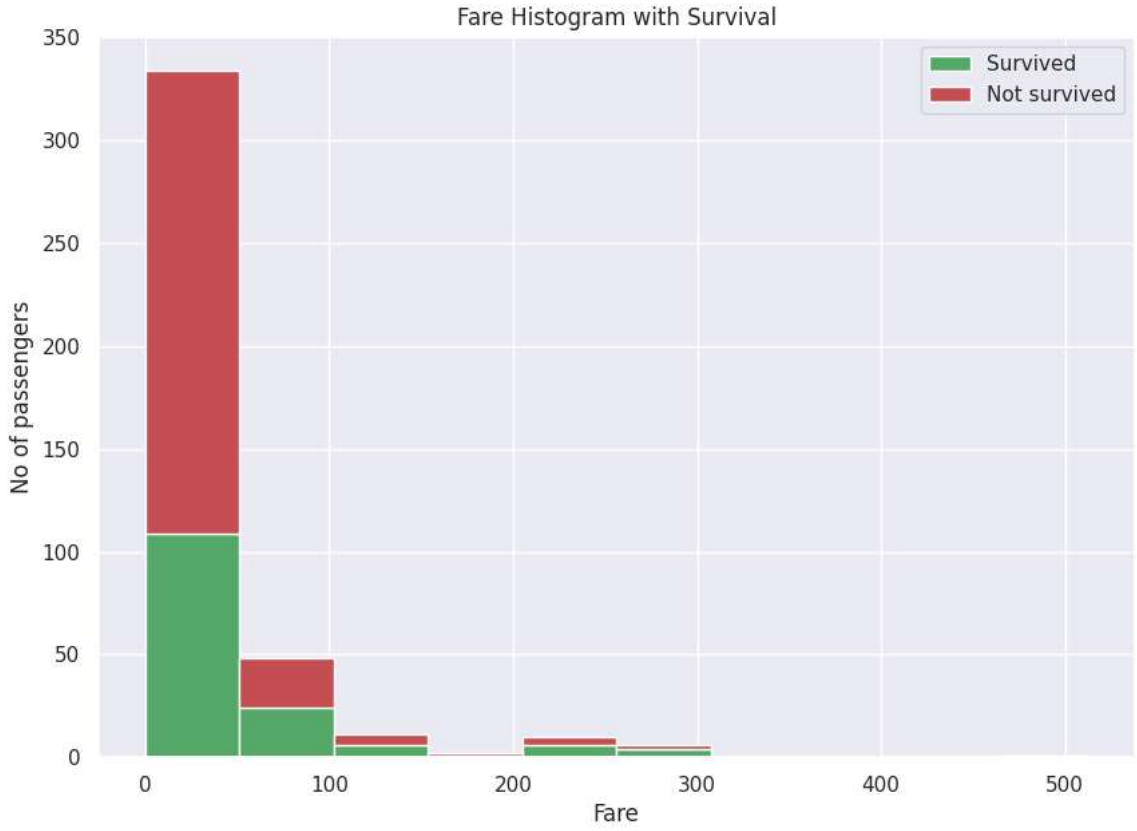
```
<matplotlib.legend.Legend at 0x7be5efb1c250>
```




```
fig = plt.figure(figsize =(10, 7))
plt.hist(x = [Titanic_data[Titanic_data['Survived']==1]['Fare'], Titanic_data[Titanic_data['Survived']==0]['Fare']], stacked=True, color =
plt.title('Fare Histogram with Survival')
plt.xlabel('Fare')
plt.ylabel('No of passengers')
plt.legend()

```

```
<matplotlib.legend.Legend at 0x7be5efe71210>
```

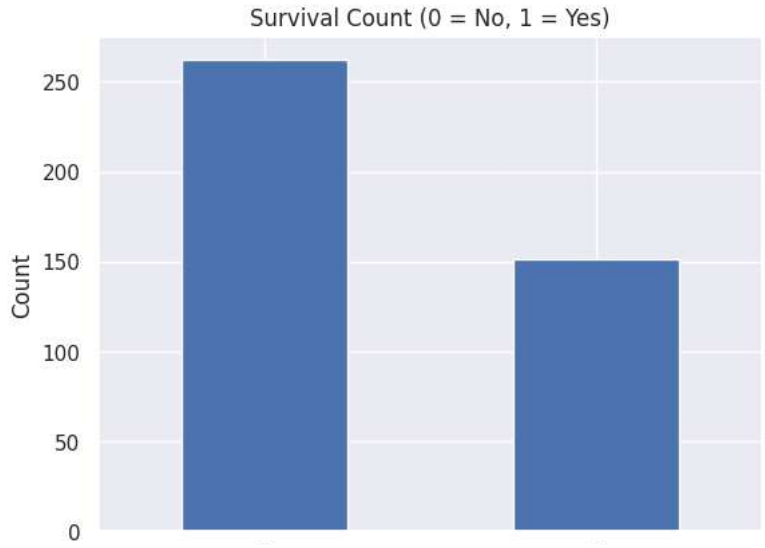



```
column = 'Survived'

# Create a bar chart
survival_counts = Titanic_data[column].value_counts()
survival_counts.plot(kind='bar', rot=0)

# Adding labels and title
plt.xlabel('Survived')
plt.ylabel('Count')
plt.title('Survival Count (0 = No, 1 = Yes)')

# Show the plot
plt.show()
```



Separating features & Target

```
1 Titanic_data['Sex'].value_counts()
```

```
male      262
female    151
Name: Sex, dtype: int64
```

```
1 Titanic_data['Embarked'].value_counts()
```

```
S    267
C    101
Q     45
Name: Embarked, dtype: int64
```

```
1 # converting categorical Columns
2 Titanic_data.replace({'Sex':{'male':0,'female':1}, 'Embarked':{'S':0,'C':1,'Q':2}}, inplace=True)
```

```
1 Titanic_data.dtypes
```

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

```
1 Titanic_data['Age'] = Titanic_data['Age'].astype(int)
2 Titanic_data['Fare'] = Titanic_data['Fare'].fillna(0)
3 Titanic_data['Fare'] = Titanic_data['Fare'].astype(int)
4
5
```

```
1 Titanic_data.head()
```

	PassengerId	Survived	Pclass	Name	Sex	Age	SibSp	Parch	Ticket	Fare	Cabin	Embarked
1	893	1	3	James (Ellen	1	47	1	0	363272	7	NaN	0

```
1 data = Titanic_data.drop(['PassengerId','Name','Cabin','Ticket'], axis =1, inplace=True)
2
```

```
1 Titanic_data.head
```

```
<bound method NDFrame.head of      Survived  Pclass  Sex  Age  SibSp  Parch  Fare  Embarked
0           0       3    0   34      0      0     7         2
1           1       3    1   47      1      0     7         0
2           0       2    0   62      0      0     9         2
3           0       3    0   27      0      0     8         0
4           1       3    1   22      1      1    12         0
..        ...     ...  ...  ...    ...    ...   ...       ...
408         0       3    0   30      0      0     8         0
409         1       1    1   39      0      0   108         1
410         0       3    0   38      0      0     7         0
411         0       3    0   30      0      0     8         0
412         0       3    0   30      1      1    22         1

[413 rows x 8 columns]>
```

```
1
```

```
1 Train = Titanic_data.drop(['Survived'], axis=1)
2 Test = Titanic_data.iloc[:,1]
3 x_train, x_test, y_train, y_test = train_test_split(Train, Test, test_size = 0.2, random_state = 1)
```

```
1 print(X.shape, X_train.shape, X_test.shape)
```

```
(413, 8) (330, 8) (83, 8)
```

Model Training

Logistic Regression

```
1 try:
2   float("E52")
3 except ValueError:
4   print("The string 'E52' cannot be converted to a float.")
```

```
The string 'E52' cannot be converted to a float.
```

```
1 LR = LogisticRegression(solver='liblinear', max_iter=200)
2 LR.fit(x_train, y_train)
3 y_pred = LR.predict(x_test)
4 LRAcc = accuracy_score(y_pred,y_test)
5 print('Logistic regression accuracy: {:.2f}%'.format(LRAcc*100))
```

```
Logistic regression accuracy: 96.39%
```

✓ 0s completed at 12:36 AM