In [1]:
```python
import numpy as np
import pandas as pd
import seaborn as sns

from sklearn.linear_model import LogisticRegression
from sklearn.model_selection import train_test_split
from sklearn.metrics import classification_report
from sklearn.metrics import accuracy_score
from sklearn.tree import DecisionTreeClassifier
from sklearn.svm import SVC
from sklearn.ensemble import RandomForestClassifier
from sklearn.neighbors import KNeighborsClassifier
```

In [2]:
```python
df=pd.read_csv("C:/Users/Admin/Desktop/tested.csv")
df
```

Out[2]:

	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 Needs)	female	47.0	1	0	363272	7.0000	NaN	S
2	894	0	2	Myles, Mr. Thomas Francis	male	62.0	0	0	240276	9.6875	NaN	Q
3	895	0	3	Wirz, Mr. Albert	male	27.0	0	0	315154	8.6625	NaN	S
4	896	1	3	Hirvonen, Mrs. Alexander (Helga E Lindqvist)	female	22.0	1	1	3101298	12.2875	NaN	S
...	...	...	...	...	...	...	...	...	...	...	...	...
413	1305	0	3	Spector, Mr. Woolf	male	NaN	0	0	A.5. 3236	8.0500	NaN	S
414	1306	1	1	Oliva y Ocana, Dona. Fermina	female	39.0	0	0	PC 17758	108.9000	C105	C
415	1307	0	3	Saether, Mr. Simon Sivertsen	male	38.5	0	0	SOTON/O.Q. 3101262	7.2500	NaN	S
416	1308	0	3	Ware, Mr. Frederick	male	NaN	0	0	359309	8.0500	NaN	S
417	1309	0	3	Peter, Master. Michael J	male	NaN	1	1	2668	22.3583	NaN	C

418 rows × 12 columns

In [3]:
```python
df.head()
```

Out[3]:

	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 Needs)	female	47.0	1	0	363272	7.0000	NaN	S
2	894	0	2	Myles, Mr. Thomas Francis	male	62.0	0	0	240276	9.6875	NaN	Q
3	895	0	3	Wirz, Mr. Albert	male	27.0	0	0	315154	8.6625	NaN	S
4	896	1	3	Hirvonen, Mrs. Alexander (Helga E Lindqvist)	female	22.0	1	1	3101298	12.2875	NaN	S

In [4]:
```python
df.tail()
```

Out[4]:

	PassengerId	Survived	Pclass	Name	Sex	Age	SibSp	Parch	Ticket	Fare	Cabin	Embarked
413	1305	0	3	Spector, Mr. Woolf	male	NaN	0	0	A.5. 3236	8.0500	NaN	S
414	1306	1	1	Oliva y Ocana, Dona. Fermina	female	39.0	0	0	PC 17758	108.9000	C105	C
415	1307	0	3	Saether, Mr. Simon Sivertsen	male	38.5	0	0	SOTON/O.Q. 3101262	7.2500	NaN	S
416	1308	0	3	Ware, Mr. Frederick	male	NaN	0	0	359309	8.0500	NaN	S
417	1309	0	3	Peter, Master. Michael J	male	NaN	1	1	2668	22.3583	NaN	C

In [5]:
```python
df.shape
```

Out[5]:
```
(418, 12)
```

In [7]:
```python
df.describe()
```

Out[7]:

	PassengerId	Survived	Pclass	Age	SibSp	Parch	Fare
count	418.000000	418.000000	418.000000	332.000000	418.000000	418.000000	417.000000
mean	1100.500000	0.363636	2.265550	30.272590	0.447368	0.392344	35.627188
std	120.810458	0.481622	0.841838	14.181209	0.896760	0.981429	55.907576
min	892.000000	0.000000	1.000000	0.170000	0.000000	0.000000	0.000000
25%	996.250000	0.000000	1.000000	21.000000	0.000000	0.000000	7.895800
50%	1100.500000	0.000000	3.000000	27.000000	0.000000	0.000000	14.454200
75%	1204.750000	1.000000	3.000000	39.000000	1.000000	0.000000	31.500000
max	1309.000000	1.000000	3.000000	76.000000	8.000000	9.000000	512.329200

In [8]:
```python
df.isnull().sum()
```

Out[8]:
```
PassengerId      0
Survived         0
Pclass           0
Name             0
Sex              0
Age             86
SibSp            0
Parch            0
Ticket           0
Fare             1
Cabin          327
Embarked         0
dtype: int64
```

In [12]:
```python
df.dtypes
```

Out[12]:
```
PassengerId      int64
Survived         int64
Pclass           int64
Name            object
Sex             object
Age            float64
SibSp            int64
Parch            int64
Ticket          object
Fare           float64
Cabin           object
Embarked        object
dtype: object
```

In [13]:
```python
df['Age'] = df['Age'].fillna(df['Age'].mean())
df['Fare'] = df['Fare'].fillna(df['Fare'].mean())
```

In [14]:
```python
Embarked = df['Embarked'].unique()
for Embarkeds in Embarked:
    print("->",Embarkeds)
```

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

In [15]:
```python
df['Embarked'] = df['Embarked'].map( {'Q': 0,'S':1,'C':2}).astype(int)
df['Sex'] = df['Sex'].map( {'female': 1,'male':0}).astype(int)
```

In [16]:
```python
df.dtypes
```

Out[16]:
```
PassengerId      int64
Survived         int64
Pclass           int64
Name            object
Sex              int32
Age            float64
SibSp            int64
Parch            int64
Ticket          object
Fare           float64
Cabin           object
Embarked         int32
dtype: object
```

In [17]:
```python
df['Age'] = df['Age'].astype(int)
df['Fare'] = df['Fare'].astype(int)
data = df.drop(['PassengerId','Name','Cabin','Ticket'], axis =1, inplace=True)
```

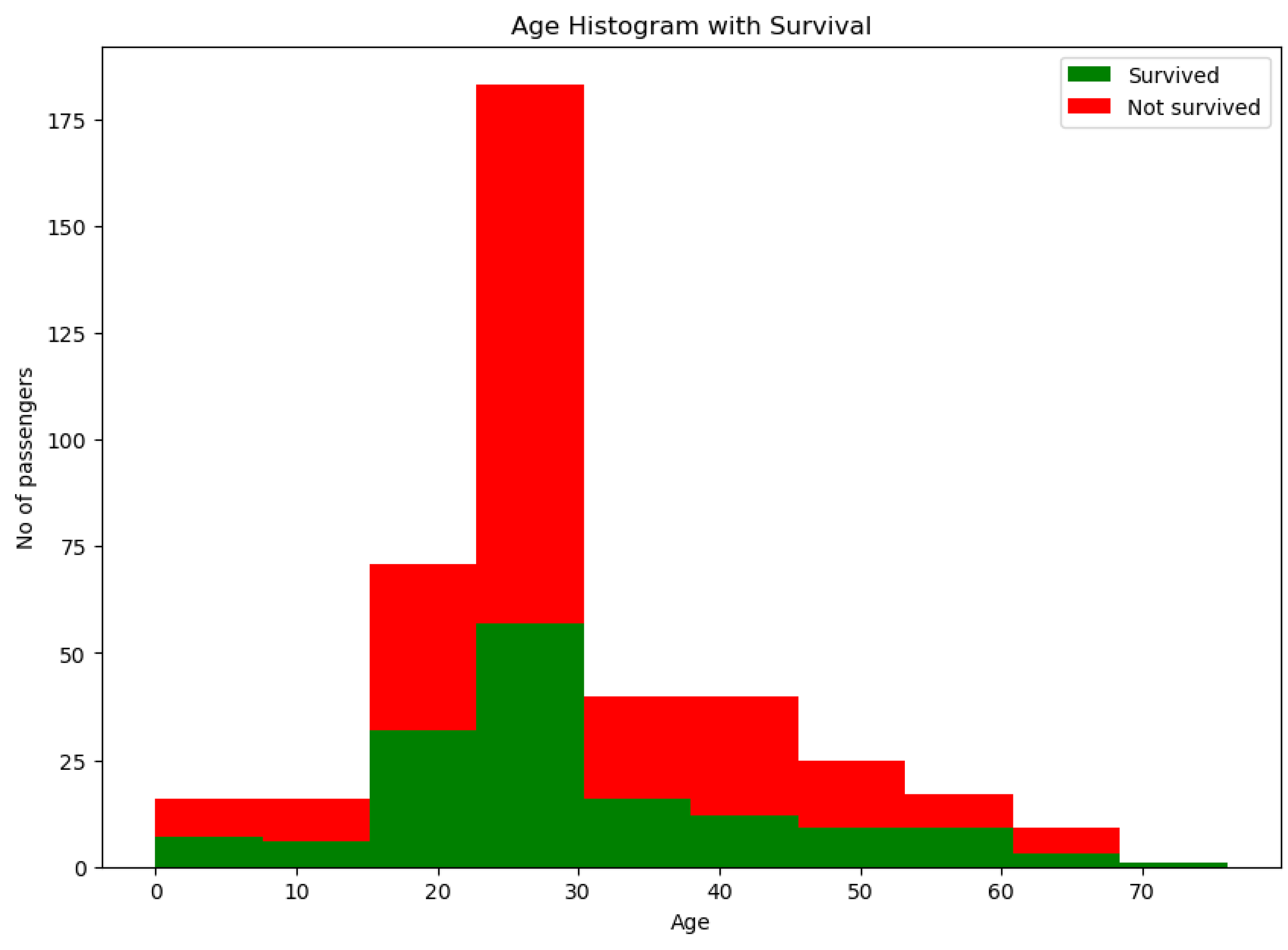
In [18]:
```python
df.head()
```

Out[18]:

	Survived	Pclass	Sex	Age	SibSp	Parch	Fare	Embarked
0	0	3	0	34	0	0	7	0
1	1	3	1	47	1	0	7	1
2	0	2	0	62	0	0	9	0
3	0	3	0	27	0	0	8	1
4	1	3	1	22	1	1	12	1

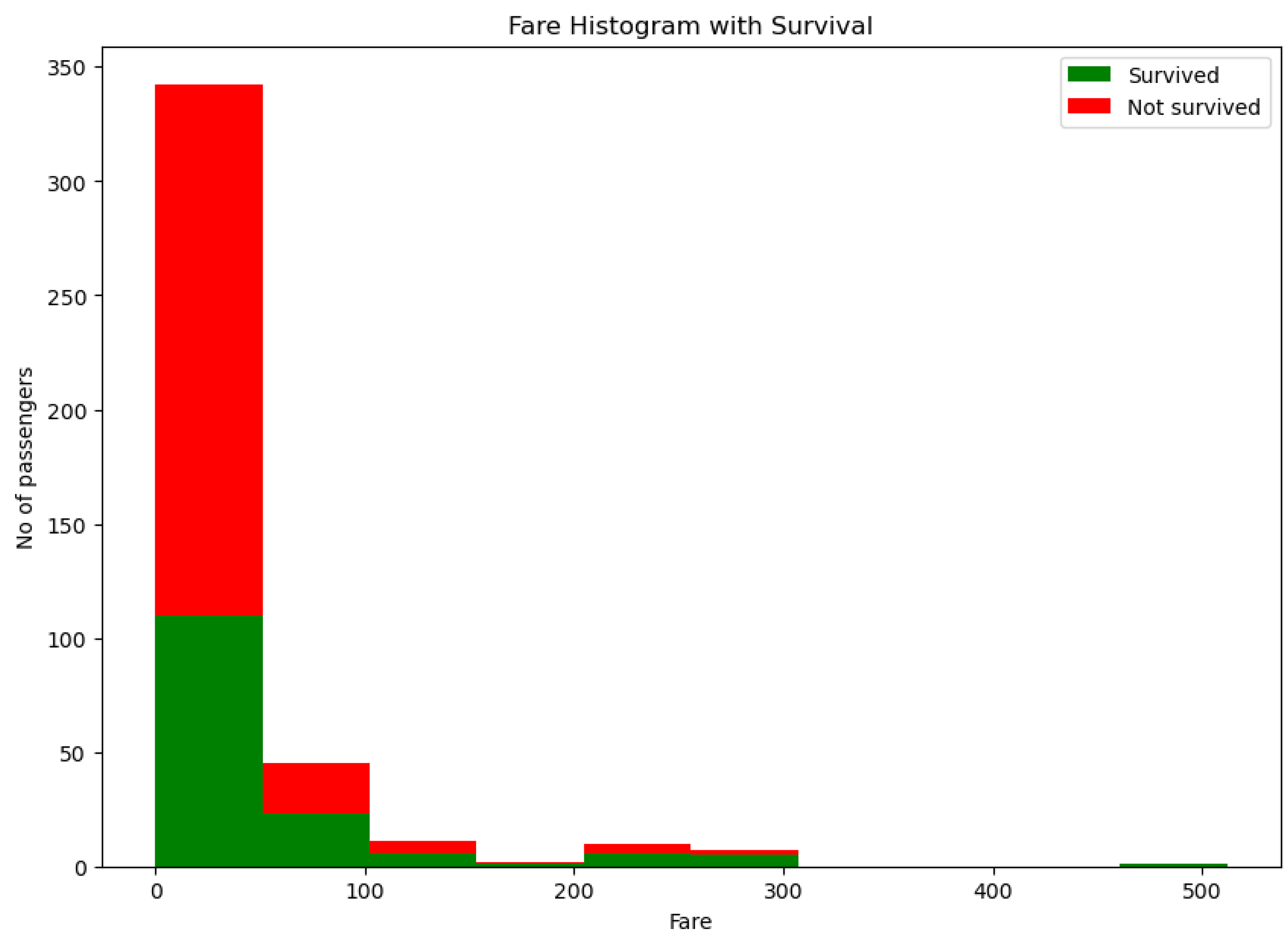
In [19]:
```python
import matplotlib.pyplot as plt
fig = plt.figure(figsize =(10, 7))
plt.hist(x = [df[df['Survived']==1]['Age'], df[df['Survived']==0]['Age']],stacked=True, color = ['g','r'],label = ['Survived','Not survived'])
plt.title('Age Histogram with Survival')
plt.xlabel('Age')
plt.ylabel('No of passengers')
plt.legend()
```

Out[19]:
```
<matplotlib.legend.Legend at 0x2af49e1e410>
```



In [20]:
```python
fig = plt.figure(figsize =(10, 7))
plt.hist(x = [df[df['Survived']==1]['Fare'], df[df['Survived']==0]['Fare']], stacked=True, color = ['g','r'],label = ['Survived','Not survived'])
plt.title('Fare Histogram with Survival')
plt.xlabel('Fare')
plt.ylabel('No of passengers')
plt.legend()
```

Out[20]:
```
<matplotlib.legend.Legend at 0x2af49e10190>
```

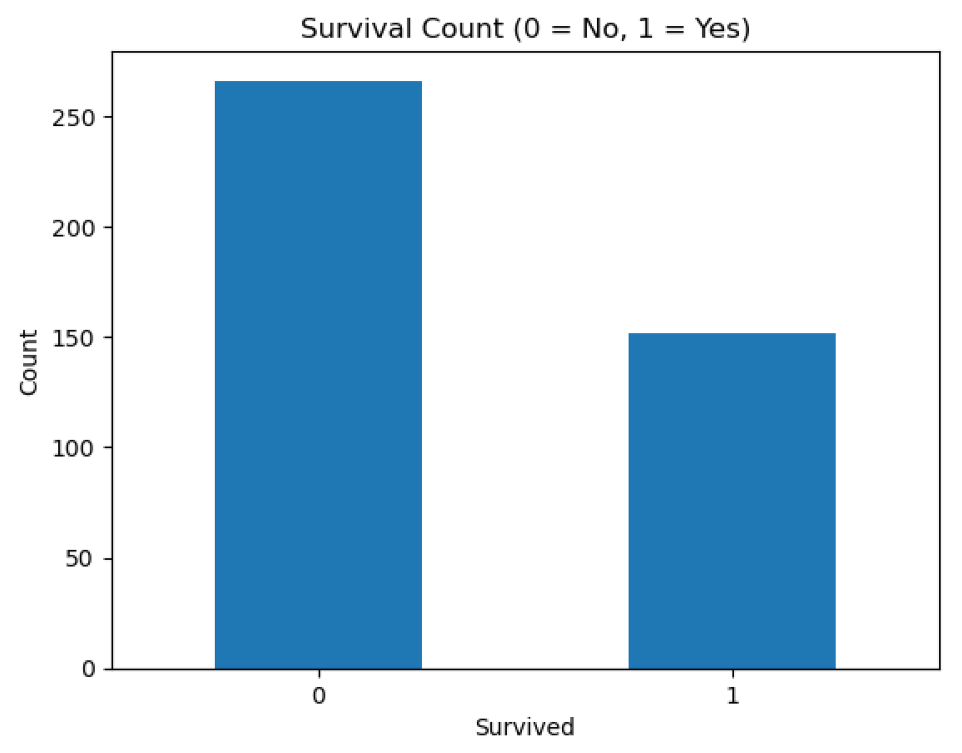


In [21]:
```python
column = 'Survived'

# Create a bar chart
survival_counts = df[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()
```



In [22]:
```python
Train = df.drop(['Survived'], axis=1)
Test = df.iloc[:,1]
x_train, x_test, y_train, y_test = train_test_split(Train, Test, test_size = 0.2, random_state = 1)
```

In [23]:
```python
LR = LogisticRegression(solver='liblinear', max_iter=200)
LR.fit(x_train, y_train)
y_pred = LR.predict(x_test)
LRAcc = accuracy_score(y_pred,y_test)
print('Logistic regression accuracy: {:.2f}%'.format(LRAcc*100))
```

```
Logistic regression accuracy: 92.86%
```

In [ ]: