In [ ]:
```
import pandas as pd
import seaborn as sns
from sklearn.feature_selection import SelectKBest, chi2
from sklearn.preprocessing import LabelEncoder
```

In [ ]:
```
df = pd.read_csv(r'C:\Users\DELL\Documents\7th sem\PA\titanic.csv')
df.head()
```

Out[ ]:

	PassengerId	Survived	Pclass	Name	Sex	Age	SibSp	Parch	Ticket	Fare	Cabi
0	1	0	3	Braund, Mr. Owen Harris	male	22.0	1	0	A/5 21171	7.2500	Na
1	2	1	1	Cumings, Mrs. John Bradley (Florence Briggs Th...	female	38.0	1	0	PC 17599	71.2833	C8
2	3	1	3	Heikkinen, Miss. Laina	female	26.0	0	0	STON/O2. 3101282	7.9250	Na
3	4	1	1	Futrelle, Mrs. Jacques Heath (Lily May Peel)	female	35.0	1	0	113803	53.1000	C12
4	5	0	3	Allen, Mr. William Henry	male	35.0	0	0	373450	8.0500	Na

In [ ]:
```
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
```

In [ ]:
```
df.Sex.value_counts()
```

Out[ ]:
```
male      577
female    314
Name: Sex, dtype: int64
```

In [ ]:
```
df.Embarked.value_counts()
```

Out[ ]:
```
S    644
C    168
Q     77
Name: Embarked, dtype: int64
```

In [ ]:
```
df1 = pd.get_dummies(df['Sex'])
df1.head()
```

Out[ ]:

	female	male
0	0	1
1	1	0
2	1	0
3	1	0
4	0	1

In [ ]:
```
df = pd.concat([df, df1], axis=1).reindex(df.index)
df.drop('Sex', axis=1, inplace=True)
df.head()
```

Out[ ]:

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

In [ ]:
```
df['Embarked'].unique()
```

Out[ ]:
```
array(['S', 'C', 'Q', nan], dtype=object)
```

In [ ]:

```
df.dropna(inplace=True)
le = LabelEncoder()
df['Embarked'] = le.fit_transform(df['Embarked'])
df.head()
```

Out[ ]:

	PassengerId	Survived	Pclass	Name	Age	SibSp	Parch	Ticket	Fare	Cabin	Emba
1	2	1	1	Cumings, Mrs. John Bradley (Florence Briggs Th...	38.0	1	0	PC 17599	71.2833	C85	
3	4	1	1	Futrelle, Mrs. Jacques Heath (Lily May Peel)	35.0	1	0	113803	53.1000	C123	
6	7	0	1	McCarthy, Mr. Timothy J	54.0	0	0	17463	51.8625	E46	
10	11	1	3	Sandstrom, Miss. Marguerite Rut	4.0	1	1	PP 9549	16.7000	G6	
11	12	1	1	Bonnell, Miss. Elizabeth	58.0	0	0	113783	26.5500	C103	

In [ ]:

```
df.drop(['Cabin', 'Name', 'Ticket'], axis=1, inplace=True)
df.head(3)
```

Out[ ]:

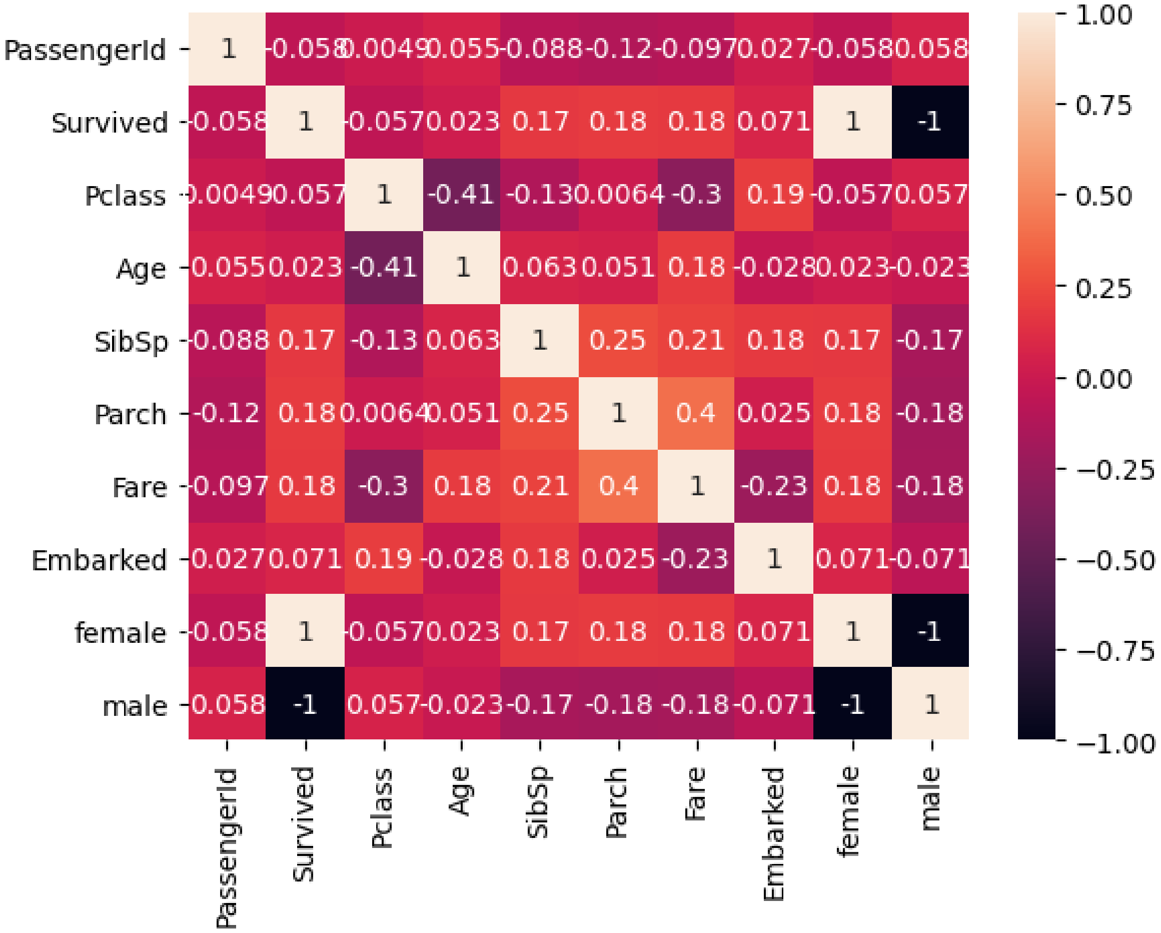
	PassengerId	Survived	Pclass	Age	SibSp	Parch	Fare	Embarked	female	male
1	2	1	1	38.0	1	0	71.2833	0	1	0
3	4	1	1	35.0	1	0	53.1000	2	1	0
6	7	0	1	54.0	0	0	51.8625	2	0	1

In [ ]:

```
sns.heatmap(df.corr(), annot=True)
```

Out[ ]:

```
<AxesSubplot:>
```



In [ ]:
```
X = df.drop(['Survived', 'Name', 'Ticket', 'Cabin'], axis=1)
y = df['Survived']
```

In [ ]:
```
bestfeatures = SelectKBest(score_func=chi2, k=5)
fit = bestfeatures.fit(X, y)
```

In [ ]:
```
scores = pd.DataFrame(fit.scores_)
columns = pd.DataFrame(X.columns)
featurescores = pd.concat([columns, scores], axis=1)
featurescores.columns = ['Specs', 'Score']
featurescores.nlargest(5, 'Score')
```

Out[ ]:

	Specs	Score
5	Fare	218.493185
8	male	44.000000
7	female	43.000000
4	Parch	4.350951
0	PassengerId	4.252916