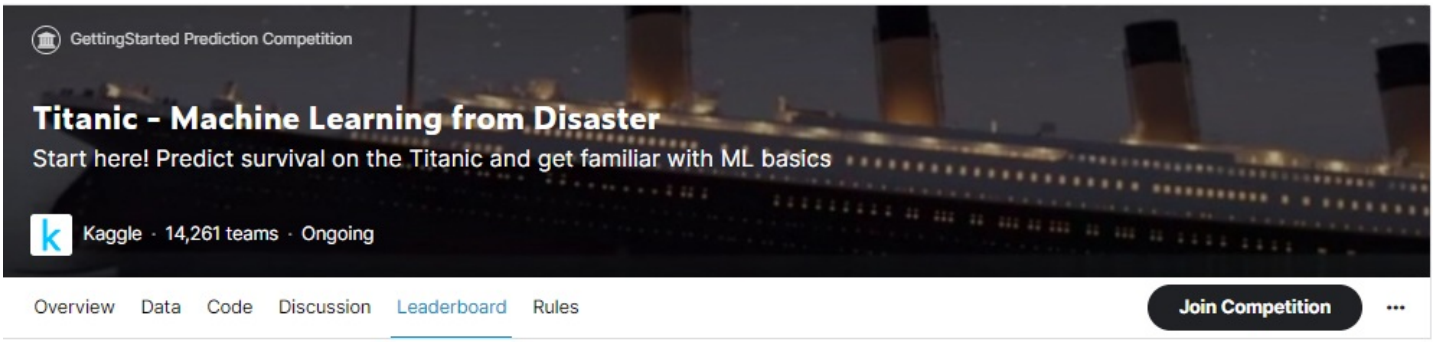


In [1]:

```
import numpy as np
import pandas as pd
import matplotlib.pyplot as plt
import seaborn as sns
import warnings
warnings.filterwarnings("ignore")
```

In [79]:

```
df_tr=pd.read_csv('E:\\My projects\\Kaggle titanic\\train.csv')
df_tr.head(2)

# df_tr means df training data set
```

Out[79]:

	PassengerId	Survived	Pclass	Name	Sex	Age	SibSp	Parch	Ticket	Fare	Cabin	Embarked
0	1	0	3	Braund, Mr. Owen Harris	male	22.0	1	0	A/5 21171	7.2500	NaN	S
1	2	1	1	Cumings, Mrs. John Bradley (Florence Briggs Th...	female	38.0	1	0	PC 17599	71.2833	C85	C

In [80]:

```
df_tr.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 [81]:

```
df_tr.describe()
```

Out[81]:

	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

Data cleaning

In [82]:

```
df_tr.isna().sum()
```

Out[82]:

```
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
```

In [83]:

```
mean= df_tr['Age'].mean()
print(mean)

mode = df_tr['Embarked'].mode()[0]
print(mode)

mode1 = df_tr['Cabin'].mode()[0]
print(mode1)
```

```
29.69911764705882
S
B96 B98
```

fillna( )

In [84]:

```
df_tr['Age'].fillna(mean,inplace=True)
df_tr['Embarked'].fillna(mode,inplace=True)
df_tr['Cabin'].fillna(mode1,inplace=True)
```

In [85]:

```
df_tr.isna().sum()   #  now data has no missing values
```

Out[85]:

```
PassengerId    0
Survived       0
```

```
Pclass          0
Name            0
Sex             0
Age             0
SibSp           0
Parch           0
Ticket          0
Fare            0
Cabin           0
Embarked        0
dtype: int64
```

In [86]:

```
df_tr
```

Out[86]:

	PassengerId	Survived	Pclass	Name	Sex	Age	SibSp	Parch	Ticket	Fare	Cabin	Embarked
0	1	0	3	Braund, Mr. Owen Harris	male	22.000000	1	0	A/5 21171	7.2500	B96 B98	S
1	2	1	1	Cumings, Mrs. John Bradley (Florence Briggs Th...	female	38.000000	1	0	PC 17599	71.2833	C85	C
2	3	1	3	Heikkinen, Miss. Laina	female	26.000000	0	0	STON/O2. 3101282	7.9250	B96 B98	S
3	4	1	1	Futrelle, Mrs. Jacques Heath (Lily May Peel)	female	35.000000	1	0	113803	53.1000	C123	S
4	5	0	3	Allen, Mr. William Henry	male	35.000000	0	0	373450	8.0500	B96 B98	S
...	...	...	...	...	...	...	...	...	...	...	...	...
886	887	0	2	Montvila, Rev. Juozas	male	27.000000	0	0	211536	13.0000	B96 B98	S
887	888	1	1	Graham, Miss. Margaret Edith	female	19.000000	0	0	112053	30.0000	B42	S
888	889	0	3	Johnston, Miss. Catherine Helen "Carrie"	female	29.699118	1	2	W./C. 6607	23.4500	B96 B98	S
889	890	1	1	Behr, Mr. Karl Howell	male	26.000000	0	0	111369	30.0000	C148	C
890	891	0	3	Dooley, Mr. Patrick	male	32.000000	0	0	370376	7.7500	B96 B98	Q

891 rows × 12 columns

checking data is normal or not

In [87]:

```
print(df_tr['Fare'].skew())
print(df_tr['Age'].skew())
```

```
4.787316519674893
0.4344880940129925
```

In [88]:

```
# making data normal

df_tr['sqr_Fare']=df_tr['Fare']**(1/4.7)
```

```
print(df_tr['sqr_Fare'].skew())
```

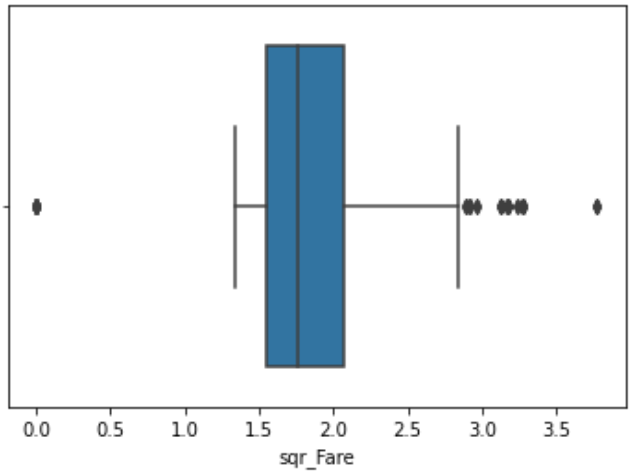
```
0.00982006067812734
```

In [89]:

```
sns.boxplot(x=df_tr['sqr_Fare'])
```

Out[89]:

```
<AxesSubplot:xlabel='sqr_Fare'>
```

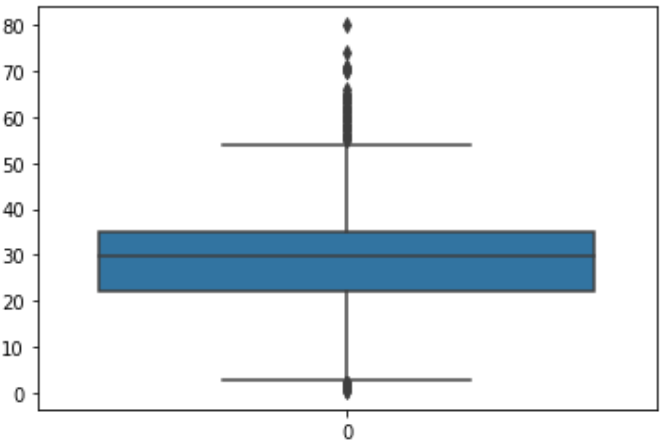


In [90]:

```
sns.boxplot(data=df_tr['Age'])
```

Out[90]:

```
<AxesSubplot:>
```



In [91]:

```
## df_tr.nunique()
# changing column name
# df.rename(columns={'old_name': 'new_name'},inplace = True)
```

In [92]:

```
#! pip install feature_engine
```

now handling with outliers

In [93]:

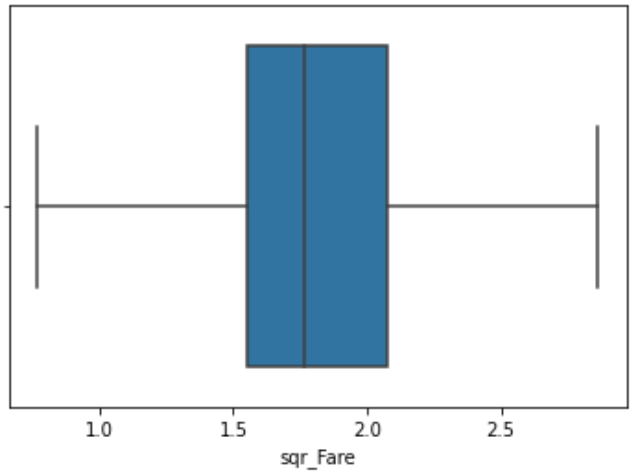
```
from feature_engine.outliers import Winsorizer

win=Winsorizer(capping_method='iqr',tail='both',fold=1.5,variables=['Age','sqr_Fare'])

df_tr[['Age','sqr_Fare']]=win.fit_transform(df_tr[['Age','sqr_Fare']])
```

In [94]:

```
sns.boxplot(x=df_tr['sqr_Fare'])
```

Out[94]:

```
<AxesSubplot:xlabel='sqr_Fare'>
```



In [95]:

```
df_tr
```

Out[95]:

	PassengerId	Survived	Pclass	Name	Sex	Age	SibSp	Parch	Ticket	Fare	Cabin	Embarked	sqr_
0	1	0	3	Braund, Mr. Owen Harris	male	22.000000	1	0	A/5 21171	7.2500	B96 B98	S	1.524
1	2	1	1	Cumings, Mrs. John Bradley (Florence Briggs Th...	female	38.000000	1	0	PC 17599	71.2833	C85	C	2.478
2	3	1	3	Heikkinen, Miss. Laina	female	26.000000	0	0	STON/O2. 3101282	7.9250	B96 B98	S	1.553
3	4	1	1	Futrelle, Mrs. Jacques Heath (Lily May Peel)	female	35.000000	1	0	113803	53.1000	C123	S	2.328
4	5	0	3	Allen, Mr. William Henry	male	35.000000	0	0	373450	8.0500	B96 B98	S	1.558
...	...	...	...	...	...	...	...	...	...	...	...	...	
886	887	0	2	Montvila, Rev. Juozas	male	27.000000	0	0	211536	13.0000	B96 B98	S	1.725
887	888	1	1	Graham, Miss. Margaret Edith	female	19.000000	0	0	112053	30.0000	B42	S	2.061
888	889	0	3	Johnston, Miss. Catherine Helen "Carrie"	female	29.699118	1	2	W./C. 6607	23.4500	B96 B98	S	1.950
889	890	1	1	Behr, Mr. Karl	male	26.000000	0	0	111369	30.0000	C148	C	2.061

	PassengerId	Survived	Pclass	Name	Sex	Age	SibSp	Parch	Ticket	Fare	Cabin	Embarked	sqr_
890	891	0	3	Howell Dooley, Mr. Patrick	male	32.000000	0	0	370376	7.7500	B96 B98	Q	1.54

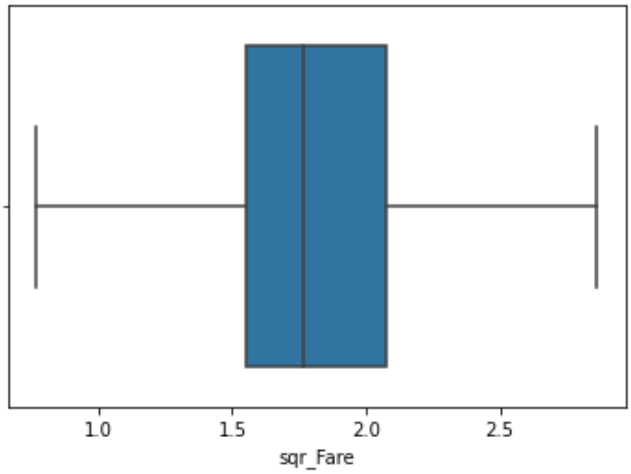
891 rows × 13 columns

In [97]:

```
sns.boxplot(x=df_tr['sqr_Fare'])
```

Out[97]:

<AxesSubplot:xlabel='sqr_Fare'>



In [98]:

```
df_tr1=df_tr.drop(columns=['PassengerId','Name','Ticket','Fare','Cabin'])
df_tr1
```

Out[98]:

	Survived	Pclass	Sex	Age	SibSp	Parch	Embarked	sqr_Fare
0	0	3	male	22.000000	1	0	S	1.524230
1	1	1	female	38.000000	1	0	C	2.478864
2	1	3	female	26.000000	0	0	S	1.553375
3	1	1	female	35.000000	1	0	S	2.328313
4	0	3	male	35.000000	0	0	S	1.558556
...	...	...	...	...	...	...	...	...
886	0	2	male	27.000000	0	0	S	1.725875
887	1	1	female	19.000000	0	0	S	2.061964
888	0	3	female	29.699118	1	2	S	1.956680
889	1	1	male	26.000000	0	0	C	2.061964
890	0	3	male	32.000000	0	0	Q	1.546013

891 rows × 8 columns

In [99]:

```
df_tr1.rename(columns={'sqr_Fare':'Fare'},inplace=True)
```

In [100]:

```
df_tr1.head(2)
```

Out[100]:

	Survived	Pclass	Sex	Age	SibSp	Parch	Embarked	Fare
0	0	3	male	22.0	1	0	S	1.524230
1	1	1	female	38.0	1	0	C	2.478864

In [105]:

```
from sklearn.preprocessing import LabelEncoder

# call the func
le=LabelEncoder()

# fit and transform

df_tr1['Sex']= le.fit_transform(df_tr1['Sex'])
df_tr1

df_tr1['Embarked']=le.fit_transform(df_tr1['Embarked'])
df_tr1
```

Out[105]:

	Survived	Pclass	Sex	Age	SibSp	Parch	Embarked	Fare
0	0	3	1	22.000000	1	0	2	1.524230
1	1	1	0	38.000000	1	0	0	2.478864
2	1	3	0	26.000000	0	0	2	1.553375
3	1	1	0	35.000000	1	0	2	2.328313
4	0	3	1	35.000000	0	0	2	1.558556
...	...	...	...	...	...	...	...	...
886	0	2	1	27.000000	0	0	2	1.725875
887	1	1	0	19.000000	0	0	2	2.061964
888	0	3	0	29.699118	1	2	2	1.956680
889	1	1	1	26.000000	0	0	0	2.061964
890	0	3	1	32.000000	0	0	1	1.546013

891 rows × 8 columns

In [110]:

```
from sklearn.preprocessing import MaxAbsScaler

# call func
mas=MaxAbsScaler()

# fit_transform
df_tr1['Age']=mas.fit_transform(df_tr1[['Age']])

df_tr1['Fare']=mas.fit_transform(df_tr1[['Fare']])
```

In [112]:

```
df_tr1.head(2)
```

Out[112]:

	Survived	Pclass	Sex	Age	SibSp	Parch	Embarked	Fare
0	0	3	1	0.403670	1	0	2	0.532603
1	1	1	0	0.697248	1	0	0	0.866175

Train Test Split

Train Test Split

In [113]:

```
# first find x and y
```

In [115]:

```
x=df_tr1.drop(columns=['Survived'])
x.head(2)
```

Out[115]:

	Pclass	Sex	Age	SibSp	Parch	Embarked	Fare
0	3	1	0.403670	1	0	2	0.532603
1	1	0	0.697248	1	0	0	0.866175

In [117]:

```
y=df_tr1['Survived']
y.head(2)
```

Out[117]:

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

In [118]:

```
from sklearn.model_selection import train_test_split
x_train,x_test,y_train,y_test=train_test_split(x,y,test_size=0.25,random_state=99)
```

Modelling

In [121]:

```
#! pip install xgboost
```

In [125]:

```
from xgboost import XGBClassifier
#help(XGBClassifier)

xg_model=XGBClassifier()

xg_model.fit(x_train,y_train)
```

Out[125]:

```
XGBClassifier(base_score=0.5, booster='gbtree', callbacks=None,
              colsample_bylevel=1, colsample_bynode=1, colsample_bytree=1,
              early_stopping_rounds=None, enable_categorical=False,
              eval_metric=None, gamma=0, gpu_id=-1, grow_policy='depthwise',
              importance_type=None, interaction_constraints='',
              learning_rate=0.300000012, max_bin=256, max_cat_to_onehot=4,
              max_delta_step=0, max_depth=6, max_leaves=0, min_child_weight=1,
              missing=nan, monotone_constraints='()', n_estimators=100,
              n_jobs=0, num_parallel_tree=1, predictor='auto', random_state=0,
              reg_alpha=0, reg_lambda=1, ...)
```

In [126]:

```
# now predicting over x_train & predicting over X_test

y_pred_train=xg_model.predict(x_train)

y_pred_test = xg_model.predict(x_test)
```

In [129]:

```
from sklearn.metrics import accuracy_score
print(accuracy_score(y_train,y_pred_train))    # train accu
print(accuracy_score(y_test,y_pred_test))
```

```
0.9730538922155688
0.8385650224215246
```

In [133]:

```
from sklearn.model_selection import cross_val_score

acc= cross_val_score(estimator=xg_model,X=x_train,y=y_train,cv=5)
acc.mean()
```

Out[133]:

```
0.8038716193468746
```

In [134]:

```
from sklearn.model_selection import GridSearchCV
```

In [135]:

```

```

In [136]:

```
xg_model = XGBClassifier()
param_grid={'n_estimators':[1,5,12,17,20,50],'max_depth':[3,4,5,6],'gamma':[0,3]}
grid = GridSearchCV(xg_model,param_grid,cv=5,scoring='accuracy')
grid.fit(x_train,y_train)
```

Out[136]:

```
GridSearchCV(cv=5,
             estimator=XGBClassifier(base_score=None, booster=None,
                                     callbacks=None, colsample_bylevel=None,
                                     colsample_bynode=None,
                                     colsample_bytree=None,
                                     early_stopping_rounds=None,
                                     enable_categorical=False, eval_metric=None,
                                     gamma=None, gpu_id=None, grow_policy=None,
                                     importance_type=None,
                                     interaction_constraints=None,
                                     learning_rate=None, max_bin=None,
                                     max_cat_to_onehot=None,
                                     max_delta_step=None, max_depth=None,
                                     max_leaves=None, min_child_weight=None,
                                     missing=nan, monotone_constraints=None,
                                     n_estimators=100, n_jobs=None,
                                     num_parallel_tree=None, predictor=None,
                                     random_state=None, reg_alpha=None,
                                     reg_lambda=None, ...),
             param_grid={'gamma': [0, 3], 'max_depth': [3, 4, 5, 6],
                         'n_estimators': [1, 5, 12, 17, 20, 50]},
             scoring='accuracy')
```

In [137]:

```
grid.best_params_
```

Out[137]:

```
{'gamma': 0, 'max_depth': 4, 'n_estimators': 50}
```

In [139]:

```
predictions = grid.predict(x_test)
```

In [142]:

```
#print(classification_report(y_test,predictions))
```

In [143]:

```
grid.best_estimator_.feature_importances_
```

Out[143]:

```
array([0.15767032, 0.6412118 , 0.03816468, 0.0634597 , 0.01888428,
       0.04274383, 0.03786531], dtype=float32)
```

logistic model

In [144]:

```
from sklearn.linear_model import LogisticRegression
log_model=LogisticRegression()
log_model.fit(x_train,y_train)
```

Out[144]:

```
LogisticRegression()
```

In [145]:

```
y_pred=log_model.predict(x_test)

pd.DataFrame(y_pred).head()
```

Out[145]:

	0
0	1
1	1
2	0
3	0
4	1

In [146]:

```
from sklearn.metrics import accuracy_score,confusion_matrix,classification_report,plot_co
nfusion_matrix
```

In [147]:

```
from sklearn.metrics import accuracy_score
accuracy_score(y_test,y_pred)
```

Out[147]:

```
0.7623318385650224
```

In [148]:

```
from sklearn.metrics import confusion_matrix
confusion_matrix(y_test,y_pred)
```

Out[148]:

```
array([[121,  24],
       [ 29,  49]], dtype=int64)
```

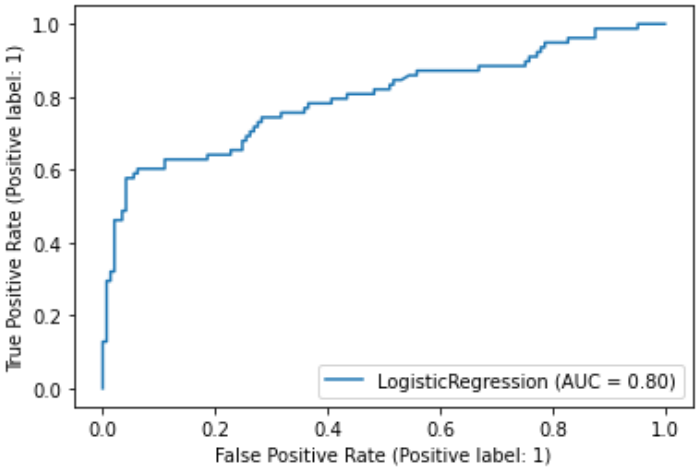
In [149]:

```
from sklearn.metrics import plot_roc_curve
```

```
plot_roc_curve(log_model,x_test,y_test)
```

Out[149]:

```
<sklearn.metrics._plot.roc_curve.RocCurveDisplay at 0x2ac3a208880>
```



In [150]:

```
from sklearn.model_selection import cross_val_score
scores= cross_val_score(log_model,x,y,cv=5)
print('cross val score',scores.mean())
```

```
cross val score 0.78788525516289
```

In [151]:

```
log_model.score(x_test,y_test),log_model.score(x_train,y_train)    #test acc and train a
ccu
```

Out[151]:

```
(0.7623318385650224, 0.812874251497006)
```

Random Forest

In [198]:

```
from sklearn.ensemble import RandomForestClassifier

rf_model = RandomForestClassifier(n_estimators=20)

rf_model.fit(x_train,y_train)
```

Out[198]:

```
RandomForestClassifier(n_estimators=20)
```

In [199]:

```
y_pred_train=rf_model.predict(x_train)
y_pred_test=rf_model.predict(x_test)
```

Evaluation

In [200]:

```
from sklearn.metrics import accuracy_score
print('train_accu',accuracy_score(y_pred_train,y_train))
print('test_accu',accuracy_score(y_pred_test,y_test))
```

```
train_accu 0.9835329341317365
test_accu 0.8161434977578476
```

In [201]:

```
from sklearn.model_selection import cross_val_score
scores= cross_val_score(rf_model,x,y,cv=5)
print('cross val score',scores.mean())
```

```
cross val score 0.798022722992907
```

In [189]:

```
rf_model = RandomForestClassifier()
param_grid={'n_estimators':list(range(1,101))}
grid = GridSearchCV(rf_model,param_grid,cv=5,scoring='accuracy')
grid.fit(x_train,y_train)
grid.best_params_
```

Out[189]:

```
{'n_estimators': 73}
```

In [ ]:

```

```

In [ ]:

```

```

In [ ]:

```

```

Gradient boost

In [184]:

```
from sklearn.ensemble import GradientBoostingClassifier

g_model = GradientBoostingClassifier(n_estimators=1,learning_rate=0.9)

g_model.fit(x_train,y_train)
```

Out[184]:

```
GradientBoostingClassifier(learning_rate=0.9, n_estimators=1)
```

In [185]:

```
y_pred_train = g_model.predict(x_train)

y_pred_test = g_model.predict(x_test)
```

Evaluation

In [186]:

```
## accuracy
from sklearn.metrics import accuracy_score
print(accuracy_score(y_train,y_pred_train))
print(accuracy_score(y_test,y_pred_test))
```

```
0.8323353293413174
0.7847533632286996
```

In [188]:

```
from sklearn.model_selection import cross_val_score
scores= cross_val_score(g_model,x,y,cv=5)
```

```
print('cross val score',scores.mean())
```

```
cross val score 0.8091959073504487
```

In [183]:

```
g_model = GradientBoostingClassifier()
param_grid={'n_estimators':[1,5,12,17,20,50],'learning_rate':[0.1,0.2,0.3,0.4,0.5,1]}
grid = GridSearchCV(g_model,param_grid,cv=5,scoring='accuracy')
grid.fit(x_train,y_train)
grid.best_params_
```

Out[183]:

```
{'learning_rate': 1, 'n_estimators': 12}
```

In [ ]:

In [ ]:

In [ ]:

In [ ]:

In [ ]:

Test Data

In [61]:

```
df_te=pd.read_csv('E:\\My projects\\Kaggle titanic\\test.csv')
df_te.head()
```

Out[61]:

	PassengerId	Pclass	Name	Sex	Age	SibSp	Parch	Ticket	Fare	Cabin	Embarked
0	892	3	Kelly, Mr. James	male	34.5	0	0	330911	7.8292	NaN	Q
1	893	3	Wilkes, Mrs. James (Ellen Needs)	female	47.0	1	0	363272	7.0000	NaN	S
2	894	2	Myles, Mr. Thomas Francis	male	62.0	0	0	240276	9.6875	NaN	Q
3	895	3	Wirz, Mr. Albert	male	27.0	0	0	315154	8.6625	NaN	S
4	896	3	Hirvonen, Mrs. Alexander (Helga E Lindqvist)	female	22.0	1	1	3101298	12.2875	NaN	S

In [62]:

```
df_te.info()
```

```
<class 'pandas.core.frame.DataFrame'>
RangeIndex: 418 entries, 0 to 417
Data columns (total 11 columns):
 #   Column       Non-Null Count  Dtype
---  ------       --------------  -----
 0   PassengerId  418 non-null    int64
 1   Pclass       418 non-null    int64
 2   Name         418 non-null    object
 3   Sex          418 non-null    object
```

```
 4   Age          332 non-null    float64
 5   SibSp        418 non-null    int64
 6   Parch        418 non-null    int64
 7   Ticket       418 non-null    object
 8   Fare         417 non-null    float64
 9   Cabin        91 non-null     object
 10  Embarked     418 non-null    object
dtypes: float64(2), int64(4), object(5)
memory usage: 36.0+ KB
```

In [63]:

```
df_te.describe()
```

Out[63]:

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

In [64]:

```
df_te.isna().sum()
```

Out[64]:

```
PassengerId      0
Pclass           0
Name             0
Sex              0
Age             86
SibSp            0
Parch            0
Ticket           0
Fare             1
Cabin          327
Embarked         0
dtype: int64
```

In [65]:

```
mean= df_te['Age'].mean()
print(mean)

mode = df_te['Embarked'].mode()[0]
print(mode)

mode1 = df_te['Cabin'].mode()[0]
print(mode1)
```

```
30.272590361445783
S
B57 B59 B63 B66
```

In [66]:

```
df_te['Age'].fillna(mean,inplace=True)
df_te['Embarked'].fillna(mode,inplace=True)
df_te['Cabin'].fillna(mode1,inplace=True)
```

In [67]:

```
a=df_te['Fare'].mean()
df_te['Fare'].fillna(a,inplace=True)
```

In [68]:

```
df_te.isna().sum()
```

Out[68]:

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

In [69]:

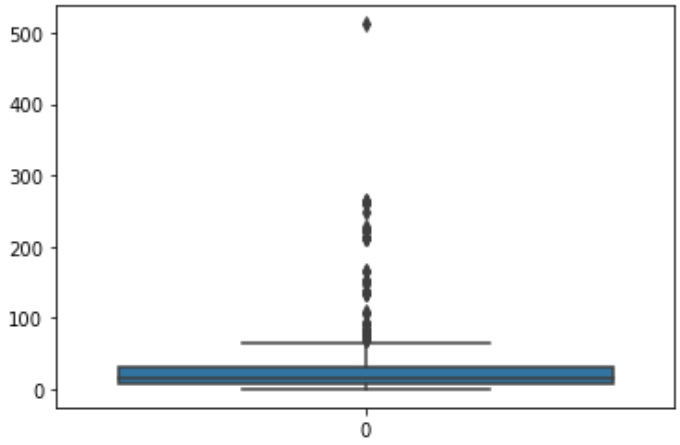
```
# now data is no missing values
```

In [70]:

```
sns.boxplot(data=df_te['Fare'])
```

Out[70]:

```
<AxesSubplot:>
```

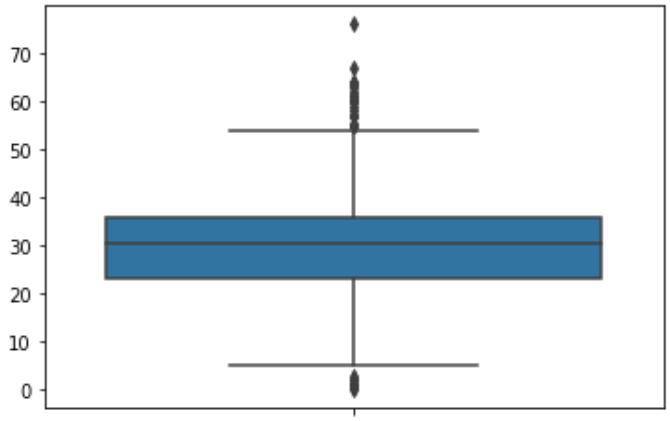


In [71]:

```
sns.boxplot(data=df_te['Age'])
```

Out[71]:

```
<AxesSubplot:>
```



0

In [73]:

```
from feature_engine.outliers import Winsorizer

win=Winsorizer(capping_method='iqr',tail='both',fold=1.5,variables=['Age','Fare'])

df_te[['Age','Fare']]=win.fit_transform(df_te[['Age','Fare']])
```

In [131]:

```
## so we checked there is no outliers
# sns.boxplot('Fare',data=df_te
```

In [202]:

```
df_te=df_te.d
```

Out[202]:

	PassengerId	Pclass	Name	Sex	Age	SibSp	Parch	Ticket	Fare	Cabin	Embarked
0	892	3	Kelly, Mr. James	male	34.50000	0	0	330911	7.8292	B57 B59 B63 B66	Q
1	893	3	Wilkes, Mrs. James (Ellen Needs)	female	47.00000	1	0	363272	7.0000	B57 B59 B63 B66	S
2	894	2	Myles, Mr. Thomas Francis	male	54.87500	0	0	240276	9.6875	B57 B59 B63 B66	Q
3	895	3	Wirz, Mr. Albert	male	27.00000	0	0	315154	8.6625	B57 B59 B63 B66	S
4	896	3	Hirvonen, Mrs. Alexander (Helga E Lindqvist)	female	22.00000	1	1	3101298	12.2875	B57 B59 B63 B66	S
...	...	...	...	...	...	...	...	...	...	...	...
413	1305	3	Spector, Mr. Woolf	male	30.27259	0	0	A.5. 3236	8.0500	B57 B59 B63 B66	S
414	1306	1	Oliva y Ocana, Dona. Fermina	female	39.00000	0	0	PC 17758	66.9063	C105	C
415	1307	3	Saether, Mr. Simon Sivertsen	male	38.50000	0	0	SOTON/O.Q. 3101262	7.2500	B57 B59 B63 B66	S
416	1308	3	Ware, Mr. Frederick	male	30.27259	0	0	359309	8.0500	B57 B59 B63 B66	S
417	1309	3	Peter, Master. Michael J	male	30.27259	1	1	2668	22.3583	B57 B59 B63 B66	C

418 rows × 11 columns

In [206]:

```
df_te1=df_te.drop(columns=['PassengerId','Name','Ticket','Cabin'])
df_te1.head()
```

Out[206]:

	Pclass	Sex	Age	SibSp	Parch	Fare	Embarked
0	3	male	34.500	0	0	7.8292	Q
1	3	female	47.000	1	0	7.0000	S
2	2	male	54.875	0	0	9.6875	Q
3	3	male	27.000	0	0	8.6625	S
4	3	female	22.000	1	1	12.2875	S

In [207]:

```
from sklearn.preprocessing import LabelEncoder

# call the func
le=LabelEncoder()

# fit and transform

df_te1['Sex']= le.fit_transform(df_te1['Sex'])
df_te1

df_te1['Embarked']=le.fit_transform(df_te1['Embarked'])
df_te1
```

Out[207]:

	Pclass	Sex	Age	SibSp	Parch	Fare	Embarked
0	3	1	34.50000	0	0	7.8292	1
1	3	0	47.00000	1	0	7.0000	2
2	2	1	54.87500	0	0	9.6875	1
3	3	1	27.00000	0	0	8.6625	2
4	3	0	22.00000	1	1	12.2875	2
...	...	...	...	...	...	...	...
413	3	1	30.27259	0	0	8.0500	2
414	1	0	39.00000	0	0	66.9063	0
415	3	1	38.50000	0	0	7.2500	2
416	3	1	30.27259	0	0	8.0500	2
417	3	1	30.27259	1	1	22.3583	0

418 rows × 7 columns

In [208]:

```
from sklearn.preprocessing import MaxAbsScaler

# call func
mas=MaxAbsScaler()

# fit_transform
df_te1['Age']=mas.fit_transform(df_te1[['Age']])

df_te1['Fare']=mas.fit_transform(df_te1[['Fare']])
```

In [212]:

```
x_test=df_te1
x_test.head(2)
```

Out[212]:

	Pclass	Sex	Age	SibSp	Parch	Fare	Embarked
0	3	1	0.628702	0	0	0.117017	1
1	3	0	0.856492	1	0	0.104624	2

In [215]:

```
x_train=x
x_train.head(2)
```

Out[215]:

	Pclass	Sex	Age	SibSp	Parch	Embarked	Fare
0	3	1	0.403670	1	0	2	0.532603
1	1	0	0.697248	1	0	0	0.866175

In [217]:

```
y_train=y
y_train.head(2)
```

Out[217]:

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

In [218]:

```
from sklearn.ensemble import GradientBoostingClassifier

g_model = GradientBoostingClassifier(n_estimators=1,learning_rate=0.9)

g_model.fit(x_train,y_train)
```

Out[218]:

```
GradientBoostingClassifier(learning_rate=0.9, n_estimators=1)
```

In [223]:

```
# y_pred_train = g_model.predict(x_train)

y_pred_test = g_model.predict(x_test)
```

In [228]:

```
y_pred_test=pd.DataFrame(y_pred_test)   # conv in dataframe
y_pred_test.head()
```

Out[228]:

	0
0	0
1	0
2	0
3	0
4	0

In [225]:

```
sample=pd.read_csv('E:\My projects\Kaggle titanic\\gender_submission.csv')
```

```
sample.head()
```

Out[225]:

	PassengerId	Survived
0	892	0
1	893	1
2	894	0
3	895	0
4	896	1

In [229]:

```
dataset=pd.concat([sample['PassengerId'],y_pred_test],axis=1)
dataset.head()
```

Out[229]:

	PassengerId	0
0	892	0
1	893	0
2	894	0
3	895	0
4	896	0

In [230]:

```
dataset.columns=['PassengerId','Survived']
```

In [231]:

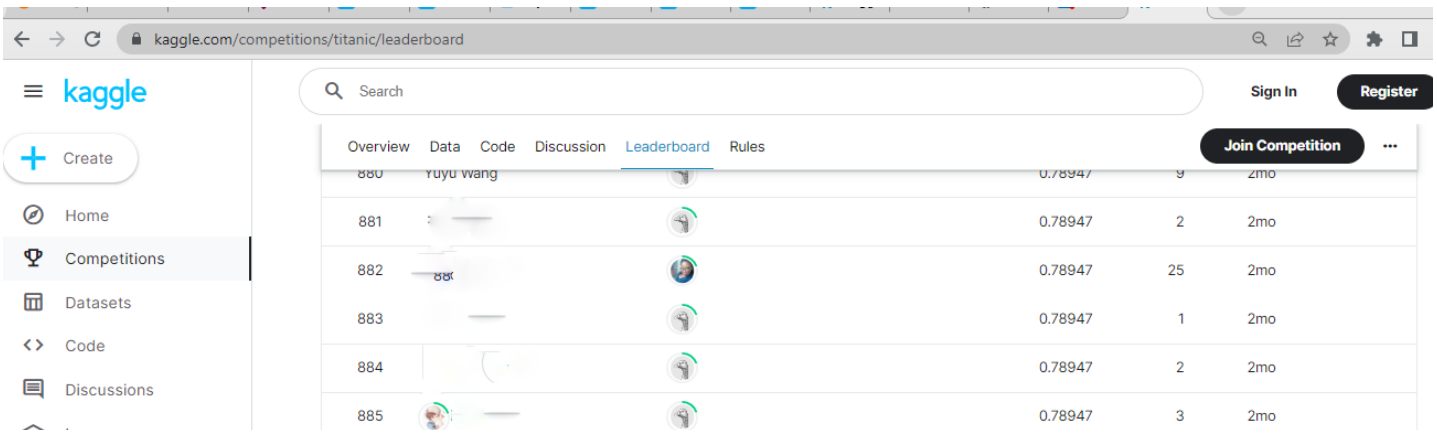
```
dataset.head()
```

Out[231]:

	PassengerId	Survived
0	892	0
1	893	0
2	894	0
3	895	0
4	896	0

In [233]:

```
dataset.to_csv('Final_sub2.csv',index=False)
```



Learn

More

886	bhagwan palmuri		0.78947	1	2mo

In [1]:

```
# 886 rank out of nearly 10,000 kagglers
```

In [ ]:

```

```