Results

```
import numpy as np
import pandas as pd
import matplotlib.pyplot as plt
import seaborn as sns
from scipy import stats
from sklearn.preprocessing import LabelEncoder
from sklearn.model_selection import train_test_split
from sklearn.ensemble import RandomForestClassifier
from sklearn.metrics import accuracy_score
from sklearn.tree import DecisionTreeClassifier
from sklearn.ensemble import ExtraTreesClassifier
from sklearn.svm import SVC
import xgboost as xgb
from sklearn.metrics import f1_score
from sklearn.metrics import classification_report,confusion_matrix
import warnings
import pickle
```

```
[ ] from google.colab import drive
    drive.mount('/content/drive')
```

```
Drive already mounted at /content/drive; to attempt to forcibly remount, call drive.mount("/content/drive", force_remount=True).
```

```
df=pd.read_csv('/content/drive/MyDrive/Colab Notebooks/datasets/onlinefraud.csv')
df
```

	step	type	amount	nameOrig	oldbalanceOrg	newbalanceOrig	nameDest	oldbalanceDest	newbalanceDest	isFraud	isFlaggedFraud
0	1	PAYMENT	9839.64	C1231006815	170136.00	160296.36	M1979787155	0.00	0.00	0	0
1	1	PAYMENT	1864.28	C1666544295	21249.00	19384.72	M2044282225	0.00	0.00	0	0
2	1	TRANSFER	181.00	C1305486145	181.00	0.00	C553264065	0.00	0.00	1	0
3	1	CASH_OUT	181.00	C840083671	181.00	0.00	C38997010	21182.00	0.00	1	0
4	1	PAYMENT	11668.14	C2048537720	41554.00	29885.86	M1230701703	0.00	0.00	0	0
...	...	...	...	...	...	...	...	...	...	...	...
6362615	743	CASH_OUT	339682.13	C786484425	339682.13	0.00	C776919290	0.00	339682.13	1	0
6362616	743	TRANSFER	6311409.28	C1529008245	6311409.28	0.00	C1881841831	0.00	0.00	1	0
6362617	743	CASH_OUT	6311409.28	C1162922333	6311409.28	0.00	C1365125890	68488.84	6379898.11	1	0
6362618	743	TRANSFER	850002.52	C1685995037	850002.52	0.00	C2080388513	0.00	0.00	1	0
6362619	743	CASH_OUT	850002.52	C1280323807	850002.52	0.00	C873221189	6510099.11	7360101.63	1	0

6362620 rows × 11 columns

```
[ ] df.shape
```

```
(6362620, 11)
```

```
[ ] df.columns
```

```
Index(['step', 'type', 'amount', 'nameOrig', 'oldbalanceOrg', 'newbalanceOrig',
       'nameDest', 'oldbalanceDest', 'newbalanceDest', 'isFraud',
       'isFlaggedFraud'],
      dtype='object')
```

```
df.drop(['isFlaggedFraud'],axis=1,inplace=True)
```

```
df
```

	step	type	amount	nameOrig	oldbalanceOrg	newbalanceOrig	nameDest	oldbalanceDest	newbalanceDest	isFraud
0	1	PAYMENT	9839.64	C1231006815	170136.00	160296.36	M1979787155	0.00	0.00	0
1	1	PAYMENT	1864.28	C1666544295	21249.00	19384.72	M2044282225	0.00	0.00	0
2	1	TRANSFER	181.00	C1305486145	181.00	0.00	C553264065	0.00	0.00	1
3	1	CASH_OUT	181.00	C840083671	181.00	0.00	C38997010	21182.00	0.00	1
4	1	PAYMENT	11668.14	C2048537720	41554.00	29885.86	M1230701703	0.00	0.00	0
...	...	...	...	...	...	...	...	...	...	...
6362615	743	CASH_OUT	339682.13	C786484425	339682.13	0.00	C776919290	0.00	339682.13	1
6362616	743	TRANSFER	6311409.28	C1529008245	6311409.28	0.00	C1881841831	0.00	0.00	1
6362617	743	CASH_OUT	6311409.28	C1162922333	6311409.28	0.00	C1365125890	68488.84	6379898.11	1
6362618	743	TRANSFER	850002.52	C1685995037	850002.52	0.00	C2080388513	0.00	0.00	1
6362619	743	CASH_OUT	850002.52	C1280323807	850002.52	0.00	C873221189	6510099.11	7360101.63	1

6362620 rows × 10 columns

```
[ ] df.head()
```

	step	type	amount	nameOrig	oldbalanceOrg	newbalanceOrig	nameDest	oldbalanceDest	newbalanceDest	isFraud
0	1	PAYMENT	9839.64	C1231006815	170136.0	160296.36	M1979787155	0.0	0.0	0
1	1	PAYMENT	1864.28	C1666544295	21249.0	19384.72	M2044282225	0.0	0.0	0
2	1	TRANSFER	181.00	C1305486145	181.0	0.00	C553264065	0.0	0.0	1
3	1	CASH_OUT	181.00	C840083671	181.0	0.00	C38997010	21182.0	0.0	1
4	1	PAYMENT	11668.14	C2048537720	41554.0	29885.86	M1230701703	0.0	0.0	0

```
[ ] df.tail()
```

	step	type	amount	nameOrig	oldbalanceOrg	newbalanceOrig	nameDest	oldbalanceDest	newbalanceDest	isFraud
6362615	743	CASH_OUT	339682.13	C786484425	339682.13	0.0	C776919290	0.00	339682.13	1
6362616	743	TRANSFER	6311409.28	C1529008245	6311409.28	0.0	C1881841831	0.00	0.00	1
6362617	743	CASH_OUT	6311409.28	C1162922333	6311409.28	0.0	C1365125890	68488.84	6379898.11	1
6362618	743	TRANSFER	850002.52	C1685995037	850002.52	0.0	C2080388513	0.00	0.00	1
6362619	743	CASH_OUT	850002.52	C1280323807	850002.52	0.0	C873221189	6510099.11	7360101.63	1

```
[ ] df.isnull().sum()
```

```
step              0
type              0
amount            0
nameOrig          0
oldbalanceOrg     0
newbalanceOrig    0
nameDest          0
oldbalanceDest    0
newbalanceDest    0
isFraud           0
isFlaggedFraud    0
dtype: int64
```

```
df.info()
```

```
<class 'pandas.core.frame.DataFrame'>
RangeIndex: 6362620 entries, 0 to 6362619
Data columns (total 11 columns):
 #   Column          Dtype
---  ------          -----
 0   step            int64
 1   type            object
 2   amount          float64
 3   nameOrig        object
 4   oldbalanceOrg   float64
 5   newbalanceOrig  float64
 6   nameDest        object
 7   oldbalanceDest  float64
 8   newbalanceDest  float64
 9   isFraud         int64
 10  isFlaggedFraud  int64
dtypes: float64(5), int64(3), object(3)
memory usage: 534.0+ MB
```

```
# Select only numeric columns before calculating correlation
numeric_df = df.select_dtypes(include=['number'])
numeric_df.corr()
```

	step	amount	oldbalanceOrg	newbalanceOrig	oldbalanceDest	newbalanceDest	isFraud	isFlaggedFraud
step	1.000000	0.022373	-0.010058	-0.010299	0.027665	0.025888	0.031578	0.003277
amount	0.022373	1.000000	-0.002762	-0.007861	0.294137	0.459304	0.076688	0.012295
oldbalanceOrg	-0.010058	-0.002762	1.000000	0.998803	0.066243	0.042029	0.010154	0.003835
newbalanceOrig	-0.010299	-0.007861	0.998803	1.000000	0.067812	0.041837	-0.008148	0.003776
oldbalanceDest	0.027665	0.294137	0.066243	0.067812	1.000000	0.976569	-0.005885	-0.000513
newbalanceDest	0.025888	0.459304	0.042029	0.041837	0.976569	1.000000	0.000535	-0.000529
isFraud	0.031578	0.076688	0.010154	-0.008148	-0.005885	0.000535	1.000000	0.044109
isFlaggedFraud	0.003277	0.012295	0.003835	0.003776	-0.000513	-0.000529	0.044109	1.000000

```
[ ] le=LabelEncoder()
    df['type']=le.fit_transform(df['type'])
    df.info()
```

```
<class 'pandas.core.frame.DataFrame'>
RangeIndex: 6362620 entries, 0 to 6362619
Data columns (total 11 columns):
 #   Column          Dtype
---  ------          -----
 0   step            int64
 1   type            int64
 2   amount          float64
 3   nameOrig        object
 4   oldbalanceOrg   float64
 5   newbalanceOrig  float64
 6   nameDest        object
 7   oldbalanceDest  float64
 8   newbalanceDest  float64
 9   isFraud         int64
 10  isFlaggedFraud  int64
dtypes: float64(5), int64(4), object(2)
memory usage: 534.0+ MB
```

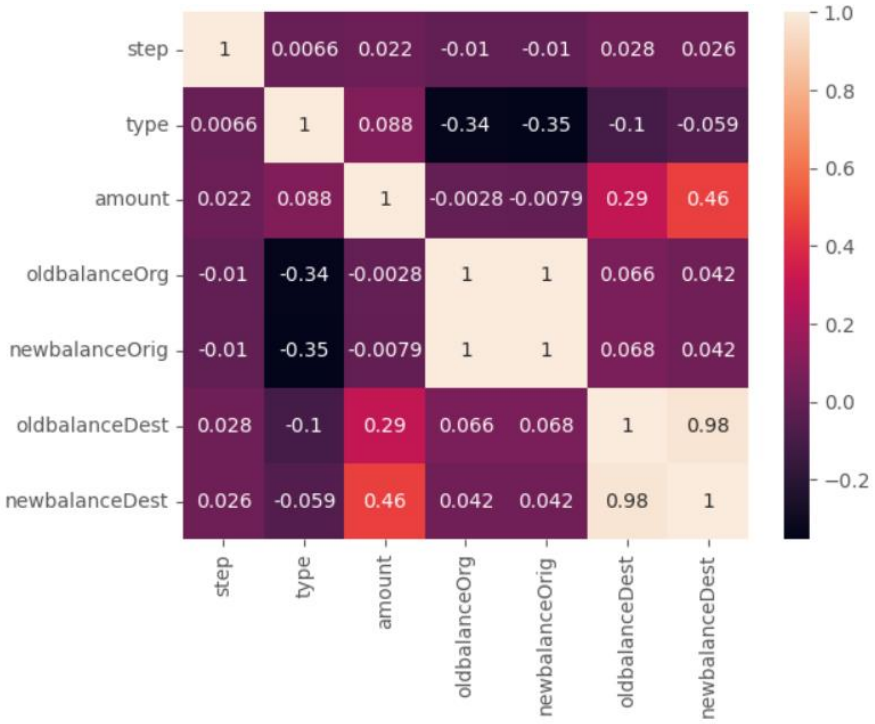
```
[ ] le=LabelEncoder()
    df['nameOrig']=le.fit_transform(df['nameOrig'])
    df.info()
```

```
<class 'pandas.core.frame.DataFrame'>
RangeIndex: 6362620 entries, 0 to 6362619
Data columns (total 11 columns):
 #   Column          Dtype
---  ------          -----
 0   step            int64
 1   type            int64
 2   amount          float64
 3   nameOrig        int64
 4   oldbalanceOrg   float64
 5   newbalanceOrig  float64
 6   nameDest        object
 7   oldbalanceDest  float64
 8   newbalanceDest  float64
 9   isFraud         int64
 10  isFlaggedFraud  int64
dtypes: float64(5), int64(5), object(1)
memory usage: 534.0+ MB
```

```
le=LabelEncoder()
df['nameDest']=le.fit_transform(df['nameDest'])
df.info()
```

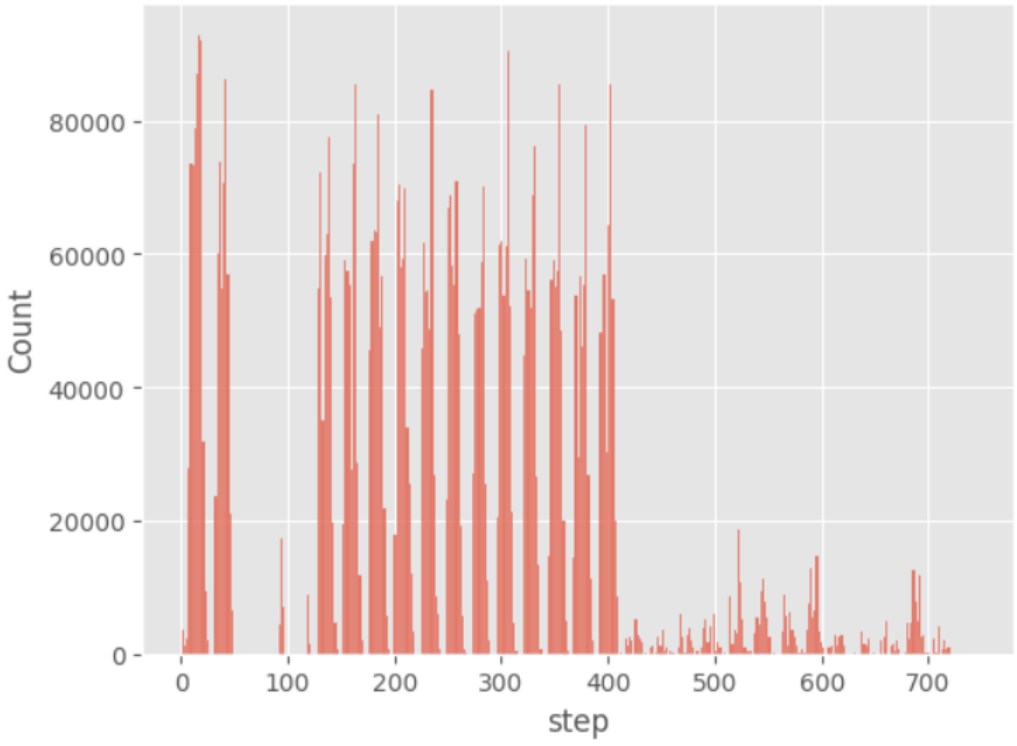
```
<class 'pandas.core.frame.DataFrame'>
RangeIndex: 6362620 entries, 0 to 6362619
Data columns (total 11 columns):
 #   Column          Dtype
---  ------          -----
 0   step            int64
 1   type            int64
 2   amount          float64
 3   nameOrig        int64
 4   oldbalanceOrg   float64
 5   newbalanceOrig  float64
 6   nameDest        int64
 7   oldbalanceDest  float64
 8   newbalanceDest  float64
 9   isFraud         int64
 10  isFlaggedFraud  int64
dtypes: float64(5), int64(6)
memory usage: 534.0 MB
```

Heap Map



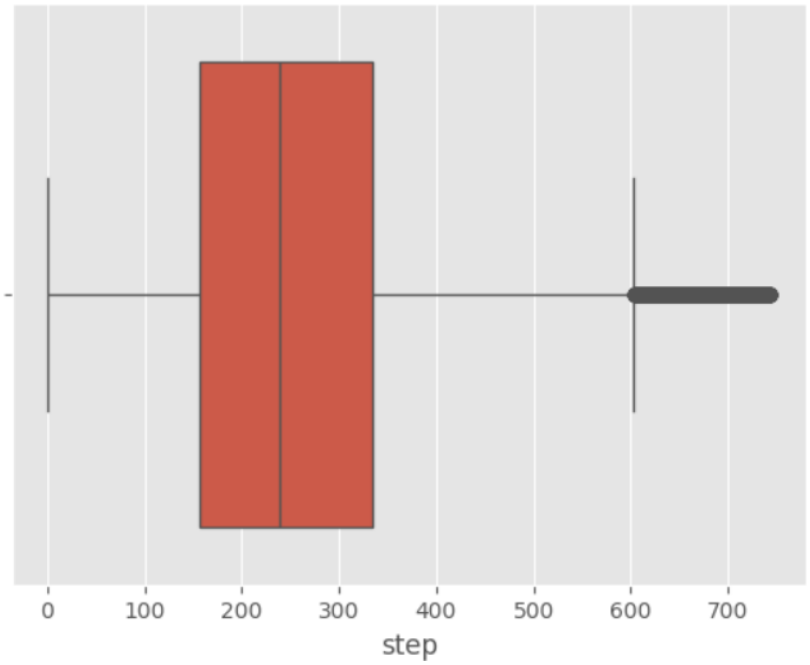
Histogram Plot

<Axes: xlabel='step', ylabel='Count'>



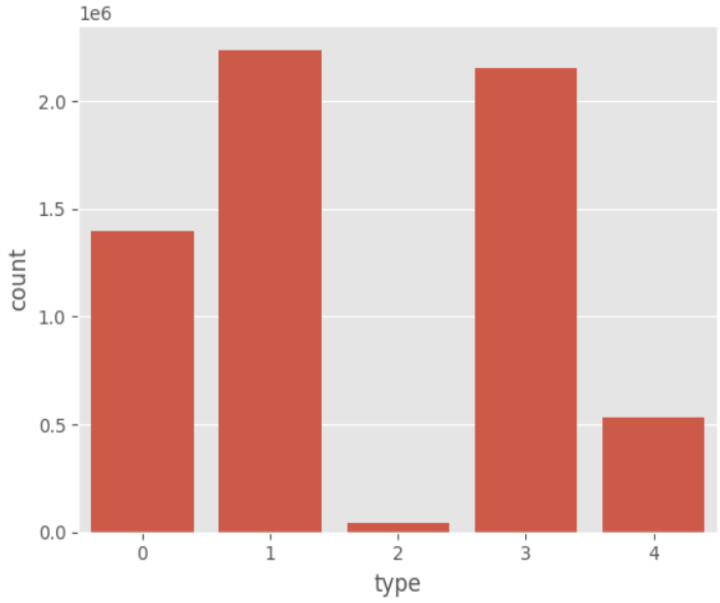
Box Plot

```
<Axes: xlabel='step'>
```



Count Plot

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

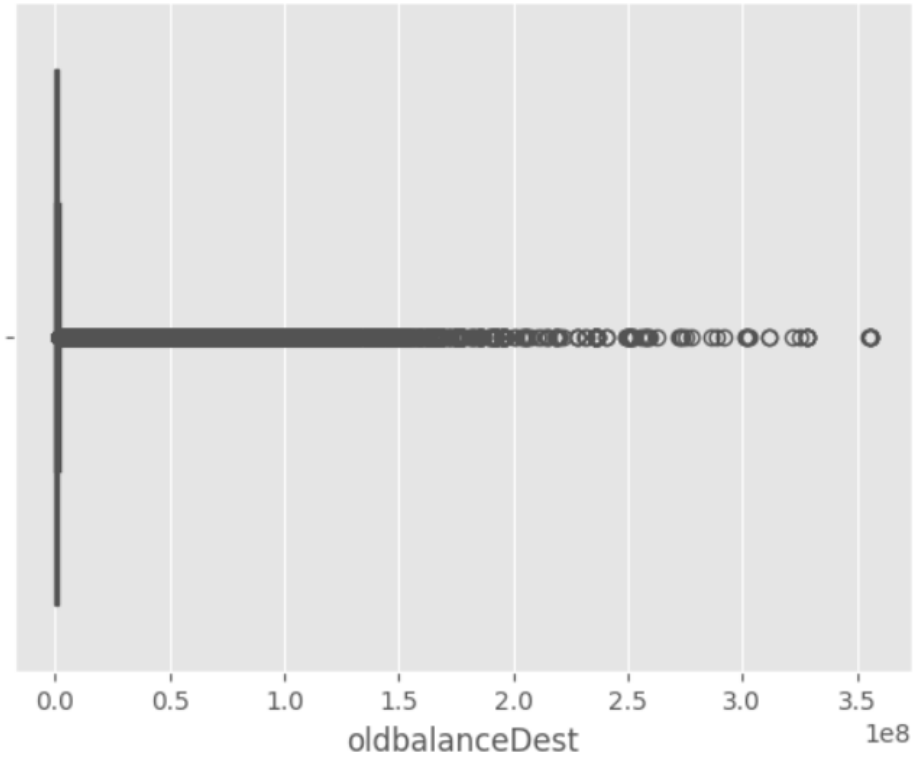


```
df['nameDest'].value_counts()
```

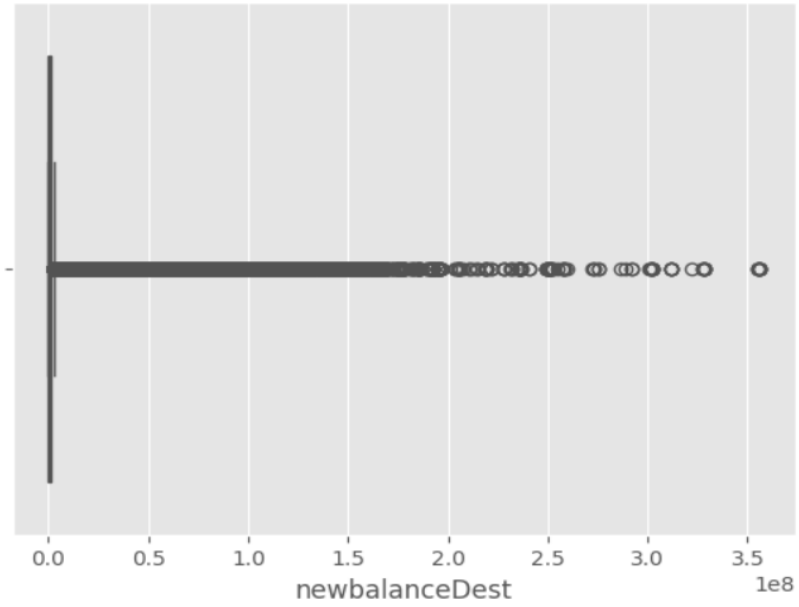
```
nameDest
84652      113
567820     109
472721     105
320660     102
349730     101
          ...
1095075      1
939730       1
1445164      1
1774945      1
319713       1
Name: count, Length: 2722362, dtype: int64
```

```
sns.boxplot(data=df,x='oldbalanceDest')
```

```
<Axes: xlabel='oldbalanceDest'>
```

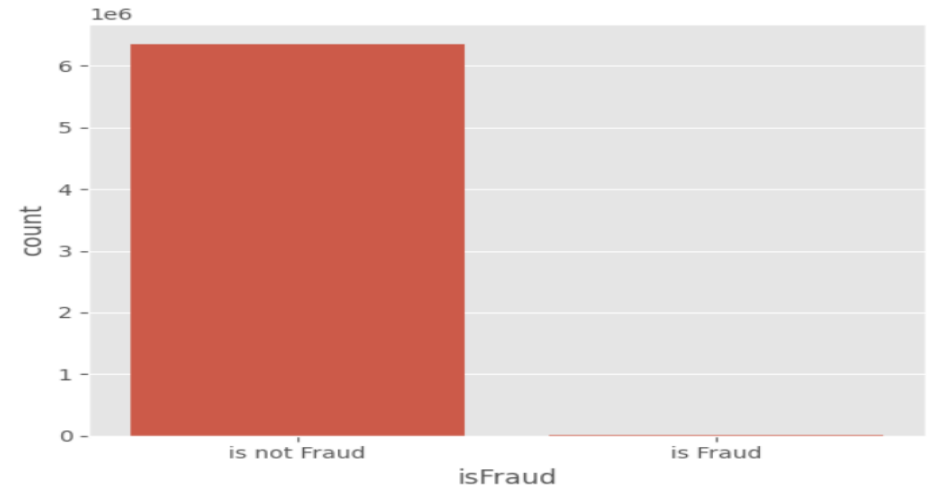


```
<Axes: xlabel='newbalanceDest'>
```




```
sns.countplot(data=df,x='isFraud')
```

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




```
[ ]  df['isFraud'].value_counts()
```

```
isFraud
0    6354407
1       8213
Name: count, dtype: int64
```

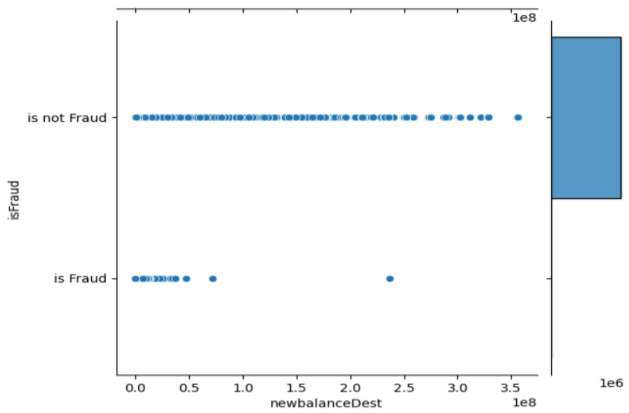
```
[ ]  df.loc[df['isFraud']==0,'isFraud']='is not Fraud'
     df.loc[df['isFraud']==1,'isFraud']='is Fraud'
```

```
[ ] df
```

	step	type	amount	nameOrig	oldbalanceOrg	newbalanceOrig	nameDest	oldbalanceDest	newbalanceDest	isFraud	isFlaggedFraud
0	1	3	9839.64	757869	170136.00	160296.36	1662094	0.00	0.00	is not Fraud	0
1	1	3	1864.28	2188998	21249.00	19384.72	1733924	0.00	0.00	is not Fraud	0
2	1	4	181.00	1002156	181.00	0.00	439685	0.00	0.00	is Fraud	0
3	1	1	181.00	5828262	181.00	0.00	391696	21182.00	0.00	is Fraud	0
4	1	3	11668.14	3445981	41554.00	29885.86	828919	0.00	0.00	is not Fraud	0
...	...	...	...	...	...	...	...	...	...	...	...
6362615	743	1	339682.13	5651847	339682.13	0.00	505863	0.00	339682.13	is Fraud	0
6362616	743	4	6311409.28	1737278	6311409.28	0.00	260949	0.00	0.00	is Fraud	0
6362617	743	1	6311409.28	533958	6311409.28	0.00	108224	68488.84	6379898.11	is Fraud	0
6362618	743	4	850002.52	2252932	850002.52	0.00	319713	0.00	0.00	is Fraud	0
6362619	743	1	850002.52	919229	850002.52	0.00	534595	6510099.11	7360101.63	is Fraud	0

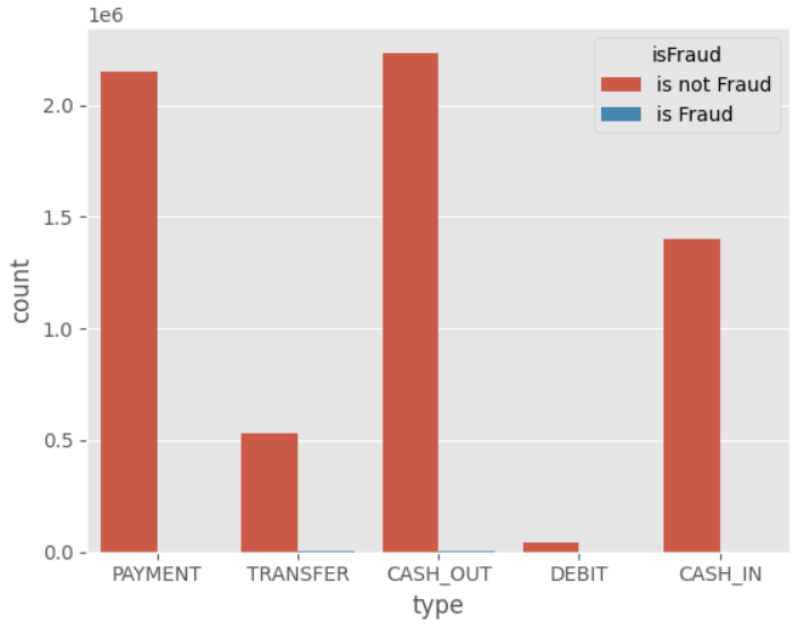
6362620 rows × 11 columns

Joint Plot



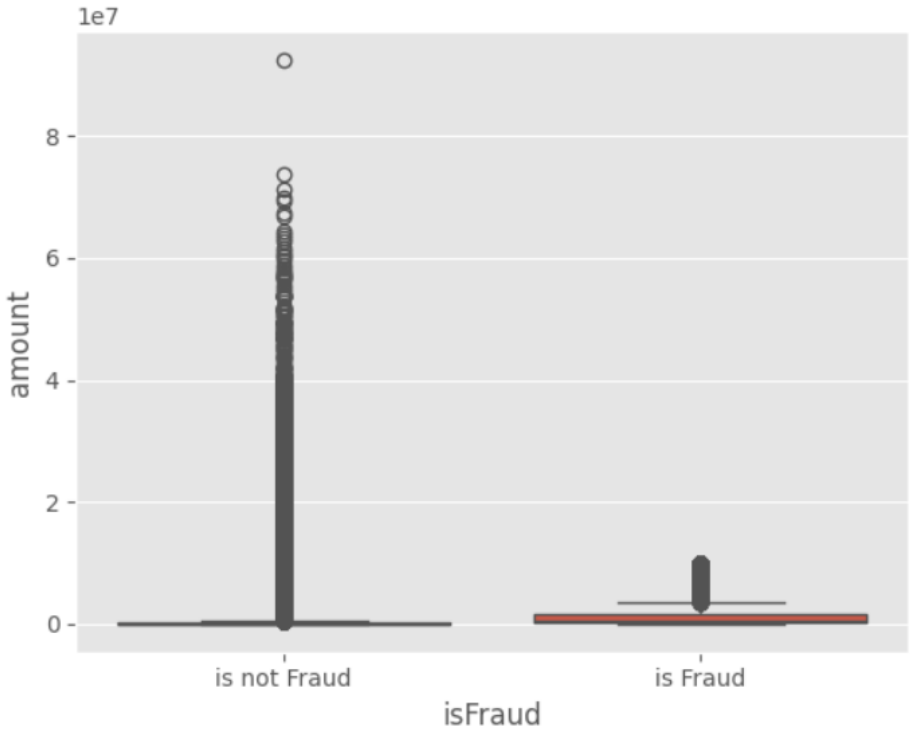

```
[ ] sns.countplot(data=df,x='type',hue='isFraud')
```

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



```
sns.boxplot(data=df,x='isFraud',y='amount')
```

```
<Axes: xlabel='isFraud', ylabel='amount'>
```




```
sns.boxplot(data=df,x='isFraud',y='step')
```

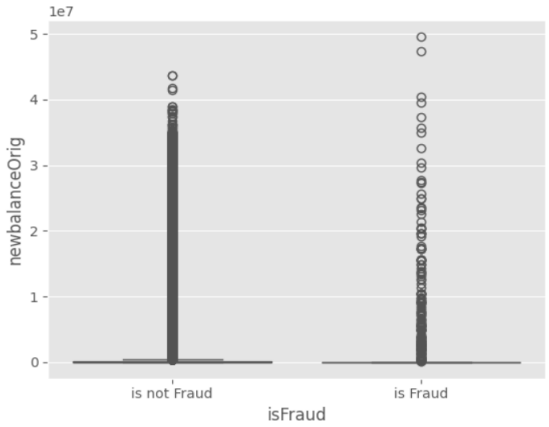
```
<Axes: xlabel='isFraud', ylabel='step'>
```

```
[ ] sns.boxplot(data=df,x='isFraud',y='oldbalanceOrg')
```

```
<Axes: xlabel='isFraud', ylabel='oldbalanceOrg'>
```

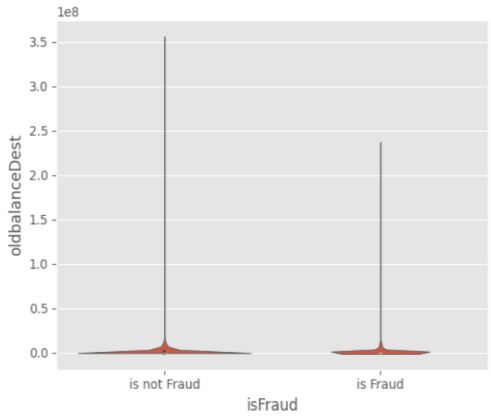

```
sns.boxplot(data=df,x='isFraud',y='newbalanceOrig')
```

```
<Axes: xlabel='isFraud', ylabel='newbalanceOrig'>
```



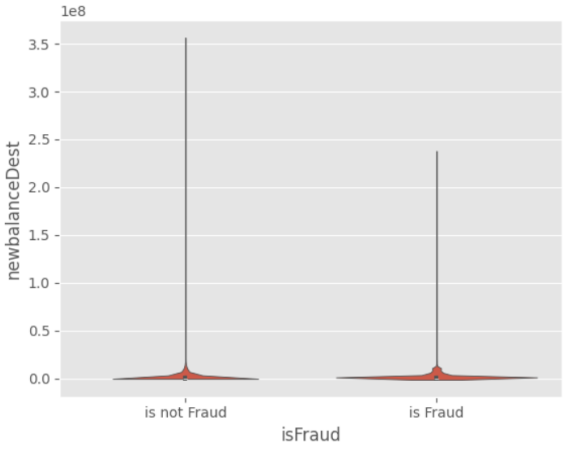

```
sns.violinplot(data=df,x='isFraud',y='oldbalanceDest')
```

```
<Axes: xlabel='isFraud', ylabel='oldbalanceDest'>
```



```
sns.violinplot(data=df,x='isFraud',y='newbalanceDest')
```

```
<Axes: xlabel='isFraud', ylabel='newbalanceDest'>
```

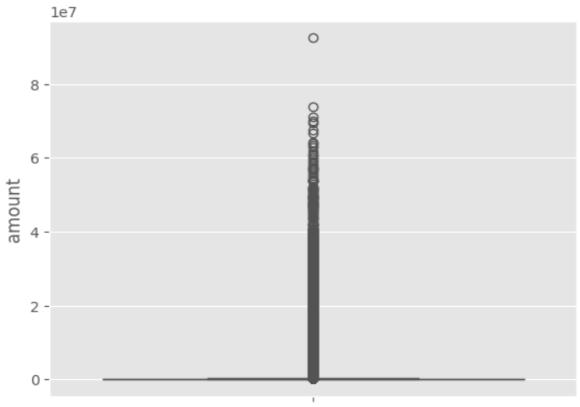



```
df.describe(include='all')
```

	step	type	amount	nameOrig	oldbalanceOrg	newbalanceOrig	nameDest	oldbalanceDest	newbalanceDest	isFraud
count	6.362620e+06	6.362620e+06	6.362620e+06	6.362620e+06	6.362620e+06	6.362620e+06	6.362620e+06	6.362620e+06	6.362620e+06	6362620
unique	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	2
top	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	is not Fraud
freq	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	6354407
mean	2.433972e+02	1.714150e+00	1.798619e+05	3.176678e+06	8.338831e+05	8.551137e+05	7.464270e+05	1.100702e+06	1.224996e+06	NaN
std	1.423320e+02	1.350117e+00	6.038582e+05	1.834064e+06	2.888243e+06	2.924049e+06	7.502455e+05	3.399180e+06	3.674129e+06	NaN
min	1.000000e+00	0.000000e+00	0.000000e+00	0.000000e+00	0.000000e+00	0.000000e+00	0.000000e+00	0.000000e+00	0.000000e+00	NaN
25%	1.560000e+02	1.000000e+00	1.338957e+04	1.588332e+06	0.000000e+00	0.000000e+00	2.168950e+05	0.000000e+00	0.000000e+00	NaN
50%	2.390000e+02	1.000000e+00	7.487194e+04	3.176672e+06	1.420800e+04	0.000000e+00	4.322890e+05	1.327057e+05	2.146614e+05	NaN
75%	3.350000e+02	3.000000e+00	2.087215e+05	4.765048e+06	1.073152e+05	1.442584e+05	1.132509e+06	9.430367e+05	1.111909e+06	NaN
max	7.430000e+02	4.000000e+00	9.244552e+07	6.353306e+06	5.958504e+07	4.958504e+07	2.722361e+06	3.560159e+08	3.561793e+08	NaN

```
sns.boxplot(df['amount'])
```

```
<Axes: ylabel='amount'>
```




```
from scipy import stats
print(stats.mode(df['amount']))
print(np.mean(df['amount']))
```

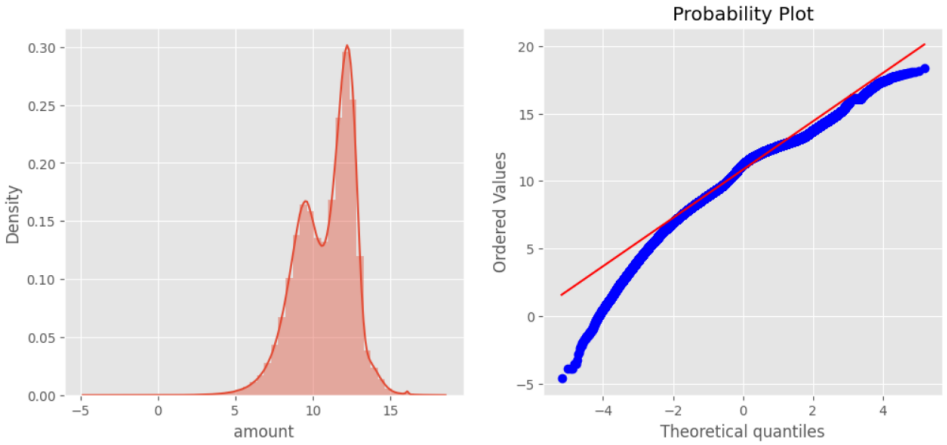
```
ModeResult(mode=10000000.0, count=3207)
179861.90354913071
```

```
q1=np.quantile(df['amount'],0.25)
q3=np.quantile(df['amount'],0.75)
IQR=q3-q1
upper_bound=q3+(1.5*IQR)
lower_bound=q1-(1.5*IQR)
print('q1:',q1)
print('q3:',q3)
print('IQR:',IQR)
print('Upper Bound:',upper_bound)
print('Lower Bound:',lower_bound)
print('Skewed data:',len(df[df['amount']>upper_bound]))
print('Skewed data:',len(df[df['amount']<lower_bound]))
```

```
q1: 13389.57
q3: 208721.4775
IQR: 195331.9075
Upper Bound: 501719.33875
Lower Bound: -279608.29125
Skewed data: 338078
Skewed data: 0
```

```
def transformationPlot(feature):
  plt.figure(figsize=(12,5))
  plt.subplot(1,2,1)
  # Handle potential infinite values
  sns.distplot(feature[np.isfinite(feature)])
  plt.subplot(1,2,2)
  stats.probplot(feature[np.isfinite(feature)], plot=plt)
```

```
positive_amounts = df['amount'][df['amount'] > 0]
transformationPlot(np.log(positive_amounts))
```




```
le=LabelEncoder()
df['type']=le.fit_transform(df['type'])
```

```
df['type'].value_counts()
```

```
type
1    2237500
3    2151495
0    1399284
4     532909
2      41432
Name: count, dtype: int64
```

```
x=df.drop('isFraud',axis=1)
y=df['isFraud']
```

```
x
```

	step	type	amount	nameOrig	oldbalanceOrg	newbalanceOrig	nameDest	oldbalanceDest	newbalanceDest	isFlaggedFraud
0	1	3	9839.64	757869	170136.00	160296.36	1662094	0.00	0.00	0
1	1	3	1864.28	2188998	21249.00	19384.72	1733924	0.00	0.00	0
2	1	4	181.00	1002156	181.00	0.00	439685	0.00	0.00	0
3	1	1	181.00	5828262	181.00	0.00	391696	21182.00	0.00	0
4	1	3	11668.14	3445981	41554.00	29885.86	828919	0.00	0.00	0
...	...	...	...	...	...	...	...	...	...	...
6362615	743	1	339682.13	5651847	339682.13	0.00	505863	0.00	339682.13	0
6362616	743	4	6311409.28	1737278	6311409.28	0.00	260949	0.00	0.00	0
6362617	743	1	6311409.28	533958	6311409.28	0.00	108224	68488.84	6379898.11	0
6362618	743	4	850002.52	2252932	850002.52	0.00	319713	0.00	0.00	0
6362619	743	1	850002.52	919229	850002.52	0.00	534595	6510099.11	7360101.63	0

6362620 rows × 10 columns

```
[ ] y
```

```
0          is not Fraud
1          is not Fraud
2              is Fraud
3              is Fraud
4          is not Fraud
                  ...
6362615        is Fraud
6362616        is Fraud
6362617        is Fraud
6362618        is Fraud
6362619        is Fraud
Name: isFraud, Length: 6362620, dtype: object
```

```
[ ] from sklearn.model_selection import train_test_split
    x_train,x_test,y_train,y_test=train_test_split(x,y,test_size=0.2,random_state=0)
```

```
[ ] print(x_train.shape)
    print(x_test.shape)
    print(y_train.shape)
    print(y_test.shape)
```

```
(5090096, 10)
(1272524, 10)
(5090096,)
(1272524,)
```

```
[ ] from sklearn.ensemble import RandomForestClassifier
    from sklearn.metrics import accuracy_score
```

```
[ ] rfc=RandomForestClassifier()
    rfc.fit(x_train,y_train)
    y_test_predict1=rfc.predict(x_test)
```

```
test_accuracy=accuracy_score(y_test,y_test_predict1)
print(test_accuracy)
```

```
0.999704524236871
```

```
y_train_predict1=rfc.predict(x_train)
train_accuracy=accuracy_score(y_train,y_train_predict1)
train_accuracy
```

```
1.0
```

```
[ ] pd.crosstab(y_test,y_test_predict1)
```

col_0	is Fraud	is not Fraud
isFraud		
is Fraud	1289	352
is not Fraud	24	1270859

```
[ ] print(classification_report(y_test,y_test_predict1))
```

```
              precision    recall  f1-score   support

    is Fraud       0.98      0.79      0.87      1641
is not Fraud       1.00      1.00      1.00   1270883

    accuracy                           1.00   1272524
   macro avg       0.99      0.89      0.94   1272524
weighted avg       1.00      1.00      1.00   1272524
```

```
[ ] from sklearn.tree import DecisionTreeClassifier
    dtc=DecisionTreeClassifier()
    dtc.fit(x_train,y_train)
    y_test_predict2=dtc.predict(x_test)
```

```
[ ] test_accuracy=accuracy_score(y_test,y_test_predict2)
    test_accuracy
```

```
0.9996785915236176
```

```
    y_train_predict2=dtc.predict(x_train)
    train_accuracy=accuracy_score(y_train,y_train_predict2)
    train_accuracy
```

```
1.0
```

```
[ ] pd.crosstab(y_test,y_test_predict2)
```

col_0	is Fraud	is not Fraud
isFraud		
is Fraud	1424	217
is not Fraud	192	1270691

```
[ ] print(classification_report(y_test,y_test_predict2))
```

```
              precision    recall  f1-score   support

    is Fraud       0.88      0.87      0.87      1641
is not Fraud       1.00      1.00      1.00   1270883

    accuracy                           1.00   1272524
   macro avg       0.94      0.93      0.94   1272524
weighted avg       1.00      1.00      1.00   1272524
```

```
[ ] from sklearn.ensemble import ExtraTreesClassifier
    etc=ExtraTreesClassifier()
    etc.fit(x_train,y_train)
    y_test_predict3=etc.predict(x_test)
```

```
[ ] test_accuracy=accuracy_score(y_test,y_test_predict3)
    test_accuracy
```

```
0.999628297776702
```

```
    y_train_predict3=etc.predict(x_train)
    train_accuracy=accuracy_score(y_train,y_train_predict3)
    train_accuracy
```

```
1.0
```

```
[ ] pd.crosstab(y_test,y_test_predict3)
```

col_0	is Fraud	is not Fraud
isFraud		
is Fraud	1170	471
is not Fraud	2	1270881

```
print(classification_report(y_test,y_test_predict3))
```

```
              precision    recall  f1-score   support

    is Fraud       1.00      0.71      0.83      1641
is not Fraud       1.00      1.00      1.00   1270883

    accuracy                           1.00   1272524
   macro avg       1.00      0.86      0.92   1272524
weighted avg       1.00      1.00      1.00   1272524
```

```
[ ] df.columns
```

```
Index(['step', 'type', 'amount', 'nameOrig', 'oldbalanceOrg', 'newbalanceOrig',
       'nameDest', 'oldbalanceDest', 'newbalanceDest', 'isFraud',
       'isFlaggedFraud'],
      dtype='object')
```

```
[ ] from sklearn.preprocessing import LabelEncoder
    le=LabelEncoder()
    y_train1=le.fit_transform(y_train)
```

```
[ ] y_test1=le.transform(y_test)
```

```
[ ] y_test1
```

```
array([1, 1, 1, ..., 1, 1, 1])
```

```
[ ] y_train1
```

```
array([1, 1, 1, ..., 1, 1, 1])
```

```
[ ] import xgboost as xgb
    xgb1=xgb.XGBClassifier()
    xgb1.fit(x_train,y_train1)
    y_test_predict5=xgb1.predict(x_test)
```

```
[ ] test_accuracy=accuracy_score(y_test1,y_test_predict5)
    test_accuracy
```

```
0.9997705347796977
```

```
[ ] y_train_predict5=xgb1.predict(x_train)
    train_accuracy=accuracy_score(y_train1,y_train_predict5)
    train_accuracy
```

```
0.9998668001546532
```

```
[ ] pd.crosstab(y_test1,y_test_predict5)
```

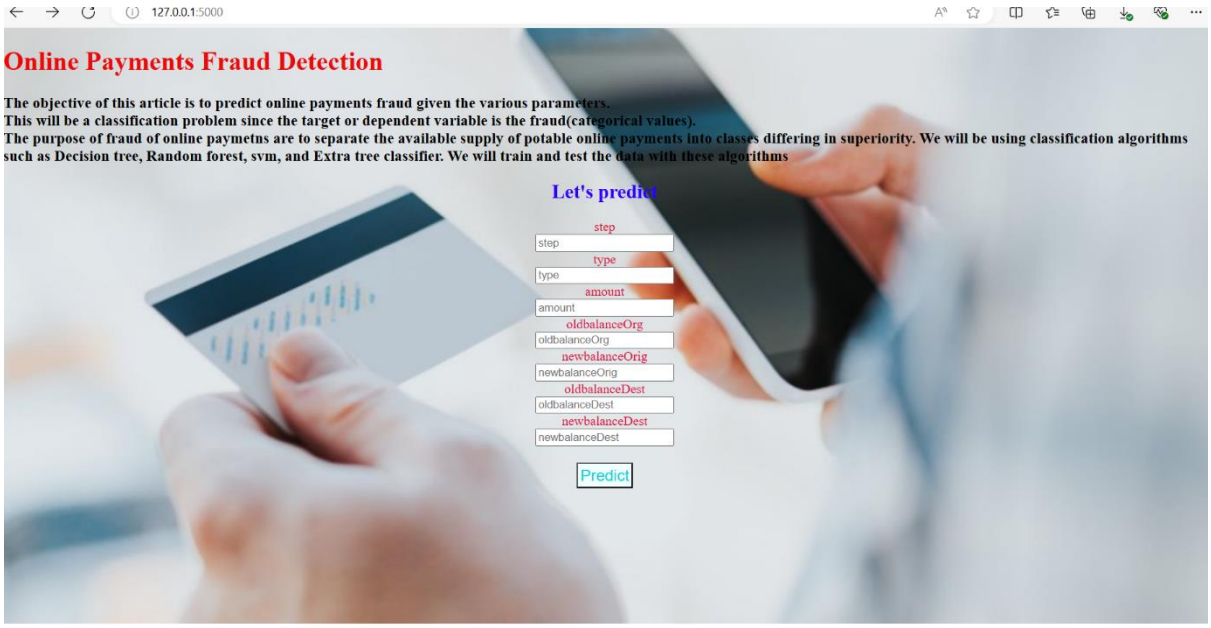
col_0	0	1
row_0		
0	1399	242
1	50	1270833

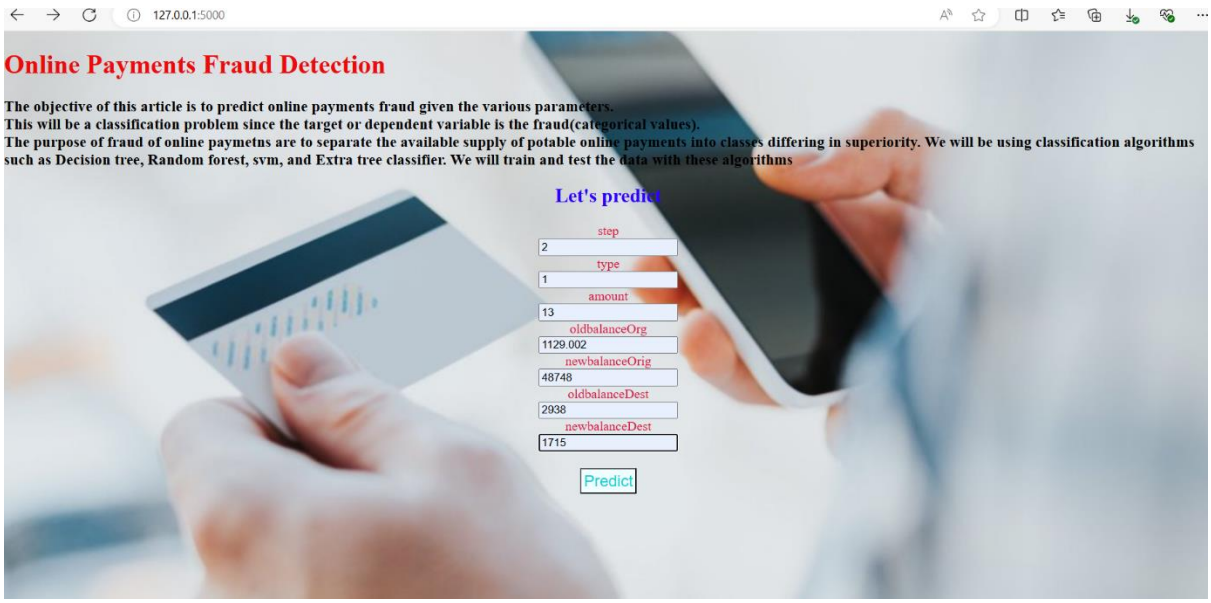
```
from sklearn.metrics import classification_report,confusion_matrix
print(classification_report(y_test1,y_test_predict5))
```

```
              precision    recall  f1-score   support

           0       0.97      0.85      0.91      1641
           1       1.00      1.00      1.00   1270883

    accuracy                           1.00   1272524
   macro avg       0.98      0.93      0.95   1272524
weighted avg       1.00      1.00      1.00   1272524
```

```
[ ]  import pickle
     pickle.dump(dtc,open('model.pkl','wb'))
```

```
[ ]  from google.colab import files
     files.download('model.pkl')
```





127.0.0.1:5000/predict

The online payment is: Not fraud