Importing Libraries and Datasets

In [12]:
```
import numpy as np
import pandas as pd
import matplotlib.pyplot as plt
import seaborn as sns
```

In [13]:
```
data = pd.read_csv('onlinefraud.csv')
data.head()
```

Out[13]:

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

In [14]:
```
data.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
```

In [15]:
```
data.describe()
```

Out[15]:

	step	amount	oldbalanceOrg	newbalanceOrig	oldbalanceDest	newbalanceI
count	6.362620e+06	6.362620e+06	6.362620e+06	6.362620e+06	6.362620e+06	6.362620e
mean	2.433972e+02	1.798619e+05	8.338831e+05	8.551137e+05	1.100702e+06	1.224996e
std	1.423320e+02	6.038582e+05	2.888243e+06	2.924049e+06	3.399180e+06	3.674129e
min	1.000000e+00	0.000000e+00	0.000000e+00	0.000000e+00	0.000000e+00	0.000000e
25%	1.560000e+02	1.338957e+04	0.000000e+00	0.000000e+00	0.000000e+00	0.000000e
50%	2.390000e+02	7.487194e+04	1.420800e+04	0.000000e+00	1.327057e+05	2.146614e
75%	3.350000e+02	2.087215e+05	1.073152e+05	1.442584e+05	9.430367e+05	1.111909e
max	7.430000e+02	9.244552e+07	5.958504e+07	4.958504e+07	3.560159e+08	3.561793e

Exploring transaction type

In [16]:
```
print(data.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
```

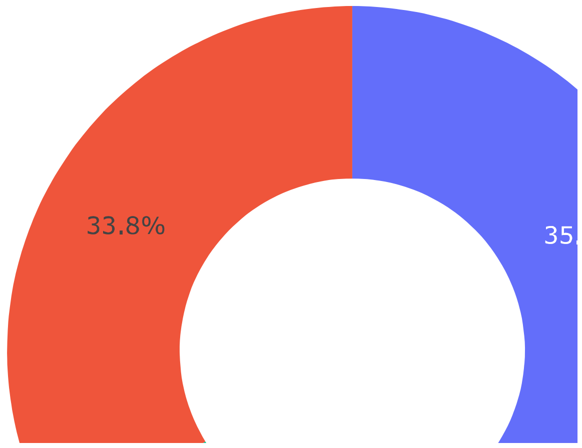
In [17]:
```
print(data.type.value_counts())
```

```
CASH_OUT    2237500
PAYMENT     2151495
CASH_IN     1399284
TRANSFER     532909
DEBIT         41432
Name: type, dtype: int64
```

In [18]:
```
type = data["type"].value_counts()
transactions = type.index
quantity = type.values

import plotly.express as px
figure = px.pie(data,
             values=quantity,
             names=transactions,hole = 0.5,
             title="Distribution of Transaction Type")
figure.show()
```

Distribution of Transaction Type



Checking correlation

In [8]:
```
data["type"] = data["type"].map({"CASH_OUT": 1, "PAYMENT": 2,
                                 "CASH_IN": 3, "TRANSFER": 4,
                                 "DEBIT": 5})
data["isFraud"] = data["isFraud"].map({0: "No Fraud", 1: "Fraud"})
print(data.head())
```

```
   step  type    amount     nameOrig  oldbalanceOrg  newbalanceOrig  \
0     1     2   9839.64  C1231006815       170136.0       160296.36   
1     1     2   1864.28  C1666544295        21249.0        19384.72   
2     1     4    181.00  C1305486145          181.0            0.00   
3     1     1    181.00   C840083671          181.0            0.00   
4     1     2  11668.14  C2048537720        41554.0        29885.86   

      nameDest  oldbalanceDest  newbalanceDest   isFraud  isFlaggedFraud  
0  M1979787155             0.0             0.0  No Fraud               0  
1  M2044282225             0.0             0.0  No Fraud               0  
2   C553264065             0.0             0.0     Fraud               0  
3    C38997010         21182.0             0.0     Fraud               0  
4  M1230701703             0.0             0.0  No Fraud               0  
```

splitting the data

In [9]:
```
from sklearn.model_selection import train_test_split
x = np.array(data[["type", "amount", "oldbalanceOrg", "newbalanceOrig"]])
y = np.array(data[["isFraud"]])
```

training a machine learning model

In [10]:
```
from sklearn.tree import DecisionTreeClassifier
xtrain, xtest, ytrain, ytest = train_test_split(x, y, test_size=0.10, random_s
model = DecisionTreeClassifier()
model.fit(xtrain, ytrain)
print(model.score(xtest, ytest))
```

```
0.9997343861491021
```

In [11]:
```
features = np.array([[4, 9000.60, 9000.60, 0.0]])
print(model.predict(features))
```

```
['Fraud']
```

In [ ]: