```python
In [1]:  import pandas as pd
         import numpy as np
         from sklearn import cluster

         data = pd.read_csv(r"C:\Users\User21\CC GENERAL.csv")
         print(data.head())
```
```
   CUST_ID      BALANCE  BALANCE_FREQUENCY  PURCHASES  ONEOFF_PURCHASES  \
0  C10001    40.900749           0.818182      95.40              0.00
1  C10002  3202.467416           0.909091       0.00              0.00
2  C10003  2495.148862           1.000000     773.17            773.17
3  C10004  1666.670542           0.636364    1499.00           1499.00
4  C10005   817.714335           1.000000      16.00             16.00

   INSTALLMENTS_PURCHASES  CASH_ADVANCE  PURCHASES_FREQUENCY  \
0                    95.4     0.000000             0.166667
1                     0.0  6442.945483             0.000000
2                     0.0     0.000000             1.000000
3                     0.0   205.788017             0.083333
4                     0.0     0.000000             0.083333

   ONEOFF_PURCHASES_FREQUENCY  PURCHASES_INSTALLMENTS_FREQUENCY  \
0                    0.000000                          0.083333
1                    0.000000                          0.000000
2                    1.000000                          0.000000
3                    0.083333                          0.000000
4                    0.083333                          0.000000

   CASH_ADVANCE_FREQUENCY  CASH_ADVANCE_TRX  PURCHASES_TRX  CREDIT_LIMIT  \
0                0.000000                 0              2        1000.0
1                0.250000                 4              0        7000.0
2                0.000000                 0             12        7500.0
3                0.083333                 1              1        7500.0
4                0.000000                 0              1        1200.0

      PAYMENTS  MINIMUM_PAYMENTS  PRC_FULL_PAYMENT  TENURE
0   201.802084        139.509787          0.000000      12
1  4103.032597       1072.340217          0.222222      12
2   622.066742        627.284787          0.000000      12
3     0.000000               NaN          0.000000      12
4   678.334763        244.791237          0.000000      12
```
```python
In [2]:  data.isnull().sum()
```
```
Out[2]:  CUST_ID                             0
         BALANCE                             0
         BALANCE_FREQUENCY                   0
         PURCHASES                           0
         ONEOFF_PURCHASES                    0
         INSTALLMENTS_PURCHASES              0
         CASH_ADVANCE                        0
         PURCHASES_FREQUENCY                 0
         ONEOFF_PURCHASES_FREQUENCY          0
         PURCHASES_INSTALLMENTS_FREQUENCY    0
         CASH_ADVANCE_FREQUENCY              0
         CASH_ADVANCE_TRX                    0
         PURCHASES_TRX                       0
         CREDIT_LIMIT                        1
         PAYMENTS                            0
         MINIMUM_PAYMENTS                  313
         PRC_FULL_PAYMENT                    0
         TENURE                              0
         dtype: int64
```
```python
In [3]:  data = data.dropna()
```
```python
In [4]:  clustering_data = data[["BALANCE", "PURCHASES", "CREDIT_LIMIT"]]
         from sklearn.preprocessing import MinMaxScaler
         for i in clustering_data.columns:
             MinMaxScaler(i)

         from sklearn.cluster import KMeans
         kmeans = KMeans(n_clusters=5)
         clusters = kmeans.fit_predict(clustering_data)
         data["CREDIT_CARD_SEGMENTS"] = clusters
```
```python
In [5]:  data["CREDIT_CARD_SEGMENTS"] = data["CREDIT_CARD_SEGMENTS"].map({0: "Cluster 1", 1:
             "Cluster 2", 2: "Cluster 3", 3: "Cluster 4", 4: "Cluster 5"})
         print(data["CREDIT_CARD_SEGMENTS"].head(10))
```
```
0     Cluster 2
1     Cluster 1
2     Cluster 5
4     Cluster 2
5     Cluster 2
6     Cluster 4
7     Cluster 2
8     Cluster 5
9     Cluster 5
10    Cluster 2
Name: CREDIT_CARD_SEGMENTS, dtype: object
```
```python
In [6]:  import plotly.graph_objects as go
         PLOT = go.Figure()
         for i in list(data["CREDIT_CARD_SEGMENTS"].unique()):


             PLOT.add_trace(go.Scatter3d(x = data[data["CREDIT_CARD_SEGMENTS"]== i]['BALANCE'],
                                         y = data[data["CREDIT_CARD_SEGMENTS"] == i]['PURCHASES'],
                                         z = data[data["CREDIT_CARD_SEGMENTS"] == i]['CREDIT_LIMIT'],
                                         mode = 'markers',marker_size = 6, marker_line_width = 1,
                                         name = str(i)))
         PLOT.update_traces(hovertemplate='BALANCE: %{x} <br>PURCHASES %{y} <br>DCREDIT_LIMIT: %{z}')


         PLOT.update_layout(width = 800, height = 800, autosize = True, showlegend = True,
                         scene = dict(xaxis=dict(title = 'BALANCE', titlefont_color = 'black'),
                                      yaxis=dict(title = 'PURCHASES', titlefont_color = 'black'),
                                      zaxis=dict(title = 'CREDIT_LIMIT', titlefont_color = 'black')),
                         font = dict(family = "Gilroy", color  = 'black', size = 12))
```


- Cluster 2
- Cluster 1
- Cluster 5
- Cluster 4
- Cluster 3

```python
In [ ]:
```