DESARROLLO LABORATORIO 8

In [1]:
```
import pandas as pd
import numpy as np
import matplotlib.pyplot as plt
import seaborn as sns
import os
import math
from sklearn.preprocessing import KBinsDiscretizer # Para aplicar Discretizacion
```

In [2]:
```
os.chdir("D:\Social Data Consulting\Python for Data Science\data")
```

In [4]:
```
fileCsv="php9xWOpn.csv"
df_fall_placa_acero = pd.read_csv(fileCsv,  sep=',')
df_fall_placa_acero.info()
```

```
<class 'pandas.core.frame.DataFrame'>
RangeIndex: 1941 entries, 0 to 1940
Data columns (total 34 columns):
 #   Column  Non-Null Count  Dtype  
---  ------  --------------  -----  
 0   V1      1941 non-null   int64  
 1   V2      1941 non-null   int64  
 2   V3      1941 non-null   int64  
 3   V4      1941 non-null   int64  
 4   V5      1941 non-null   int64  
 5   V6      1941 non-null   int64  
 6   V7      1941 non-null   int64  
 7   V8      1941 non-null   int64  
 8   V9      1941 non-null   int64  
 9   V10     1941 non-null   int64  
 10  V11     1941 non-null   int64  
 11  V12     1941 non-null   int64  
 12  V13     1941 non-null   int64  
 13  V14     1941 non-null   int64  
 14  V15     1941 non-null   float64
 15  V16     1941 non-null   float64
 16  V17     1941 non-null   float64
 17  V18     1941 non-null   float64
 18  V19     1941 non-null   float64
 19  V20     1941 non-null   float64
 20  V21     1941 non-null   float64
 21  V22     1941 non-null   float64
 22  V23     1941 non-null   float64
 23  V24     1941 non-null   float64
 24  V25     1941 non-null   float64
 25  V26     1941 non-null   float64
 26  V27     1941 non-null   float64
 27  V28     1941 non-null   int64  
 28  V29     1941 non-null   int64  
 29  V30     1941 non-null   int64  
 30  V31     1941 non-null   int64  
 31  V32     1941 non-null   int64  
 32  V33     1941 non-null   int64  
 33  Class   1941 non-null   int64  
dtypes: float64(13), int64(21)
memory usage: 515.7 KB
```

1. Encontrar el numero de bins con la tecnica de Sturges

In [6]:

```
n=len(df_fall_placa_acero)
k=1+math.log2(n)
k=round(k,0)
k
```

Out[6]:

```
12.0
```

2. Discretizacion por intervalos de igual amplitud de la variable "V9" (Grafico de Barras)

In [7]:

```
#Creando una instancia de KBinsDiscretizer
amplitud=KBinsDiscretizer(n_bins=12,
                          encode='ordinal',
                          strategy='uniform')# uniform por ser intervalos de igual amplitud
```

In [8]:

```
nuevo_amplitud=amplitud.fit_transform(df_fall_placa_acero[['V9']])
```

In [9]:

```
df_fall_placa_acero['V9_amplitud']=nuevo_amplitud
df_fall_placa_acero.head()
```

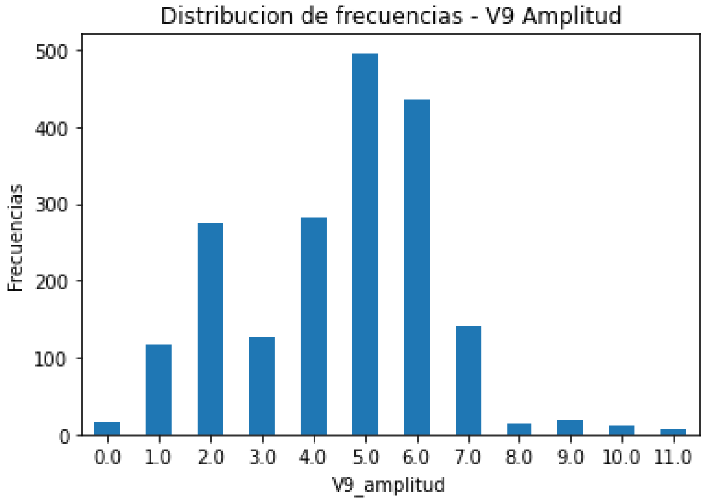
Out[9]:

	V1	V2	V3	V4	V5	V6	V7	V8	V9	V10	...	V26	V27	V28	V29	V30	V31	V32	V3
0	42	50	270900	270944	267	17	44	24220	76	108	...	-0.2913	0.5822	1	0	0	0	0	
1	645	651	2538079	2538108	108	10	30	11397	84	123	...	-0.1756	0.2984	1	0	0	0	0	
2	829	835	1553913	1553931	71	8	19	7972	99	125	...	-0.1228	0.2150	1	0	0	0	0	
3	853	860	369370	369415	176	13	45	18996	99	126	...	-0.1568	0.5212	1	0	0	0	0	
4	1289	1306	498078	498335	2409	60	260	246930	37	126	...	-0.1992	1.0000	1	0	0	0	0	

5 rows × 35 columns

In [11]:

```
df_fall_placa_acero.groupby(df_fall_placa_acero.V9_amplitud).size().plot(kind='bar',rot=0)
plt.title('Distribucion de frecuencias - V9 Amplitud')
plt.ylabel('Frecuencias')
plt.show()
```



3. Discretizacion por cuantil de la variable "V19" (Grafico de barras)

In [12]:

```
#Creando una instancia de KBinsDiscretizer
cuantil=KBinsDiscretizer(n_bins=4,
                          encode='ordinal',
                          strategy='quantile')
```

In [14]:

```
nuevo_cuantil=cuantil.fit_transform(df_fall_placa_acero[['V19']])
```

In [15]:

```
df_fall_placa_acero['V19_cuantil']=nuevo_cuantil
df_fall_placa_acero['V19_cuantil']=df_fall_placa_acero['V19_cuantil'].astype(np.int64)
df_fall_placa_acero.head()
```

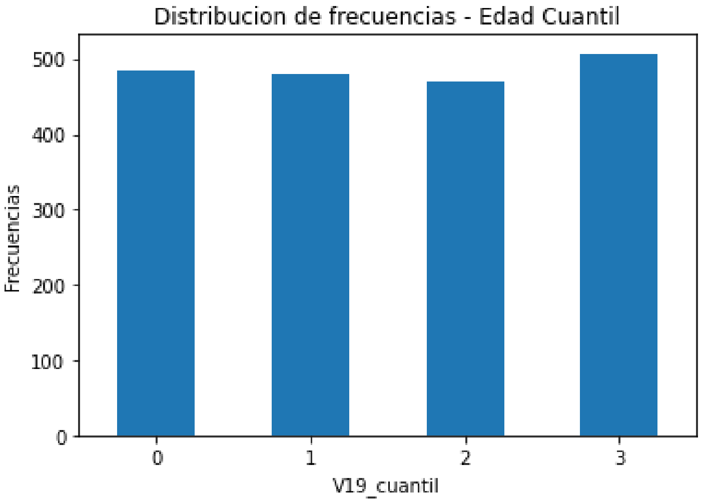
Out[15]:

	V1	V2	V3	V4	V5	V6	V7	V8	V9	V10	...	V27	V28	V29	V30	V31	V32	V33	Class
0	42	50	270900	270944	267	17	44	24220	76	108	...	0.5822	1	0	0	0	0	0	1
1	645	651	2538079	2538108	108	10	30	11397	84	123	...	0.2984	1	0	0	0	0	0	1
2	829	835	1553913	1553931	71	8	19	7972	99	125	...	0.2150	1	0	0	0	0	0	1
3	853	860	369370	369415	176	13	45	18996	99	126	...	0.5212	1	0	0	0	0	0	1
4	1289	1306	498078	498335	2409	60	260	246930	37	126	...	1.0000	1	0	0	0	0	0	1

5 rows × 36 columns

In [16]:

```
df_fall_placa_acero.groupby(df_fall_placa_acero.V19_cuantil).size().plot(kind='bar',rot=0)
plt.title('Distribucion de frecuencias - Edad Cuantil')
plt.ylabel('Frecuencias')
plt.show()
```



4. Discretizacion por kmeans de la variable "V15" (Grafico de barras)

In [17]:

```
#Creando una instancia de KBinsDiscretizer
kmeans=KBinsDiscretizer(n_bins=4,
                        encode='ordinal',
                        strategy='kmeans')
```

In [18]:

```
nuevo_kmeans=kmeans.fit_transform(df_fall_placa_acero[['V15']])
```

In [19]:

```
df_fall_placa_acero['V15_kmeans']=nuevo_kmeans
df_fall_placa_acero['V15_kmeans']=df_fall_placa_acero['V15_kmeans'].astype(np.int64)
df_fall_placa_acero.head()
```

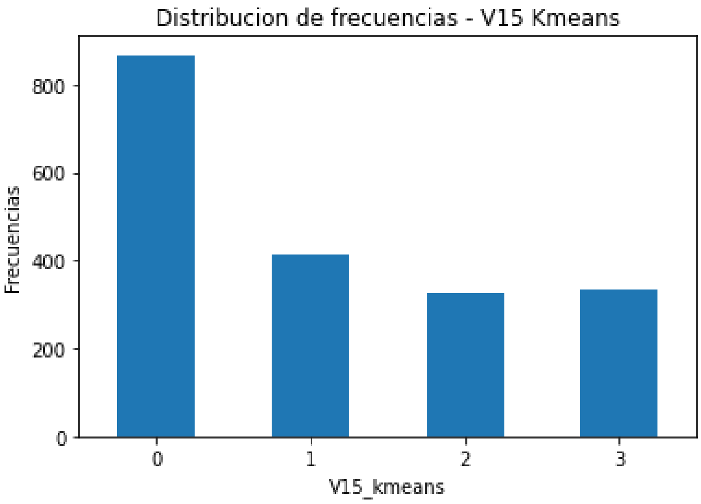
Out[19]:

	V1	V2	V3	V4	V5	V6	V7	V8	V9	V10	...	V28	V29	V30	V31	V32	V33	Class	V9_am
0	42	50	270900	270944	267	17	44	24220	76	108	...	1	0	0	0	0	0	1	
1	645	651	2538079	2538108	108	10	30	11397	84	123	...	1	0	0	0	0	0	1	
2	829	835	1553913	1553931	71	8	19	7972	99	125	...	1	0	0	0	0	0	1	
3	853	860	369370	369415	176	13	45	18996	99	126	...	1	0	0	0	0	0	1	
4	1289	1306	498078	498335	2409	60	260	246930	37	126	...	1	0	0	0	0	0	1	

5 rows × 37 columns

In [22]:

```
df_fall_placa_acero.groupby(df_fall_placa_acero.V15_kmeans).size().plot(kind='bar',rot=0)
plt.title('Distribucion de frecuencias - V15 Kmeans')
plt.ylabel('Frecuencias')
plt.show()
```



In [ ]: