

# Práctica 0

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Visualización de la Información  
Licenciatura en Ciencia de Datos  
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IIMAS, UNAM

## 1. Visualización de datos

Visualización de datos

```
[3] In [ ]: In [ ]: In [ ]:
import pandas as pd
import numpy as np
import matplotlib.pyplot as plt

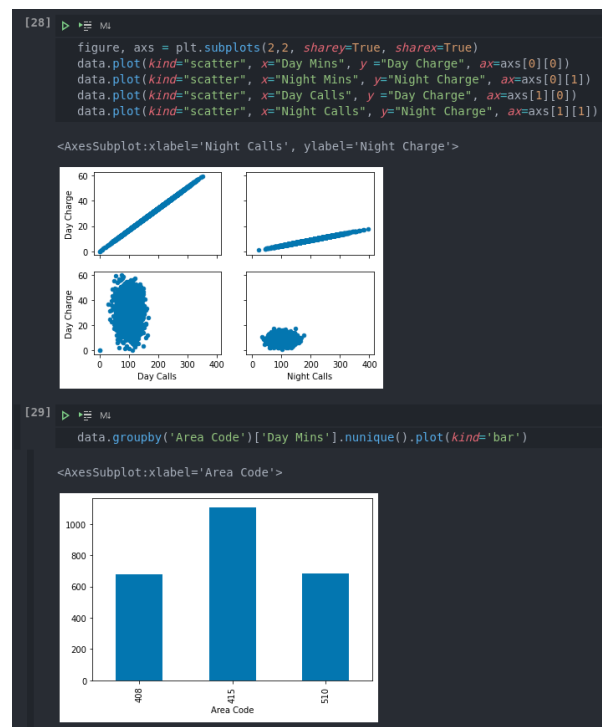
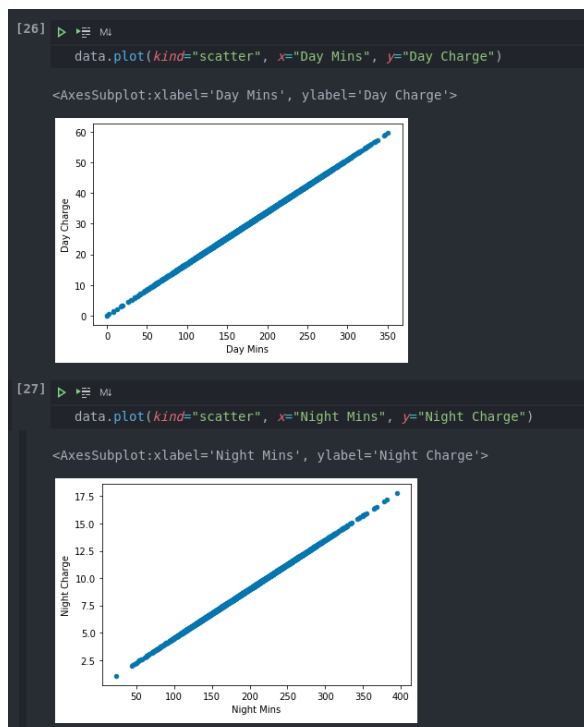
data = pd.read_csv("Customer_Churn_Model.txt")

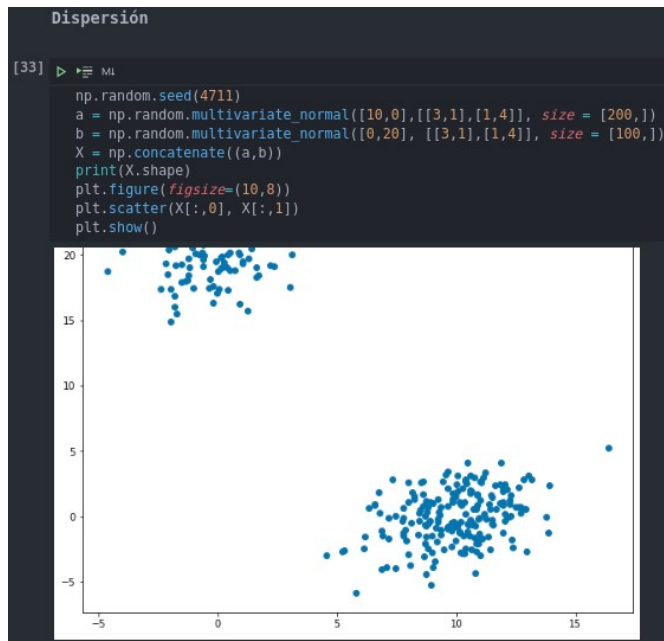
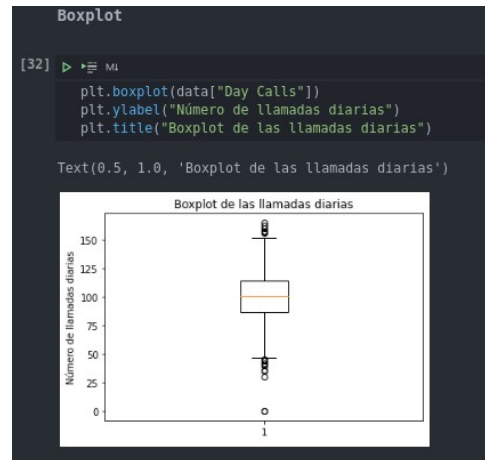
data
```

	State	Account Length	Area Code	Phone	Int'l Plan	VMail Plan	VMail Message	Day Mins	Day Calls	Day Charge	...	Eve Calls	Eve Charge	Night Mins	Night Calls	Night Charge	Intl Mins	Intl Calls	Intl Charge	CustServ Calls	Churn?
0	KS	128	415	382-4657	no	yes	25	265.1	110	45.07	...	99	16.78	244.7	91	11.01	10.0	3	2.70	1	False.
1	OH	107	415	371-7191	no	yes	26	161.6	123	27.47	...	103	16.62	254.4	103	11.45	13.7	3	3.70	1	False.
2	NJ	137	415	358-1921	no	no	0	243.4	114	41.38	...	110	10.30	162.6	104	7.32	12.2	5	3.29	0	False.
3	OH	84	408	375-9999	yes	no	0	299.4	71	50.90	...	88	5.26	196.9	89	8.86	6.6	7	1.78	2	False.
4	OK	75	415	330-6626	yes	no	0	166.7	113	28.34	...	122	12.61	186.9	121	8.41	10.1	3	2.73	3	False.
...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
3328	AZ	192	415	414-4276	no	yes	36	156.2	77	26.55	...	126	18.32	279.1	83	12.56	9.9	6	2.67	2	False.
3329	WV	68	415	370-3271	no	no	0	231.1	57	39.29	...	55	13.04	191.3	123	8.61	9.6	4	2.59	3	False.
3330	RI	28	510	328-8230	no	no	0	180.8	109	30.74	...	58	24.55	191.9	91	8.64	14.1	6	3.81	2	False.
3331	CT	184	510	364-6381	yes	no	0	213.8	105	36.35	...	84	13.57	139.2	137	6.26	5.0	10	1.35	2	False.
3332	TN	74	415	400-4344	no	yes	25	234.4	113	39.85	...	82	22.60	241.4	77	10.86	13.7	4	3.70	0	False.

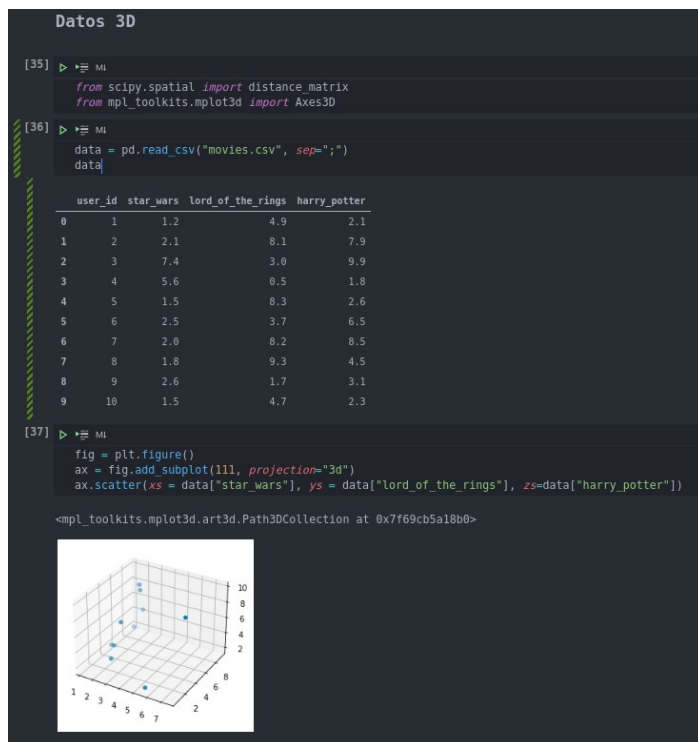
3333 rows x 21 columns

## 2. Gráficas

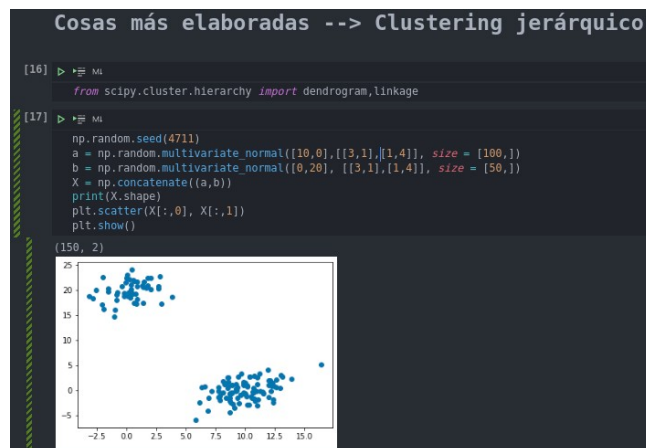




### 3. Gráficas en 3D



### 4. Clustering jerárquico





## 5. Barras y error

