

```
1 import pandas as pd
2 import seaborn as sns
```

```
dt=pd.read_csv('/content/Telco Customer Churn.csv')
```

```
1 dt=pd.read_csv('/content/Telco Customer Churn.csv')
```

```
1 dt.info()
```

```
>>> <class 'pandas.core.frame.DataFrame'>
RangeIndex: 7043 entries, 0 to 7042
Data columns (total 21 columns):
 #   Column                Non-Null Count  Dtype  
---  -
 0   customerID            7043 non-null   object  
 1   gender                7043 non-null   object  
 2   SeniorCitizen         7043 non-null   int64   
 3   Partner               7043 non-null   object  
 4   Dependents            7043 non-null   object  
 5   tenure                7043 non-null   int64   
 6   PhoneService          7043 non-null   object  
 7   MultipleLines         7043 non-null   object  
 8   InternetService       7043 non-null   object  
 9   OnlineSecurity        7043 non-null   object  
10   OnlineBackup          7043 non-null   object  
11   DeviceProtection      7043 non-null   object  
12   TechSupport           7043 non-null   object  
13   StreamingTV           7043 non-null   object  
14   StreamingMovies       7043 non-null   object  
15   Contract              7043 non-null   object  
16   PaperlessBilling      7043 non-null   object  
17   PaymentMethod         7043 non-null   object  
18   MonthlyCharges        7043 non-null   float64  
19   TotalCharges          7043 non-null   object  
20   Churn                 7043 non-null   object  
dtypes: float64(1), int64(2), object(18)
memory usage: 1.1+ MB
```

```

1 for i in dt.columns:
2     if dt[i].dtype=='object':
3         dt[i]=dt[i].astype('category').cat.codes

```

```

1 dt.info()

```

```

<class 'pandas.core.frame.DataFrame'>
RangeIndex: 7043 entries, 0 to 7042
Data columns (total 21 columns):
 #   Column                Non-Null Count  Dtype
---  -
 0   customerID            7043 non-null   int16
 1   gender                7043 non-null   int8
 2   SeniorCitizen         7043 non-null   int64
 3   Partner               7043 non-null   int8
 4   Dependents            7043 non-null   int8
 5   tenure               7043 non-null   int64
 6   PhoneService          7043 non-null   int8
 7   MultipleLines         7043 non-null   int8
 8   InternetService       7043 non-null   int8
 9   OnlineSecurity        7043 non-null   int8
10  OnlineBackup          7043 non-null   int8
11  DeviceProtection      7043 non-null   int8
12  TechSupport           7043 non-null   int8
13  StreamingTV           7043 non-null   int8
14  StreamingMovies       7043 non-null   int8
15  Contract              7043 non-null   int8
16  PaperlessBilling      7043 non-null   int8
17  PaymentMethod         7043 non-null   int8
18  MonthlyCharges        7043 non-null   float64
19  TotalCharges          7043 non-null   int16
20  Churn                 7043 non-null   int8
dtypes: float64(1), int16(2), int64(2), int8(16)
memory usage: 302.8 KB

```

```

1 dt.drop(['customerID'],axis=1,inplace=True)

```

```
1 dt.corr()
```



	gender	SeniorCitizen	Partner	Dependents	tenure	PhoneService	MultipleLines	InternetService	OnlineSe
<b>gender</b>	1.000000	-0.001874	-0.001808	0.010517	0.005106	-0.006488	-0.006739	-0.000863	-0
<b>SeniorCitizen</b>	-0.001874	1.000000	0.016479	-0.211185	0.016567	0.008576	0.146185	-0.032310	-0
<b>Partner</b>	-0.001808	0.016479	1.000000	0.452676	0.379697	0.017706	0.142410	0.000891	0
<b>Dependents</b>	0.010517	-0.211185	0.452676	1.000000	0.159712	-0.001762	-0.024991	0.044590	0
<b>tenure</b>	0.005106	0.016567	0.379697	0.159712	1.000000	0.008448	0.343032	-0.030359	0
<b>PhoneService</b>	-0.006488	0.008576	0.017706	-0.001762	0.008448	1.000000	-0.020538	0.387436	-0
<b>MultipleLines</b>	-0.006739	0.146185	0.142410	-0.024991	0.343032	-0.020538	1.000000	-0.109216	0
<b>InternetService</b>	-0.000863	-0.032310	0.000891	0.044590	-0.030359	0.387436	-0.109216	1.000000	-0
<b>OnlineSecurity</b>	-0.015017	-0.128221	0.150828	0.152166	0.325468	-0.015198	0.007141	-0.028416	1
<b>OnlineBackup</b>	-0.012057	-0.013632	0.153130	0.091015	0.370876	0.024105	0.117327	0.036138	0
<b>DeviceProtection</b>	0.000549	-0.021398	0.166330	0.080537	0.371105	0.003727	0.122318	0.044944	0
<b>TechSupport</b>	-0.006825	-0.151268	0.126733	0.133524	0.322942	-0.019158	0.011466	-0.026047	0
<b>StreamingTV</b>	-0.006421	0.030776	0.137341	0.046885	0.289373	0.055353	0.175059	0.107417	0
<b>StreamingMovies</b>	-0.008743	0.047266	0.129574	0.021321	0.296866	0.043870	0.180957	0.098350	0
<b>Contract</b>	0.000126	-0.142554	0.294806	0.243187	0.671607	0.002247	0.110842	0.099721	0
<b>PaperlessBilling</b>	-0.011754	0.156530	-0.014877	-0.111377	0.006152	0.016505	0.165146	-0.138625	-0
<b>PaymentMethod</b>	0.017352	-0.038551	-0.154798	-0.040292	-0.370436	-0.004184	-0.176793	0.086140	-0
<b>MonthlyCharges</b>	-0.014569	0.220173	0.096848	-0.113890	0.247900	0.247398	0.433576	-0.323260	-0
<b>TotalCharges</b>	-0.005291	0.037653	0.059568	-0.009572	0.158523	0.083195	0.114955	-0.055724	0
<b>Churn</b>	-0.008612	0.150889	-0.150448	-0.164221	-0.352229	0.011942	0.038037	-0.047291	-0

```
1 dt=dt.drop(["gender","Dependents","PhoneService","MultipleLines","InternetService"],axis=1)
```

```
1 dt=dt.drop(["StreamingTV","StreamingMovies","TotalCharges"],axis=1)
```

```
1 x=dt.drop(["Churn"],axis=1)
```

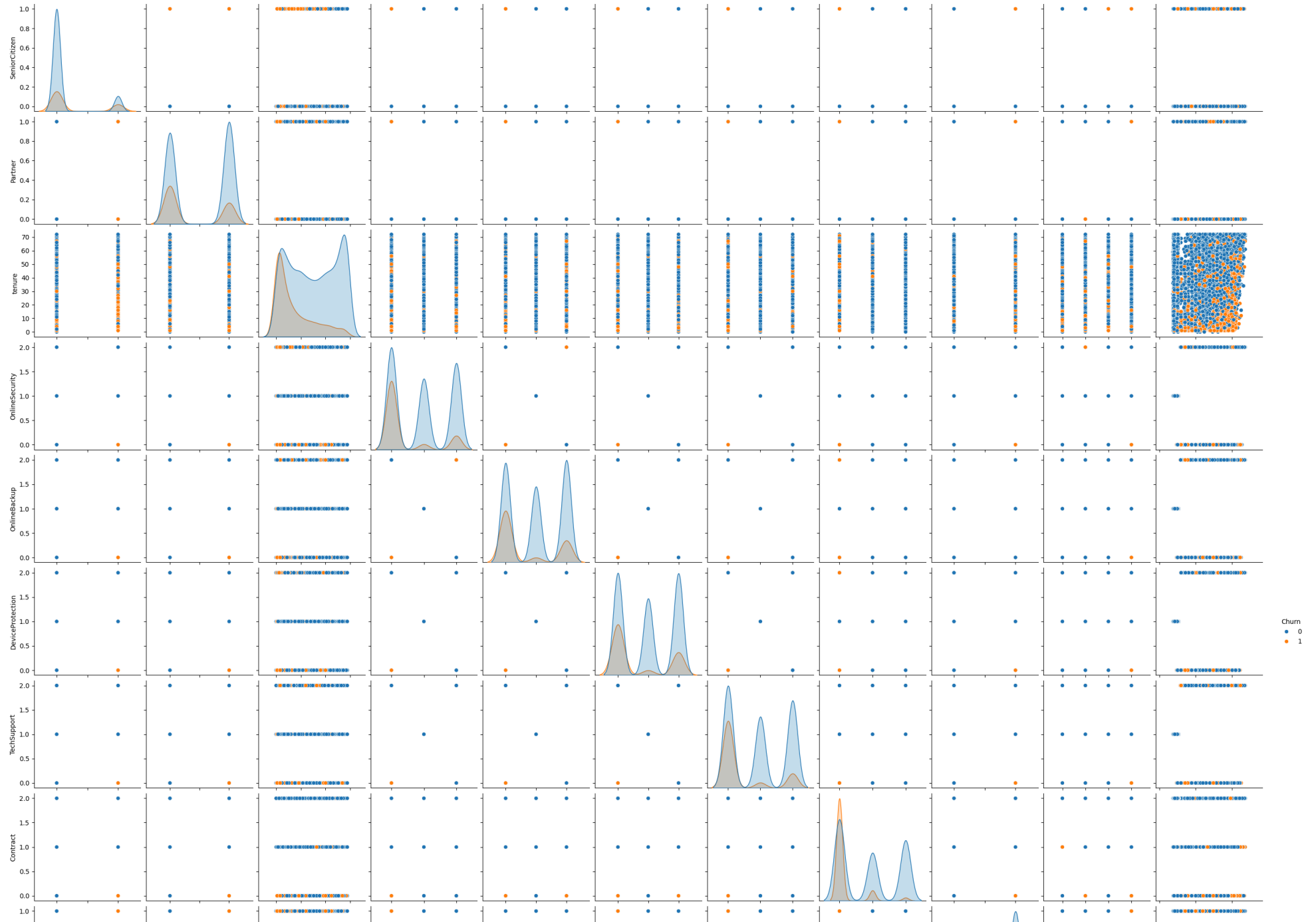
```
2 y=dt["Churn"]
```

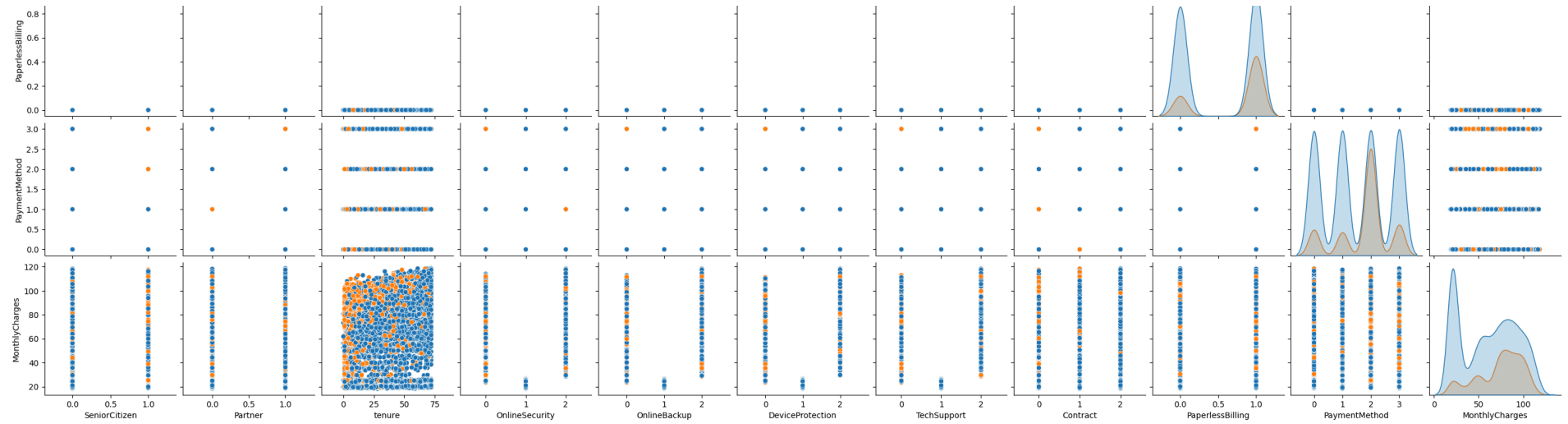
```
1 from sklearn.model_selection import train_test_split
```

```
2 x_train,x_test,y_train,y_test=train_test_split(x,y,test_size=0.2)
```

```
1 sns.pairplot(data=dt,hue='Churn')
```

```
>>> g = sns.pairplot(df)
Out[10]: <seaborn.axisgrid.PairGrid at 0x7f3d421e2f10>
```





```
1 from sklearn.tree import DecisionTreeClassifier
2 d=DecisionTreeClassifier()
```