

Assignment 4 – Pandas

Problem Statement:

You work in XYZ Corporation as a Data Analyst. Your corporation has told you to analyze the customer_churn dataset with various functions.

Tasks To Be Performed:

1. Now from the churn DataFrame, try to sort the data by the tenure column according to the descending order.
2. Fetch all the records that are satisfying the following condition:

- a. Tenure>50 and the gender as 'Female'
- b. Gender as 'Male' and SeniorCitizen as 0
- c. TechSupport as 'Yes' and Churn as 'No'
- d. Contract type as 'Month-to-month' and Churn as 'Yes'

In [1]:

```
import pandas as pd
df = pd.read_csv(r'csv files/customer_churn-1.csv')
df
```

Out[1]:

	customerID	gender	SeniorCitizen	Partner	Dependents	tenure	PhoneService	MultipleLines	InternetService	OnlineSecurity	...	DeviceProtection	TechSupport	StreamingTV	StreamingMovies	Contract	PaperlessBilling	PaymentMethod	MonthlyCharges	TotalCharges	Churn
0	7590-VHVEG	Female	0	Yes	No	1	No	No phone service	DSL	No	...	No	No	No	No	Month-to-month	Yes	Electronic check	29.85	29.85	No
1	5575-GNVDE	Male	0	No	No	34	Yes	No	DSL	Yes	...	Yes	No	No	No	One year	No	Mailed check	56.95	1889.5	No
2	3668-QPYBK	Male	0	No	No	2	Yes	No	DSL	Yes	...	No	No	No	No	Month-to-month	Yes	Mailed check	53.85	108.15	Yes
3	7795-CFOCW	Male	0	No	No	45	No	No phone service	DSL	Yes	...	Yes	Yes	No	No	One year	No	Bank transfer (automatic)	42.30	1840.75	No
4	9237-HQITU	Female	0	No	No	2	Yes	No	Fiber optic	No	...	No	No	No	No	Month-to-month	Yes	Electronic check	70.70	151.65	Yes
...
7038	6840-RESVB	Male	0	Yes	Yes	24	Yes	Yes	DSL	Yes	...	Yes	Yes	Yes	Yes	One year	Yes	Mailed check	84.80	1990.5	No
7039	2234-XADUH	Female	0	Yes	Yes	72	Yes	Yes	Fiber optic	No	...	Yes	No	Yes	Yes	One year	Yes	Credit card (automatic)	103.20	7362.9	No
7040	4801-JZAZL	Female	0	Yes	Yes	11	No	No phone service	DSL	Yes	...	No	No	No	No	Month-to-month	Yes	Electronic check	29.60	346.45	No
7041	8361-LTMKD	Male	1	Yes	No	4	Yes	Yes	Fiber optic	No	...	No	No	No	No	Month-to-month	Yes	Mailed check	74.40	306.6	Yes
7042	3186-AJIEK	Male	0	No	No	66	Yes	No	Fiber optic	Yes	...	Yes	Yes	Yes	Yes	Two year	Yes	Bank transfer (automatic)	105.65	6844.5	No

7043 rows × 21 columns

In [4]:

```
df[(df['tenure']>50) & (df['gender']=='Female')]
```

Out[4]:

	customerID	gender	SeniorCitizen	Partner	Dependents	tenure	PhoneService	MultipleLines	InternetService	OnlineSecurity	...	DeviceProtection	TechSupport	StreamingTV	StreamingMovies	Contract	PaperlessBilling	PaymentMethod	MonthlyCharges	TotalCharges	Churn
15	3655-SNQYZ	Female	0	Yes	Yes	69	Yes	Yes	Fiber optic	Yes	...	Yes	Yes	Yes	Yes	Two year	No	Credit card (automatic)	113.25	7895.15	No
16	8191-XWSZG	Female	0	No	No	52	Yes	No	No	No internet service	...	No internet service	No internet service	No internet service	No internet service	One year	No	Mailed check	20.65	1022.95	No
23	3638-WEABW	Female	0	Yes	No	58	Yes	Yes	DSL	No	...	No	Yes	No	No	Two year	Yes	Credit card (automatic)	59.90	3505.1	No
30	3841-NFECX	Female	1	Yes	No	71	Yes	Yes	Fiber optic	Yes	...	Yes	Yes	No	No	Two year	Yes	Credit card (automatic)	96.35	6766.95	No
35	6234-RAAPL	Female	0	Yes	Yes	72	Yes	Yes	Fiber optic	Yes	...	No	Yes	Yes	No	Two year	No	Bank transfer (automatic)	99.90	7251.7	No
...
7023	1035-IPGPU	Female	1	Yes	No	63	Yes	Yes	Fiber optic	No	...	Yes	No	Yes	Yes	Month-to-month	Yes	Electronic check	103.50	6479.4	No
7028	9281-CEDRU	Female	0	Yes	No	68	Yes	No	DSL	No	...	No	Yes	Yes	No	Two year	No	Bank transfer (automatic)	64.10	4326.25	No
7034	0639-TSIQW	Female	0	No	No	67	Yes	Yes	Fiber optic	Yes	...	Yes	No	Yes	No	Month-to-month	Yes	Credit card (automatic)	102.95	6886.25	Yes
7037	2569-WGERO	Female	0	No	No	72	Yes	No	No	No internet service	...	No internet service	No internet service	No internet service	No internet service	Two year	Yes	Bank transfer (automatic)	21.15	1419.4	No
7039	2234-XADUH	Female	0	Yes	Yes	72	Yes	Yes	Fiber optic	No	...	Yes	No	Yes	Yes	One year	Yes	Credit card (automatic)	103.20	7362.9	No

1022 rows × 21 columns

In [5]:

```
df[(df['gender']=='Male') & (df['SeniorCitizen']==0)]
```

Out[5]:

	customerID	gender	SeniorCitizen	Partner	Dependents	tenure	PhoneService	MultipleLines	InternetService	OnlineSecurity	...	DeviceProtection	TechSupport	StreamingTV	StreamingMovies	Contract	PaperlessBilling	PaymentMethod	MonthlyCharges	TotalCharges	Churn
1	5575-GNVDE	Male	0	No	No	34	Yes	No	DSL	Yes	...	Yes	No	No	No	One year	No	Mailed check	56.95	1889.5	No
2	3668-QPYBK	Male	0	No	No	2	Yes	No	DSL	Yes	...	No	No	No	No	Month-to-month	Yes	Mailed check	53.85	108.15	Yes
3	7795-CFOCW	Male	0	No	No	45	No	No phone service	DSL	Yes	...	Yes	Yes	No	No	One year	No	Bank transfer (automatic)	42.30	1840.75	No
6	1452-KIOVK	Male	0	No	Yes	22	Yes	Yes	Fiber optic	No	...	No	No	Yes	No	Month-to-month	Yes	Credit card (automatic)	89.10	1949.4	No
9	6388-TABGU	Male	0	No	Yes	62	Yes	No	DSL	Yes	...	No	No	No	No	One year	No	Bank transfer (automatic)	56.15	3487.95	No
...
7027	0550-DCXLH	Male	0	No	No	13	Yes	No	DSL	No	...	No	Yes	Yes	Yes	Month-to-month	No	Mailed check	73.35	931.55	No
7033	9767-FFLEM	Male	0	No	No	38	Yes	No	Fiber optic	No	...	No	No	No	No	Month-to-month	Yes	Credit card (automatic)	69.50	2625.25	No
7035	8456-QDAVC	Male	0	No	No	19	Yes	No	Fiber optic	No	...	No	No	Yes	No	Month-to-month	Yes	Bank transfer (automatic)	78.70	1495.1	No
7038	6840-RESVB	Male	0	Yes	Yes	24	Yes	Yes	DSL	Yes	...	Yes	Yes	Yes	Yes	One year	Yes	Mailed check	84.80	1990.5	No
7042	3186-AJIEK	Male	0	No	No	66	Yes	No	Fiber optic	Yes	...	Yes	Yes	Yes	Yes	Two year	Yes	Bank transfer (automatic)	105.65	6844.5	No

2981 rows × 21 columns

In [7]:

```
df[(df['TechSupport']=='Yes') & (df['Churn']=='No')]
```

Out[7]:

	customerID	gender	SeniorCitizen	Partner	Dependents	tenure	PhoneService	MultipleLines	InternetService	OnlineSecurity	...	DeviceProtection	TechSupport	StreamingTV	StreamingMovies	Contract	PaperlessBilling	PaymentMethod	MonthlyCharges	TotalCharges	Churn
3	7795-CFOCW	Male	0	No	No	45	No	No phone service	DSL	Yes	...	Yes	Yes	No	No	One year	No	Bank transfer (automatic)	42.30	1840.75	No
14	5129-JLPJS	Male	0	No	No	25	Yes	No	Fiber optic	Yes	...	Yes	Yes	Yes	Yes	Month-to-month	Yes	Electronic check	105.50	2686.05	No
15	3655-SNQYZ	Female	0	Yes	Yes	69	Yes	Yes	Fiber optic	Yes	...	Yes	Yes	Yes	Yes	Two year	No	Credit card (automatic)	113.25	7895.15	No
23	3638-WEABW	Female	0	Yes	No	58	Yes	Yes	DSL	No	...	No	Yes	No	No	Two year	Yes	Credit card (automatic)	59.90	3505.1	No
24	6322-HRPPA	Male	0	Yes	Yes	49	Yes	No	DSL	Yes	...	No	Yes	No	No	Month-to-month	No	Credit card (automatic)	59.60	2970.3	No
...
7027	0550-DCXLH	Male	0	No	No	13	Yes	No	DSL	No	...	No	Yes	Yes	Yes	Month-to-month	No	Mailed check	73.35	931.55	No
7028	9281-CEDRU	Female	0	Yes	No	68	Yes	No	DSL	No	...	No	Yes	Yes	No	Two year	No	Bank transfer (automatic)	64.10	4326.25	No
7036	7750-EYXWZ	Female	0	No	No	12	No	No phone service	DSL	No	...	Yes	Yes	Yes	Yes	One year	No	Electronic check	60.65	743.3	No
7038	6840-RESVB	Male	0	Yes	Yes	24	Yes	Yes	DSL	Yes	...	Yes	Yes	Yes	Yes	One year	Yes	Mailed check	84.80	1990.5	No
7042	3186-AJIEK	Male	0	No	No	66	Yes	No	Fiber optic	Yes	...	Yes	Yes	Yes	Yes	Two year	Yes	Bank transfer (automatic)	105.65	6844.5	No

1734 rows × 21 columns

In [8]:

```
df[(df['Contract']=='Month-to-month') & (df['Churn']=='Yes')]
```

Out[8]:

	customerID	gender	SeniorCitizen	Partner	Dependents	tenure	PhoneService	MultipleLines	InternetService	OnlineSecurity	...	DeviceProtection	TechSupport	StreamingTV	StreamingMovies	Contract	PaperlessBilling	PaymentMethod	MonthlyCharges	TotalCharges	Churn
2	3668-QPYBK	Male	0	No	No	2	Yes	No	DSL	Yes	...	No	No	No	No	Month-to-month	Yes	Mailed check	53.85	108.15	Yes
4	9237-HQITU	Female	0	No	No	2	Yes	No	Fiber optic	No	...	No	No	No	No	Month-to-month	Yes	Electronic check	70.70	151.65	Yes
5	9305-CDSKC	Female	0	No	No	8	Yes	Yes	Fiber optic	No	...	Yes	No	Yes	Yes	Month-to-month	Yes	Electronic check	99.65	820.5	Yes
8	7892-POOKP	Female	0	Yes	No	28	Yes	Yes	Fiber optic	No	...	Yes	Yes	Yes	Yes	Month-to-month	Yes	Electronic check	104.80	3046.05	Yes
13	0280-XGEX	Male	0	No	No	49	Yes	Yes	Fiber optic	No	...	Yes	No	Yes	Yes	Month-to-month	Yes	Bank transfer (automatic)	103.70	5036.3	Yes
...
7018	1122-JWTJW	Male	0	Yes	Yes	1	Yes	No	Fiber optic	No	...	No	No	No	No	Month-to-month	Yes	Mailed check	70.65	70.65	Yes
7026	8775-CEBBJ	Female	0	No	No	9	Yes	No	DSL	No	...	No	No	No	No	Month-to-month	Yes	Bank transfer (automatic)	44.20	403.35	Yes
7032	6894-LFHLY	Male	1	No	No	1	Yes	Yes	Fiber optic	No	...	No	No	No	No	Month-to-month	Yes	Electronic check	75.75	75.75	Yes
7034	0639-TSIQW	Female	0	No	No	67	Yes	Yes	Fiber optic	Yes	...	Yes	No	Yes	No	Month-to-month	Yes	Credit card (automatic)	102.95	6886.25	Yes
7041	8361-LTMKD	Male	1	Yes	No	4	Yes	Yes	Fiber optic	No	...	No	No	No	No	Month-to-month	Yes	Mailed check	74.40	306.6	Yes

1655 rows × 21 columns

In []: