**Filter() Function Assignment**

**Problem Statement:**

Sam’s next exam would be on the filter() function from the dplyr package. You would be asked questions on what you’ve learnt from the respective module

Questions:

1. Extract all the customers whose Internet Service is “DSL” & store the result in ‘customer\_dsl’

> filter(customer\_churn,InternetService == "DSL") -> customer\_dsl

> head(customer\_dsl)

customerID gender SeniorCitizen Partner Dependents tenure PhoneService MultipleLines InternetService

1 7590-VHVEG Female 0 Yes No 1 No No phone service DSL

2 5575-GNVDE Male 0 No No 34 Yes No DSL

3 3668-QPYBK Male 0 No No 2 Yes No DSL

4 7795-CFOCW Male 0 No No 45 No No phone service DSL

5 6713-OKOMC Female 0 No No 10 No No phone service DSL

6 6388-TABGU Male 0 No Yes 62 Yes No DSL

OnlineSecurity OnlineBackup DeviceProtection TechSupport StreamingTV StreamingMovies Contract

1 No Yes No No No No Month-to-month

2 Yes No Yes No No No One year

3 Yes Yes No No No No Month-to-month

4 Yes No Yes Yes No No One year

5 Yes No No No No No Month-to-month

6 Yes Yes No No No No One year

PaperlessBilling PaymentMethod MonthlyCharges TotalCharges Churn

1 Yes Electronic check 29.85 29.85 No

2 No Mailed check 56.95 1889.50 No

3 Yes Mailed check 53.85 108.15 Yes

4 No Bank transfer (automatic) 42.30 1840.75 No

5 No Mailed check 29.75 301.90 No

6 No Bank transfer (automatic) 56.15 3487.95 No

2. Extract all the customers whose Contract type is ‘Month-to-month’ & store the result in

‘customer\_month’

> filter(customer\_churn, Contract == "Month-to-month") -> customer\_month

> head(customer\_month)

customerID gender SeniorCitizen Partner Dependents tenure PhoneService MultipleLines InternetService

1 7590-VHVEG Female 0 Yes No 1 No No phone service DSL

2 3668-QPYBK Male 0 No No 2 Yes No DSL

3 9237-HQITU Female 0 No No 2 Yes No Fiber optic

4 9305-CDSKC Female 0 No No 8 Yes Yes Fiber optic

5 1452-KIOVK Male 0 No Yes 22 Yes Yes Fiber optic

6 6713-OKOMC Female 0 No No 10 No No phone service DSL

OnlineSecurity OnlineBackup DeviceProtection TechSupport StreamingTV StreamingMovies Contract

1 No Yes No No No No Month-to-month

2 Yes Yes No No No No Month-to-month

3 No No No No No No Month-to-month

4 No No Yes No Yes Yes Month-to-month

5 No Yes No No Yes No Month-to-month

6 Yes No No No No No Month-to-month

PaperlessBilling PaymentMethod MonthlyCharges TotalCharges Churn

1 Yes Electronic check 29.85 29.85 No

2 Yes Mailed check 53.85 108.15 Yes

3 Yes Electronic check 70.70 151.65 Yes

4 Yes Electronic check 99.65 820.50 Yes

5 Yes Credit card (automatic) 89.10 1949.40 No

6 No Mailed check 29.75 301.90 No

3. Extract all the male senior citizens whose Payment Method is Electronic check & store the result in ‘senior\_male\_electronic’

> filter(customer\_churn, gender == "Male" & SeniorCitizen == 1 & PaymentMethod == "Electronic check") -> senior\_male\_electronic

> head(senior\_male\_electronic)

customerID gender SeniorCitizen Partner Dependents tenure PhoneService MultipleLines InternetService

1 8779-QRDMV Male 1 No No 1 No No phone service DSL

2 1658-BYGOY Male 1 No No 18 Yes Yes Fiber optic

3 5067-XJQFU Male 1 Yes Yes 66 Yes Yes Fiber optic

4 0191-ZHSKZ Male 1 No No 30 Yes No DSL

5 2424-WVHPL Male 1 No No 1 Yes No Fiber optic

6 2639-UGMAZ Male 1 No No 71 No No phone service DSL

OnlineSecurity OnlineBackup DeviceProtection TechSupport StreamingTV StreamingMovies Contract

1 No No Yes No No Yes Month-to-month

2 No No No No Yes Yes Month-to-month

3 No Yes Yes Yes Yes Yes One year

4 Yes Yes No No Yes Yes Month-to-month

5 No No No Yes No No Month-to-month

6 Yes Yes No No Yes Yes One year

PaperlessBilling PaymentMethod MonthlyCharges TotalCharges Churn

1 Yes Electronic check 39.65 39.65 Yes

2 Yes Electronic check 95.45 1752.55 Yes

3 Yes Electronic check 108.45 7076.35 No

4 Yes Electronic check 74.75 2111.30 No

5 No Electronic check 74.70 74.70 No

6 Yes Electronic check 56.45 3985.35 No

4. Extract all those customers whose tenure is greater than 70 months or their Total charges is more than 8000$ & store the result in ‘customer\_total\_tenure’

> filter(customer\_churn, tenure>70 | TotalCharges>8000) -> customer\_total\_tenure

> head(customer\_total\_tenure)

customerID gender SeniorCitizen Partner Dependents tenure PhoneService MultipleLines InternetService

1 9959-WOFKT Male 0 No Yes 71 Yes Yes Fiber optic

2 5248-YGIJN Male 0 Yes No 72 Yes Yes DSL

3 3841-NFECX Female 1 Yes No 71 Yes Yes Fiber optic

4 6234-RAAPL Female 0 Yes Yes 72 Yes Yes Fiber optic

5 5954-BDFSG Female 0 No No 72 Yes Yes Fiber optic

6 0526-SXDJP Male 0 Yes No 72 No No phone service DSL

OnlineSecurity OnlineBackup DeviceProtection TechSupport StreamingTV StreamingMovies Contract

1 Yes No Yes No Yes Yes Two year

2 Yes Yes Yes Yes Yes Yes Two year

3 Yes Yes Yes Yes No No Two year

4 Yes Yes No Yes Yes No Two year

5 No No Yes Yes Yes Yes Two year

6 Yes Yes Yes No No No Two year

PaperlessBilling PaymentMethod MonthlyCharges TotalCharges Churn

1 No Bank transfer (automatic) 106.70 7382.25 No

2 Yes Credit card (automatic) 90.25 6369.45 No

3 Yes Credit card (automatic) 96.35 6766.95 No

4 No Bank transfer (automatic) 99.90 7251.70 No

5 Yes Credit card (automatic) 107.50 7853.70 No

6 No Bank transfer (automatic) 42.10 2962.00 No

5. Extract all the customers whose Contract is of two years, payment method is Mailed check & the value of Churn is ‘Yes’ & store the result in ‘two\_mail\_yes’

filter(customer\_churn,(Contract == "Two year") & (PaymentMethod == "Mailed check") & (Churn == "Yes")) -> two\_mail\_yes

> head(two\_mail\_yes)

customerID gender SeniorCitizen Partner Dependents tenure PhoneService MultipleLines InternetService

1 6323-AYBRX Male 0 No No 59 Yes No No

2 7951-QKZPL Female 0 Yes Yes 33 Yes Yes No

3 9412-ARGBX Female 0 No Yes 48 Yes No Fiber optic

OnlineSecurity OnlineBackup DeviceProtection TechSupport StreamingTV

1 No internet service No internet service No internet service No internet service No internet service

2 No internet service No internet service No internet service No internet service No internet service

3 No Yes Yes Yes Yes

StreamingMovies Contract PaperlessBilling PaymentMethod MonthlyCharges TotalCharges Churn

1 No internet service Two year No Mailed check 19.35 1099.60 Yes

2 No internet service Two year Yes Mailed check 24.50 740.30 Yes

3 No Two year Yes Mailed check 95.50 4627.85 Yes