DS_Mod1_Operators

R Markdown

Here, we are going to have a look at different types of operators in R.

1.Assignment Operators: "->" : This is an assignment operator, which will help us store a file into an object. Here we are storing the "customer_churn" dataset into an object called "churn".

```
read.csv("C:/Users/INTELLIPAAT/Desktop/customer_churn.csv")->churn
```

"<-" : This is another assignment operator. Again we are storing the "customer_churn" dataset into an object called "churn1"

```
churn1 <-read.csv("C:/Users/INTELLIPAAT/Desktop/customer_churn.csv")
```

"=" : This is also an assignment operator. Here we are storing the "customer_churn" dataset into an object called "churn2"

```
churn2 =read.csv("C:/Users/INTELLIPAAT/Desktop/customer_churn.csv")
```

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2.   Arithmetic Operators: Now we are going to use the arithmetic operators on "customer_churn" dataset. Let's say we want to update the value of MonthlyCharges.

Let's say, We want to subtract 1 from the cell[1] of the MonthlyCharges column and store it in the same cell using the minus operator ("-").

```
churn1$MonthlyCharges[1]-1 ->churn1$MothlyCharges[1]
head(churn1)

##    customerID gender SeniorCitizen Partner Dependents tenure PhoneService
## 1 7590-VHVEG Female             0     Yes         No      1           No
## 2 5575-GNVDE   Male             0      No         No     34          Yes
## 3 3668-QPYBK   Male             0      No         No      2          Yes
## 4 7795-CFOCW   Male             0      No         No     45           No
## 5 9237-HQITU Female             0      No         No      2          Yes
## 6 9305-CDSKC Female             0      No         No      8          Yes
##     MultipleLines InternetService OnlineSecurity OnlineBackup
## 1 No phone service             DSL             No          Yes
## 2               No             DSL            Yes           No
```

```
## 3                No               DSL              Yes              Yes
## 4 No phone service                DSL              Yes               No
## 5                No      Fiber optic               No               No
## 6               Yes      Fiber optic               No               No
##    DeviceProtection TechSupport StreamingTV StreamingMovies        Contract
## 1                No          No          No              No Month-to-month
## 2               Yes          No          No              No       One year
## 3                No          No          No              No Month-to-month
## 4               Yes         Yes          No              No       One year
## 5                No          No          No              No Month-to-month
## 6               Yes          No         Yes             Yes Month-to-month
##    PaperlessBilling               PaymentMethod MonthlyCharges TotalCharges
## 1              Yes            Electronic check          29.85        29.85
## 2               No                Mailed check          56.95      1889.50
## 3              Yes                Mailed check          53.85       108.15
## 4               No Bank transfer (automatic)          42.30      1840.75
## 5              Yes            Electronic check          70.70       151.65
## 6              Yes            Electronic check          99.65       820.50
##    Churn MothlyCharges
## 1    No         28.85
## 2    No         28.85
## 3   Yes         28.85
## 4    No         28.85
## 5   Yes         28.85
## 6   Yes         28.85
```

Again with the help of plus operator ("+") we are going to add 1 to the cell[2] of TotalCharges column. Again store the updated value in the same cell.

```r
churn1$TotalCharges[2]+1 ->churn1$TotalCharges[2]
head(churn1)

##    customerID gender SeniorCitizen Partner Dependents tenure PhoneService
## 1 7590-VHVEG Female             0     Yes         No      1           No
## 2 5575-GNVDE   Male             0      No         No     34          Yes
## 3 3668-QPYBK   Male             0      No         No      2          Yes
## 4 7795-CFOCW   Male             0      No         No     45           No
## 5 9237-HQITU Female             0      No         No      2          Yes
## 6 9305-CDSKC Female             0      No         No      8          Yes
##       MultipleLines InternetService OnlineSecurity OnlineBackup
## 1 No phone service             DSL             No          Yes
## 2               No             DSL            Yes           No
## 3               No             DSL            Yes          Yes
## 4 No phone service             DSL            Yes           No
## 5               No     Fiber optic             No           No
## 6              Yes     Fiber optic             No           No
##    DeviceProtection TechSupport StreamingTV StreamingMovies        Contract
## 1                No          No          No              No Month-to-month
## 2               Yes          No          No              No       One year
```

```
## 3                No          No           No         No Month-to-month
## 4               Yes         Yes           No         No       One year
## 5                No          No           No         No Month-to-month
## 6               Yes          No          Yes        Yes Month-to-month
##    PaperlessBilling              PaymentMethod MonthlyCharges TotalCharges
## 1              Yes           Electronic check          29.85        29.85
## 2               No              Mailed check          56.95      1890.50
## 3              Yes              Mailed check          53.85       108.15
## 4               No Bank transfer (automatic)          42.30      1840.75
## 5              Yes           Electronic check          70.70       151.65
## 6              Yes           Electronic check          99.65       820.50
##    Churn MothlyCharges
## 1    No         28.85
## 2    No         28.85
## 3   Yes         28.85
## 4    No         28.85
## 5   Yes         28.85
## 6   Yes         28.85
```

If we want to give a discount of 10% to the cell[9] of Total Charges i.e. we will be multiplying the value of cell[9] with 0.9. Again store it in the same cell.

```
churn1$TotalCharges[9]*0.9 ->churn1$TotalCharges[9]
head(churn1)

##   customerID gender SeniorCitizen Partner Dependents tenure PhoneService
## 1 7590-VHVEG Female             0     Yes         No      1           No
## 2 5575-GNVDE   Male             0      No         No     34          Yes
## 3 3668-QPYBK   Male             0      No         No      2          Yes
## 4 7795-CFOCW   Male             0      No         No     45           No
## 5 9237-HQITU Female             0      No         No      2          Yes
## 6 9305-CDSKC Female             0      No         No      8          Yes
##      MultipleLines InternetService OnlineSecurity OnlineBackup
## 1 No phone service             DSL             No          Yes
## 2               No             DSL            Yes           No
## 3               No             DSL            Yes          Yes
## 4 No phone service             DSL            Yes           No
## 5               No     Fiber optic             No           No
## 6              Yes     Fiber optic             No           No
##   DeviceProtection TechSupport StreamingTV StreamingMovies        Contract
## 1               No          No          No              No Month-to-month
## 2              Yes          No          No              No       One year
## 3               No          No          No              No Month-to-month
## 4              Yes         Yes          No              No       One year
## 5               No          No          No              No Month-to-month
## 6              Yes          No         Yes             Yes Month-to-month
##   PaperlessBilling              PaymentMethod MonthlyCharges TotalCharges
## 1              Yes           Electronic check          29.85        29.85
## 2               No              Mailed check          56.95      1890.50
```

```
## 3              Yes              Mailed check         53.85       108.15
## 4               No Bank transfer (automatic)         42.30      1840.75
## 5              Yes           Electronic check         70.70       151.65
## 6              Yes           Electronic check         99.65       820.50
##    Churn MothlyCharges
## 1    No         28.85
## 2    No         28.85
## 3   Yes         28.85
## 4    No         28.85
## 5   Yes         28.85
## 6   Yes         28.85
```

Say, a customer gets a discount of 50% i.e. we are going to divide the value with 2.

```
churn1$MonthlyCharges[3]/2->churn1$MothlyCharges[3]
head(churn1)

##     customerID gender SeniorCitizen Partner Dependents tenure PhoneService
## 1 7590-VHVEG Female             0     Yes         No      1           No
## 2 5575-GNVDE   Male             0      No         No     34          Yes
## 3 3668-QPYBK   Male             0      No         No      2          Yes
## 4 7795-CFOCW   Male             0      No         No     45           No
## 5 9237-HQITU Female             0      No         No      2          Yes
## 6 9305-CDSKC Female             0      No         No      8          Yes
##      MultipleLines InternetService OnlineSecurity OnlineBackup
## 1 No phone service             DSL             No          Yes
## 2               No             DSL            Yes           No
## 3               No             DSL            Yes          Yes
## 4 No phone service             DSL            Yes           No
## 5               No     Fiber optic             No           No
## 6              Yes     Fiber optic             No           No
##   DeviceProtection TechSupport StreamingTV StreamingMovies        Contract
## 1               No          No          No              No Month-to-month
## 2              Yes          No          No              No       One year
## 3               No          No          No              No Month-to-month
## 4              Yes         Yes          No              No       One year
## 5               No          No          No              No Month-to-month
## 6              Yes          No         Yes             Yes Month-to-month
##   PaperlessBilling              PaymentMethod MonthlyCharges TotalCharges
## 1              Yes           Electronic check          29.85        29.85
## 2               No              Mailed check          56.95      1890.50
## 3              Yes              Mailed check          53.85       108.15
## 4               No Bank transfer (automatic)          42.30      1840.75
## 5              Yes           Electronic check          70.70       151.65
## 6              Yes           Electronic check          99.65       820.50
##    Churn MothlyCharges
## 1    No        28.850
## 2    No        28.850
## 3   Yes        26.925
```

```
## 4    No        28.850
## 5   Yes        28.850
## 6   Yes        28.850
```

3.   Relational Operators: Now we are going to have a look at the relational operators.

Using the greater than (>) operator we are going to find out all of those customers whose ""tenure" is greater than 60.

```
churn1$tenure>60 ->c_tenure
head(c_tenure)
```

```
## [1] FALSE FALSE FALSE FALSE FALSE FALSE
```

In the previous example values are shown in TRUE/FALSE, To have a look at the actual values we can use a function called subset()

```
subset(churn1,c_tenure=T)->c_tenure
head(c_tenure)
```

```
##   customerID gender SeniorCitizen Partner Dependents tenure PhoneService
## 1 7590-VHVEG Female             0     Yes         No      1           No
## 2 5575-GNVDE   Male             0      No         No     34          Yes
## 3 3668-QPYBK   Male             0      No         No      2          Yes
## 4 7795-CFOCW   Male             0      No         No     45           No
## 5 9237-HQITU Female             0      No         No      2          Yes
## 6 9305-CDSKC Female             0      No         No      8          Yes
##       MultipleLines InternetService OnlineSecurity OnlineBackup
## 1 No phone service             DSL             No          Yes
## 2               No             DSL            Yes           No
## 3               No             DSL            Yes          Yes
## 4 No phone service             DSL            Yes           No
## 5               No     Fiber optic             No           No
## 6              Yes     Fiber optic             No           No
##   DeviceProtection TechSupport StreamingTV StreamingMovies        Contract
## 1               No          No          No              No Month-to-month
## 2              Yes          No          No              No       One year
## 3               No          No          No              No Month-to-month
## 4              Yes         Yes          No              No       One year
## 5               No          No          No              No Month-to-month
## 6              Yes          No         Yes             Yes Month-to-month
##   PaperlessBilling              PaymentMethod MonthlyCharges TotalCharges
## 1              Yes           Electronic check          29.85        29.85
## 2               No             Mailed check          56.95       1890.50
## 3              Yes             Mailed check          53.85        108.15
## 4               No Bank transfer (automatic)          42.30       1840.75
## 5              Yes           Electronic check          70.70        151.65
## 6              Yes           Electronic check          99.65        820.50
##   Churn MothlyCharges
```

```
## 1     No        28.850
## 2     No        28.850
## 3    Yes        26.925
## 4     No        28.850
## 5    Yes        28.850
## 6    Yes        28.850
```

Using the less than (>) operator we are going to find out all of those customers whose "MonthlyCharges"" is less than 30.

```
churn1$MonthlyCharges<30->c_mon
head(c_mon)

## [1]  TRUE FALSE FALSE FALSE FALSE FALSE
```

4.   Logical Operators. These type of operators help us give multiple conditions.

AND operator: We will be selecting all the customers whose gender is "Male" and also are senior citizens.

```
churn1$gender == "Male"&churn1$SeniorCitizen==1 ->c_ms
head(c_ms)

## [1] FALSE FALSE FALSE FALSE FALSE FALSE
```

Use the subset function to have a look at the values.

```
subset(churn1, c_ms ==T) ->c_ms
head(c_ms)

##     customerID gender SeniorCitizen Partner Dependents tenure PhoneService
## 21 8779-QRDMV    Male             1      No         No      1           No
## 32 4929-XIHVW    Male             1     Yes         No      2          Yes
## 35 3413-BMNZE    Male             1      No         No      1          Yes
## 56 1658-BYGOY    Male             1      No         No     18          Yes
## 58 5067-XJQFU    Male             1     Yes        Yes     66          Yes
## 73 1891-QRQSA    Male             1     Yes        Yes     64          Yes
##       MultipleLines InternetService OnlineSecurity OnlineBackup
## 21 No phone service             DSL             No           No
## 32               No     Fiber optic             No           No
## 35               No             DSL             No           No
## 56              Yes     Fiber optic             No           No
## 58              Yes     Fiber optic             No          Yes
## 73              Yes     Fiber optic            Yes           No
##     DeviceProtection TechSupport StreamingTV StreamingMovies      Contract
## 21               Yes          No          No             Yes Month-to-month
```

```
## 32              Yes         No         Yes          Yes Month-to-month
## 35               No         No          No           No Month-to-month
## 56               No         No         Yes          Yes Month-to-month
## 58              Yes        Yes         Yes          Yes       One year
## 73              Yes        Yes         Yes          Yes       Two year
##    PaperlessBilling              PaymentMethod MonthlyCharges TotalCharges
## 21             Yes          Electronic check          39.65        39.65
## 32             Yes   Credit card (automatic)          95.50       181.65
## 35              No Bank transfer (automatic)          45.25        45.25
## 56             Yes          Electronic check          95.45      1752.55
## 58             Yes          Electronic check         108.45      7076.35
## 73             Yes Bank transfer (automatic)         111.60      7099.00
##    Churn MothlyCharges
## 21   Yes        28.85
## 32    No        28.85
## 35    No        28.85
## 56   Yes        28.85
## 58    No        28.85
## 73    No        28.85
```

OR Operator: We will be selecting all the customers whose Internet Service is DSL or Fiber optic.

```
churn1$InternetService == "DSL"|churn1$InternetService =="Fiber optic" -
>c_internet
head(c_internet)

## [1] TRUE TRUE TRUE TRUE TRUE TRUE
```

Use the subset function to have a look at the values.

```
subset(churn1, c_internet ==T) ->c_internet
head(c_internet)

##   customerID gender SeniorCitizen Partner Dependents tenure PhoneService
## 1 7590-VHVEG Female             0     Yes         No      1           No
## 2 5575-GNVDE   Male             0      No         No     34          Yes
## 3 3668-QPYBK   Male             0      No         No      2          Yes
## 4 7795-CFOCW   Male             0      No         No     45           No
## 5 9237-HQITU Female             0      No         No      2          Yes
## 6 9305-CDSKC Female             0      No         No      8          Yes
##       MultipleLines InternetService OnlineSecurity OnlineBackup
## 1 No phone service             DSL             No          Yes
## 2               No             DSL            Yes           No
## 3               No             DSL            Yes          Yes
## 4 No phone service             DSL            Yes           No
## 5               No     Fiber optic             No           No
```

```
## 6             Yes     Fiber optic            No          No
##    DeviceProtection TechSupport StreamingTV StreamingMovies        Contract
## 1              No          No          No              No Month-to-month
## 2             Yes          No          No              No        One year
## 3              No          No          No              No Month-to-month
## 4             Yes         Yes          No              No        One year
## 5              No          No          No              No Month-to-month
## 6             Yes          No         Yes             Yes Month-to-month
##    PaperlessBilling                PaymentMethod MonthlyCharges TotalCharges
## 1              Yes             Electronic check          29.85        29.85
## 2               No                 Mailed check          56.95      1890.50
## 3              Yes                 Mailed check          53.85       108.15
## 4               No Bank transfer (automatic)             42.30      1840.75
## 5              Yes             Electronic check          70.70       151.65
## 6              Yes             Electronic check          99.65       820.50
##    Churn MothlyCharges
## 1    No        28.850
## 2    No        28.850
## 3   Yes        26.925
## 4    No        28.850
## 5   Yes        28.850
## 6   Yes        28.850
```

NOT Operator: We will be selecting all the customers who are not senior citizens.

```
churn1$SeniorCitizen==!1 ->c_not_senior
head(c_not_senior)

## [1] TRUE  TRUE  TRUE  TRUE  TRUE  TRUE
```

Again we will be using subset() to have a look at the values.

```
subset(churn1, c_not_senior ==T) ->c_not_senior
head(c_not_senior)

##   customerID gender SeniorCitizen Partner Dependents tenure PhoneService
## 1 7590-VHVEG Female             0     Yes         No      1           No
## 2 5575-GNVDE   Male             0      No         No     34          Yes
## 3 3668-QPYBK   Male             0      No         No      2          Yes
## 4 7795-CFOCW   Male             0      No         No     45           No
## 5 9237-HQITU Female             0      No         No      2          Yes
## 6 9305-CDSKC Female             0      No         No      8          Yes
##       MultipleLines InternetService OnlineSecurity OnlineBackup
## 1 No phone service             DSL             No          Yes
## 2               No             DSL            Yes           No
## 3               No             DSL            Yes          Yes
## 4 No phone service             DSL            Yes           No
```

```
## 5                No     Fiber optic                 No              No
## 6               Yes     Fiber optic                 No              No
##    DeviceProtection TechSupport StreamingTV StreamingMovies         Contract
## 1                No          No          No              No Month-to-month
## 2               Yes          No          No              No       One year
## 3                No          No          No              No Month-to-month
## 4               Yes         Yes          No              No       One year
## 5                No          No          No              No Month-to-month
## 6               Yes          No         Yes             Yes Month-to-month
##    PaperlessBilling             PaymentMethod MonthlyCharges TotalCharges
## 1              Yes          Electronic check          29.85        29.85
## 2               No             Mailed check          56.95      1890.50
## 3              Yes             Mailed check          53.85       108.15
## 4               No Bank transfer (automatic)          42.30      1840.75
## 5              Yes          Electronic check          70.70       151.65
## 6              Yes          Electronic check          99.65       820.50
##    Churn MothlyCharges
## 1    No        28.850
## 2    No        28.850
## 3   Yes        26.925
## 4    No        28.850
## 5   Yes        28.850
## 6   Yes        28.850
```