Min & Max functions

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```r
# create a vector
data1 = c(34, 54, 25, 5, 34, 65, 43)

# find the minimum value
print(min(data1))
```

```
## [1] 5
```

```r
# find the maximum value
print(max(data1))
```

```
## [1] 65
```

```r
# create a dataframe
data2=data.frame(col1=c(3,24,26,51),
                 col2=c("Ellie","Joel","Can","Kath"),
                 col3=c(4.3,1.6,6.8,7.3))

# the minimum value in first column
print(min(data2$col1))
```

```
## [1] 3
```

```r
# the minimum value in second column
print(min(data2$col2))
```

```
## [1] "Can"
```

```r
# the minimum value in third column
print(min(data2$col3))
```

```
## [1] 1.6
```

```r
# the maximum value in first column
print(max(data2$col1))
```

```
## [1] 51
```

```r
# the maximum value in second column
print(max(data2$col2))
```

```
## [1] "Kath"
```

```r
# the maximum value in third column
print(max(data2$col3))
```

```
## [1] 7.3
```

```r
# create a dataframe
data3=data.frame(col1=c(3,24,26,51),
                 col2=c("Ellie","Joel","Can","Kath"),
                 col3=c(4.3,1.6,6.8,7.3))

# the minimum value across dataframe
print(sapply(data3, min))
```

```
##  col1  col2  col3
##   "3" "Can" "1.6"
```

```r
# the maximum value across dataframe
print(sapply(data3, max))
```

```
##   col1   col2   col3
##   "51" "Kath"  "7.3"
```

```r
# create a dataframe
data4=data.frame(col1=c(3,24,26,51),
                 col2=c("Ellie","Joel","Can","Kath"),
                 col3=c(4.3,1.6,6.8,7.3))

# the minimum value in multiple columns of dataframe
print(min(c(data4$col1,data4$col2,data4$col3)))
```

```
## [1] "1.6"
```

```r
# the maximum value in multiple columns of dataframe
print(max(c(data4$col1,data4$col2,data4$col3)))
```

```
## [1] "Kath"
```

```r
# maximum function for a numeric vector with NA
data5 <-c(4.3,1.6,6.8,7.3,NA)
max(data5)
```

```
## [1] NA
```

```r
# maximum function for a numeric vector with removing NA
data5 <-c(4.3,1.6,6.8,7.3,NA)
max(data5, na.rm=TRUE)
```

```
## [1] 7.3
```

```r
# minimum function for a numeric vector with NA
data6 <-c(4.3,1.6,6.8,7.3,NA)
min(data5)
```

```
## [1] NA
```

```r
# minimum function for a numeric vector with NA
data6 <-c(4.3,1.6,6.8,7.3,NA)
min(data5, na.rm=TRUE)
```

```
## [1] 1.6
```

```r
# maximum function for a character vector
data7<-c("i","q","a","x")
max(data7)
```

```
## [1] "x"
```

```r
# minimum function for a character vector
data7<-c("i","q","a","x")
min(data7)
```

```
## [1] "a"
```

```r
# Maximum function of character vector names
data8 <- c('Ellie','Joel','Can','Kath')
max(data8)
```

```
## [1] "Kath"
```

```r
# Minimum function of character vector names
data8 <- c('Ellie','Joel','Can','Kath')
min(data8)
```

```
## [1] "Can"
```

```r
#practical example How to know the highest and lowest price
### create dataframe
Shop = data.frame(Items = c("Fruit","Fruit","Fruit","Fruit","Fruit","Vegetable","Vegetable","Vegetable"
                            "Vegetable","Fruit","Fruit","Vegetable","Vegetable"),
                  I_Names = c("Apple","Banana","Orange","Mango","Papaya","Carrot","Potato","Brinjal
                              "Raddish","Peach","Stawberries","Cabbage","Greenchilli"),
                  Price = c(100,80,80,90,65,70,60,70,25,60,40,50,20),
                  Tax = c(2,4,5,6,2,3,5,1,3,4,5,4,3))
Shop
```

```
##           Items      I_Names Price Tax
## 1        Fruit        Apple   100   2
## 2        Fruit       Banana    80   4
## 3        Fruit       Orange    80   5
## 4        Fruit        Mango    90   6
## 5        Fruit       Papaya    65   2
## 6    Vegetable       Carrot    70   3
## 7    Vegetable       Potato    60   5
## 8    Vegetable      Brinjal    70   1
## 9    Vegetable      Raddish    25   3
## 10       Fruit        Peach    60   4
## 11       Fruit   Stawberries   40   5
## 12   Vegetable      Cabbage    50   4
## 13   Vegetable   Greenchilli   20   3
```

```r
#Columns
# maximum value of a column in dataframe
 max(Shop$Price)
```

```
## [1] 100
```

```r
# minimum value of a column in dataframe
 min(Shop$Price)
```

```
## [1] 20
```

```r
# maximum value of multiple columns in data frame
 mapply(max,Shop[,c(-1,-2)])
```

```
## Price   Tax
##   100     6
```

```r
# minimum value of multiple columns in data frame
 mapply(min,Shop[,c(-1,-2)])
```

```
## Price   Tax
##    20     1
```

```r
# maximum value of the column by group
aggregate(x= Shop$Price,by= list(Shop$Items), FUN=max)
```

```
##     Group.1   x
## 1     Fruit 100
## 2 Vegetable  70
```

```r
# minimum value of the column by group
aggregate(x= Shop$Price,by= list(Shop$Items), FUN=min)
```

```
##     Group.1  x
## 1     Fruit 40
## 2 Vegetable 20
```