Data 413: Classwork/Lab 2

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## Atomic Vector with Different Animals (characters)

V <- c("Bears", "Lions", "Dolphins", "Eagles", "Bengals")  
typeof(V)

## [1] "character"

## Why is the vector shown above an atomic vector? (Explain using two or three sentences)

The vector shown above is an atomic vector because all the objects within the vector are the same object type. An atomic vector is homogeneous, all the objects in the atomic vector is of the type “character” so it would be an atomic vector, not a list.

## Use and show R code that will extract “Dolphins” from the vector shown above.

V[3]

## [1] "Dolphins"

## Use and show Rcode that will extract “Bears” , “Dolphins” and “Bengals” from the vector shown above.

V[c(1, 3, 5)]

## [1] "Bears" "Dolphins" "Bengals"

## Use and show two Rcoding methods that will show all objects of the vector given above except “Bears”.

V[-1]

## [1] "Lions" "Dolphins" "Eagles" "Bengals"

V[c(2:5)]

## [1] "Lions" "Dolphins" "Eagles" "Bengals"

## List 1

K <- list(x = 3:7, "never", 43, y = list(10,20,30))  
K

## $x  
## [1] 3 4 5 6 7  
##   
## [[2]]  
## [1] "never"  
##   
## [[3]]  
## [1] 43  
##   
## $y  
## $y[[1]]  
## [1] 10  
##   
## $y[[2]]  
## [1] 20  
##   
## $y[[3]]  
## [1] 30

## Why is the vector given above called a list? (Explain in two or three sentences) If the vector is a list, identify the type of each object inthe list.

str(K)

## List of 4  
## $ x: int [1:5] 3 4 5 6 7  
## $ : chr "never"  
## $ : num 43  
## $ y:List of 3  
## ..$ : num 10  
## ..$ : num 20  
## ..$ : num 30

The vector given above is a list because all the objects above in the vector are not the same. This vector is not homogeneous because it contains integers, character string, and a list of numbers within the list K so it would be a list, not an atomic vector.

#Use and show R code that will give the length of the vector shown above.

length(K)

## [1] 4

# Use and show R code that will output the fourth object in the vector shown above.

K[[4]]

## [[1]]  
## [1] 10  
##   
## [[2]]  
## [1] 20  
##   
## [[3]]  
## [1] 30

# Use and show R code that will show all objects in the vector (list) given above.

str(K)

## List of 4  
## $ x: int [1:5] 3 4 5 6 7  
## $ : chr "never"  
## $ : num 43  
## $ y:List of 3  
## ..$ : num 10  
## ..$ : num 20  
## ..$ : num 30

K

## $x  
## [1] 3 4 5 6 7  
##   
## [[2]]  
## [1] "never"  
##   
## [[3]]  
## [1] 43  
##   
## $y  
## $y[[1]]  
## [1] 10  
##   
## $y[[2]]  
## [1] 20  
##   
## $y[[3]]  
## [1] 30

## Copy paste and run the tribble given below.

tribble( ~x, ~y, ~w, ~z,  
 210, 300, 220, 180,  
 102, 100, 119, 187,  
 176, 175, 188, 173,  
 87, 95, 91, 94,  
 202, 210, 234, 218,  
 110, 122, 131, 128,  
) -> dt  
dt

## # A tibble: 6 × 4  
## x y w z  
## <dbl> <dbl> <dbl> <dbl>  
## 1 210 300 220 180  
## 2 102 100 119 187  
## 3 176 175 188 173  
## 4 87 95 91 94  
## 5 202 210 234 218  
## 6 110 122 131 128

## Use and show a map function to find the mean of each column of the dt data table

map\_dbl(dt, mean)

## x y w z   
## 147.8333 167.0000 163.8333 163.3333

## Use and show a map function to find the standard deviation of each column of the dt data table.

map\_dbl(dt, sd)

## x y w z   
## 54.45151 79.12016 58.40348 44.66617

## Use and show a map function that will calculate the square root of each value of each column of the data table dt.

dt %>%  
 map(~. ^(0.5))

## $x  
## [1] 14.491377 10.099505 13.266499 9.327379 14.212670 10.488088  
##   
## $y  
## [1] 17.320508 10.000000 13.228757 9.746794 14.491377 11.045361  
##   
## $w  
## [1] 14.832397 10.908712 13.711309 9.539392 15.297059 11.445523  
##   
## $z  
## [1] 13.41641 13.67479 13.15295 9.69536 14.76482 11.31371

## Use R code to find the mean, max, 1st Quartile, 2nd Quartile, Median, and Mean for each column of the dt data table. (Hint: You do not have to use a map function)

summary(dt)

## x y w z   
## Min. : 87.0 Min. : 95.0 Min. : 91.0 Min. : 94.0   
## 1st Qu.:104.0 1st Qu.:105.5 1st Qu.:122.0 1st Qu.:139.2   
## Median :143.0 Median :148.5 Median :159.5 Median :176.5   
## Mean :147.8 Mean :167.0 Mean :163.8 Mean :163.3   
## 3rd Qu.:195.5 3rd Qu.:201.2 3rd Qu.:212.0 3rd Qu.:185.2   
## Max. :210.0 Max. :300.0 Max. :234.0 Max. :218.0