R Notebook

1

If the data type of all the atoms is same, we call it atom vectors.

2

```
library(tidyverse)
```

```
## Warning: package 'tidyverse' was built under R version 4.1.1
```

```
## -- Attaching packages --------------------------------------- tidyverse 1.3.1 --
```

```
## v ggplot2 3.3.5     v purrr   0.3.4
## v tibble  3.1.2     v dplyr   1.0.6
## v tidyr   1.1.4     v stringr 1.4.0
## v readr   2.1.1     v forcats 0.5.1
```

```
## Warning: package 'ggplot2' was built under R version 4.1.1
```

```
## Warning: package 'tidyr' was built under R version 4.1.2
```

```
## Warning: package 'readr' was built under R version 4.1.2
```

```
## -- Conflicts ------------------------------------------ tidyverse_conflicts() --
## x dplyr::filter() masks stats::filter()
## x dplyr::lag()    masks stats::lag()
```

```
V <- c("Bears", "Lions", "Dolphins", "Eagles", "Bengals")
V[3]
```

```
## [1] "Dolphins"
```

3

```
V[c(1,3,5)]
```

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

4

```
V[c(2,3,4,5)]
```

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

```
V[-1]
```

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

5

Due to different data type entries, it's called list.

6

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

## [1] 4
```

7

```
V[4]

## [1] "Eagles"
```

8

```
V[]

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

9

```
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
# a

map_dbl(dt, mean)

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

# b
map_dbl(dt, sd)

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

# c
dt%>%map(sqrt)

## $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
```

```
# d
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
```

```
dt%>%map(summary)
```

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

10

```
x <- list(26, 32, 45, 50, 65, 77, 82)
y <- list(30, 43, 50, 58, 62, 71, 88)
```

```
unlist(x)+unlist(y)
```

```
## [1]  56  75  95 108 127 148 170
```

```
Map("+", x, y)
```

```
## [[1]]
## [1] 56
##
## [[2]]
## [1] 75
##
## [[3]]
## [1] 95
```

```
##
## [[4]]
## [1] 108
##
## [[5]]
## [1] 127
##
## [[6]]
## [1] 148
##
## [[7]]
## [1] 170
```

```
sqrx = Map('*',x,x)
sqry = Map('*',y,y)
Map("-",sqrx,sqry)
```

```
## [[1]]
## [1] -224
##
## [[2]]
## [1] -825
##
## [[3]]
## [1] -475
##
## [[4]]
## [1] -864
##
## [[5]]
## [1] 381
##
## [[6]]
## [1] 888
##
## [[7]]
## [1] -1020
```

```
lnx = Map("log",x)
lny = Map("log",y)
Map("/",lnx,lny)
```

```
## [[1]]
## [1] 0.9579263
##
## [[2]]
## [1] 0.9214442
##
## [[3]]
## [1] 0.9730675
##
## [[4]]
```

```
## [1] 0.9634473
##
## [[5]]
## [1] 1.011449
##
## [[6]]
## [1] 1.019032
##
## [[7]]
## [1] 0.9842278
```