STA 445

6260662

Constant Yaokumah

2023-10-06

Q8. 1 create vectors,label and sum

```
vec_a <- c(2,4,6)
vec_b <- c(8,10,12)
vec_c <- vec_a + vec_b
vec_c
```

```
## [1] 10 14 18
```

Q8. 2 Add vectors

```
vec_d <- c(14,20)
vec_d + vec_a
```

```
## Warning in vec_d + vec_a: longer object length is not a multiple of shorter
## object length
```

```
## [1] 16 24 20
```

The vector d = (14,20), however, R recreate the vector d as (14,20,14) because the length of d did not correspond to vector a Warning: longer object length is not a multiple of shorter object length[1] 16 24 20

Q8. 3 Add 5

```
vec_a + 5   # R refers to the 5 as a scalar added to each vector in vec_a
```

```
## [1]  7  9 11
```

When 5 was added, R create the 5 as a scalar adding to each element in the vector a, hence no warning

Q8. 4 Generating vectors

```r
seq(1,5)  #a
```

```
## [1] 1 2 3 4 5
```

```r
1:5    #b
```

```
## [1] 1 2 3 4 5
```

Q8. 5 Generating vectors of even numbers

```r
seq(2,20,2)  #a
```

```
##  [1]  2  4  6  8 10 12 14 16 18 20
```

```r
2*(1:10)   #b
```

```
##  [1]  2  4  6  8 10 12 14 16 18 20
```

Q8. 6 vector of 21 elemnet from 0 to 1

```r
x <- seq(from =0, to = 1, length.out = 21)
x
```

```
##  [1] 0.00 0.05 0.10 0.15 0.20 0.25 0.30 0.35 0.40 0.45 0.50 0.55 0.60 0.65 0.70
## [16] 0.75 0.80 0.85 0.90 0.95 1.00
```

Q8. 7 Using rep

```r
rep(c(2,4,8),3)
```

```
## [1] 2 4 8 2 4 8 2 4 8
```

Q8. 8 Using rep for each

```r
rep(c(2,4,8), each= 4)
```

```
##  [1] 2 2 2 2 4 4 4 4 8 8 8 8
```

Q8. 10 Matrix

```r
M = matrix(seq(2,30,2), nrow = 3, ncol = 5, byrow = TRUE) #a
M
```

```
##      [,1] [,2] [,3] [,4] [,5]
## [1,]    2    4    6    8   10
## [2,]   12   14   16   18   20
## [3,]   22   24   26   28   30
```

```r
## matrix using seq and cbind
rbind(seq(2,10,2), seq(12,20,2),seq(22,30,2)) #a i
```

```
##      [,1] [,2] [,3] [,4] [,5]
## [1,]    2    4    6    8   10
## [2,]   12   14   16   18   20
## [3,]   22   24   26   28   30
```

```r
M[2,] #b
```

```
## [1] 12 14 16 18 20
```

```r
M[3,2]
```

```
## [1] 24
```

Q8. 12 Dataframe and deleting NA

```r
df <- data.frame(name= c('Alice','Bob','Charlie','Daniel'),
                      Grade = c(6,8,NA,9))

df[ -which(  is.na(df$Grade) ), ]
```

```
##     name Grade
## 1  Alice     6
## 2    Bob     8
## 4 Daniel     9
```

```r
df[  which( !is.na(df$Grade) ), ]
```

```
##     name Grade
## 1  Alice     6
## 2    Bob     8
## 4 Daniel     9
```

Both copes perform the same work, however, the difference lies on how the copes are written , the first (is.na) select any (NA) and (-which) removes or delete that row while the second is (!is.na) removes the row which any (NA)

Q8. 14 List named of element

```
x = c(4,5,6,7,8,9,10)
y = c(34,35,41,40,45,47,51)
slope = 2.82
p.value = 0.000131

my.test <- list(x = x,y = y,slope = slope,p.value = p.value)
my.test #a
```

```
## $x
## [1]  4  5  6  7  8  9 10
##
## $y
## [1] 34 35 41 40 45 47 51
##
## $slope
## [1] 2.82
##
## $p.value
## [1] 0.000131
```

```
my.test[2] #b
```

```
## $y
## [1] 34 35 41 40 45 47 51
```

```
my.test$p.value   # my.test['p.value'] c
```

```
## [1] 0.000131
```

Q 9 1 Example_5

```
library(readxl)
```

```
## Warning: package 'readxl' was built under R version 4.0.5
```

```
Example_5 <- read_excel('Example_5.xls', sheet ='RawData',range = "A5:C36")
head(Example_5)
```

```
## # A tibble: 6 x 3
##   Girth Height Volume
##   <dbl>  <dbl>  <dbl>
## 1   8.3     70   10.3
## 2   8.6     65   10.3
## 3   8.8     63   10.2
## 4  10.5     72   16.4
## 5  10.7     81   18.8
## 6  10.8     83   19.7
```

```r
str(Example_5)
```

```
## tibble [31 x 3] (S3: tbl_df/tbl/data.frame)
##  $ Girth : num [1:31] 8.3 8.6 8.8 10.5 10.7 10.8 11 11 11.1 11.2 ...
##  $ Height: num [1:31] 70 65 63 72 81 83 66 75 80 75 ...
##  $ Volume: num [1:31] 10.3 10.3 10.2 16.4 18.8 19.7 15.6 18.2 22.6 19.9 ...
```

Q 9 2 Example_3

```r
Example_3 <- read_excel('Example_3.xls',sheet = 'data', range = "A1:L34", na = c('NA', '-9999'))
tail(Example_3) #
```

```
## # A tibble: 6 x 12
##   model          mpg   cyl  disp    hp  drat    wt  qsec    vs    am  gear  carb
##   <chr>        <dbl> <dbl> <dbl> <dbl> <dbl> <dbl> <dbl> <dbl> <dbl> <dbl> <dbl>
## 1 Lotus Europa  30.4     4  95.1   113  3.77  1.51  16.9     1     1     5     2
## 2 Ford Panter~  15.8     8 351     264  4.22  3.17  14.5     0     1     5     4
## 3 Ferrari Dino  19.7     6 145     175  3.62  2.77  15.5     0     1     5     6
## 4 Maserati Bo~  15       8 301     335  3.54  3.57  14.6     0     1     5     8
## 5 Volvo 142E    21.4     4 121     109  4.11  2.78  18.6     1     1     4     2
## 6 Tesla Model~  98      NA  NA     778 NA     4.94  10.4    NA     0     1    NA
```