朱原昊 2017141463040

Console ~/

```
> source('~/.active-rstudio-document', echo=TRUE)

> #创建向量
> a <- c(1, 2, 5, 3, 6, -2, 4)

> b <- c("one", "two", "three")

> c <- c(TRUE, TRUE, TRUE, FALSE, TRUE, FALSE)

> #使用向量
> a <- c(1, 2, 5, 3, 6, -2, 4)

> a[3]
[1] 5

> a[c(1, 3, 5)]
[1] 1 5 6

> a[2:6]
[1]  2  5  3  6 -2

> a <- c("k", "j", "h", "a", "c", "m")

> a[3]
[1] "h"

> a[c(1, 3, 5)]
[1] "k" "h" "c"

> a[2:6]
[1] "j" "h" "a" "c" "m"

> #创建矩阵
> y <- matrix(1:20,nrow=5,ncol=4)

> y
     [,1] [,2] [,3] [,4]
[1,]    1    6   11   16
[2,]    2    7   12   17
[3,]    3    8   13   18
[4,]    4    9   14   19
[5,]    5   10   15   20

> cells <- c(1,26,24,68)

> rnames <- c("R1", "R2")
```

Console ~/

```
> cnames <- c("C1", "C2")

> mymatrix <- matrix(cells, nrow=2,ncol=2,byrow=TRUE,dimnames=list(rnames,cnames))

> mymatrix
   C1 C2
R1  1 26
R2 24 68

> #byrow 默认为FALSE，R如何将传入的向量填充入矩阵，byrow时优先填满行
> mymatrix <- matrix(cells, nrow = 2,ncol = 2,byrow = FALSE,dimnames = list(rnames, cnames))

> mymatrix
   C1 C2
R1  1 24
R2 26 68

> #使用矩阵
> x <- matrix(1:10, nrow=2)

> x
     [,1] [,2] [,3] [,4] [,5]
[1,]    1    3    5    7    9
[2,]    2    4    6    8   10

> x[2,]
[1]  2  4  6  8 10

> #访问矩阵的方式matrix[row_index,col_index]row_index或col_index缺省则代表访问全部的列或者行
> x[,2]
[1] 3 4

> x[1,4]
[1] 7

> x[1, c(4,5)]
[1] 7 9

> #创建数组
> dim1 <- c("A1","A2")

> dim2 <- c("B1","B2","B3")

> dim3 <- c("C1","C2","C3","C4")

> z <- array(1:24, c(2,3,4),dimnames = list(dim1,dim2,dim3))
```

Console ~/

```
> z
, , C1

   B1 B2 B3
A1  1  3  5
A2  2  4  6

, , C2

   B1 B2 B3
A1  7  9 11
A2  8 10 12

, , C3

   B1 B2 B3
A1 13 15 17
A2 14 16 18

, , C4

   B1 B2 B3
A1 19 21 23
A2 20 22 24


> #创建数据框
> patientID <- c(1,2,3,4)

> age <- c(25, 34, 28, 52)

> diabetes <- c("Type1", "Type2", "Type1", "Type1")

> status <- c("Poor", "Improved", "Excellent", "Poor")

> patientdata <- data.frame(patientID, age, diabetes, status)

> patientdata
  patientID age diabetes    status
1         1  25    Type1      Poor
2         2  34    Type2  Improved
3         3  28    Type1 Excellent
4         4  52    Type1      Poor

> #指定数据框中的数据
> patientdata[1:2]
  patientID age
```

Console ~/

```
1         1  25
2         2  34
3         3  28
4         4  52

> patientdata[c("diabetes","status")]
  diabetes    status
1    Type1      Poor
2    Type2  Improved
3    Type1 Excellent
4    Type1      Poor

> patientdata$age
[1] 25 34 28 52

> #使用系数
> patientID <- c(1, 2, 3, 4)

> age <- c(25, 34, 28, 52)

> diabetes <- c("Type1", "Type2", "Type1", "Type1")

> status <- c("Poor", "Improved", "Excellent", "Poor")

> diabetes <- factor(diabetes)

> status <- factor(status, order=TRUE)

> patientdata <- data.frame(patientID, age, diabetes, status)

> str(patientdata)
'data.frame':   4 obs. of  4 variables:
 $ patientID: num  1 2 3 4
 $ age      : num  25 34 28 52
 $ diabetes : Factor w/ 2 levels "Type1","Type2": 1 2 1 1
 $ status   : Ord.factor w/ 3 levels "Excellent"<"Improved"<..: 3 2 1 3

> summary(patientdata)
   patientID         age
 Min.   :1.00   Min.   :25.00
 1st Qu.:1.75   1st Qu.:27.25
 Median :2.50   Median :31.00
 Mean   :2.50   Mean   :34.75
 3rd Qu.:3.25   3rd Qu.:38.50
 Max.   :4.00   Max.   :52.00
  diabetes       status
 Type1:3   Excellent:1
```

Console ~/

```
> summary(patientdata)
   patientID         age
 Min.   :1.00   Min.   :25.00
 1st Qu.:1.75   1st Qu.:27.25
 Median :2.50   Median :31.00
 Mean   :2.50   Mean   :34.75
 3rd Qu.:3.25   3rd Qu.:38.50
 Max.   :4.00   Max.   :52.00
  diabetes       status
 Type1:3   Excellent:1
 Type2:1   Improved :1
           Poor     :2



> #创建list
> g <- "My First List"

> h <- c(25, 26, 18, 39)

> j <- matrix(1:10, nrow=5)

> k <- c("one", "two", "three")

> mylist <- list(title=g, ages=h, j, k)

> mylist
$title
[1] "My First List"

$ages
[1] 25 26 18 39

[[3]]
     [,1] [,2]
[1,]    1    6
[2,]    2    7
[3,]    3    8
[4,]    4    9
[5,]    5   10

[[4]]
[1] "one"   "two"   "three"

>
```