3-Vectors,Factors, Missing values

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05/12/2020

Vectors,Factors, Missing values

# vectors  
# c- combine  
  
x = c(1,2,3,4,5,6,7,8,9,10) # Vector creation  
x

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

# Arithmetic Operations on Vector  
x+1

## [1] 2 3 4 5 6 7 8 9 10 11

x-1

## [1] 0 1 2 3 4 5 6 7 8 9

c =x  
c-1

## [1] 0 1 2 3 4 5 6 7 8 9

c^2

## [1] 1 4 9 16 25 36 49 64 81 100

sqrt(c)

## [1] 1.000000 1.414214 1.732051 2.000000 2.236068 2.449490 2.645751 2.828427  
## [9] 3.000000 3.162278

sqrt(c^2)

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

sqrt(c^4)

## [1] 1 4 9 16 25 36 49 64 81 100

# Vector creation  
  
a = 1:10  
a

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

b = -5:4  
b

## [1] -5 -4 -3 -2 -1 0 1 2 3 4

a+b

## [1] -4 -2 0 2 4 6 8 10 12 14

a\*b

## [1] -5 -8 -9 -8 -5 0 7 16 27 40

length(a) # length of vector

## [1] 10

length(b)

## [1] 10

a + c(1,2)

## [1] 2 4 4 6 6 8 8 10 10 12

a+c(1,2,3,4,5)

## [1] 2 4 6 8 10 7 9 11 13 15

# Vector comparisons  
  
a>5

## [1] FALSE FALSE FALSE FALSE FALSE TRUE TRUE TRUE TRUE TRUE

a>0

## [1] TRUE TRUE TRUE TRUE TRUE TRUE TRUE TRUE TRUE TRUE

a>b

## [1] TRUE TRUE TRUE TRUE TRUE TRUE TRUE TRUE TRUE TRUE

a<b

## [1] FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE

any(a<b)

## [1] FALSE

a

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

b

## [1] -5 -4 -3 -2 -1 0 1 2 3 4

any(a>b)

## [1] TRUE

any(a<b)

## [1] FALSE

all(a<b)

## [1] FALSE

all(a>b)

## [1] TRUE

c = c('cricket','football','basketball','hockey','athletics')  
nchar(c) # defines the no. of characters

## [1] 7 8 10 6 9

nchar(b)

## [1] 2 2 2 2 2 1 1 1 1 1

# Accessing individual elements in a vector  
  
c[1]

## [1] "cricket"

c[0]

## character(0)

c[3]

## [1] "basketball"

c[1:2]

## [1] "cricket" "football"

c[1:4]

## [1] "cricket" "football" "basketball" "hockey"

c[c(1,4)]

## [1] "cricket" "hockey"

# Assigning names to a vector   
d = c(q='one', w='two',e='three')  
d

## q w e   
## "one" "two" "three"

d[1]

## q   
## "one"

d[1:4]

## q w e <NA>   
## "one" "two" "three" NA

e = c(1:10, 20)  
e

## [1] 1 2 3 4 5 6 7 8 9 10 20

s = 1:3  
s

## [1] 1 2 3

names(s)= c('one','two','three')  
s

## one two three   
## 1 2 3

# Factors- Ordinal data  
  
q1 = c(c,'javellin','volleyball','shooting')  
length(q1)

## [1] 8

q1

## [1] "cricket" "football" "basketball" "hockey" "athletics"   
## [6] "javellin" "volleyball" "shooting"

q2 = c(q1,'hockey','cricket','badland')  
q2

## [1] "cricket" "football" "basketball" "hockey" "athletics"   
## [6] "javellin" "volleyball" "shooting" "hockey" "cricket"   
## [11] "badland"

q2\_F = as.factor(q2)  
q2\_F

## [1] cricket football basketball hockey athletics javellin   
## [7] volleyball shooting hockey cricket badland   
## 9 Levels: athletics badland basketball cricket football hockey ... volleyball

class(q2)

## [1] "character"

as.numeric(q2\_F) # assigning unique integer to each value(based on alphabetical order)

## [1] 4 5 3 6 1 7 9 8 6 4 2

# Missing data in a vector  
  
x = c(1,2,3,NA,5,6,NA,8)  
x

## [1] 1 2 3 NA 5 6 NA 8

length(x)

## [1] 8

is.na(x)

## [1] FALSE FALSE FALSE TRUE FALSE FALSE TRUE FALSE

x = c(1,2,3,NA,5,6,NA,8,NULL,10)  
x

## [1] 1 2 3 NA 5 6 NA 8 10

class(x)

## [1] "numeric"

length(x)

## [1] 9

is.null(x)

## [1] FALSE

# y = c(10,20,,40)  
y = c('hockey',NA,'cricket')  
y

## [1] "hockey" NA "cricket"

class(y)

## [1] "character"

is.na(y)

## [1] FALSE TRUE FALSE

z = c(1,NULL,2)  
z

## [1] 1 2

is.null(z)

## [1] FALSE