

0102-Main-data-types

March 19, 2024

1 TP 02 - R Data Types - 2/4

- Written by Alexandre Gazagnes
- Last update: 2024-02-01
- Based on <https://www.w3schools.com/r/default.asp>

1.1 Numerics

```
[ ]: # Numeric  
x <- 10.5  
class(x)
```

```
[ ]: # Integer  
x <- 1000  
class(x)
```

```
[ ]: # Complex  
x <- 9i + 3  
class(x)
```

```
[ ]: # Numbers ?  
x <- 10.5 # numeric  
y <- 10   # integer  
z <- 1i   # complex
```

```
[ ]: # Basic Maths operations on numbers  
sqrt(16) # square root  
  
log(10) # logarithm  
log(10, base=2) # logarithm with base 2  
  
exp(2) # exponential
```

```
[ ]: sin(pi) # sine  
cos(pi) # cosine  
tan(pi) # tangent  
  
asin(1) # arcsine
```

```
acos(1) # arccosine
```

```
[ ]: factorial(5) # factorial  
  
choose(5, 2) # binomial coefficient
```

```
[ ]: max(5, 10, 15) # max  
min(5, 10, 15) # min
```

```
[ ]: abs(-4.7) # absolute value  
ceiling(1.4) # round up  
floor(1.4) # round down
```

```
[ ]: round(1.4) # round to the nearest integer  
round(1.556789, 2) # round to 2 decimals
```

```
[ ]: # Is it numeric ?  
is.numeric(10) # TRUE
```

1.2 Strings

```
[ ]: # character/string  
x <- "R is exciting"  
class(x)
```

```
[ ]: # Strings without cat  
str <- "Lorem ipsum dolor sit amet,  
consectetur adipiscing elit,  
sed do eiusmod tempor incididunt  
ut labore et dolore magna aliqua."  
str # print the value of str
```

```
[ ]: # strings with cat  
str <- "Lorem ipsum dolor sit amet,  
consectetur adipiscing elit,  
sed do eiusmod tempor incididunt  
ut labore et dolore magna aliqua."  
cat(str)
```

```
[ ]: # nb of chars  
str <- "Hello World!"  
nchar(str)
```

```
[ ]: # grep  
str <- "Hello World!"  
grepl("H", str)  
grepl("Hello", str)
```

```
grepl("X", str)
```

1.3 Boolean

```
[ ]: # logical/boolean
x <- TRUE
x = FALSE
class(x)
```

```
[ ]: # Please note that :
TRUE + TRUE # is 2
TRUE + FALSE # is 1
FALSE + FALSE # is 0
TRUE * TRUE # is 1
TRUE * FALSE # is 0
FALSE * FALSE # is 0
```

```
[ ]: # Logical operators
10 > 9 # TRUE because 10 is greater than 9
10 >= 9 # TRUE because 10 is greater than 9
10 == 9 # FALSE because 10 is not equal to 9
10 < 9 # FALSE because 10 is greater than 9
10 <= 9 # FALSE because 10 is greater than 9
10 != 9 # TRUE because 10 is not equal to 9
```

```
[ ]: # of course ...
ans = 10 > 9
class(ans) # bool ?
print(ans)
```

```
[ ]: # and and or
(10 > 9) & (10 > 9) # TRUE because 10 is greater than 9 and 10 is greater than
↪9
(10 > 9) & (10 < 9) # FALSE because 10 is greater than 9 but 10 is not greater
↪than 9
(10 > 9) | (10 < 9) # TRUE because 10 is greater than 9 and 10 is not greater
↪than 9
!(10 > 9) # FALSE because 10 is greater than 9
!(10 < 9) # TRUE because 10 is not greater than 9
```

```
[ ]: # fun fact
pi == 3.14159265
```

```
[ ]: round(pi, 2) == 3.14
```

1.4 NULL, NA and NAN

```
[ ]: # in R Null is a special value that means "no value"  
x <- NULL  
class(x)
```

```
[ ]: # NA is used to represent missing values in a dataset  
x <- NA  
class(x)
```

```
[ ]: # Inf  
x <- 1000/0  
class(x)
```

```
[ ]: # NaN  
x <- 0/0  
class(x)
```

1.5 Ranges

```
[ ]: range = 1:10  
range  
class(range)
```

1.6 In usage

```
[ ]: 3 %in% 1:10  
100 %in% 1:99
```

```
[ ]: # BUT :  
100 %in% 1:100
```