Applied Statistics for Data Scientists with R

Class 02: Data Types & Operators

Learning Objective

1. Data types and variables
2. Common operators
3. Common functions

Common Data Types in R

Data type	Example	typeof()	mode( )
Numeric	6, 3.14, 10	double	numeric
Integer	6L, 3L, 10L	integer	numeric
Logical	TRUE, FALSE	logical	logical
Character	“Female”, “Success”, “a”	character	character
Complex	4+3i, 2+9i	complex	complex

Combine Multiple Elements

- When working with multiple elements of a data type, use the function `c()` to combine multiple elements.

Assignment operators in R

Operators	Example
<-	x <- 10 y <- c(3, 2)
->	10 -> x
=	X = 10
<<-	x <<- 10
->>	10 ->> x

Arithmetic operators in R

Operators	Description	Example
+	Addition / Sum	10+3 = 13
-	Subtraction / Minus	10-3 = 7
/	Division	10/3 = 3.333333
*	Multiplication	10*3 = 30
^	Exponent / Power	10^3 = 1000
%%	Modulus (Remainder from division)	10%%3 = 1
%/%	Integer division	10%/%3 = 3
%*%	Matrix Multiplication	

Relational operators in R

Operators	Description	Example
<	Less than	`4 < 2` FALSE `4 < 10` TRUE
<=	Less than or equal to	`4 <=5` FALSE `4 <= 4` TRUE
>	Greater than	`4 > 2` TRUE
>=	Greater than or equal to	`4 >= 2` FALSE
==	Equal	`3 == 5` FALSE
!=	Not equal	`3 != 5` TRUE
%in%	Included in	`'a' %in% c('b', 'a', 'c')` TRUE

Logical operators in R

Operators	Description	Example

&	And	`> x <- c(TRUE, FALSE, TRUE)`
		`> y <- c(TRUE, TRUE, FALSE)`
		`> x & y`
		`[1]  TRUE FALSE FALSE`

|	Or	`> x <- c(TRUE, FALSE, TRUE)`
		`> y <- c(FALSE, TRUE, FALSE)`
		`> x | y`
		`[1] TRUE TRUE TRUE`

!	Not	`> x <- c(TRUE, FALSE, TRUE)`
		`> !x`
		`[1] FALSE  TRUE FALSE`

Note: Relational operators compare values and return either TRUE or FALSE. Logical operators perform logical operations on TRUE and FALSE.

Common functions in R

Group	Functions
Statistical	`sum(), mean(), min(), max(), median(), quantile(), sd(), range(), summary()`
Logical	`is.na(), any(), all(), which()`
Rounding	`round(), floor(), ceiling()`
Other mathematical	`sqrt(), abs(), log(), exp()`
Vector operation	`length(), seq(), rep(), unique()`
Object inspection	`str(), typeof(), mode()`
Utility	`help(), install.packages(), library()`