R Statistical computing

CONCEPTS

Almost everything is a vector; a single number is a vector of length 1. Operations work on whole vectors at once.

Vector one type
↓ `names + dims`
List mixed types
↓ `equal-length columns`
Data frame table of columns
↓ `model / plot`
Result print or write

RUNNING R

`R`
Start an interactive session

`Rscript <file.R> [args]`
Run a script non-interactively

`Rscript -e '<expr>'`
Evaluate an expression and exit

`R --vanilla`
Ignore profile, site and saved state

HELP AND PACKAGES

`?<topic>`
Open the help page for a function

`install.packages("<pkg>")`
Install from CRAN

`library(<pkg>)`
Attach an installed package

VECTORS

`c(1, 2, 3)`
Combine values into a vector

`1:10`
Integer sequence

`length(<x>)`
Number of elements

`x[3]`
Third element

VECTORS (cont.)

`x[x > 5]`
Elements matching a condition

DATA STRUCTURES

`str(x)`
Compact structure of any object

DATA FRAMES

`head(df, <n>)`
First rows

`summary(df)`
Per-column statistics

`df$<col>`
One column as a vector

`df[<rows>, <cols>]`
Rows and columns by index or name

`df[df$<col> > 5, ]`
Filter rows

CONTROL AND FUNCTIONS

`f ← function(x, y = 2) { x + y }`
Define a function

APPLY FAMILY

`sapply(x, f)`
Apply, simplify to vector or matrix

`lapply(x, f)`
Apply, always return a list

IMPORT AND EXPORT

`read.csv("<file>")`
Read a CSV into a data frame

`write.csv(df, "<file>", row.names = FALSE)`
Write a data frame as CSV

PLOTTING

`plot(x, y)`
Scatter plot