R Essentials

Functions

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Agenda

- An overview
- Common built-in functions
- Self-defined functions
- Be functional

An overview

Function is the core of R applications

The way R works is pretty straightforward, you apply functions to objects.

Greg Martain

There are 3 components in a Function

- inputs and arguments
- body
- outputs

Common built-in functions

Functions for numerics

- `abs()`
- `sqrt()`
- `ceiling()`
- `floor()`
- `round()`
- `exp()`
- `log()`
- `log10()`

Functions for descriptive statistics

- `mean()`
- `sd()`
- `median()`
- `range()`
- `sum()`
- `max()`
- `min()`

Functions for characters

- `unique()`
- `toupper()`
- `tolower()`
- `substr()`
- `grep()`
- `sub()`
- `strsplit()`
- `paste()`
- `paste0()`
- `trimws()`

Self-defined functions

Considering 5 components when defining a function

- Function name
- Inputs and parameters
- Body)
- Outputs
- Reserved words: `function`, `return()`

```r
# How to define a function
FUNCTION_NAME <- function(INPUT1, INPUT2, ..., PARAM1, PARAM2, ...) {
  # BODY
  return(OUTPUT)
}
```

Functions with single input

In [1]:
```
#celsius_to_fahrenheit <- function() {
#
#}
```

Functions with 2 inputs

In [2]:
```
#get_bmi <- function() {
#
#}
```

Functions with default parameters

In [3]:
```
#temperature_converter <- function() {
#
#}
```

Functions with multiple outputs

In [4]:
```
#get_bmi_and_label <- function() {
#
#}
```

Be functional

Dealing with repetitive tasks

- Vectorization
- Loops
- Functional

How to print out jerseys of star players in NBA?

In [5]:
```
super_nba_stars <- c("Steve Nash", "Michael Jordan", "LeBron James", "Dirk Nowitzs
ki", "Hakeem Olajuwon")
# We need to extract these players' last names and make it upper-cased
```

Common functional functions

- `lapply()`
- `sapply()`
- `apply()`