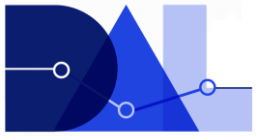
CEFET/RJ

Estrutura de repetição



Eduardo Ogasawara
eduardo.ogasawara@cefet-rj.br
https://eic.cefet-rj.br/~eogasawara

Exemplo

```r
weight <- 60
height = 1.75
subject <- "A"
healthy <- TRUE
bmi <- weight/height^2
bmi
```

```
## [1] 19.59184
```

Exemplo

```
weight <- c(60, 72, 57, 90, 95, 72)
height <- c(1.75, 1.80, 1.65, 1.90, 1.74, 1.91)
subject <- c("A", "B", "C", "D", "E", "F")
```

Estrutura de repetição for

```r
bmi <- 0
for (i in 1:length(weight)) {
  bmi[i] <- weight[i]/height[i]^2
}
bmi
```

```
## [1] 19.59184 22.22222 20.93664 24.93075 31.37799 19.73630
```

Inspecionando os cálculos

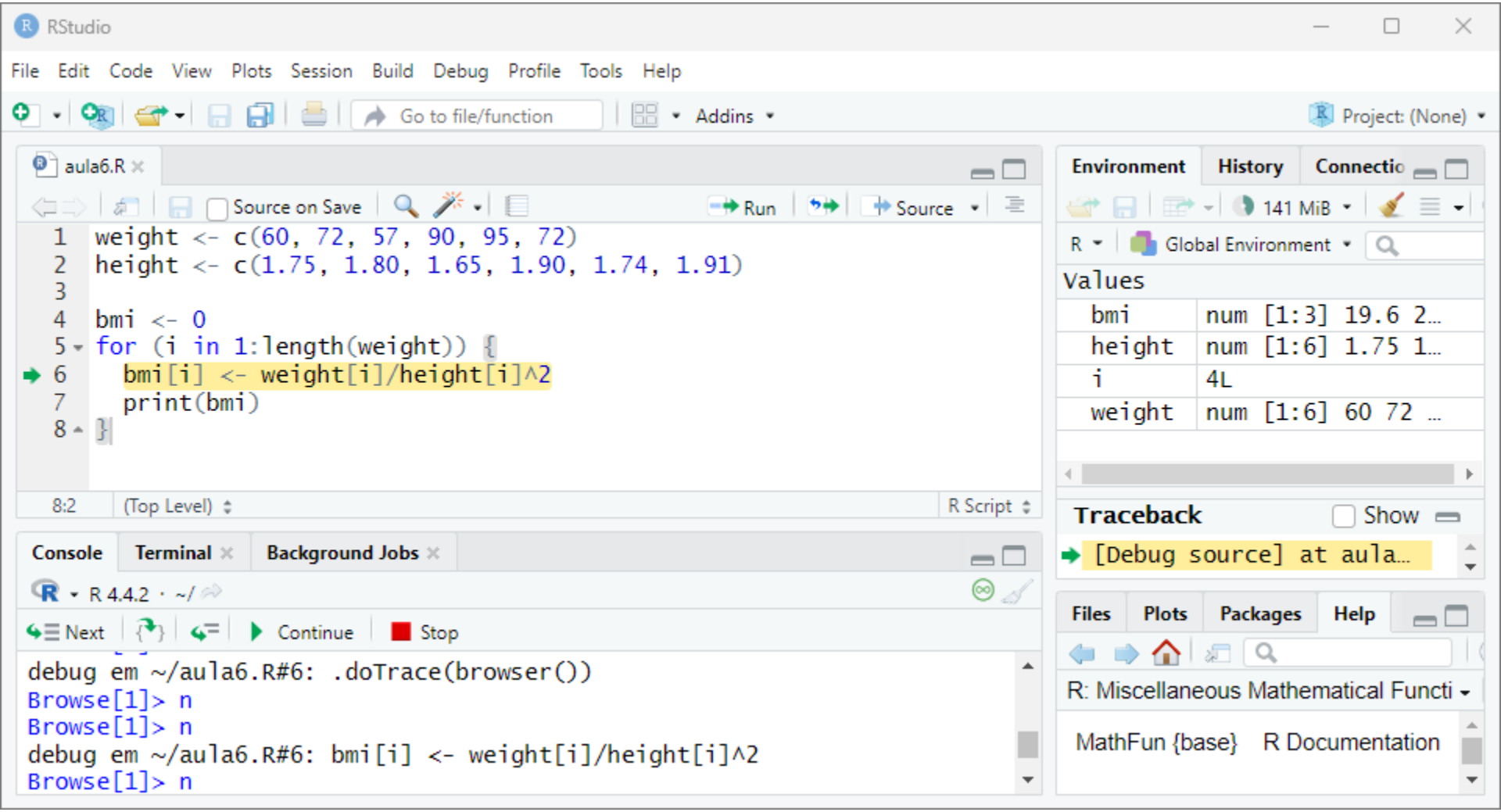
```
bmi <- 0
for (i in 1:length(weight)) {
  bmi[i] <- weight[i]/height[i]^2
  print(bmi)
}
```

```
## [1] 19.59184
## [1] 19.59184 22.22222
## [1] 19.59184 22.22222 20.93664
## [1] 19.59184 22.22222 20.93664 24.93075
## [1] 19.59184 22.22222 20.93664 24.93075 31.37799
## [1] 19.59184 22.22222 20.93664 24.93075 31.37799 19.73630
```

```
bmi
```

```
## [1] 19.59184 22.22222 20.93664 24.93075 31.37799 19.73630
```

Depurando estrutura de repetição for



Criando a função

Clique na vassoura para limpar as variáveis

Removendo varáveis

```
rm(bmi)
exists("bmi")
```

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

Estrutura de repetição while

```r
i <- 1
bmi <- 0
while (i <= length(weight)) {
  bmi[i] <- weight[i]/height[i]^2
  i <- i + 1
}
```

Inspecionando estrutura de repetição while

```
i <- 1
bmi <- 0
while (i <= length(weight)) {
  bmi[i] <- weight[i]/height[i]^2
  i <- i + 1
}
```

Depurando estrutura de repetição while

```r
i <- 1
bmi <- 0
while (i <= length(weight)) {
  bmi[i] <- weight[i]/height[i]^2
  i <- i + 1
}
```

Encapsulando cálculo do bmi como função

```r
compute_bmi <- function(weight, height) {
  i <- 1
  bmi <- 0
  while (i <= length(weight)) {
    bmi[i] <- weight[i]/height[i]^2
    i <- i + 1
  }
  return(bmi)
}

bmi <- compute_bmi(weight, height)
bmi
```

```
## [1] 19.59184 22.22222 20.93664 24.93075 31.37799 19.73630
```

Implementando a função do jeito certo

```r
compute_bmi <- function(weight, height) {
  resposta <- weight/height^2
  return(resposta)
}

bmi <- compute_bmi(weight, height)
bmi
```

```
## [1] 19.59184 22.22222 20.93664 24.93075 31.37799 19.73630
```

Depurando a função

```r
compute_bmi <- function(weight, height) {
  resposta <- weight/height^2
  return(resposta)
}

bmi <- compute_bmi(weight, height)
bmi
```

```
## [1] 19.59184 22.22222 20.93664 24.93075 31.37799 19.73630
```

Uso da função (escalares/vetores)

```
compute_bmi(80, 1.79)
```

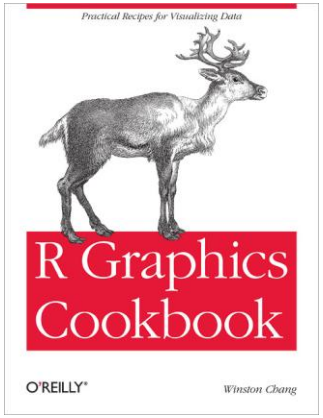
```
## [1] 24.96801
```

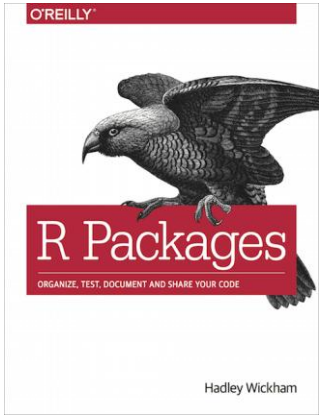
```
compute_bmi(weight, height)
```

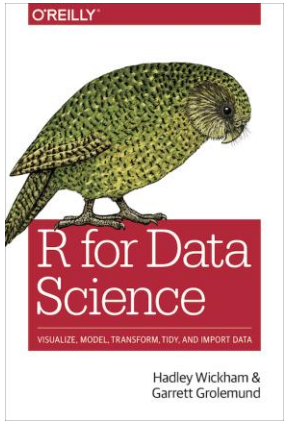
```
## [1] 19.59184 22.22222 20.93664 24.93075 31.37799 19.73630
```

Referências

Material: https://eic.cefet-rj.br/~eogasawara/tutorial-r







Hands-on Programming with R: https://rstudio-education.github.io/hopr/index.html
R Graphics Cookbook: https://r-graphics.org
R Packages: https://r-pkgs.org/index.html
R for Data Science: https://r4ds.had.co.nz

https://rstudio-education.github.io/hopr/basics.html

[1] G. Grolemund, 2014, Hands-On Programming with R: Write Your Own Functions and Simulations. O'Reilly Media, Inc.