02.Matrix.R

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# O que é uma Matriz

Origem dos Exercícios: DataCamp: <https://campus.datacamp.com/courses/free-introduction-to-r>

# In R, a matrix is a collection of elements of the same data type (numeric, character, or logical) arranged into a fixed number of rows and columns. Since you are only working with rows and columns, a matrix is called two-dimensional.  
# Criando uma matriz com 9 elementos.  
matrix (1:9, byrow=TRUE, nrow=3)

## [,1] [,2] [,3]  
## [1,] 1 2 3  
## [2,] 4 5 6  
## [3,] 7 8 9

# Criando uma Matriz a partir de Vetores

# Criando uma matriz a partir de três vetores  
# Box office Star Wars (in millions!)  
new\_hope <- c(460.998, 314.4)  
empire\_strikes <- c(290.475, 247.900)  
return\_jedi <- c(309.306, 165.8)  
  
# Consolidando os Vetores em um Apenas  
box\_office <- c(new\_hope,empire\_strikes,return\_jedi)  
   
# Construindo uma matriz só  
star\_wars\_matrix <- matrix(box\_office,byrow = TRUE, nrow=3)  
  
# Vendo a Matriz  
star\_wars\_matrix

## [,1] [,2]  
## [1,] 460.998 314.4  
## [2,] 290.475 247.9  
## [3,] 309.306 165.8

# Nomeando uma Matriz

To help you remember what is stored in star\_wars\_matrix, you would like to add the names of the movies for the rows. Not only does this help you to read the data, but it is also useful to select certain elements from the matrix. Similar to vectors, you can add names for the rows and the columns of a matrix

# Box office Star Wars (in millions!)  
new\_hope <- c(460.998, 314.4)  
empire\_strikes <- c(290.475, 247.900)  
return\_jedi <- c(309.306, 165.8)  
  
# Construct matrix  
star\_wars\_matrix <- matrix(c(new\_hope, empire\_strikes, return\_jedi), nrow = 3, byrow = TRUE)  
  
# Vectors region and titles, used for naming  
region <- c("US", "non-US")  
titles <- c("A New Hope", "The Empire Strikes Back", "Return of the Jedi")  
  
# Name the columns with region  
rownames(star\_wars\_matrix) = titles  
  
# Name the rows with titles  
colnames(star\_wars\_matrix) = region  
  
# Print out star\_wars\_matrix  
star\_wars\_matrix

## US non-US  
## A New Hope 460.998 314.4  
## The Empire Strikes Back 290.475 247.9  
## Return of the Jedi 309.306 165.8

# Realizando Calculos com a Matriz

As funções rowSums() e colSums() retorna vetores com somas das colunas e linhas

# TUdo o que fiz Anteriormente poderia ser feito apenas nesses comandos:  
box\_office <- c(460.998, 314.4, 290.475, 247.900, 309.306, 165.8)  
star\_wars\_matrix <- matrix(box\_office, nrow = 3, byrow = TRUE,  
 dimnames = list(c("A New Hope", "The Empire Strikes Back", "Return of the Jedi"),   
 c("US", "non-US")))  
  
# Calculate worldwide box office figures  
worldwide\_vector <- rowSums(star\_wars\_matrix)  
worldwide\_vector

## A New Hope The Empire Strikes Back Return of the Jedi   
## 775.398 538.375 475.106

# ADicionando colunas na matriz

A funçao cbind() pode ser usada para juntar vetores e matrizes: matrizcompilada