

Matrices

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Matrices (1ª parte)

```
M = matrix(1:12, nrow=4)
M
```

```
##      [,1] [,2] [,3]
## [1,]    1    5    9
## [2,]    2    6   10
## [3,]    3    7   11
## [4,]    4    8   12
```

```
M = matrix(1:12, nrow=4, byrow = T)
M
```

```
##      [,1] [,2] [,3]
## [1,]    1    2    3
## [2,]    4    5    6
## [3,]    7    8    9
## [4,]   10   11   12
```

```
M = matrix(1:12, nrow=3)
M
```

```
##      [,1] [,2] [,3] [,4]
## [1,]    1    4    7   10
## [2,]    2    5    8   11
## [3,]    3    6    9   12
```

```
M = matrix(1:12, nrow=5)
```

```
## Warning in matrix(1:12, nrow = 5): la longitud de los datos [12] no es un
## submúltiplo o múltiplo del número de filas [5] en la matriz
```

```
M
```

```
##      [,1] [,2] [,3]
## [1,]    1    6   11
## [2,]    2    7   12
## [3,]    3    8    1
## [4,]    4    9    2
## [5,]    5   10    3
```

```
M = matrix(1, nrow = 4, ncol = 6)
M
```

```
##      [,1] [,2] [,3] [,4] [,5] [,6]
## [1,]    1    1    1    1    1    1
## [2,]    1    1    1    1    1    1
## [3,]    1    1    1    1    1    1
## [4,]    1    1    1    1    1    1
```

Ejercicio

```
M = matrix(0, nrow = 3, ncol = 5)
M
```

```
##      [,1] [,2] [,3] [,4] [,5]
## [1,]    0    0    0    0    0
## [2,]    0    0    0    0    0
## [3,]    0    0    0    0    0
```

```
vec = 1:12
M = matrix(vec, nrow = 3)
M
```

```
##      [,1] [,2] [,3] [,4]
## [1,]    1    4    7   10
## [2,]    2    5    8   11
## [3,]    3    6    9   12
```

Matrices (2ª parte)

```
M = rbind(M, c(1,2,3,4), -4:-1)
M
```

```
##      [,1] [,2] [,3] [,4]
## [1,]    1    4    7   10
## [2,]    2    5    8   11
## [3,]    3    6    9   12
## [4,]    1    2    3    4
## [5,]   -4   -3   -2   -1
```

```
M = cbind(M, seq(0, 100, length.out = 5))
M
```

```
##      [,1] [,2] [,3] [,4] [,5]
## [1,]    1    4    7   10    0
## [2,]    2    5    8   11   25
## [3,]    3    6    9   12   50
## [4,]    1    2    3    4   75
## [5,]   -4   -3   -2   -1  100
```

```
M_diag = diag(1:9)
M_diag
```

```
##      [,1] [,2] [,3] [,4] [,5] [,6] [,7] [,8] [,9]
## [1,]    1    0    0    0    0    0    0    0    0
## [2,]    0    2    0    0    0    0    0    0    0
## [3,]    0    0    3    0    0    0    0    0    0
## [4,]    0    0    0    4    0    0    0    0    0
## [5,]    0    0    0    0    5    0    0    0    0
## [6,]    0    0    0    0    0    6    0    0    0
## [7,]    0    0    0    0    0    0    7    0    0
## [8,]    0    0    0    0    0    0    0    8    0
## [9,]    0    0    0    0    0    0    0    0    9
```

Propiedades matrices

```
m = matrix(1:20, nrow = 4)
m
```

```
##      [,1] [,2] [,3] [,4] [,5]
## [1,]    1    5    9   13   17
## [2,]    2    6   10   14   18
## [3,]    3    7   11   15   19
## [4,]    4    8   12   16   20
```

```
diag(m)
```

```
## [1]  1  6 11 16
```

```
nrow(m)
```

```
## [1] 4
```

```
ncol(m)
```

```
## [1] 5
```

```
dim(m)
```

```
## [1] 4 5
```

```
sum(m)
```

```
## [1] 210
```

```
prod(m)
```

```
## [1] 2.432902e+18
```

```
mean(m)
```

```
## [1] 10.5
```

```
colSums(m)
```

```
## [1] 10 26 42 58 74
```

```
rowSums(m)
```

```
## [1] 45 50 55 60
```

```
colMeans(m)
```

```
## [1] 2.5 6.5 10.5 14.5 18.5
```

```
rowMeans(m)
```

```
## [1] 9 10 11 12
```