Bucles, vectores, matrices y listas

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Estructuras repetitivas

For

```
for (i in 1:10){
    print(i)
}
```

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

Uso de la palabra `next`

```
for (i in 1:10){
    if (i == 3){
        next
    }
    print(i)
}
```

```
## [1] 1
## [1] 2
## [1] 4
## [1] 5
## [1] 6
## [1] 7
## [1] 8
## [1] 9
## [1] 10
```

Uso de la palabra `break`

```
for (i in 1:10){
    if (i == 3){
        break
    }
    print(i)
```

```
}
```

```
## [1] 1
## [1] 2
```

While

```
i <- 0
while (i <= 10){
    print(i)
    i = i + 1
}
```

```
## [1] 0
## [1] 1
## [1] 2
## [1] 3
## [1] 4
## [1] 5
## [1] 6
## [1] 7
## [1] 8
## [1] 9
## [1] 10
```

Repeat

```
i <- 0
repeat{
    if (i == 10){
        break
    }
    print(i)
    i = i + 1
}
```

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

Vectores

Formas de definir vectores

```
vector <- c("1", "2", "3")
print(vector)
```

```
## [1] "1" "2" "3"
```

```r
vector <- vector("numeric", length = 10)
print(vector)
```

```
##  [1] 0 0 0 0 0 0 0 0 0 0
```

Evaluar si es un vector o no

```r
is.vector(vector)
```

```
## [1] TRUE
```

```r
x <- rep("nombre", 20)
print(x)
```

```
##  [1] "nombre" "nombre" "nombre" "nombre" "nombre" "nombre" "nombre" "nombre"
##  [9] "nombre" "nombre" "nombre" "nombre" "nombre" "nombre" "nombre" "nombre"
## [17] "nombre" "nombre" "nombre" "nombre"
```

```r
x <- seq(1, 10, by=2)
print(x)
```

```
## [1] 1 3 5 7 9
```

```r
# acceder a un rango elementos de un vector
x[1:3]
```

```
## [1] 1 3 5
```

```r
# acceder a un elemento de un vector
x[2]
```

```
## [1] 3
```

Juntar dos vectores

```r
c(vector, x)
```

```
##  [1] 0 0 0 0 0 0 0 0 0 0 1 3 5 7 9
```

```r
x*2
```

```
## [1]  2  6 10 14 18
```

Matrices

Creacion de matrices

```r
matriz <- matrix(nrow = 2, ncol = 3)
print(matriz)
```

```
##      [,1] [,2] [,3]
## [1,]   NA   NA   NA
## [2,]   NA   NA   NA
```

```r
matriz1 <- matrix(1:6, nrow = 2, ncol = 3)
print(matriz1)
```

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

Ingresar a una fila

```
matriz1[1, ]
```

```
## [1] 1 3 5
```

Ingrear a una columna

```
matriz1[, 1]
```

```
## [1] 1 2
```

Relación entre vectores y matrices

```
x <- 1:20
print(dim(x))
```

```
## NULL
```

```
matriz1 <- matrix(1:6, nrow = 2, ncol = 3)
print(dim(matriz1))
```

```
## [1] 2 3
```

Convertir un vector a matriz

```
m <- 1:10
dim(m) <- c(2, 5)
print(m)
```

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

Unir dos vectores para la cración de una matriz

```
x <- 1:3
y <- 10:12
# une columna
matriz2 <- cbind(x, y)
matriz2
```

```
##      x  y
## [1,] 1 10
## [2,] 2 11
## [3,] 3 12
```

```
colnames(matriz2)
```

```
## [1] "x" "y"
```

```
matriz3 <-rbind(x, y)
matriz3
```

```
##   [,1] [,2] [,3]
## x    1    2    3
## y   10   11   12
```

Listas

```
x <- list("elemento1"=1, "elemento2"=c(1, 2, 3, 4, 5),
          "elemento3"=matrix(1:10, nrow = 2, ncol = 5), "elemento4"="soy un elemento")
x
```

```
## $elemento1
## [1] 1
##
## $elemento2
## [1] 1 2 3 4 5
##
## $elemento3
##      [,1] [,2] [,3] [,4] [,5]
## [1,]    1    3    5    7    9
## [2,]    2    4    6    8   10
##
## $elemento4
## [1] "soy un elemento"
```

```
print(x$elemento1)
```

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

```
print(x$elemento2)
```

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

```
print(x$elemento4)
```

```
## [1] "soy un elemento"
```

```
x["elemento1"]
```

```
## $elemento1
## [1] 1
```

```
x[1]
```

```
## $elemento1
## [1] 1
```

```
x[[3]]
```

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