Jorge Fuertes

Practica 5.R*

```
#   PRACTICA 5   #

### EJERCICIO 1 ###

datos<- read.csv("C:/Users/jorge/Desktop/JORGE/CUNEF/MASTER/PROGRAMACIÓN R/student_census.csv", sep=",", header = TRUE)
fix(datos)
deporte<- datos$Physical
a<- dim(datos)
lista<- vector()
contador<-1
for (i in 1:a[1]){
  if (deporte[i]=="Basketball"){
    lista[contador] = i
    contador = contador+1}}
lista

jugadores<- sample(lista, 5) #Coger 5 estudiantes de forma aleatoria
```

```
> datos<- read.csv("C:/Users/jorge/Desktop/JORGE/CUNEF/MASTER/PROGRAMACIÓN R/student_census.csv", sep=",", header = TRUE)
> fix(datos)
> deporte<- datos$Physical
> a<- dim(datos)
> lista<- vector()
> contador<-1
> for (i in 1:a[1]){
+   if (deporte[i]=="Basketball"){
+     lista[contador] = i
+     contador = contador+1}}
> lista
 [1]  11  16  18  36  89  92  96  98 103 107 113 132 141 148 157 176 187 200
>
```

Editor de datos

Archivo Editar Ayuda

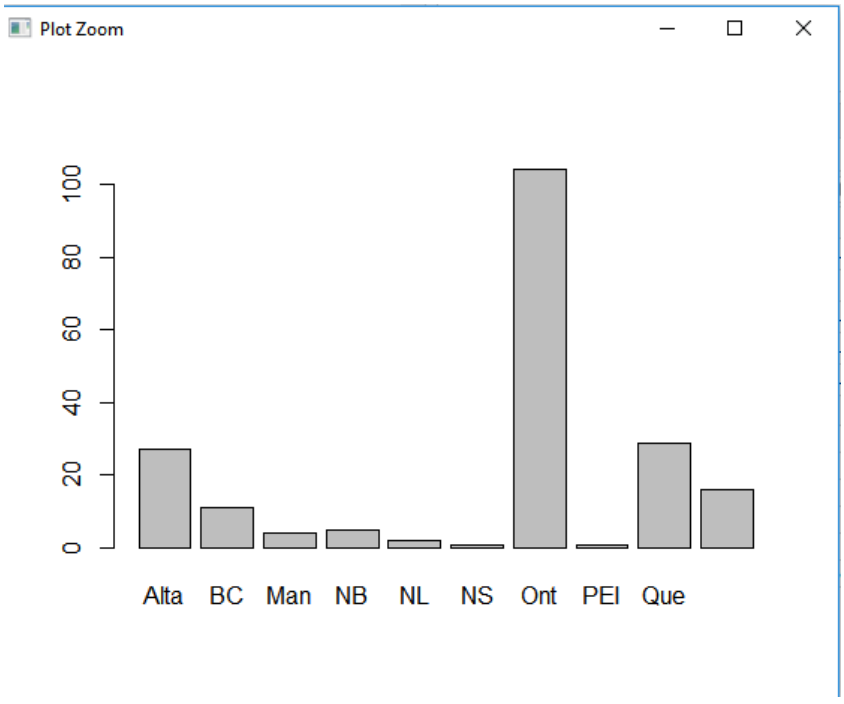
	Province	Gender	Language	Height	Arm.Span	Foot.Size	Wrist.Bone
1	Ont	M	1	168	157	26	26
2	Ont	F	2	163	164	26	27
3	Ont	F	4	163	156	22	27
4	Alta	F	1	173	167	25	25
5	Ont	F	3	158	158	24	24
6	Ont	M	3	175	181	26	30
7	Ont	M	2	178	154	26	26
8	Man	M	1	167	168	26	27
9	Ont	M	1	184	178	30	32
10	Ont	F	1	150	120	27	27
11	Alta	M	2	176	185	28	28
12	Que	M	1	170	170	25	28
13	Ont	M	2	167	156	26	28
14	Sask	F	1	162	160	22	27
15	Ont	M	2	176	175	30	30
16	Alta	F	1	166	159	21	18
17	Sask	F	2	177	176	25	25
18	Que	F	2	155	137	18	19
19	Ont	M	1	173	179	26	27

```
### EJERCICIO 2 ###

datos<- data.frame(datos); datos
height<- data.frame(datos$Height); height
arm.span<- data.frame(datos$Arm.Span); arm.span
foot.size<- data.frame(datos$Foot.Size); foot.size
matriz<- data.frame(height, arm.span, foot.size); matriz

cor(matriz)

(ii<- order(height, arm.span, foot.size))
cbind(height, arm.span, foot.size)[ii,]
plot(datos$Province)

```

```
> ### EJERCICIO 2 ###
>
> datos<- data.frame(datos)
> height<- data.frame(datos$Height)
> arm.span<- data.frame(datos$Arm.Span)
> foot.size<- data.frame(datos$Foot.Size)
> matriz<- data.frame(height, arm.span, foot.size)
>
> cor(matriz)
              datos.Height datos.Arm.Span datos.Foot.Size
datos.Height     1.0000000      0.7498349       0.5006804
datos.Arm.Span   0.7498349      1.0000000       0.4615200
datos.Foot.Size  0.5006804      0.4615200       1.0000000
>
> (ii<- order(height, arm.span, foot.size))
  [1] 113 183 144 179  66  10  64  71 154  62 194  63 169  29 139 115 100 197  18 163  89  88  48 153  51  79 171
```

```
> (ii<- order(height, arm.span, foot.size))
  [1] 113 183 144 179  66  10  64  71 154  62 194  63 169  29 139 115 100 197  18 163  89  88  48 153  51  79 171
 [28] 140  50 132   5 192 164 195 134 142 123 116 186  77 173 148 157 128 182 178  92  96  31 172 189 146 137  68
 [55] 159  14 161  37  90  21  49 136 162   3 170 147  85 126 130   2  44  45 124  36  27  38 119  81  82 188  86
 [82] 166  42  84 117  16  93 112 175  22  20  99  13 168 101  43  83 111   8  55 107 143 125  60   1  34 190 104
[109] 177 155 110 131  69 180 114  40  33  91 106  12  61  32  94  35  58  80 185 181 156  72 184 149  54 102 151
[136] 109 108  76  87   4  28 158  30  19 145 167 152  41 196 105 176  73   6 141 122 121  15  46  11 200 127  17
[163]   7  97  57 120  75 193 118  95  26 150 135 129  78 198  23  25 138  74  53  98  70  47   9  67 103 133 165
[190]  39 199 160  65 191 187 174  52  56  59  24
> cbind(height, arm.span, foot.size)[ii,]
    datos.Height datos.Arm.Span datos.Foot.Size
113          126            150              24
183          128            157              23
144          130            125              19
179          140            140              22
66           147            144              19
10           150            120              27
64           150            151              21
```

```
187          190            187              28
174          191            183              24
52           201            201              22
56           203            166              24
59           203            200              31
24           211            211              31
> plot(datos$Province)
>
```



```r
### EJERCICIO 4 ###

physical<- data.frame(datos$Physical)
province<- data.frame(datos$Province)


province<- unique(province)
physical<- unique(physical)


lphysical<- dim(physical)
lphysical<-lphysical[1]
lprovince<- dim(province)
lprovince<-lprovince[1]

matriz1<- matrix(0, nrow=lphysical, ncol=lprovince)
rownames(matriz1)<-physical[,1]
colnames(matriz1)<-province[,1]

for (k in 1:lprovince){
  for (j in 1:lphysical){
    contador<-0
    l<-1
    while(l<=20){
      m<-1+10*(l-1)
      n<-l*10
      for (i in m:n){
        if (datos$Physical[i]==physical[j,1] & datos$Province[i]==province[k,1]){
          contador<-contador+1
        }
      }
      l<-l+1

    }
    matriz1[j,k]<-contador
  }
}
#matriz[1,3]<-100
matriz1
sum(matriz1)
```

```
> ### EJERCICIO 4 ###
>
> physical<- data.frame(datos$Physical)
> province<- data.frame(datos$Province)
>
>
> province<- unique(province)
> physical<- unique(physical)
>
>
> lphysical<- dim(physical)
> lphysical<-lphysical[1]
> lprovince<- dim(province)
> lprovince<-lprovince[1]
>
> matriz1<- matrix(0, nrow=lphysical, ncol=lprovince)
> rownames(matriz1)<-physical[,1]
> colnames(matriz1)<-province[,1]
>
> for (k in 1:lprovince){
+   for (j in 1:lphysical){
+     contador<-0
+     l<-1
+     while(l<=20){
+       m<-1+10*(l-1)
+       n<-l*10
+       for (i in m:n){
+         if (datos$Physical[i]==physical[j,1] & datos$Province[i]==province[k,1]){
+           contador<-contador+1
+         }
+       }
+       l<-l+1
+     }
+     matriz1[j,k]<-contador
+   }
+ }
> #matriz[1,3]<-100
> matriz1
                          Ont Alta Man Que Sask NB BC NL NS PEI
Football/Soccer            17    0   0   2    1  2  3  0  0   0
Swimming                    6    2   0   6    0  0  0  0  0   1
Dancing                     6    3   0   6    1  2  1  1  0   0
Cycling                     1    1   0   0    1  0  0  0  0   0
Martial arts                4    1   0   1    0  0  0  0  0   0
Hockey (Ice)               16    3   1   4    2  0  2  0  0   0
Other activities/sports    17    4   0   0    4  1  0  0  0   0
```

```
Basketball                  7   4   0   5   1   0   0   0   1   0
Athletics                   4   2   1   0   2   0   1   0   0   0
Golf                        3   0   0   0   0   0   0   0   0   0
Baseball/Softball           6   1   0   0   1   0   1   0   0   0
None                        1   1   1   3   1   0   0   0   0   0
Table Tennis                1   0   0   0   0   0   0   0   0   0
Skateboarding/Rollerblading 1   1   1   0   0   0   1   1   0   0
Running/Jogging             6   1   0   0   1   0   0   0   0   0
Hockey (Field)              1   0   0   0   0   0   0   0   0   0
Rugby League                3   0   0   0   0   0   0   0   0   0
Bowling                     0   0   0   0   0   0   1   0   0   0
Walking/Hiking              2   2   0   1   1   0   0   0   0   0
Tennis                      0   0   0   0   0   0   1   0   0   0
Gymnastics                  1   1   0   1   0   0   0   0   0   0
Rugby Union                 1   0   0   0   0   0   0   0   0   0
> sum(matriz1)
[1] 200
>
```

```r
### EJERCICIO 5 ###

x<- c(1:80, 78:34, 1,2,3,4,5,6,7,5,4,3,2)
n<-5
divideenBloques <- function( x, n ){
      tam<-length(x)%/%n
      list<-NULL

      for (i in 0:(n-2)){
          list<-c(list,c(i*tam+1, (i+1)*tam))

              }
      list<-c(list,c(((i+1)*tam)+1, length(x)))
      return(list)
}
lista<-divideenBloques(x,n); lista
```

```r
########################

i<-1
pares_sumas<-function (lista, x, n){
 sumas<-NULL
 tams<-NULL
 for (i in 0:(n-1)){
    ini<-lista[i*2+1]
    fin<-lista[i*2+2]
    sumas<-c(sumas, sum(x[ini:fin]))
    tams<-c(tams,fin-ini+1)
    }
return(data.frame(sumas, tams))
}
ps<-pares_sumas(lista, x, n); ps

reduce<-function(ps){
resultado<- as.double(sum(ps$sumas)/sum(ps$tams))
return(resultado)
}
resultado_media<-reduce(ps); resultado_media
```

```
> ### EJERCICIO 5 ###
>
> x<- c(1:80, 78:34, 1,2,3,4,5,6,7,5,4,3,2)
> n<-5
> divideenBloques <- function( x, n ){
+                       tam<-length(x)%/%n
+                       list<-NULL
+
+                       for (i in 0:(n-2)){
+                                       list<-c(list,c(i*tam+1, (i+1)*tam))
+
+                                                       }
+                       list<-c(list,c(((i+1)*tam)+1, length(x)))
+                       return(list)
+ }
> lista<-divideenBloques(x,n); lista
 [1]   1  27  28  54  55  81  82 108 109 136
>
```

```
> i<-1
> pares_sumas<-function (lista, x, n){
+  sumas<-NULL
+  tams<-NULL
+  for (i in 0:(n-1)){
+               ini<-lista[i*2+1]
+               fin<-lista[i*2+2]
+               sumas<-c(sumas, sum(x[ini:fin]))
+               tams<-c(tams,fin-ini+1)
+               }
+ return(data.frame(sumas, tams))
+ }
> ps<-pares_sumas(lista, x, n); ps
  sumas tams
1   378   27
2  1107   27
3  1833   27
4  1728   27
5   756   28
>
> reduce<-function(ps){
+ resultado<- as.double(sum(ps$sumas)/sum(ps$tams))
+ return(resultado)
+ }
> resultado_media<-reduce(ps); resultado_media
[1] 42.66176
>
```

```
82  ### EJERCICIO 6 ###
83
84  busca <- function (l, h, st){
85    if (l<=st) {if (sum(l:h) ==st) {print(c(l, h))
86      return(busca(l+1,l+1,st))}
87      else {if (sum(l:h)<st) return(busca(l, h+1, st))
88        else return(busca(l+1, l+1, st))}
89    }
90  }
91  busca(0,100, 100)
```

```
> busca <- function (l, h, st){
+   if (l<=st) {if (sum(l:h) ==st) {print(c(l, h))
+     return(busca(l+1,l+1,st))}
+     else {if (sum(l:h)<st) return(busca(l, h+1, st))
+       else return(busca(l+1, l+1, st))}
+   }
+ }
> busca(0,100, 100)
[1]  9 16
[1] 18 22
[1] 100 100
>
```

El enunciado nos dice que l y h son dos números naturales donde:

- h está entre 0 y 51
- l entre 0 y h-1.

El objetivo de esta fórmula, es que el resultado de la misma nos representa que la suma de los números dentro de los intervalos 9-16 y 18-22 (ambos números inclusive en ambos intervalos) suman 100.