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Ejercicio 1

a)Es una herramienta gratuita, es mas estable ya que no es necesario craquearlo, consume menos recursos, posee una amplia gama de tecnicas estadisticas y es de facil manipulacion, ademas es una herramienta con una amplia cantidad de desarrolladores por lo que algn tipo de analisis que surja pronto se desarrolla un codigo para programarlo en R, mientras los otros programas estadisticos por ser un rea cerrada de desarrollo les lleva mas tiempo programar el mtodo e incluirlo en sus paquetes.

b)Version actual: 3.2.1 su nombre es World-Famous Astronaut
Version anterior: 3.1.3 su nombre fue Smooth Sidewalk
Version siguiente: 3.2.2 su nombre ser Fire Safety
Para el proximo ao se desarrollara la version 3.3.0 con el nombre de Unsuffered Consequences para el ao 2016
CRAN sigue ciclos de un ao para liberar una nueva version.

c) La version se identifica con 3 numeros, cada ao cambia el numero central 3.0.0 3.1.0 3.2.0 El ultimo numero identifica actualizaciones que no son tan grandes, las funcionalidades de la nueva tambien se ejecutan en la anterior,lo cual no implica un problema. Por ejemplo la version 3.2.1

Ejercicio 2

```
A <- matrix(c(1, 2, 2, 1, 3, 4), nrow=2, ncol=3);A
```

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

```
B <- matrix(c(1, 2, 3, 0, 1, 2), nrow=3, ncol=2);B
```

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

```
C <- matrix(c(3,4,2,-1,1,1,3,5,3), nrow=3, ncol=3);C
```

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

```r
D <- matrix(c(3, 2, -2, 4), nrow=2, ncol=2);D
```

```
##      [,1] [,2]
## [1,]    3   -2
## [2,]    2    4
```

```r
E <- matrix(c(2,0,3,-4,1,2,5,4,1), nrow=3, ncol=3);E
```

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

```r
F <- matrix(c(-4, 2, 5, 3), nrow=2, ncol=2);F
```

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

```r
O <- matrix(c(0,0,0,0,0,0,0,0,0), nrow=3, ncol=3);O
```

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

```r
a<-C+E; a
```

```
##      [,1] [,2] [,3]
## [1,]    5   -5    8
## [2,]    4    2    9
## [3,]    5    3    4
```

```r
b<-E+C; b
```

```
##      [,1] [,2] [,3]
## [1,]    5   -5    8
## [2,]    4    2    9
## [3,]    5    3    4
```

```r
c<-A+B; c #No es posible reaizar la suma de las matrices.
```

```
## Error in A + B: arreglos de dimensn no compatibles
```

```r
## function (..., recursive = FALSE)  .Primitive("c")
```

```r
d<-D-F; d
```

```
##      [,1] [,2]
## [1,]    7   -7
## [2,]    0    1
```

```
e<--3*C+5*O;e
```

```
##      [,1] [,2] [,3]
## [1,]   -9    3   -9
## [2,]  -12   -3  -15
## [3,]   -6   -3   -9
```

```
f<-2*C-3*E;f
```

```
##      [,1] [,2] [,3]
## [1,]    0   10   -9
## [2,]    8   -1   -2
## [3,]   -5   -4    3
```

```
g<-2*B+3*F;g #No es posible reaizar la resta de las matrices.
```

```
## Error in 2 * B + 3 * F: arreglos de dimensn no compatibles
## Error in eval(expr, envir, enclos):  objeto 'g' no encontrado
```

Ejercicio 3

```
A <- matrix(c(2, 3, 4, 3, 2, 1,4,2,6,3,5,4), nrow=3, ncol=4);A
```

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

```
B <- matrix(c(20, 28, 30, 40, 12, 15, 12, 16,8,15,10,20), nrow=4, ncol=3);B
```

```
##      [,1] [,2] [,3]
## [1,]   20   12    8
## [2,]   28   15   15
## [3,]   30   12   10
## [4,]   40   16   20
```

```
AB<-A%*%B; AB
```

```
##      [,1] [,2] [,3]
## [1,]  364  165  161
## [2,]  376  170  174
## [3,]  448  199  187
```

Ejercicio 4

```
library(XML)

## Warning:  package 'XML' was built under R version 3.2.2

u<-"http://www.jaredlander.com/2012/02/another-kind-of-super-bowl-pool/"
tables <- readHTMLTable(u);tables

## $`NULL`
##                V1      V2        V3
## 1   Participant 1 Giant A Patriot Q
## 2   Participant 2 Giant B Patriot R
## 3   Participant 3 Giant C Patriot S
## 4   Participant 4 Giant D Patriot T
## 5   Participant 5 Giant E Patriot U
## 6   Participant 6 Giant F Patriot V
## 7   Participant 7 Giant G Patriot W
## 8   Participant 8 Giant H Patriot X
## 9   Participant 9 Giant I Patriot Y
## 10 Participant 10 Giant J Patriot Z
```

Ejercicio 5

```
url<-"http://www.jaredlander.com/data/Tomato%20First.csv"
Tomatoes<- read.table(file=url, header=TRUE, sep = ",");Tomatoes

##    Round                   Tomato Price           Source Sweet Acid Color
## 1      1              Simpson SM  3.99      Whole Foods   2.8  2.8   3.7
## 2      1        Tuttorosso (blue)  2.99          Pioneer   3.3  2.8   3.4
## 3      1       Tuttorosso (green)  0.99          Pioneer   2.8  2.6   3.3
## 4      1           La Fede SM DOP  3.99        Shop Rite   2.6  2.8   3.0
## 5      2            Cento SM DOP  5.49       D Agostino   3.3  3.1   2.9
## 6      2           Cento Organic  4.99       D Agostino   3.2  2.9   2.9
## 7      2             La Valle SM  3.99        Shop Rite   2.6  2.8   3.6
## 8      2          La Valle SM DOP  3.99           Faicos   2.1  2.7   3.1
## 9      3   Stanislaus Alta Cucina  4.53 Restaurant Depot   3.4  3.3   4.1
## 10     3                     Ciao    NA            Other   2.6  2.9   3.4
## 11     3       Scotts Backyard SM  0.00       Home Grown   1.6  2.9   3.1
## 12     3 Di Casa Barone (organic) 12.80           Eataly   1.7  3.6   3.8
## 13     4         Trader Joes Plum  1.49      Trader Joes   3.4  3.3   4.0
## 14     4          365 Whole Foods  1.49      Whole Foods   2.8  2.7   3.4
## 15     4        Muir Glen Organic  3.19      Whole Foods   2.9  2.8   2.7
```

```
## 16     4        Bionature Organic  3.39      Whole Foods   2.4  3.3   3.4
##    Texture Overall Avg.of.Totals Total.of.Avg
## 1      3.4     3.4          16.1         16.1
## 2      3.0     2.9          15.3         15.3
## 3      2.8     2.9          14.3         14.3
## 4      2.3     2.8          13.4         13.4
## 5      2.8     3.1          14.4         15.2
## 6      3.1     2.9          15.5         15.1
## 7      3.4     2.6          14.7         14.9
## 8      2.4     2.2          12.6         12.5
## 9      3.2     3.7          17.8         17.7
## 10     3.3     2.9          15.3         15.2
## 11     2.4     1.9          11.9         11.9
## 12     2.3     1.4          12.7         12.7
## 13     3.6     3.9          17.8         18.2
## 14     3.1     3.1          14.8         15.2
## 15     3.2     3.1          14.8         14.7
## 16     3.2     2.8          15.1         15.2
```

Ejercicio 6

```
Var1<-Tomatoes[,"Tomato"]; Var1

##  [1] Simpson SM               Tuttorosso (blue)
##  [3] Tuttorosso (green)       La Fede SM DOP
##  [5] Cento SM DOP             Cento Organic
##  [7] La Valle SM              La Valle SM DOP
##  [9] Stanislaus Alta Cucina   Ciao
## [11] Scotts Backyard SM       Di Casa Barone (organic)
## [13] Trader Joes Plum         365 Whole Foods
## [15] Muir Glen Organic        Bionature Organic
## 16 Levels: 365 Whole Foods Bionature Organic ... Tuttorosso (green)

Var2<-Tomatoes[,"Sweet"]; Var2

##  [1] 2.8 3.3 2.8 2.6 3.3 3.2 2.6 2.1 3.4 2.6 1.6 1.7 3.4 2.8 2.9 2.4

Var3<-Tomatoes[,"Acid"]; Var3

##  [1] 2.8 2.8 2.6 2.8 3.1 2.9 2.8 2.7 3.3 2.9 2.9 3.6 3.3 2.7 2.8 3.3

Var4<-Tomatoes[,"Texture"]; Var4

##  [1] 3.4 3.0 2.8 2.3 2.8 3.1 3.4 2.4 3.2 3.3 2.4 2.3 3.6 3.1 3.2 3.2
```

Ejercicio 7

```
library(foreign)

## Warning:  package 'foreign' was built under R version 3.2.2

empresas <- read.spss("empresas.sav", to.data.frame = TRUE); empresas

##              ID  AGR MIN  MAN CEN  CON  SER  BAN SECSER  TC
## 1  Blgica       3.3 0.9 27.6 0.9  8.2 19.1  6.2   26.6 7.2
## 2  Dinamarca     9.2 0.1 21.8 0.6  8.3 14.6  6.5   32.2 7.1
## 3  Francia      10.8 0.8 27.5 0.9  8.9 16.8  6.0   22.6 5.7
## 4  Alemania O    6.7 1.3 35.8 0.9  7.3 14.4  5.0   22.3 6.1
## 5  Irlanda      23.2 1.0 20.7 1.3  7.5 16.8  2.8   20.8 6.1
## 6  Italia       15.9 0.6 27.6 0.5 10.0 18.1  1.6   20.1 5.7
## 7  Luxemburgo    7.7 3.1 30.8 0.8  9.2 18.5  4.6   19.2 6.2
## 8  Holanda       6.3 0.1 22.5 1.0  9.9 18.0  6.8   28.5 6.8
## 9  Reino Unido   2.7 1.4 30.2 1.4  6.9 16.9  5.7   28.3 6.4
## 10 Austria      12.7 1.1 30.2 1.4  9.0 16.8  4.9   16.8 7.0
## 11 Finlandia    13.0 0.4 25.9 1.3  7.4 14.7  5.5   24.3 7.6
## 12 Grecia       41.4 0.6 17.6 0.6  8.1 11.5  2.4   11.0 6.7
## 13 Noruega       9.0 0.5 22.4 0.8  8.6 16.9  4.7   27.6 9.4
## 14 Portugal     27.8 0.3 24.5 0.6  8.4 13.3  2.7   16.7 5.7
## 15 Espaa       22.9 0.8 28.5 0.7 11.5  9.7  8.5   11.8 5.5
## 16 Suecia        6.1 0.4 25.9 0.8  7.2 14.4  6.0   32.4 6.8
## 17 Suiza         7.7 0.2 37.8 0.8  9.5 17.5  5.3   15.4 5.7
## 18 Turqua      66.8 0.7  7.9 0.1  2.8  5.2  1.1   11.9 3.2
## 19 Bulgaria     23.6 1.9 32.3 0.6  7.9  8.0  0.7   18.2 6.7
## 20 Checoslovaqu 16.5 2.9 35.5 1.2  8.7  9.2  0.9   17.9 7.0
## 21 Alemania E    4.2 2.9 41.2 1.3  7.6 11.2  1.2   22.1 8.4
## 22 Hungra       21.7 3.1 29.6 1.9  8.2  9.4  0.9   17.2 8.0
## 23 Polonia       31.1 2.5 25.7 0.9  8.4  7.5  0.9   16.1 6.9
## 24 Rumana       34.7 2.1 30.1 0.6  8.7  5.9  1.3   11.7 5.0
## 25 Rusia         23.7 1.4 25.8 0.6  9.2  6.1  0.5   23.6 9.3
## 26 Yugoslavia    48.7 1.5 16.8 1.1  4.9  6.4 11.3    5.3 4.0
```

Ejercicio 8 y 9

```
coches.csv <- read.csv("coches.csv", header = T); coches.csv

##     consumo motor  cv peso acel a.o origen cilindr derivada
## 1        13  5031 130 1168 12.0  70      1       8        0
## 2        16  5735 165 1231 11.5  70      1       8        0
```

```
## 3        13  5211 150 1145 11.0  70      1       8        0
## 4        15  4982 150 1144 12.0  70      1       8        0
## 5        14  4949 140 1149 10.5  70      1       8        0
## 6        16  7030 198 1447 10.0  70      1       8        0
## 7        17  7440 220 1451  9.0  70      1       8        0
## 8        17  7210 215 1437  8.5  70      1       8        0
## 9        17  7456 225 1475 10.0  70      1       8        0
## 10       16  6391 190 1283  8.5  70      1       8        0
## 11       NA  2179 115 1030 17.5  70      2       4        1
## 12       NA  5735 165 1380 11.5  70      1       8        0
## 13       NA  5752 153 1344 11.0  70      1       8        0
## 14       NA  6276 175 1388 10.5  70      1       8        0
## 15       NA  5899 175 1283 11.0  70      1       8        0
## 16       16  6276 170 1187 10.0  70      1       8        0
## 17       17  5572 160 1203  8.0  70      1       8        0
## 18       NA  4949 140 1117  8.0  70      1       8        0
## 19       16  6555 150 1253  9.5  70      1       8        0
## 20       17  7456 225 1028 10.0  70      1       8        0
## 21       10  1852  95  790 15.0  70      3       4        1
## 22       11  3245  95  944 15.5  70      1       6        1
## 23       13  3261  97  924 15.5  70      1       6        1
## 24       11  3277  85  862 16.0  70      1       6        1
## 25        9  1590  88  710 14.5  70      3       4        1
## 26        9  1590  46  611 20.5  70      2       4        1
## 27        9  1803  87  890 17.5  70      2       4        1
## 28       10  1753  90  810 14.5  70      2       4        1
## 29        9  1704  95  791 17.5  70      2       4        1
## 30        9  1983 113  744 12.5  70      2       4        1
## 31       11  3261  90  882 15.0  70      1       6        1
## 32       24  5899 215 1538 14.0  70      1       8        0
## 33       24  5031 200 1458 15.0  70      1       8        0
## 34       21  5211 210 1460 13.5  70      1       8        0
## 35       26    66  93  244  8.5   0     NA      NA       NA
## 36        9  1590  88  710 14.5  71      3       4        1
## 37        8  2294  90  754 15.5  71      1       4        1
## 38        9  1852  95  742 14.0  71      3       4        1
## 39        9  1606  NA  682 19.0  71      1       4        1
## 40       NA  1590  48  659 20.0  71      2       4        1
## 41       12  3802 100  878 13.0  71      1       6        1
## 42       15  3687 105 1146 15.5  71      1       6        1
## 43       14  4097 100 1109 15.5  71      1       6        1
## 44       12  4097  88 1100 15.5  71      1       6        1
## 45       13  3802 100 1096 15.5  71      1       6        1
## 46       17  5735 165 1403 12.0  71      1       8        0
## 47       17  6555 175 1488 11.5  71      1       8        0
```

```
## 48       17  5752 153 1384 13.5  71      1       8        0
## 49       17  5211 150 1365 13.0  71      1       8        0
## 50       20  6276 180 1651 11.5  71      1       8        0
## 51       18  6555 170 1582 12.0  71      1       8        0
## 52       18  6555 175 1713 12.0  71      1       8        0
## 53       13  4228 110  987 13.5  71      1       6        1
## 54       11  2294  72  802 19.0  71      1       4        1
## 55       12  4097 100 1094 15.0  71      1       6        1
## 56       13  4097  88 1046 14.5  71      1       6        1
## 57       10  1999  86  740 14.0  71      1       4        1
## 58        8  1901  90  707 14.0  71      2       4        1
## 59        8  1295  70  691 19.5  71      2       4        1
## 60        8  1442  76  688 14.5  71      2       4        1
## 61        8  1163  65  591 19.0  71      3       4        1
## 62        7  1180  69  537 18.0  71      3       4        1
## 63        9  1590  60  611 19.0  71      2       4        1
## 64        9  1491  70  651 20.5  71      1       4        1
## 65       10  1852  95  759 15.5  72      3       4        1
## 66        9  1598  80  708 17.0  72      1       4        1
## 67       10  1590  54  751 23.5  72      2       4        1
## 68       12  2294  90  802 19.5  72      1       4        1
## 69       11  1999  86  742 16.5  72      1       4        1
## 70       18  5735 165 1424 12.0  72      1       8        0
## 71       17  6555 175 1461 12.0  72      1       8        0
## 72       16  5211 150 1378 13.5  72      1       8        0
## 73       17  5752 153 1376 13.0  72      1       8        0
## 74       14  4982 150 1224 11.5  72      1       8        0
## 75       21  7030 208 1544 11.0  72      1       8        0
## 76       18  5735 155 1500 13.5  72      1       8        0
## 77       20  5735 160 1485 13.5  72      1       8        0
## 78       18  6555 190 1474 12.5  72      1       8        0
## 79       12  1147  97  776 13.5  72      3       3        1
## 80       16  4982 150 1297 12.5  72      1       8        0
## 81       18  5031 130 1366 14.0  72      1       8        0
## 82       18  4949 140 1431 16.0  72      1       8        0
## 83       17  5211 150 1359 14.0  72      1       8        0
## 84       13  1983 112  977 14.5  72      2       4        1
## 85       11  1983  76  837 18.0  72      2       4        1
## 86       11  1966  87  993 19.5  72      2       4        1
## 87        9  1573  69  729 18.0  72      2       4        1
## 88       11  1999  86  798 16.0  72      1       4        1
## 89        8  1590  92  762 17.0  72      3       4        1
## 90       10  1966  97  835 14.5  72      3       4        1
## 91        8  1606  80  721 15.0  72      1       4        1
## 92        9  1590  88  700 16.5  72      3       4        1
```

```
## 93       18  5735 175 1366 13.0  73      1       8        0
## 94       17  4982 150 1224 11.5  73      1       8        0
## 95       18  5735 145 1329 13.0  73      1       8        0
## 96       17  4949 137 1347 14.5  73      1       8        0
## 97       16  5211 150 1259 12.5  73      1       8        0
## 98       20  7030 198 1650 11.5  73      1       8        0
## 99       18  6555 150 1488 12.0  73      1       8        0
## 100      18  5752 158 1454 13.0  73      1       8        0
## 101      17  5211 150 1412 14.5  73      1       8        0
## 102      18  7210 215 1578 11.0  73      1       8        0
## 103      20  7456 225 1650 11.0  73      1       8        0
## 104      18  5899 175 1273 11.0  73      1       8        0
## 105      13  3687 105 1040 16.5  73      1       6        1
## 106      15  4097 100 1092 18.0  73      1       6        1
## 107      13  3802 100  981 16.0  73      1       6        1
## 108      13  4097  88 1007 16.5  73      1       6        1
## 109      10  3245  95  968 16.0  73      1       6        1
## 110       9  1590  46  650 21.0  73      2       4        1
## 111      21  6555 150 1665 14.0  73      1       8        0
## 112      20  6555 167 1635 12.5  73      1       8        0
## 113      18  5899 170 1551 13.0  73      1       8        0
## 114      20  5735 180 1499 12.5  73      1       8        0
## 115      13  3802 100  929 15.0  73      1       6        1
## 116      12  1590  88  759 19.0  73      3       4        1
## 117      11  2294  72  800 19.5  73      1       4        1
## 118      11  1770  94  793 16.5  73      3       4        1
## 119      13  1147  90  708 13.5  73      3       3        1
## 120      12  1999  85  770 18.5  73      1       4        1
## 121      11  2540 107  824 14.0  73      1       6        1
## 122       9  1606  90  755 15.5  73      2       4        1
## 123      16  5735 145 1360 13.0  73      1       8        0
## 124      15  6555 230 1426  9.5  73      1       8        0
## 125       8  1114  49  622 19.5  73      2       4        1
## 126      10  1901  75  719 15.5  73      2       4        1
## 127      12  1868  91  860 14.0  73      2       4        1
## 128      12  1983 112  956 15.5  73      2       4        1
## 129      16  5211 150 1133 11.0  73      1       8        0
## 130      10  1983 110  886 14.0  73      2       4        1
## 131      12  2556 122  935 13.5  73      3       6        1
## 132      21  5735 180 1221 11.0  73      1       8        0
## 133      12  3245  95 1034 16.5  74      1       6        1
## 134      11  3277  NA  958 17.0  74      1       6        1
## 135      12  3802 100  967 16.0  74      1       6        1
## 136      16  4097 100 1112 17.0  74      1       6        1
## 137       8  1295  67  650 19.0  74      3       4        1
```

```
## 138       9  1999  80  817 16.5  74       1       4        1
## 139       7  1163  65  612 21.0  74       3       4        1
## 140       9  2294  75  847 17.0  74       1       4        1
## 141      15  4097 100 1260 17.0  74       1       6        1
## 142      15  4228 110 1210 18.0  74       1       6        1
## 143      13  3687 105 1204 16.5  74       1       6        1
## 144      15  4949 140 1380 14.0  74       1       8        0
## 145      18  5735 150 1566 14.5  74       1       8        0
## 146      17  5211 150 1485 13.5  74       1       8        0
## 147      17  4949 140 1546 16.0  74       1       8        0
## 148      17  4982 150 1419 15.5  74       1       8        0
## 149       8  1606  83  739 16.5  74       2       4        1
## 150       9  1295  67  654 15.5  74       2       4        1
## 151       9  1590  78  766 14.5  74       2       4        1
## 152       8  1245  52  549 16.5  74       3       4        1
## 153       7  1360  61  667 19.0  74       3       4        1
## 154       8  1475  75  708 14.5  74       1       4        1
## 155      10  1475  75  702 15.5  74       2       4        1
## 156       9  1901  75  748 14.0  74       2       4        1
## 157      10  1966  97  829 15.0  74       3       4        1
## 158       9  1770  93  797 15.5  74       3       4        1
## 159       8  1295  67  666 16.0  74       2       4        1
## 160      12  3687  95 1088 16.0  75       1       6        1
## 161      13  4097 105 1153 16.0  75       1       6        1
## 162      16  4097  72 1144 21.0  75       1       6        1
## 163      16  4097  72 1052 19.5  75       1       6        1
## 164      15  6555 170 1556 11.5  75       1       8        0
## 165      16  5735 145 1480 14.0  75       1       8        0
## 166      15  5211 150 1499 14.5  75       1       8        0
## 167      17  5752 148 1552 13.5  75       1       8        0
## 168      14  3785 110 1302 21.0  75       1       6        1
## 169      15  4097 105 1299 18.5  75       1       6        1
## 170      16  4228 110 1243 19.0  75       1       6        1
## 171      13  3687  95 1261 19.0  75       1       6        1
## 172      11  3785 110 1013 15.0  75       1       6        1
## 173      12  4293 110 1073 13.5  75       1       8        0
## 174      18  4949 129 1056 12.0  75       1       8        0
## 175       8  1590  75  723 16.0  75       3       4        1
## 176      10  2294  83  879 17.0  75       1       4        1
## 177      12  3802 100  971 16.0  75       1       6        1
## 178      10  2294  78  864 18.5  75       1       4        1
## 179      10  2196  96  900 13.5  75       3       4        1
## 180       9  1475  71  741 16.5  75       2       4        1
## 181      10  1950  97  848 17.0  75       3       4        1
## 182      13  2802  97  994 14.5  75       1       6        1
```

```
## 183       8  1475  70  645 14.0  75       2       4        1
## 184      12  3802  90 1070 17.0  75       1       6        1
## 185      10  1885  95  898 15.0  75       2       4        1
## 186      10  1966  88  985 17.0  75       2       4        1
## 187      11  1983  98  981 14.5  75       2       4        1
## 188       9  1983 115  890 13.5  75       2       4        1
## 189       7  1491  53  598 17.5  75       3       4        1
## 190       8  1753  86  821 15.5  76       2       4        1
## 191       9  1901  81  740 16.9  76       2       4        1
## 192       9  2294  92  857 14.9  76       1       4        1
## 193       9  1606  79  751 17.7  76       1       4        1
## 194       9  1655  83  734 15.3  76       2       4        1
## 195      13  4998 140 1405 13.0  76       1       8        0
## 196      15  5211 150 1396 13.0  76       1       8        0
## 197      15  4982 120 1320 13.9  76       1       8        0
## 198      16  5752 152 1405 12.8  76       1       8        0
## 199      11  3687 100 1077 15.4  76       1       6        1
## 200      11  4097 105 1117 14.5  76       1       6        1
## 201      10  3277  81 1004 17.6  76       1       6        1
## 202      10  3802  90 1028 17.6  76       1       6        1
## 203       8  1393  52  678 22.2  76       1       4        1
## 204      10  1606  60  721 22.1  76       1       4        1
## 205       8  1475  70  645 14.2  76       2       4        1
## 206       7  1491  53  598 17.4  76       3       4        1
## 207      12  3687 100 1217 17.7  76       1       6        1
## 208      13  4097  78 1191 21.0  76       1       6        1
## 209      13  4097 110 1215 16.2  76       1       6        1
## 210      13  4228  95 1064 17.8  76       1       6        1
## 211       8  1590  71  608 12.2  76       2       4        1
## 212       7  1393  70  663 17.0  76       3       4        1
## 213       8  1590  75  718 16.4  76       3       4        1
## 214       9  2294  72  855 13.6  76       1       4        1
## 215      12  2130 102 1050 15.7  76       2       4        1
## 216      18  5211 150 1313 13.2  76       1       8        0
## 217      12  1966  88 1090 21.9  76       2       4        1
## 218      12  2556 108  976 15.5  76       3       6        1
## 219      14  2753 120 1273 16.7  76       2       6        1
## 220      14  5735 180 1460 12.1  76       1       8        0
## 221      18  5735 145 1351 12.0  76       1       8        0
## 222      18  4949 130 1290 15.0  76       1       8        0
## 223      18  5211 150 1251 14.0  76       1       8        0
## 224       7  1606  68  681 18.5  77       3       4        1
## 225       8  1819  80  718 14.8  77       1       4        1
## 226       7  1295  58  608 18.6  77       2       4        1
## 227       9  1999  96  766 15.5  77       1       4        1
```

```
## 228       7  1393  70  648 16.8  77       3       4        1
## 229      13  4998 145 1293 12.5  77       1       8        0
## 230      14  4261 110 1353 19.0  77       1       8        0
## 231      15  5211 145 1380 13.7  77       1       8        0
## 232      16  4949 130 1431 14.9  77       1       8        0
## 233      13  4097 110 1173 16.4  77       1       6        1
## 234      12  3785 105 1141 16.9  77       1       6        1
## 235      12  3687 100 1210 17.7  77       1       6        1
## 236      13  4097  98 1175 19.0  77       1       6        1
## 237      15  6555 180 1406 11.1  77       1       8        0
## 238      15  5735 170 1388 11.4  77       1       8        0
## 239      15  6555 190 1441 12.2  77       1       8        0
## 240      15  5752 149 1445 14.5  77       1       8        0
## 241       8  1590  78  646 14.5  77       2       4        1
## 242      10  2474  88  913 16.0  77       1       4        1
## 243       9  1590  75  755 18.2  77       3       4        1
## 244       9  2294  89  918 15.8  77       1       4        1
## 245       8  1606  63  683 17.0  77       1       4        1
## 246       7  1606  83  691 15.9  77       1       4        1
## 247       8  1590  67  661 16.4  77       3       4        1
## 248       8  1590  78  730 14.1  77       2       4        1
## 249      11  2393  97  938 14.5  77       3       6        1
## 250      11  1983 110  866 12.8  77       2       4        1
## 251      11  1311 110  906 13.5  77       3       3       NA
## 252       5  1475  48  661 21.5  78       2       4        1
## 253       7  1606  66  600 14.4  78       1       4        1
## 254       7  1278  52  661 19.4  78       3       4        1
## 255       6  1393  70  690 18.6  78       3       4        1
## 256       7  1491  60  600 16.4  78       3       4        1
## 257      12  4261 110 1121 15.5  78       1       8        0
## 258      12  5211 140 1245 13.2  78       1       8        0
## 259      12  4949 139 1190 12.8  78       1       8        0
## 260      12  3785 105 1178 19.2  78       1       6        1
## 261      12  3277  95 1051 18.2  78       1       6        1
## 262      12  3277  85  988 15.8  78       1       6        1
## 263       9  2294  88  906 15.4  78       1       4        1
## 264      12  3687 100 1143 17.2  78       1       6        1
## 265      12  3802  90 1070 17.2  78       1       6        1
## 266      11  3785 105 1126 15.8  78       1       6        1
## 267      11  3277  85 1023 16.7  78       1       6        1
## 268      13  3687 110 1206 18.7  78       1       6        1
## 269      13  4228 120 1136 15.1  78       1       6        1
## 270      12  4998 145 1141 13.2  78       1       8        0
## 271      13  3785 165 1148 13.4  78       1       6        1
## 272      13  4949 139 1068 11.2  78       1       8        0
```

```
## 273      13  5211 140 1360 13.7  78      1       8        0
## 274       8  1606  68  718 16.5  78      1       4        1
## 275       9  2196  95  853 14.2  78      3       4        1
## 276       9  1950  97  766 14.7  78      3       4        1
## 277       8  1721  75  743 14.5  78      1       4        1
## 278      11  2196  95  838 14.8  78      3       4        1
## 279      10  2556 105  915 16.7  78      1       4        1
## 280      10  2474  85  951 17.6  78      1       4        1
## 281      10  1950  97  801 14.9  78      3       4        1
## 282      12  2147 103  943 15.9  78      2       5        1
## 283      14  2671 125 1046 13.6  78      2       6        1
## 284      11  1983 115  931 15.7  78      2       4        1
## 285      15  2671 133 1136 15.8  78      2       6        1
## 286       7  1458  71  663 14.9  78      2       4        1
## 287       8  1606  68  711 16.6  78      3       4        1
## 288      11  3785 115 1081 15.4  79      1       6        1
## 289      12  3277  85  996 18.2  79      1       6        1
## 290      11  2294  88  963 17.3  79      1       4        1
## 291      12  3802  90 1088 18.2  79      1       6        1
## 292      11  3687 110 1120 16.6  79      1       6        1
## 293      14  4998 130 1280 15.4  79      1       8        0
## 294      13  4949 129 1241 13.4  79      1       8        0
## 295      14  5752 138 1318 13.2  79      1       8        0
## 296      13  5211 135 1276 15.2  79      1       8        0
## 297      14  5735 155 1453 14.9  79      1       8        0
## 298      15  5752 142 1351 14.3  79      1       8        0
## 299      12  4375 125 1201 15.0  79      1       8        0
## 300      13  5899 150 1313 13.0  79      1       8        0
## 301       7  1458  71  641 14.0  79      2       4        1
## 302       7  1409  65  658 15.2  79      3       4        1
## 303       7  1606  80  638 14.4  79      1       4        1
## 304       9  1983  80  890 15.0  79      1       4        1
## 305       9  2999  77 1176 20.1  79      2       5        1
## 306      10  5735 125 1300 17.4  79      1       8        0
## 307       9  2311  71 1063 24.8  79      2       4        1
## 308      10  4261  90 1140 22.2  79      1       8        0
## 309       7  1721  70  733 13.2  79      1       4        1
## 310       7  1721  70  716 14.9  79      1       4        1
## 311       7  1393  65  673 19.2  79      3       4        1
## 312       6  1491  69  710 14.7  79      2       4        1
## 313       8  2474  90  890 16.0  79      1       4        1
## 314       8  2835 115  865 11.3  79      1       6        1
## 315       9  2835 115  900 12.9  79      1       6        1
## 316       7  2474  90  852 13.2  79      1       4        1
## 317       6  1606  76  714 14.7  80      2       4        1
```

```
## 318       6  1458  60  656 18.8  80       3       4         1
## 319       7  1606  70  706 15.5  80       1       4         1
## 320       6  1409  65  673 16.4  80       3       4         1
## 321       8  2474  90  892 16.5  80       1       4         1
## 322       9  2294  88  956 18.1  80       1       4         1
## 323      10  2474  90 1001 20.1  80       1       4         1
## 324      12  3687  90 1127 18.7  80       1       6         1
## 325       7  1590  78  729 15.8  80       2       4         1
## 326       8  2196  90  903 15.5  80       3       4         1
## 327       8  1966  75  847 17.5  80       3       4         1
## 328       6  1950  92  811 15.0  80       3       4         1
## 329       7  1770  75  755 15.2  80       3       4         1
## 330       5  1409  65  703 17.9  80       3       4         1
## 331       8  2556 105  933 14.4  80       1       4         1
## 332       6  1393  65  703 19.2  80       3       4         1
## 333       5  1475  48  695 21.7  80       2       4         1
## 334       5  1475  48  778 23.7  80       2       4         1
## 335       6  1983  67  983 19.9  80       2       5         1
## 336       8  2393  67 1083 21.8  80       2       4         1
## 337       5  1491  67  616 13.8  80       3       4         1
## 338       6  1393  NA  611 17.3  80       2       4         1
## 339       7  1590  67  715 18.0  80       3       4         1
## 340       8  1458  62  615 15.3  80       2       4         1
## 341       7  2753 132  970 11.4  80       3       6         1
## 342      10  1147 100  806 12.5  80       3       3         1
## 343       7  1999  88  833 15.1  80       2       4         1
## 344      10  2294  NA  968 14.3  80       1       4         1
## 345       7  1753  72  763 17.0  80       3       4         1
## 346       9  2212  84  830 15.7  81       1       4         1
## 347       9  2474  84  878 16.4  81       1       4         1
## 348       9  2556  92  873 14.4  81       1       4         1
## 349      10  2835 110  908 12.6  81       1       6         1
## 350       8  2212  84  795 12.9  81       1       4         1
## 351       6  1295  58  585 16.9  81       3       4         1
## 352       6  1409  64  625 16.4  81       1       4         1
## 353       7  1327  60  586 16.1  81       3       4         1
## 354       7  1590  67  688 17.8  81       3       4         1
## 355       6  1393  65  658 19.4  81       3       4         1
## 356       6  1458  62  683 17.3  81       3       4         1
## 357       7  1491  68  661 16.0  81       3       4         1
## 358       7  1721  63  738 14.9  81       1       4         1
## 359       7  1606  65  681 16.2  81       1       4         1
## 360       8  1606  65  793 20.7  81       1       4         1
## 361       7  1721  74  730 14.2  81       2       4         1
## 362       7  1639  NA  773 15.8  81       2       4         1
```

```
## 363       7  1753  75  736 14.4  81       3       4        1
## 364       7  1770  75  783 16.8  81       3       4        1
## 365       7  1950 100  871 14.8  81       3       4        1
## 366       7  1966  74  878 18.3  81       3       4        1
## 367       8  2311  80 1076 20.4  81       2       4        1
## 368      NA  1983 110  933 15.4  81       2       4        1
## 369       8  2376  76 1053 19.6  81       2       6        1
## 370       9  2753 116  966 12.6  81       3       6        1
## 371      10  2393 120  976 13.8  81       3       6        1
## 372      11  3785 110 1138 15.8  81       1       6        1
## 373       9  5735 105 1241 19.0  81       1       8        0
## 374      12  3277  88 1020 17.1  81       1       6        1
## 375      13  3687  85 1155 16.6  81       1       6        1
## 376       8  1835  88  868 19.6  82       1       4        1
## 377       9  1835  88  880 18.6  82       1       4        1
## 378       7  1835  88  798 18.0  82       1       4        1
## 379       8  1835  85  858 16.2  82       1       4        1
## 380       8  2212  84  841 16.0  82       1       4        1
## 381       9  2474  90  911 18.0  82       1       4        1
## 382      10  2294  92  955 16.4  82       1       4        1
## 383      10  2474  NA 1011 20.5  82       1       4        1
## 384       7  1721  74  660 15.3  82       2       4        1
## 385       6  1491  68  675 18.2  82       3       4        1
## 386       8  1491  68  656 17.6  82       3       4        1
## 387       6  1721  63  708 14.7  82       1       4        1
## 388       7  1606  70  708 17.3  82       1       4        1
## 389       7  1966  88  720 14.5  82       3       4        1
## 390       7  1753  75  735 14.5  82       3       4        1
## 391       7  1770  70  748 16.9  82       3       4        1
## 392       6  1491  67  655 15.0  82       3       4        1
## 393       7  1491  67  655 15.7  82       3       4        1
## 394       6  1491  67  665 16.2  82       3       4        1
## 395       9  2966 110  981 16.4  82       1       6        1
## 396       6  4293  85 1005 17.0  82       1       6        1
## 397       9  2556  92  861 14.5  82       1       4        1
## 398      11  3802 112  945 14.7  82       1       6        1
## 399       7  2360  96  888 13.9  82       3       4        1
## 400       7  2212  84  790 13.0  82       1       4        1
## 401       9  2474  90  983 17.3  82       1       4        1
## 402       9  2294  86  930 15.6  82       1       4        1
## 403       5  1590  52  710 24.6  82       2       4        1
## 404       7  2212  84  765 11.6  82       1       4        1
## 405       8  1966  79  875 18.6  82       1       4        1
## 406       8  1950  82  906 19.4  82       1       4        1
```

Ejercicio 10

```r
serie <- read.table(file = "series.txt", header = TRUE,sep = "\t", dec = ".");serie
```

```
##     t Serie.1 Serie.3 Serie.4 t.1 Serie.1.1 Serie.3.1 Serie.4.1
## 1   1    6,58    3,66   13,36  31      5,91      28,3      8,09
## 2   2    5,11    3,99   10,73  32      6,48     29,95      9,68
## 3   3    6,32    5,02    9,29  33      6,07      3,19     12,31
## 4   4    6,36    6,44   10,82  34      6,72     33,13     10,82
## 5   5    5,88    7,51   13,24  35       5,9     34,48      8,95
## 6   6     5,7    8,21    11,2  36      6,04     35,69     10,15
## 7   7    6,18    9,26    9,59  37      6,41     37,26     13,26
## 8   8    5,28    9,48      10  38      6,48     39,08     11,58
## 9   9     6,1   10,21   12,87  39         6     40,49      9,82
## 10 10    5,74   10,78   10,77  40      6,35     42,09     11,37
## 11 11     5,1   11,57    8,99  41      5,81     43,17     13,82
## 12 12    6,08   12,55   10,18  42      6,32     44,58     12,69
## 13 13    6,28   13,86   13,12  43      6,41     46,24     10,91
## 14 14     5,4   14,34   10,54  44      6,67     48,32     12,08
## 15 15    5,72   14,77    8,53  45      5,53     49,34     14,81
## 16 16    6,35   25,88   10,11  46       5,6      49,9     12,51
## 17 17    6,15    17,1    12,9  47      5,93      50,6     10,93
## 18 18    5,74   10,91   10,57  48      4,89     51,45     12,31
## 19 19    6,44   19,31    9,27  49      5,83     52,18     14,67
## 20 20    6,09   20,62   10,48  50      5,31     52,28     11,61
## 21 21    6,33   22,13   13,54  51       6,6      55,5     11,15
## 22 22    5,68   23,04   11,05  52      5,42     53,96     11,63
## 23 23    5,95   23,93    9,32  53         6     54,69     14,38
## 24 24    5,98   24,87   10,52  54       5,7     55,21     11,86
## 25 25    5,08   25,83   13,32  55      6,26     56,27     10,08
## 26 26    5,36   26,09   10,45  56      6,15     57,46     12,12
## 27 27    6,62   27,42    9,54  57      5,65     58,16     14,23
## 28 28    5,32   27,82    9,84  58      5,28      58,2     11,26
## 29 29     5,3   27,73      12  59      6,68     59,48     10,83
## 30 30    5,89   28,06    9,74  60      5,94     60,56     11,84
```