Taller 1 de R: Introducción

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Crear objetos simples/introducir datos

```
> z <- scan()#dos veces enter para terminar
> z

numeric(0)

> x <- c(3,8,9,6,4,5)
> x

[1] 3 8 9 6 4 5

> w <- 1:10
> w

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

> y <- seq(1, 20, 2)
> y

 [1]  1  3  5  7  9 11 13 15 17 19

> u<-rep(1,7)
> u

[1] 1 1 1 1 1 1 1

> u<-rep(c(1,2),c(3,4))
> u

[1] 1 1 1 2 2 2 2

> t<- rep(c(3,4),c(3,4))
> t

[1] 3 3 3 4 4 4 4

> c(u,t)

 [1] 1 1 1 2 2 2 2 3 3 3 4 4 4 4
```

```
> ut1<-cbind(u,t) #combinar columnas
> ut1

     u t
[1,] 1 3
[2,] 1 3
[3,] 1 3
[4,] 2 4
[5,] 2 4
[6,] 2 4
[7,] 2 4

> ut2<-rbind(u,t) #combinar filas
> ut2

  [,1] [,2] [,3] [,4] [,5] [,6] [,7]
u    1    1    1    2    2    2    2
t    3    3    3    4    4    4    4

> class(ut2)

[1] "matrix"

> x <- rnorm(1000, mean = 3, sd = 2)
> x[1:100]

  [1]  2.56111460  3.85379095  3.15448724  2.41069839  2.87444125  0.11021609
  [7]  4.40477398  3.86132323  3.66714581  4.85650561  6.10525017  6.20387196
 [13]  3.39661337  4.44973622 -0.16186874 -0.98532386 -0.40482408 -0.48955249
 [19]  3.99422262  3.96570702 -3.14551569  3.71508328  4.80787999  5.82196390
 [25]  1.34382563  3.37536147  4.12683464  4.81139558  1.66383565  2.92062566
 [31]  5.30756501  3.10942493  2.10029265  1.47857567  4.20792237  4.58032372
 [37]  5.73413997  3.76897840 -1.81395547  0.22084372  6.51798969  4.61462516
 [43]  4.03647706  4.02900274  4.98492443  2.24116516  1.65942604  1.23955862
 [49] -0.07534158  0.89938104  3.21074909  3.84305045  1.07313648  5.43704191
 [55]  5.64784669  1.08257059  4.64251217  2.89846766  4.57528510  4.00842053
 [61]  2.77577775  3.23799516  2.98299777  3.47226448  0.61878748 -0.72991612
 [67]  1.24202774  3.05766293  4.78057154  1.55353677  1.92121519  5.59421310
 [73]  4.37225854  3.81622194  3.51815860  0.31267980  4.47254862  4.06236107
 [79]  4.95431430  1.50565867  2.08581222  1.81552873  5.93884805  2.95011441
 [85]  3.61500285  4.28170109 -0.31792350  2.05540166  2.53229283  2.87861912
 [91]  6.04567254  5.54973099  2.54508682  2.53746653 -0.33287638  4.55004979
 [97]  5.35960760  0.41231333 -0.85030353  2.97848609

> x1 <- matrix(x,nrow = 10, ncol = 100)
> x1

           [,1]       [,2]      [,3]       [,4]        [,5]     [,6]       [,7]
 [1,] 2.5611146  6.1052502 -3.145516  5.3075650  6.51798969 3.210749  2.7757778
 [2,] 3.8537909  6.2038720  3.715083  3.1094249  4.61462516 3.843050  3.2379952
```

```
 [3,] 3.1544872  3.3966134  4.807880  2.1002926  4.03647706 1.073136  2.9829978
 [4,] 2.4106984  4.4497362  5.821964  1.4785757  4.02900274 5.437042  3.4722645
 [5,] 2.8744413 -0.1618687  1.343826  4.2079224  4.98492443 5.647847  0.6187875
 [6,] 0.1102161 -0.9853239  3.375361  4.5803237  2.24116516 1.082571 -0.7299161
 [7,] 4.4047740 -0.4048241  4.126835  5.7341400  1.65942604 4.642512  1.2420277
 [8,] 3.8613232 -0.4895525  4.811396  3.7689784  1.23955862 2.898468  3.0576629
 [9,] 3.6671458  3.9942226  1.663836 -1.8139555 -0.07534158 4.575285  4.7805715
[10,] 4.8565056  3.9657070  2.920626  0.2208437  0.89938104 4.008421  1.5535368
          [,8]       [,9]      [,10]     [,11]      [,12]      [,13]
 [1,] 1.9212152  2.0858122  6.0456725  3.591503  6.4413087  9.0336410
 [2,] 5.5942131  1.8155287  5.5497310  5.631118  1.4964230  2.7207993
 [3,] 4.3722585  5.9388480  2.5450868  5.390613  2.6285990  2.1384028
 [4,] 3.8162219  2.9501144  2.5374665  1.489616 -1.9586605  2.2648420
 [5,] 3.5181586  3.6150028 -0.3328764  3.675413  2.4672647  3.4333489
 [6,] 0.3126798  4.2817011  4.5500498  4.552462  0.8158206 -0.6140704
 [7,] 4.4725486 -0.3179235  5.3596076  5.742706  3.4215919  3.5082035
 [8,] 4.0623611  2.0554017  0.4123133  2.581715  2.6547805  4.1761980
 [9,] 4.9543143  2.5322928 -0.8503035 -1.652388  2.5484340  2.0878456
[10,] 1.5056587  2.8786191  2.9784861  1.719980  4.9006589  3.5052434
          [,14]      [,15]     [,16]      [,17]      [,18]      [,19]
 [1,]  1.1860684  4.5537869 4.2464626  2.1590817  3.8777608  1.4886807
 [2,]  2.4021020  1.2379812 1.3756372  2.1513557  2.0466432  5.1007813
 [3,] -1.8900905  2.7687190 0.6622567  1.7289408  3.6439774  3.9607828
 [4,]  3.5125334 -0.4059785 1.8971143  0.4153081  4.0424636  4.0785341
 [5,]  4.1720053  0.2381163 2.9916155  2.9941185 -2.7089068 -0.1349118
 [6,] -0.4114086  1.0903024 2.9544499  4.1091280  1.0115421  3.0589187
 [7,]  1.5968933  3.4227213 2.7289480  3.9790476  4.5362233  4.6940851
 [8,] -0.0477907  1.9672284 7.5174059 -0.3195506  0.5167267  2.4328649
 [9,]  4.5147258  3.9426304 3.9121920  6.2319788  4.2667794  3.1693569
[10,]  4.1544503 -0.2977060 4.6570025  5.8978632  4.2460790  3.9946010
          [,20]      [,21]      [,22]        [,23]     [,24]       [,25]
 [1,]  4.3392077  3.2028992  3.3699168  0.980644564  6.182554 -1.67140104
 [2,]  4.9297164  5.2584606 -0.1860164  1.631518281  1.297733  0.32405886
 [3,]  3.6703190  5.5005215  3.7422841  0.813842148  4.077089 -0.04689916
 [4,]  2.3221539 -0.3797541 -1.4069629  2.115876624  6.173039  4.22871810
 [5,] -0.4315351 -0.1123220  4.1184731  5.748066958  4.665585  2.81869711
 [6,]  2.1337056  3.0156585  3.3790282  2.542882285  4.333938  3.25622815
 [7,]  0.3891301  2.3527938  1.7800971  5.548862285 -0.318293  5.92263833
 [8,]  5.3634770  2.1041336  2.1736473  0.008248433  3.998141  0.26300065
 [9,]  3.8486843  3.7203359  6.0178178 -0.213872492  2.503267  1.61325791
[10,]  0.8656118 -2.7671222  3.4892512  4.228557645  6.094756 -0.42527015
         [,26]    [,27]      [,28]    [,29]     [,30]    [,31]      [,32]
 [1,] 2.8110536 4.423103  1.5106151 3.521965 2.1132497 2.915036  0.7692814
 [2,] 4.9013972 3.894519 -0.5670711 6.807805 2.4334278 7.213398  2.8833758
 [3,] 3.1034764 1.473564  2.7956604 1.151584 5.5342759 3.196883  1.2619788
 [4,] 5.4832279 4.366508  3.4255521 2.581934 3.9461305 4.975751  5.4966378
 [5,] 1.3429147 5.969458  3.1731722 3.213533 5.5168043 1.133322  4.8643601
 [6,] 1.4921306 2.973971  5.4635433 1.381165 2.5712539 5.253464  5.8030642
 [7,] 0.1916696 3.190495  3.1016396 2.538023 0.2059412 3.594471  3.7035735
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 [8,] 4.2431058 3.551629 -1.1913158 2.545667 3.0526924 5.598010  2.4020879
 [9,] 6.9371455 4.953240  2.0283577 2.502104 2.2736391 3.301840 -0.3533241
[10,] 4.6136981 2.413908 -0.9878483 2.894824 3.4028048 4.615430  3.1906416
         [,33]    [,34]      [,35]     [,36]     [,37]    [,38]      [,39]
 [1,] 5.199902 2.702691  0.5063543 3.4520555 2.8447142 5.036287  2.3104693
 [2,] 2.582306 4.090962  5.6259920 2.8982686 2.2587693 2.704029  0.3635032
 [3,] 3.913898 5.157608 -0.6194393 3.7882118 6.3903744 3.784473  2.8007899
 [4,] 1.355205 4.715350  1.0555706 2.1773609 0.2201922 1.269916  3.3654042
 [5,] 1.341100 3.546627  2.6817819 4.5160566 4.2576803 3.670115  2.7373386
 [6,] 4.798167 6.891088 -1.3041725 0.6116682 1.7699054 4.512943  5.1602327
 [7,] 3.387553 1.958277  5.0414639 3.3922220 3.3806576 4.837977 -1.4909505
 [8,] 5.123356 4.516070  4.5736768 5.5966450 1.4190918 1.927640  4.8608016
 [9,] 1.315006 1.812175  3.7724950 3.4440052 2.0429800 3.957920  7.0197927
[10,] 6.212304 5.502668  1.3491719 0.2988391 1.6964739 6.014425  4.0006224
          [,40]      [,41]      [,42]     [,43]      [,44]      [,45]
 [1,]  7.8586079  1.6471052  2.5535540 4.0503538  0.8036630  0.6712869
 [2,]  2.7034093  6.0022567  4.9058222 2.2710795  0.8326031  4.1174625
 [3,]  2.4697140  4.0162617  1.6459874 3.8054743  1.1653822  5.6018163
 [4,] -2.2063183  1.1847433  3.0964350 3.3240736  3.1844537  3.7509242
 [5,]  5.7050435  6.2095629  3.4241388 0.4343341 -1.6383983 -0.4508676
 [6,] -1.6877476 -0.5335501 -0.9934756 2.3642571  4.2741506 -0.1657543
 [7,] -0.9687109  0.9669385  2.1415634 2.0386033  4.9377299  4.1277408
 [8,]  4.5098271  4.4707923  4.1070320 0.6346897  3.5501162  4.6416246
 [9,]  4.5763635  1.3464401  2.4411984 5.3201185  1.2868922  0.4114248
[10,]  3.5047360  1.6064036  4.8524214 5.5231859  1.6451291  4.1257533
          [,46]      [,47]     [,48]     [,49]      [,50]    [,51]    [,52]
 [1,] -2.0924728 0.8445307 6.506465 5.0476307  3.7594709 4.293937 1.268752
 [2,]  0.5431135 0.8635245 3.574424 6.0559166 -0.1774823 3.594071 3.837940
 [3,]  3.5378715 5.4288574 3.054778 2.7285715  0.5608479 3.261628 1.832161
 [4,]  5.7713656 1.4633108 1.859784 1.7279828  1.4131002 2.730532 5.254701
 [5,]  6.7307562 4.7857780 1.744302 1.2861848  4.2275707 4.768908 3.165609
 [6,]  2.9949625 3.0549009 1.868783 1.0758431  2.8455323 3.524903 5.427965
 [7,]  3.4879331 2.9245899 0.794835 3.9925446  2.4705896 2.265072 1.338063
 [8,]  6.9881958 3.9834765 4.175003 5.8598109  0.6707083 2.408726 2.577544
 [9,]  2.5150576 3.5254826 4.265261 0.8167103  6.1029450 5.167974 4.123823
[10,]  2.5198637 4.0143703 2.561657 2.1176234  6.1954209 2.303608 5.387793
          [,53]      [,54]     [,55]     [,56]       [,57]     [,58]      [,59]
 [1,]  1.1090609 2.2048024 1.3035984  2.981391  3.80551381  2.549257 1.06322226
 [2,]  3.6458497 3.3491388 1.8277403  5.566496 -0.36773697  3.441657 0.06523106
 [3,]  0.3057405 1.8263918 2.3248632 -1.647259  1.75081196  1.660565 3.03367900
 [4,]  2.4094650 4.2704764 1.1326924  2.134119  6.07106797  1.394163 2.32671273
 [5,]  3.1764873 4.0438403 1.7122426  3.038665  4.80412533  2.039743 4.35540938
 [6,] -1.6145589 2.6275032 3.4921234  3.119445  5.52902054  1.744598 5.12570503
 [7,]  0.3483337 5.5122591 5.6347744  6.410486  5.64749614 -1.777311 1.86176410
 [8,]  4.2955491 4.2608855 3.4097384  5.728537  0.83224788  2.918548 1.80916886
 [9,]  3.2235557 1.2736519 5.8853345  1.462221 -0.07804733  5.258417 4.10261831
[10,]  3.5718696 0.5972884 0.7167377  1.670947  2.76904976  5.343393 2.23220536
          [,60]     [,61]      [,62]     [,63]     [,64]      [,65]       [,66]
 [1,] -0.1914057 2.609442  5.9261061 2.493508 3.7591103  2.9060588  1.58331688
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 [2,]  3.9056264 2.837766  0.6932863 1.765800 4.5783321  3.9470130  5.16971970
 [3,]  0.9117581 4.077690  2.4334030 2.583734 3.7175694  3.6459899  3.52921408
 [4,]  3.9116950 4.677832  1.6092662 5.356139 1.9158899 -0.6539439  3.77278270
 [5,]  3.8170945 2.018645  3.2901743 3.546763 3.5926755 -0.3879259 -0.01154002
 [6,]  0.7040051 6.637065  2.4604267 3.216738 2.1020189  0.5888492  5.05174468
 [7,]  1.3115961 5.150987  3.9846694 4.118781 3.8389012  2.5073211  2.83453209
 [8,]  6.0512018 1.456203  3.0839020 5.992514 0.6374837  3.6963849  4.22247924
 [9,]  1.5951489 3.291233  3.0860051 2.775976 5.3299273  2.0509829  3.48678392
[10,]  4.4854200 5.449095 -0.1400702 1.148739 3.2786567  1.3361384  3.78240457
          [,67]       [,68]      [,69]      [,70]    [,71]       [,72]
 [1,]  6.1705977 -0.88764197  4.0935421  2.3471544 3.154553  2.69630146
 [2,]  0.2675718 -1.17712379  5.7540530 -1.4019800 5.133850  6.70366578
 [3,]  6.9954649  5.44073053  3.4438035  2.9246034 1.344066  4.63998559
 [4,]  3.2208626  3.51134500  0.8289881 -0.3582799 2.098877  3.99297491
 [5,]  5.2387276  2.11834009  7.5513285  3.2045487 1.154555  3.37383250
 [6,] -1.0674798  4.88611849  1.2832305  4.1708798 1.502545  4.04799173
 [7,] -2.5699223  2.96508939  3.5304961  3.9905596 5.536790  2.43215424
 [8,]  1.7381373  2.85055494  0.4392019  2.4493068 1.438594 -0.09917765
 [9,]  4.0273917 -0.02508687 -1.0771652  6.8331460 1.575632  1.31935694
[10,]  2.8260662  5.13803980  5.2824952  2.2628475 3.286388 -0.23387147
        [,73]      [,74]     [,75]     [,76]     [,77]     [,78]     [,79]
 [1,] 5.407116 -0.9823877 1.0676992 2.4817758  2.596316 2.3495459 2.9349605
 [2,] 2.987581  4.0584092 3.2979308 2.5028063  5.109571 1.6563953 0.2946113
 [3,] 3.196887  1.7270461 5.5323884 3.7588617  2.988372 0.4063546 2.8957863
 [4,] 5.106335  2.0838448 0.7621840 2.3820382 -1.679229 2.2923840 5.6372792
 [5,] 2.223592  5.4674219 2.5736383 1.9767742  3.512817 1.0802246 3.8315982
 [6,] 3.599622  4.1311085 1.1465520 0.3705952  1.995012 2.5969660 6.6911443
 [7,] 1.382956  5.2362150 1.4910713 4.6133166  1.767327 3.5408750 2.4763842
 [8,] 4.840120  3.0599426 5.1244100 2.5407972  3.045500 2.5016142 3.9187882
 [9,] 5.376818 -0.2908409 0.4645659 3.4638993  3.772612 0.7326979 6.0874327
[10,] 3.937664  6.0890706 3.3282534 3.0639858  1.525776 5.0857501 3.2805638
         [,80]     [,81]     [,82]      [,83]      [,84]       [,85]    [,86]
 [1,] 0.9557453  2.519228 3.1427301  5.7473377  3.7000310  2.02372445 4.426379
 [2,] 0.6135412  1.228945 4.1132693  3.7532523  3.2775301  0.09061365 4.503707
 [3,] 1.8295465  4.347747 2.8937693  3.5194234  4.3335064  0.19372212 4.424033
 [4,] 5.2410274  3.124544 0.7498398  8.2156232  3.8582001  2.81628248 4.651498
 [5,] 5.1979853 -0.546952 2.6709555  3.3120716  0.6162240 -2.69020050 2.973009
 [6,] 1.7886250  1.535100 4.9606697  1.3305005 -0.4233093  0.08615410 2.167448
 [7,] 3.6660219  3.037390 6.6752412  0.6346027  4.6281530  0.95764324 3.745055
 [8,] 5.0258943  2.085782 0.5561541 -0.3095950  6.3539027  1.90573703 5.703057
 [9,] 4.0643451  6.036859 2.0018769  2.4902424  7.4078063  6.87562108 3.869224
[10,] 4.3447607  4.675308 1.0686622  1.4137585  5.0532641  3.50882796 6.080676
           [,87]      [,88]     [,89]    [,90]    [,91]     [,92]     [,93]
 [1,]  4.28618705  5.5446934 2.5590698 3.461795 3.666884 0.4951779  1.546118
 [2,]  5.77873286  2.1824267 5.2272957 2.013614 5.270924 0.6707755  4.791321
 [3,] -0.94460131  0.3555313 3.3803565 3.255143 2.989326 2.0955659  3.921101
 [4,]  2.96960487  1.8984332 0.7333088 2.768462 2.886541 5.0457046 -1.427454
 [5,]  1.38227682  5.2596542 3.1676247 6.104650 7.274107 1.8010432  3.640301
 [6,]  0.87534901 -1.0046834 2.4622179 6.737699 1.629216 5.0949675  3.988569
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```
 [7,]  6.83683067  2.6973764 1.4507569 4.533989 5.172467 6.1446519  5.748791
 [8,]  0.07127109  6.2600546 5.5937626 3.192546 3.140158 2.5691404  2.690158
 [9,]  4.33268792  4.8271441 2.3157455 4.427754 3.271724 4.8963068  1.674417
[10,]  3.88598102  1.5404420 2.4570500 5.944129 2.691019 7.6710921  2.226169
          [,94]      [,95]     [,96]     [,97]     [,98]      [,99]   [,100]
 [1,] 6.0275287  0.3966866 3.9078465 4.1244006 4.4185008  5.7874798 3.229986
 [2,] 1.7603926  5.3188281 4.9676581 0.9155839 2.2789848  2.4684555 5.045520
 [3,] 3.1106421  0.1983853 5.0818381 3.6815179 4.0105293 -0.4522145 4.095133
 [4,] 5.7711708  5.9742077 7.0609733 1.8353901 2.8249552  4.2161689 3.487837
 [5,] 0.5514530  5.1675035 3.6488531 3.7402000 3.9590481  5.7147443 3.491862
 [6,] 0.1026763  0.9575835 1.4473432 1.9453549 1.8603631  3.1151363 5.354609
 [7,] 2.1631500 -0.4261425 5.2552333 2.1635841 1.5539951  4.3585833 3.173867
 [8,] 1.0272346  3.3493909 1.1870353 5.9698268 5.5885490  1.4823883 5.397284
 [9,] 4.7805700  2.9234440 0.6822874 3.5432254 0.3557679  0.4508903 3.575821
[10,] 2.6409330 -0.5308595 0.5746439 3.7070290 5.8040695  2.8974459 1.013915

> class(x1)

[1] "matrix"

> dim(x)

NULL

> x2<-as.data.frame(x1)
> x2

          V1         V2        V3         V4          V5       V6         V7
1  2.5611146  6.1052502 -3.145516  5.3075650  6.51798969 3.210749  2.7757778
2  3.8537909  6.2038720  3.715083  3.1094249  4.61462516 3.843050  3.2379952
3  3.1544872  3.3966134  4.807880  2.1002926  4.03647706 1.073136  2.9829978
4  2.4106984  4.4497362  5.821964  1.4785757  4.02900274 5.437042  3.4722645
5  2.8744413 -0.1618687  1.343826  4.2079224  4.98492443 5.647847  0.6187875
6  0.1102161 -0.9853239  3.375361  4.5803237  2.24116516 1.082571 -0.7299161
7  4.4047740 -0.4048241  4.126835  5.7341400  1.65942604 4.642512  1.2420277
8  3.8613232 -0.4895525  4.811396  3.7689784  1.23955862 2.898468  3.0576629
9  3.6671458  3.9942226  1.663836 -1.8139555 -0.07534158 4.575285  4.7805715
10 4.8565056  3.9657070  2.920626  0.2208437  0.89938104 4.008421  1.5535368
          V8         V9        V10       V11        V12        V13        V14
1  1.9212152  2.0858122  6.0456725  3.591503  6.4413087  9.0336410  1.1860684
2  5.5942131  1.8155287  5.5497310  5.631118  1.4964230  2.7207993  2.4021020
3  4.3722585  5.9388480  2.5450868  5.390613  2.6285990  2.1384028 -1.8900905
4  3.8162219  2.9501144  2.5374665  1.489616 -1.9586605  2.2648420  3.5125334
5  3.5181586  3.6150028 -0.3328764  3.675413  2.4672647  3.4333489  4.1720053
6  0.3126798  4.2817011  4.5500498  4.552462  0.8158206 -0.6140704 -0.4114086
7  4.4725486 -0.3179235  5.3596076  5.742706  3.4215919  3.5082035  1.5968933
8  4.0623611  2.0554017  0.4123133  2.581715  2.6547805  4.1761980 -0.0477907
9  4.9543143  2.5322928 -0.8503035 -1.652388  2.5484340  2.0878456  4.5147258
10 1.5056587  2.8786191  2.9784861  1.719980  4.9006589  3.5052434  4.1544503
          V15       V16        V17        V18        V19        V20        V21
```

```
1   4.5537869 4.2464626  2.1590817  3.8777608  1.4886807  4.3392077  3.2028992
2   1.2379812 1.3756372  2.1513557  2.0466432  5.1007813  4.9297164  5.2584606
3   2.7687190 0.6622567  1.7289408  3.6439774  3.9607828  3.6703190  5.5005215
4  -0.4059785 1.8971143  0.4153081  4.0424636  4.0785341  2.3221539 -0.3797541
5   0.2381163 2.9916155  2.9941185 -2.7089068 -0.1349118 -0.4315351 -0.1123220
6   1.0903024 2.9544499  4.1091280  1.0115421  3.0589187  2.1337056  3.0156585
7   3.4227213 2.7289480  3.9790476  4.5362233  4.6940851  0.3891301  2.3527938
8   1.9672284 7.5174059 -0.3195506  0.5167267  2.4328649  5.3634770  2.1041336
9   3.9426304 3.9121920  6.2319788  4.2667794  3.1693569  3.8486843  3.7203359
10 -0.2977060 4.6570025  5.8978632  4.2460790  3.9946010  0.8656118 -2.7671222
          V22          V23       V24         V25       V26      V27         V28
1   3.3699168  0.980644564  6.182554 -1.67140104 2.8110536 4.423103  1.5106151
2  -0.1860164  1.631518281  1.297733  0.32405886 4.9013972 3.894519 -0.5670711
3   3.7422841  0.813842148  4.077089 -0.04689916 3.1034764 1.473564  2.7956604
4  -1.4069629  2.115876624  6.173039  4.22871810 5.4832279 4.366508  3.4255521
5   4.1184731  5.748066958  4.665585  2.81869711 1.3429147 5.969458  3.1731722
6   3.3790282  2.542882285  4.333938  3.25622815 1.4921306 2.973971  5.4635433
7   1.7800971  5.548862285 -0.318293  5.92263833 0.1916696 3.190495  3.1016396
8   2.1736473  0.008248433  3.998141  0.26300065 4.2431058 3.551629 -1.1913158
9   6.0178178 -0.213872492  2.503267  1.61325791 6.9371455 4.953240  2.0283577
10  3.4892512  4.228557645  6.094756 -0.42527015 4.6136981 2.413908 -0.9878483
        V29       V30      V31        V32      V33      V34        V35
1  3.521965 2.1132497 2.915036  0.7692814 5.199902 2.702691  0.5063543
2  6.807805 2.4334278 7.213398  2.8833758 2.582306 4.090962  5.6259920
3  1.151584 5.5342759 3.196883  1.2619788 3.913898 5.157608 -0.6194393
4  2.581934 3.9461305 4.975751  5.4966378 1.355205 4.715350  1.0555706
5  3.213533 5.5168043 1.133322  4.8643601 1.341100 3.546627  2.6817819
6  1.381165 2.5712539 5.253464  5.8030642 4.798167 6.891088 -1.3041725
7  2.538023 0.2059412 3.594471  3.7035735 3.387553 1.958277  5.0414639
8  2.545667 3.0526924 5.598010  2.4020879 5.123356 4.516070  4.5736768
9  2.502104 2.2736391 3.301840 -0.3533241 1.315006 1.812175  3.7724950
10 2.894824 3.4028048 4.615430  3.1906416 6.212304 5.502668  1.3491719
        V36       V37      V38        V39        V40        V41        V42
1  3.4520555 2.8447142 5.036287  2.3104693  7.8586079  1.6471052  2.5535540
2  2.8982686 2.2587693 2.704029  0.3635032  2.7034093  6.0022567  4.9058222
3  3.7882118 6.3903744 3.784473  2.8007899  2.4697140  4.0162617  1.6459874
4  2.1773609 0.2201922 1.269916  3.3654042 -2.2063183  1.1847433  3.0964350
5  4.5160566 4.2576803 3.670115  2.7373386  5.7050435  6.2095629  3.4241388
6  0.6116682 1.7699054 4.512943  5.1602327 -1.6877476 -0.5335501 -0.9934756
7  3.3922220 3.3806576 4.837977 -1.4909505 -0.9687109  0.9669385  2.1415634
8  5.5966450 1.4190918 1.927640  4.8608016  4.5098271  4.4707923  4.1070320
9  3.4440052 2.0429800 3.957920  7.0197927  4.5763635  1.3464401  2.4411984
10 0.2988391 1.6964739 6.014425  4.0006224  3.5047360  1.6064036  4.8524214
        V43        V44        V45        V46       V47      V48       V49
1  4.0503538  0.8036630  0.6712869 -2.0924728 0.8445307 6.506465 5.0476307
2  2.2710795  0.8326031  4.1174625  0.5431135 0.8635245 3.574424 6.0559166
3  3.8054743  1.1653822  5.6018163  3.5378715 5.4288574 3.054778 2.7285715
4  3.3240736  3.1844537  3.7509242  5.7713656 1.4633108 1.859784 1.7279828
5  0.4343341 -1.6383983 -0.4508676  6.7307562 4.7857780 1.744302 1.2861848
```

```
6  2.3642571  4.2741506 -0.1657543  2.9949625 3.0549009 1.868783 1.0758431
7  2.0386033  4.9377299  4.1277408  3.4879331 2.9245899 0.794835 3.9925446
8  0.6346897  3.5501162  4.6416246  6.9881958 3.9834765 4.175003 5.8598109
9  5.3201185  1.2868922  0.4114248  2.5150576 3.5254826 4.265261 0.8167103
10 5.5231859  1.6451291  4.1257533  2.5198637 4.0143703 2.561657 2.1176234
          V50      V51      V52        V53       V54       V55       V56
1   3.7594709 4.293937 1.268752  1.1090609 2.2048024 1.3035984  2.981391
2  -0.1774823 3.594071 3.837940  3.6458497 3.3491388 1.8277403  5.566496
3   0.5608479 3.261628 1.832161  0.3057405 1.8263918 2.3248632 -1.647259
4   1.4131002 2.730532 5.254701  2.4094650 4.2704764 1.1326924  2.134119
5   4.2275707 4.768908 3.165609  3.1764873 4.0438403 1.7122426  3.038665
6   2.8455323 3.524903 5.427965 -1.6145589 2.6275032 3.4921234  3.119445
7   2.4705896 2.265072 1.338063  0.3483337 5.5122591 5.6347744  6.410486
8   0.6707083 2.408726 2.577544  4.2955491 4.2608855 3.4097384  5.728537
9   6.1029450 5.167974 4.123823  3.2235557 1.2736519 5.8853345  1.462221
10  6.1954209 2.303608 5.387793  3.5718696 0.5972884 0.7167377  1.670947
           V57       V58        V59        V60      V61        V62      V63
1   3.80551381  2.549257 1.06322226 -0.1914057 2.609442  5.9261061 2.493508
2  -0.36773697  3.441657 0.06523106  3.9056264 2.837766  0.6932863 1.765800
3   1.75081196  1.660565 3.03367900  0.9117581 4.077690  2.4334030 2.583734
4   6.07106797  1.394163 2.32671273  3.9116950 4.677832  1.6092662 5.356139
5   4.80412533  2.039743 4.35540938  3.8170945 2.018645  3.2901743 3.546763
6   5.52902054  1.744598 5.12570503  0.7040051 6.637065  2.4604267 3.216738
7   5.64749614 -1.777311 1.86176410  1.3115961 5.150987  3.9846694 4.118781
8   0.83224788  2.918548 1.80916886  6.0512018 1.456203  3.0839020 5.992514
9  -0.07804733  5.258417 4.10261831  1.5951489 3.291233  3.0860051 2.775976
10  2.76904976  5.343393 2.23220536  4.4854200 5.449095 -0.1400702 1.148739
         V64        V65         V66        V67         V68        V69
1  3.7591103  2.9060588  1.58331688  6.1705977 -0.88764197  4.0935421
2  4.5783321  3.9470130  5.16971970  0.2675718 -1.17712379  5.7540530
3  3.7175694  3.6459899  3.52921408  6.9954649  5.44073053  3.4438035
4  1.9158899 -0.6539439  3.77278270  3.2208626  3.51134500  0.8289881
5  3.5926755 -0.3879259 -0.01154002  5.2387276  2.11834009  7.5513285
6  2.1020189  0.5888492  5.05174468 -1.0674798  4.88611849  1.2832305
7  3.8389012  2.5073211  2.83453209 -2.5699223  2.96508939  3.5304961
8  0.6374837  3.6963849  4.22247924  1.7381373  2.85055494  0.4392019
9  5.3299273  2.0509829  3.48678392  4.0273917 -0.02508687 -1.0771652
10 3.2786567  1.3361384  3.78240457  2.8260662  5.13803980  5.2824952
          V70      V71         V72      V73        V74       V75       V76
1   2.3471544 3.154553  2.69630146 5.407116 -0.9823877 1.0676992 2.4817758
2  -1.4019800 5.133850  6.70366578 2.987581  4.0584092 3.2979308 2.5028063
3   2.9246034 1.344066  4.63998559 3.196887  1.7270461 5.5323884 3.7588617
4  -0.3582799 2.098877  3.99297491 5.106335  2.0838448 0.7621840 2.3820382
5   3.2045487 1.154555  3.37383250 2.223592  5.4674219 2.5736383 1.9767742
6   4.1708798 1.502545  4.04799173 3.599622  4.1311085 1.1465520 0.3705952
7   3.9905596 5.536790  2.43215424 1.382956  5.2362150 1.4910713 4.6133166
8   2.4493068 1.438594 -0.09917765 4.840120  3.0599426 5.1244100 2.5407972
9   6.8331460 1.575632  1.31935694 5.376818 -0.2908409 0.4645659 3.4638993
10  2.2628475 3.286388 -0.23387147 3.937664  6.0890706 3.3282534 3.0639858
```

```
         V77       V78       V79       V80       V81       V82        V83
1   2.596316 2.3495459 2.9349605 0.9557453  2.519228 3.1427301  5.7473377
2   5.109571 1.6563953 0.2946113 0.6135412  1.228945 4.1132693  3.7532523
3   2.988372 0.4063546 2.8957863 1.8295465  4.347747 2.8937693  3.5194234
4  -1.679229 2.2923840 5.6372792 5.2410274  3.124544 0.7498398  8.2156232
5   3.512817 1.0802246 3.8315982 5.1979853 -0.546952 2.6709555  3.3120716
6   1.995012 2.5969660 6.6911443 1.7886250  1.535100 4.9606697  1.3305005
7   1.767327 3.5408750 2.4763842 3.6660219  3.037390 6.6752412  0.6346027
8   3.045500 2.5016142 3.9187882 5.0258943  2.085782 0.5561541 -0.3095950
9   3.772612 0.7326979 6.0874327 4.0643451  6.036859 2.0018769  2.4902424
10  1.525776 5.0857501 3.2805638 4.3447607  4.675308 1.0686622  1.4137585
          V84         V85      V86         V87        V88       V89      V90
1   3.7000310  2.02372445 4.426379  4.28618705  5.5446934 2.2590698 3.461795
2   3.2775301  0.09061365 4.503707  5.77873286  2.1824267 5.2272957 2.013614
3   4.3335064  0.19372212 4.424033 -0.94460131  0.3555313 3.3803565 3.255143
4   3.8582001  2.81628248 4.651498  2.96960487  1.8984332 0.7333088 2.768462
5   0.6162240 -2.69020050 2.973009  1.38227682  5.2596542 3.1676247 6.104650
6  -0.4233093  0.08615410 2.167448  0.87534901 -1.0046834 2.4622179 6.737699
7   4.6281530  0.95764324 3.745055  6.83683067  2.6973764 1.4507569 4.533989
8   6.3539027  1.90573703 5.703057  0.07127109  6.2600546 5.5937626 3.192546
9   7.4078063  6.87562108 3.869224  4.33268792  4.8271441 2.3157455 4.427754
10  5.0532641  3.50882796 6.080676  3.88598102  1.5404420 2.4570500 5.944129
        V91       V92       V93       V94        V95       V96       V97
1  3.666884 0.4951779  1.546118 6.0275287  0.3966866 3.9078465 4.1244006
2  5.270924 0.6707755  4.791321 1.7603926  5.3188281 4.9676581 0.9155839
3  2.989326 2.0955659  3.921101 3.1106421  0.1983853 5.0818381 3.6815179
4  2.886541 5.0457046 -1.427454 5.7711708  5.9742077 7.0609733 1.8353901
5  7.274107 1.8010432  3.640301 0.5514530  5.1675035 3.6488531 3.7402000
6  1.629216 5.0949675  3.988569 0.1026763  0.9575835 1.4473432 1.9453549
7  5.172467 6.1446519  5.748791 2.1631500 -0.4261425 5.2552333 2.1635841
8  3.140158 2.5691404  2.690158 1.0272346  3.3493909 1.1870353 5.9698268
9  3.271724 4.8963068  1.674417 4.7805700  2.9234440 0.6822874 3.5432254
10 2.691019 7.6710921  2.226169 2.6409330 -0.5308595 0.5746439 3.7070290
         V98        V99     V100
1  4.4185008  5.7874798 3.229986
2  2.2789848  2.4684555 5.045520
3  4.0105293 -0.4522145 4.095133
4  2.8249552  4.2161689 3.487837
5  3.9590481  5.7147443 3.491862
6  1.8603631  3.1151363 5.354609
7  1.5539951  4.3585833 3.173867
8  5.5885490  1.4823883 5.397284
9  0.3557679  0.4508903 3.575821
10 5.8040695  2.8974459 1.013915
> class(x2)
[1] "data.frame"
> y <- x1[3, ]
> y
```

```
  [1]  3.15448724  3.39661337  4.80787999  2.10029265  4.03647706  1.07313648
  [7]  2.98299777  4.37225854  5.93884805  2.54508682  5.39061341  2.62859898
 [13]  2.13840275 -1.89009045  2.76871900  0.66225666  1.72894079  3.64397744
 [19]  3.96078281  3.67031898  5.50052152  3.74228413  0.81384215  4.07708882
 [25] -0.04689916  3.10347639  1.47356414  2.79566041  1.15158358  5.53427594
 [31]  3.19688310  1.26197882  3.91389786  5.15760824 -0.61943933  3.78821177
 [37]  6.39037436  3.78447297  2.80078994  2.46971402  4.01626175  1.64598738
 [43]  3.80547426  1.16538216  5.60181629  3.53787152  5.42885742  3.05477801
 [49]  2.72857154  0.56084786  3.26162761  1.83216110  0.30574050  1.82639185
 [55]  2.32486317 -1.64725861  1.75081196  1.66056453  3.03367900  0.91175809
 [61]  4.07769048  2.43340303  2.58373363  3.71756941  3.64598991  3.52921408
 [67]  6.99546490  5.44073053  3.44380348  2.92460338  1.34406613  4.63998559
 [73]  3.19688711  1.72704605  5.53238840  3.75886165  2.98837192  0.40635455
 [79]  2.89578625  1.82954649  4.34774672  2.89376925  3.51942345  4.33350644
 [85]  0.19372212  4.42403324 -0.94460131  0.35553129  3.38035653  3.25514289
 [91]  2.98932562  2.09556587  3.92110146  3.11064206  0.19838526  5.08183813
 [97]  3.68151787  4.01052935 -0.45221448  4.09513291

> y <- x1[, -1]
> y

           [,1]      [,2]       [,3]        [,4]     [,5]       [,6]      [,7]
 [1,]  6.1052502 -3.145516  5.3075650  6.51798969 3.210749  2.7757778 1.9212152
 [2,]  6.2038720  3.715083  3.1094249  4.61462516 3.843050  3.2379952 5.5942131
 [3,]  3.3966134  4.807880  2.1002926  4.03647706 1.073136  2.9829978 4.3722585
 [4,]  4.4497362  5.821964  1.4785757  4.02900274 5.437042  3.4722645 3.8162219
 [5,] -0.1618687  1.343826  4.2079224  4.98492443 5.647847  0.6187875 3.5181586
 [6,] -0.9853239  3.375361  4.5803237  2.24116516 1.082571 -0.7299161 0.3126798
 [7,] -0.4048241  4.126835  5.7341400  1.65942604 4.642512  1.2420277 4.4725486
 [8,] -0.4895525  4.811396  3.7689784  1.23955862 2.898468  3.0576629 4.0623611
 [9,]  3.9942226  1.663836 -1.8139555 -0.07534158 4.575285  4.7805715 4.9543143
[10,]  3.9657070  2.920626  0.2208437  0.89938104 4.008421  1.5535368 1.5056587
           [,8]       [,9]     [,10]      [,11]      [,12]       [,13]
 [1,]  2.0858122  6.0456725  3.591503  6.4413087  9.0336410  1.1860684
 [2,]  1.8155287  5.5497310  5.631118  1.4964230  2.7207993  2.4021020
 [3,]  5.9388480  2.5450868  5.390613  2.6285990  2.1384028 -1.8900905
 [4,]  2.9501144  2.5374665  1.489616 -1.9586605  2.2648420  3.5125334
 [5,]  3.6150028 -0.3328764  3.675413  2.4672647  3.4333489  4.1720053
 [6,]  4.2817011  4.5500498  4.552462  0.8158206 -0.6140704 -0.4114086
 [7,] -0.3179235  5.3596076  5.742706  3.4215919  3.5082035  1.5968933
 [8,]  2.0554017  0.4123133  2.581715  2.6547805  4.1761980 -0.0477907
 [9,]  2.5322928 -0.8503035 -1.652388  2.5484340  2.0878456  4.5147258
[10,]  2.8786191  2.9784861  1.719980  4.9006589  3.5052434  4.1544503
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[401] 2.326713 4.355409 5.125705 4.102618 2.232205 3.905626 3.911695 3.817094
[409] 6.051202 4.485420 2.609442 2.837766 4.077690 4.677832 2.018645 6.637065
[417] 5.150987 3.291233 5.449095 5.926106 2.433403 3.290174 2.460427 3.984669
[425] 3.083902 3.086005 2.493508 2.583734 5.356139 3.546763 3.216738 4.118781
[433] 5.992514 2.775976 3.759110 4.578332 3.717569 3.592675 2.102019 3.838901
```

```
[441] 5.329927 3.278657 2.906059 3.947013 3.645990 2.507321 3.696385 2.050983
[449] 5.169720 3.529214 3.772783 5.051745 2.834532 4.222479 3.486784 3.782405
[457] 6.170598 6.995465 3.220863 5.238728 4.027392 2.826066 5.440731 3.511345
[465] 2.118340 4.886118 2.965089 2.850555 5.138040 4.093542 5.754053 3.443803
[473] 7.551329 3.530496 5.282495 2.347154 2.924603 3.204549 4.170880 3.990560
[481] 2.449307 6.833146 2.262848 3.154553 5.133850 2.098877 5.536790 3.286388
[489] 2.696301 6.703666 4.639986 3.992975 3.373832 4.047992 2.432154 5.407116
[497] 2.987581 3.196887 5.106335 2.223592 3.599622 4.840120 5.376818 3.937664
[505] 4.058409 2.083845 5.467422 4.131108 5.236215 3.059943 6.089071 3.297931
[513] 5.532388 2.573638 5.124410 3.328253 2.481776 2.502806 3.758862 2.382038
[521] 4.613317 2.540797 3.463899 3.063986 2.596316 5.109571 2.988372 3.512817
[529] 3.045500 3.772612 2.349546 2.292384 2.596966 3.540875 2.501614 5.085750
[537] 2.934961 2.895786 5.637279 3.831598 6.691144 2.476384 3.918788 6.087433
[545] 3.280564 5.241027 5.197985 3.666022 5.025894 4.064345 4.344761 2.519228
[553] 4.347747 3.124544 3.037390 2.085782 6.036859 4.675308 3.142730 4.113269
[561] 2.893769 2.670956 4.960670 6.675241 2.001877 5.747338 3.753252 3.519423
[569] 8.215623 3.312072 2.490242 3.700031 3.277530 4.333506 3.858200 4.628153
[577] 6.353903 7.407806 5.053264 2.023724 2.816282 6.875621 3.508828 4.426379
[585] 4.503707 4.424033 4.651498 2.973009 2.167448 3.745055 5.703057 3.869224
[593] 6.080676 4.286187 5.778733 2.969605 6.836831 4.332688 3.885981 5.544693
[601] 2.182427 5.259654 2.697376 6.260055 4.827144 2.559070 5.227296 3.380357
[609] 3.167625 2.462218 5.593763 2.315745 2.457050 3.461795 2.013614 3.255143
[617] 2.768462 6.104650 6.737699 4.533989 3.192546 4.427754 5.944129 3.666884
[625] 5.270924 2.989326 2.886541 7.274107 5.172467 3.140158 3.271724 2.691019
[633] 2.095566 5.045705 5.094967 6.144652 2.569140 4.896307 7.671092 4.791321
[641] 3.921101 3.640301 3.988569 5.748791 2.690158 2.226169 6.027529 3.110642
[649] 5.771171 2.163150 4.780570 2.640933 5.318828 5.974208 5.167503 3.349391
[657] 2.923444 3.907846 4.967658 5.081838 7.060973 3.648853 5.255233 4.124401
[665] 3.681518 3.740200 2.163584 5.969827 3.543225 3.707029 4.418501 2.278985
[673] 4.010529 2.824955 3.959048 5.588549 5.804070 5.787480 2.468455 4.216169
[681] 5.714744 3.115136 4.358583 2.897446 3.229986 5.045520 4.095133 3.487837
[689] 3.491862 5.354609 3.173867 5.397284 3.575821
```

```
> getwd()
```

```
[1] "/home/juan/Documentos/ExampleSweave"
```

Leyendo Tablas

```
> read.table("data.txt")
```

```
     V1   V2    V3
1  sexo peso talla
2     h   60   170
3     f   57   169
4     f   51   172
5     f   55   174
6     f   50   168
7     f   50   161
```

8	f	48	162
9	h	72	189
10	f	52	160
11	h	64	175
12	f	53	165
13	h	72	164
14	h	61	175
15	h	78	184
16	h	68	178
17	f	51	158
18	f	53	164
19	h	79	179
20	h	74	182
21	h	62	174
22	f	49	158
23	f	50	163
24	h	74	172
25	h	60	185
26	f	53	170
27	h	73	178
28	h	70	180
29	h	72	189
30	f	70	172
31	f	62	174
32	h	77	200
33	h	70	178
34	h	76	178
35	f	51	169
36	f	52	170
37	f	57	160
38	f	53	163
39	f	55	168
40	f	66	172
41	h	65	175
42	h	75	180
43	f	50	162
44	f	53	177
45	h	55	169
46	h	55	173
47	h	72	182
48	h	75	183
49	h	73	184
50	h	71	181
51	h	66	180
52	h	71	178
53	h	79	178
54	h	62	168
55	f	47	161
56	h	73	171

```
57    h   72   180
58    h   60   174
59    h   67   175
60    h   85   182
61    h   73   181
62    h   82   188
63    h   86   182
64    h   85   189
65    h   65   178
66    f   47   150
67    h   74   186
```

```
> read.table("data.txt")[1:5, ]
```

```
    V1   V2    V3
1 sexo peso talla
2    h   60   170
3    f   57   169
4    f   51   172
5    f   55   174
```

```
> read.table("data.txt", header=TRUE)
```

```
   sexo peso talla
1     h   60   170
2     f   57   169
3     f   51   172
4     f   55   174
5     f   50   168
6     f   50   161
7     f   48   162
8     h   72   189
9     f   52   160
10    h   64   175
11    f   53   165
12    h   72   164
13    h   61   175
14    h   78   184
15    h   68   178
16    f   51   158
17    f   53   164
18    h   79   179
19    h   74   182
20    h   62   174
21    f   49   158
22    f   50   163
23    h   74   172
24    h   60   185
25    f   53   170
26    h   73   178
```

```
27    h   70   180
28    h   72   189
29    f   70   172
30    f   62   174
31    h   77   200
32    h   70   178
33    h   76   178
34    f   51   169
35    f   52   170
36    f   57   160
37    f   53   163
38    f   55   168
39    f   66   172
40    h   65   175
41    h   75   180
42    f   50   162
43    f   53   177
44    h   55   169
45    h   55   173
46    h   72   182
47    h   75   183
48    h   73   184
49    h   71   181
50    h   66   180
51    h   71   178
52    h   79   178
53    h   62   168
54    f   47   161
55    h   73   171
56    h   72   180
57    h   60   174
58    h   67   175
59    h   85   182
60    h   73   181
61    h   82   188
62    h   86   182
63    h   85   189
64    h   65   178
65    f   47   150
66    h   74   186
```

```
> data <- read.table("data.txt", header=TRUE)
> data
```

```
   sexo peso talla
1     h   60   170
2     f   57   169
3     f   51   172
4     f   55   174
```

5	f	50	168
6	f	50	161
7	f	48	162
8	h	72	189
9	f	52	160
10	h	64	175
11	f	53	165
12	h	72	164
13	h	61	175
14	h	78	184
15	h	68	178
16	f	51	158
17	f	53	164
18	h	79	179
19	h	74	182
20	h	62	174
21	f	49	158
22	f	50	163
23	h	74	172
24	h	60	185
25	f	53	170
26	h	73	178
27	h	70	180
28	h	72	189
29	f	70	172
30	f	62	174
31	h	77	200
32	h	70	178
33	h	76	178
34	f	51	169
35	f	52	170
36	f	57	160
37	f	53	163
38	f	55	168
39	f	66	172
40	h	65	175
41	h	75	180
42	f	50	162
43	f	53	177
44	h	55	169
45	h	55	173
46	h	72	182
47	h	75	183
48	h	73	184
49	h	71	181
50	h	66	180
51	h	71	178
52	h	79	178
53	h	62	168

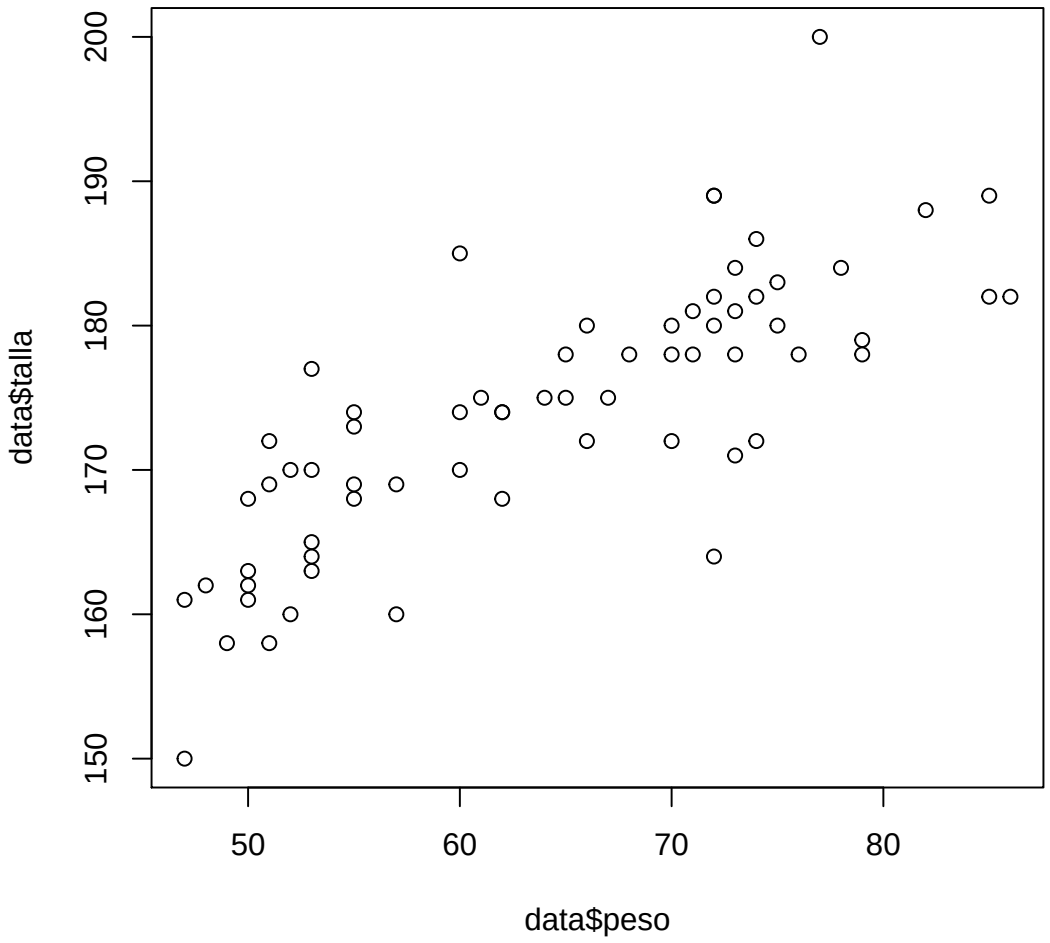
```
54    f   47   161
55    h   73   171
56    h   72   180
57    h   60   174
58    h   67   175
59    h   85   182
60    h   73   181
61    h   82   188
62    h   86   182
63    h   85   189
64    h   65   178
65    f   47   150
66    h   74   186
```

Para caracterizar los datos y realizar gráficas

```
> summary(data)
```

```
 sexo        peso           talla
 f:25   Min.   :47.00   Min.   :150.0
 h:41   1st Qu.:53.00   1st Qu.:168.2
        Median :65.00   Median :174.5
        Mean   :64.21   Mean   :174.1
        3rd Qu.:73.00   3rd Qu.:180.0
        Max.   :86.00   Max.   :200.0
```

```
> plot(data$peso, data$talla)
```



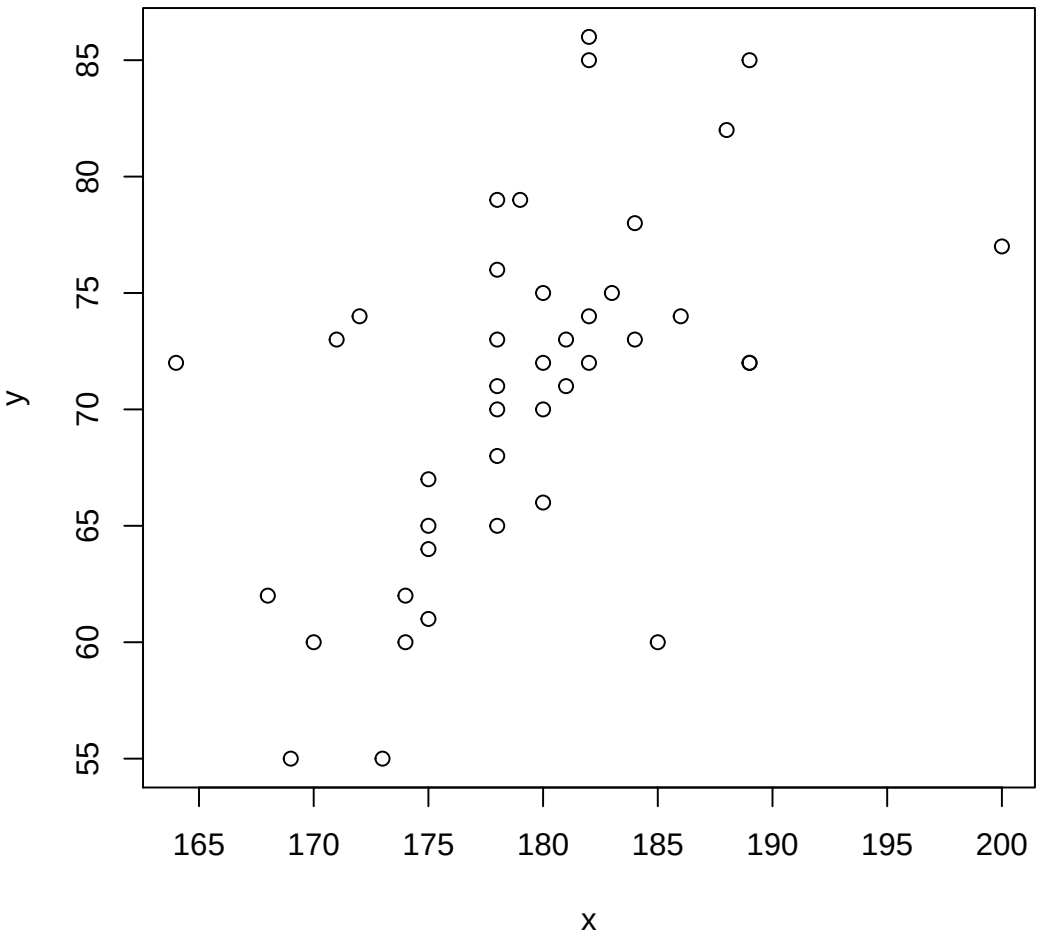

```
> x <- data$talla[data$sexo == "h"]
> x

 [1] 170 189 175 164 175 184 178 179 182 174 172 185 178 180 189 200 178 178 175
[20] 180 169 173 182 183 184 181 180 178 178 168 171 180 174 175 182 181 188 182
[39] 189 178 186

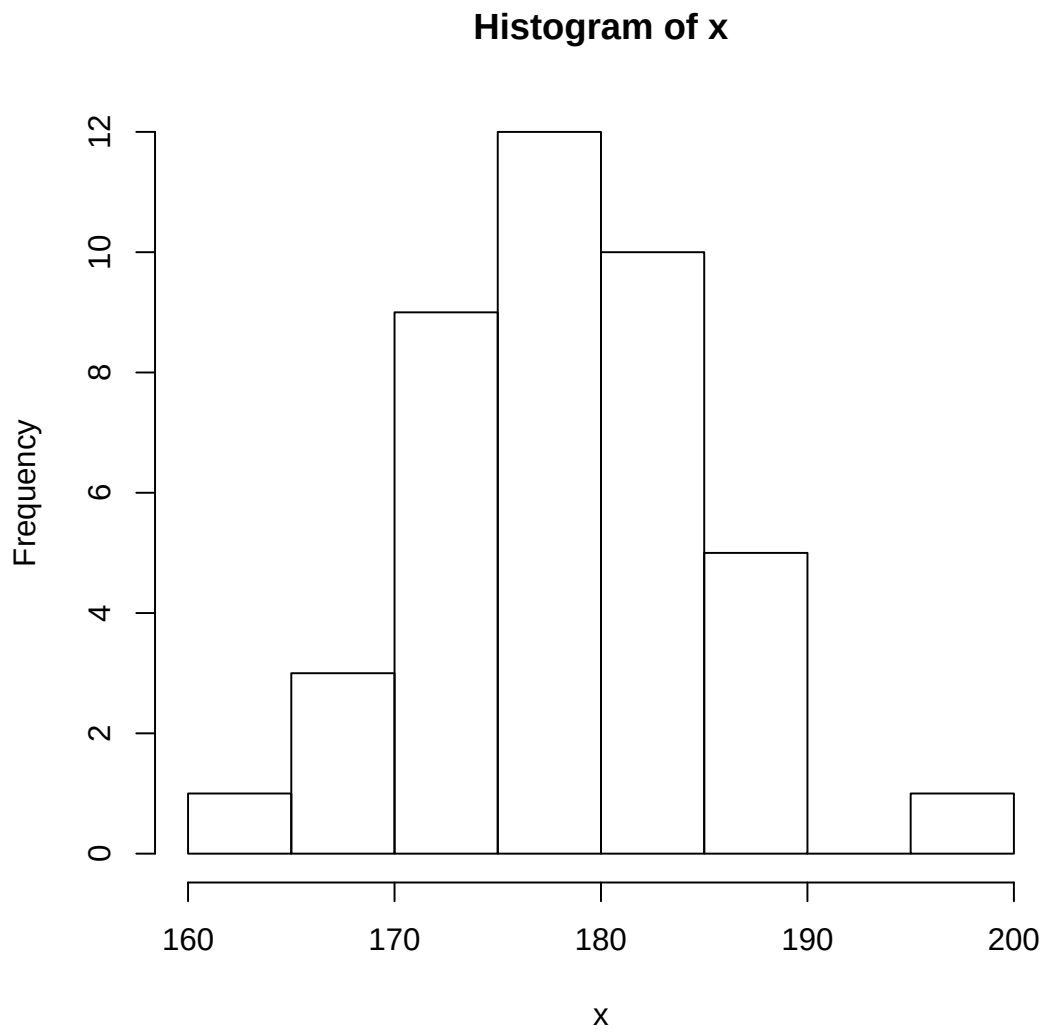
> y <- data$peso[data$sexo == "h"]
> y

 [1] 60 72 64 72 61 78 68 79 74 62 74 60 73 70 72 77 70 76 65 75 55 55 72 75 73
[26] 71 66 71 79 62 73 72 60 67 85 73 82 86 85 65 74

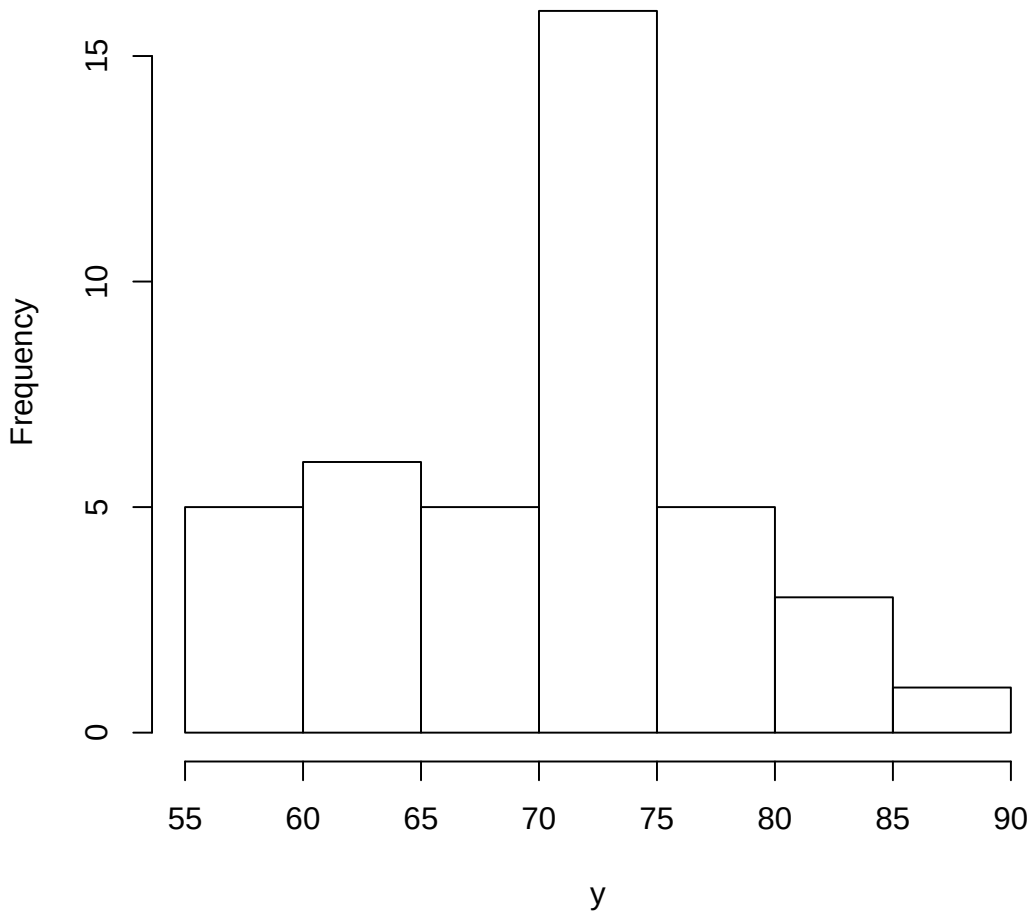
> plot(x, y)
```




```
> hist(x)
```




```
> hist(y)
```



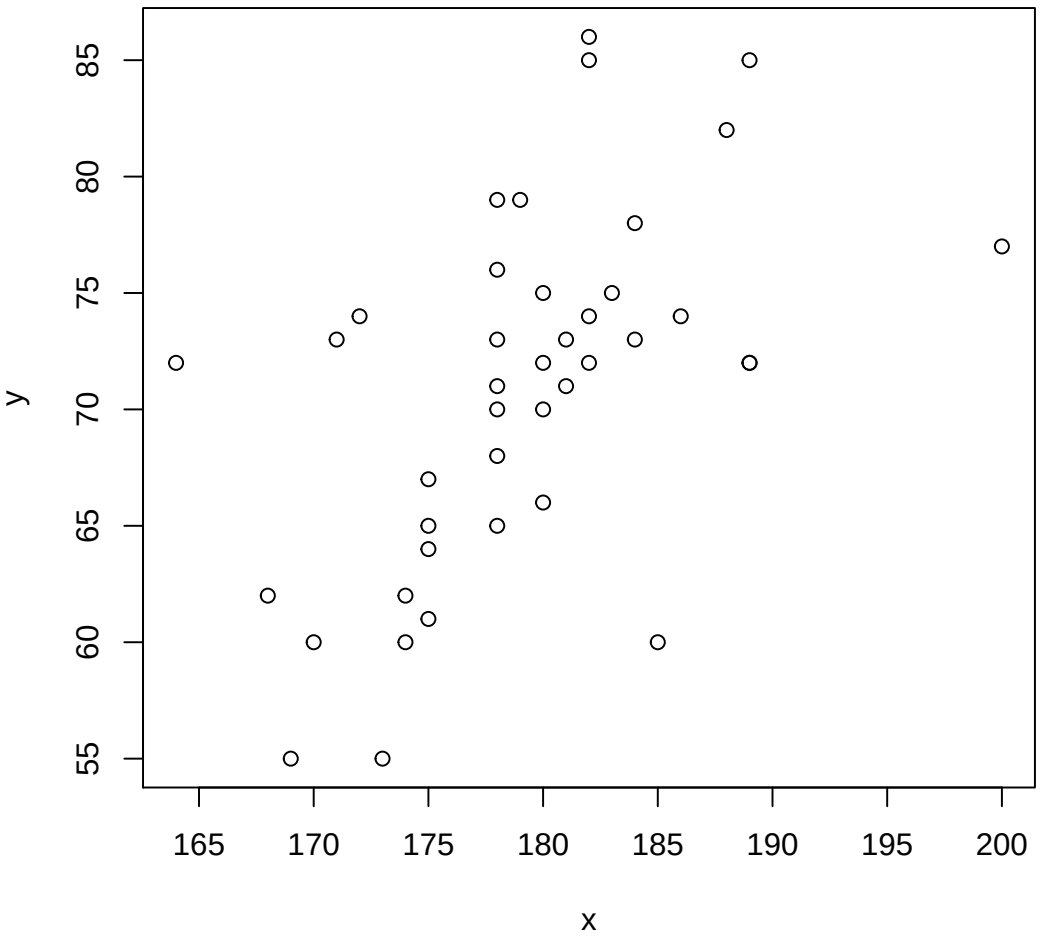

```
> par(mfrow = c(2, 2))
> x <- data$talla[data$sexo == "h"]
> x

 [1] 170 189 175 164 175 184 178 179 182 174 172 185 178 180 189 200 178 178 175
[20] 180 169 173 182 183 184 181 180 178 178 168 171 180 174 175 182 181 188 182
[39] 189 178 186

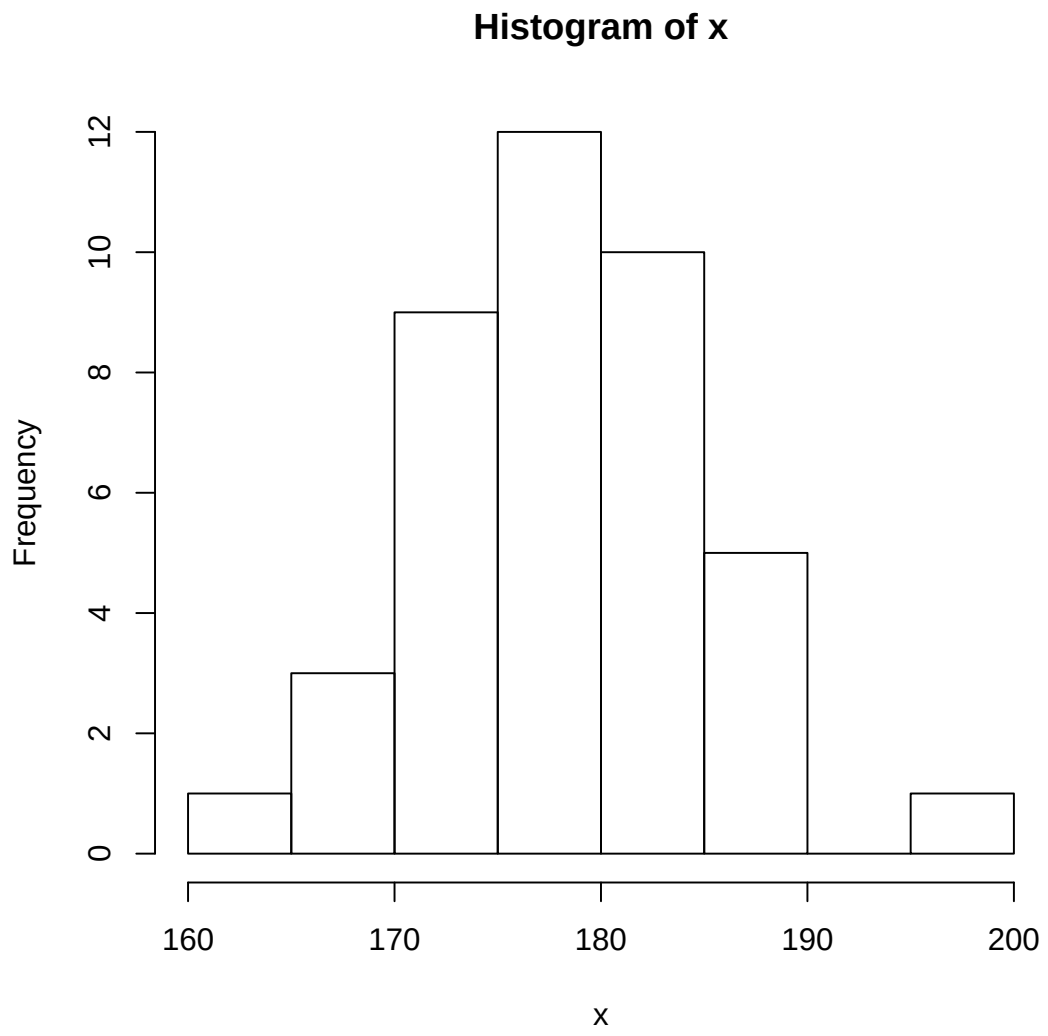
> y <- data$peso[data$sexo == "h"]
> y

 [1] 60 72 64 72 61 78 68 79 74 62 74 60 73 70 72 77 70 76 65 75 55 55 72 75 73
[26] 71 66 71 79 62 73 72 60 67 85 73 82 86 85 65 74

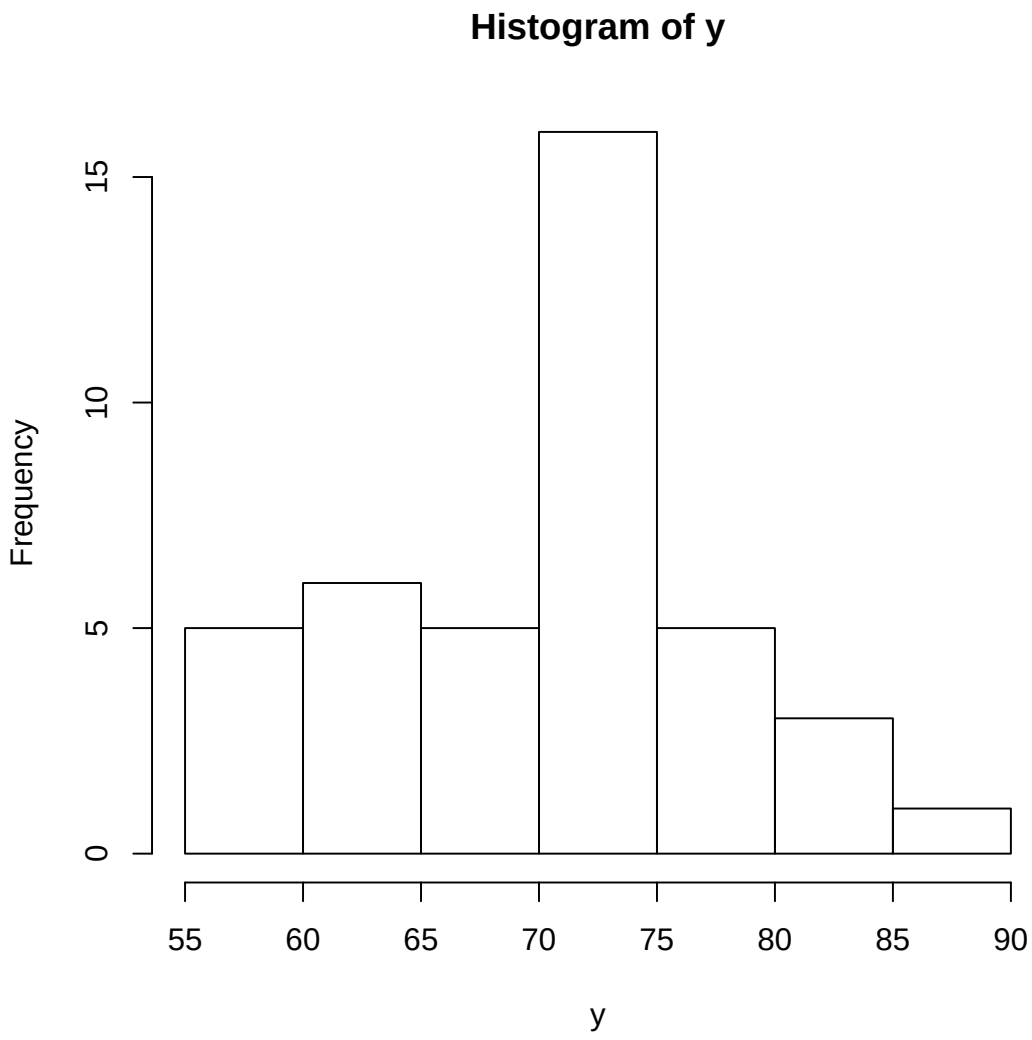
> plot(x, y)
```



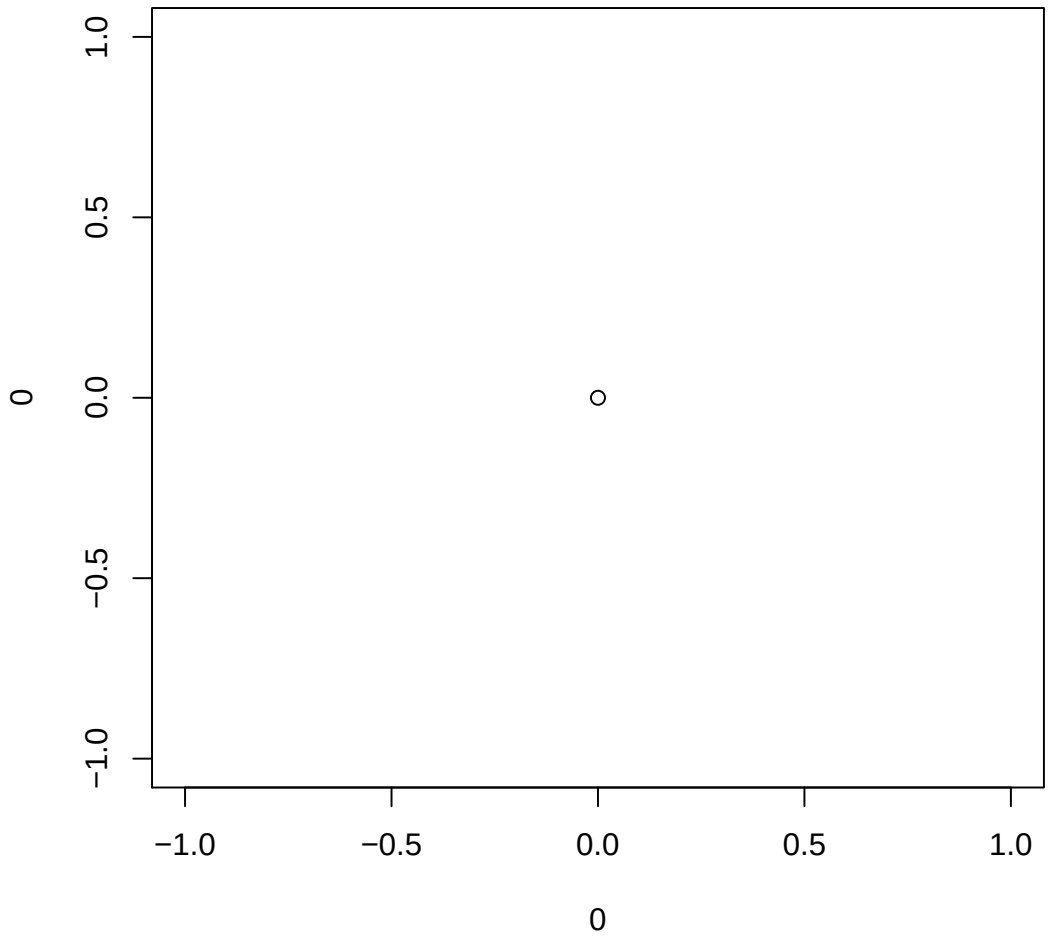

```
> hist(x)
```



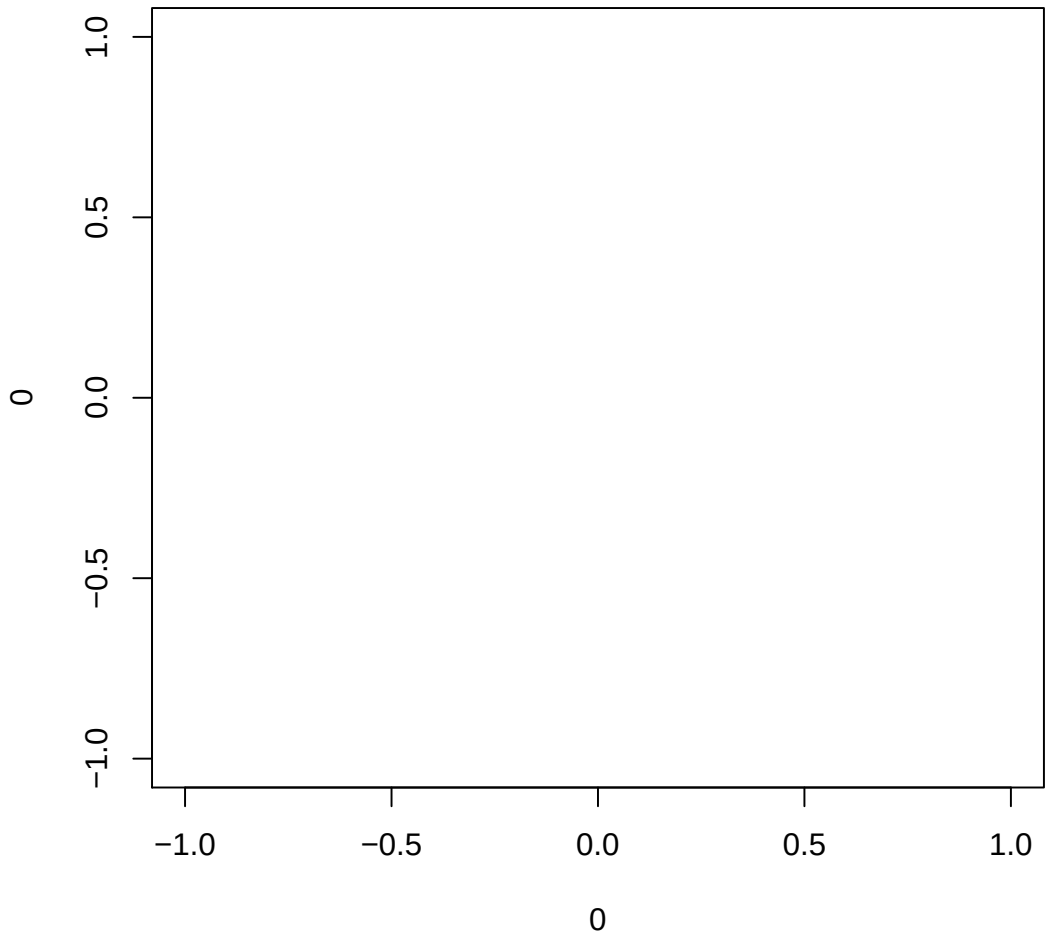

```
> hist(y)
```



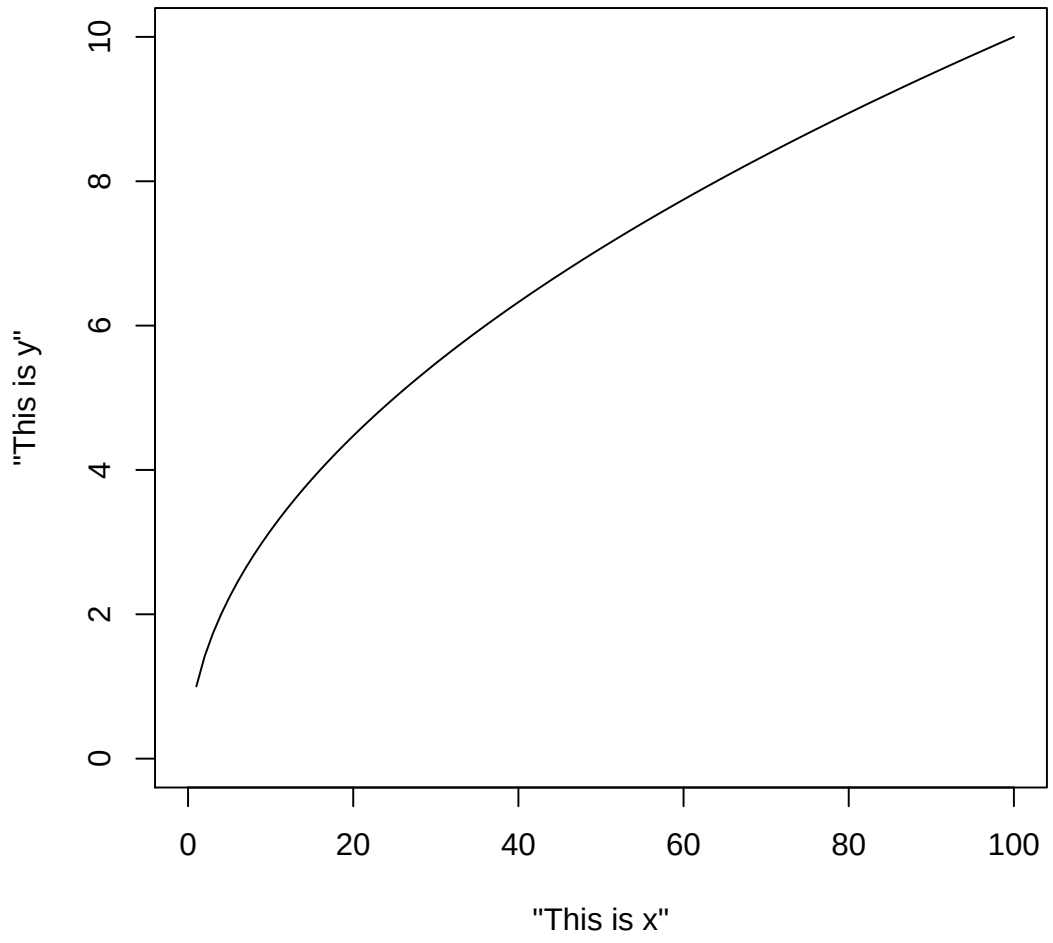

```
> plot(0,0)
```




```
> plot(0,0, type="n")
```




```
> plot('This is x','This is y', type="n", xlim=c(0,100),ylim=c(0,10))
> lines(1:100,sqrt(1:100))
> title("raiz cuadrada")
```



Cuidado con las variables cualitativas

```
> #class(sexo)
> #class(peso)
> sitio<-c(1,1,1,1,1,1,1,1,1,0,0,0,0,0,0,0,0,0)
> sitio

 [1] 1 1 1 1 1 1 1 1 1 0 0 0 0 0 0 0 0 0

> summary(sitio)

   Min. 1st Qu.  Median    Mean 3rd Qu.    Max.
    0.0     0.0     0.5     0.5     1.0     1.0

> summary(as.factor(sitio))

0 1
9 9
```

```
> sitio<-c(1,1,1,1,1,1,1,1,1,0,0,0,0,0,0,0,0,0,NA,NA,NA)
> sitio

 [1]  1  1  1  1  1  1  1  1  1  0  0  0  0  0  0  0  0  0 NA NA NA

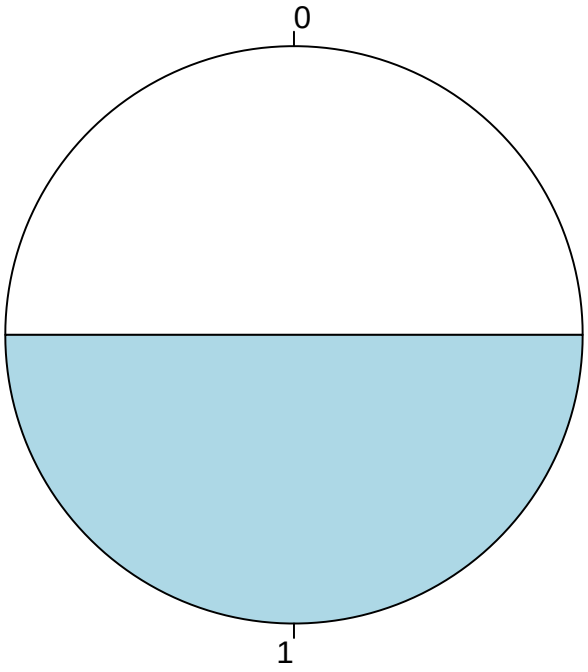
> summary(as.factor(sitio))

   0    1 NA's
   9    9    3

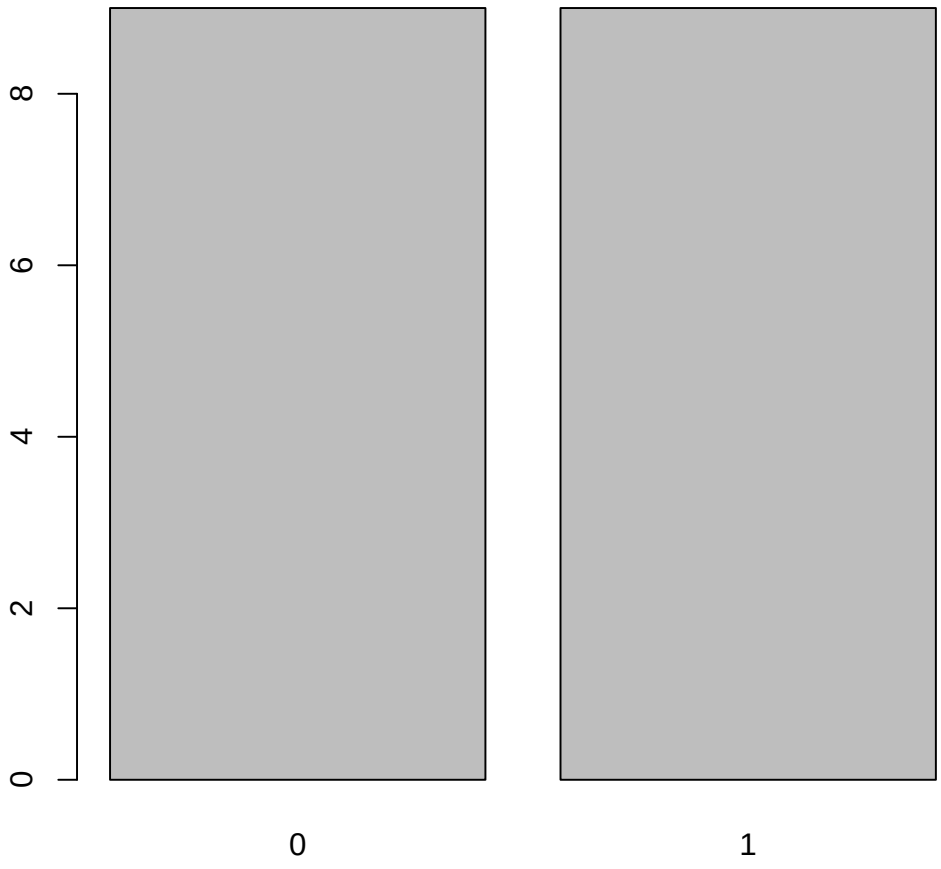
> summary(as.factor(na.omit(sitio)))

0 1
9 9

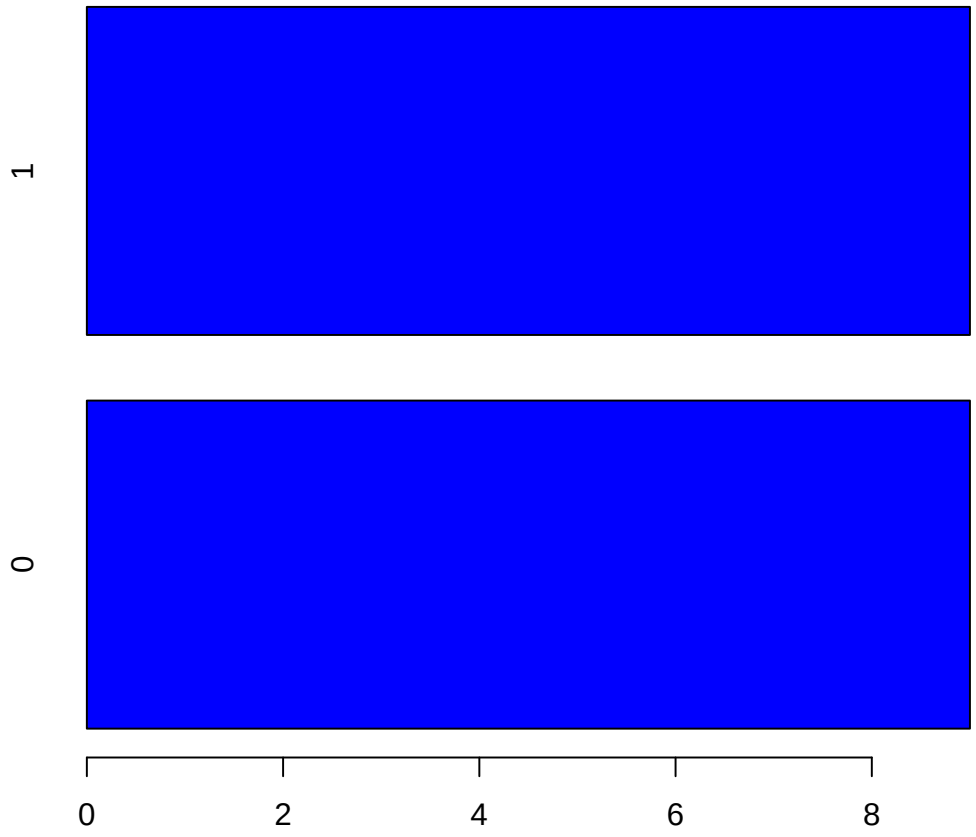
> pie(summary(as.factor(na.omit(sitio))))
```




```
> barplot(summary(as.factor(na.omit(sitio))))
```




```
> barplot(summary(as.factor(na.omit(sitio))), horiz = TRUE, col="blue")
```

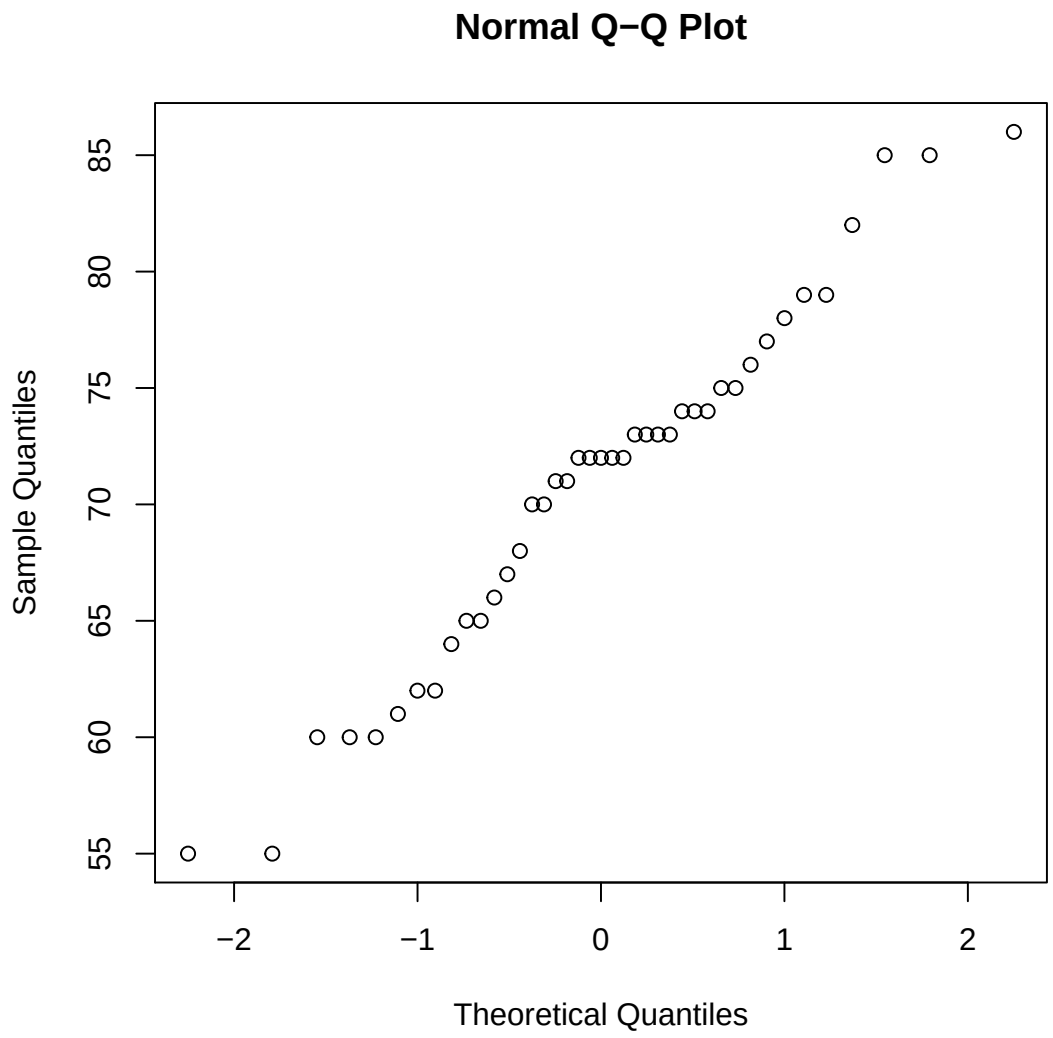


- Verificar distribución normal gráficamente: comparación de los cuartiles observados con los cuartiles teóricos bajo distribución normal. Si la relación es lineal hay indicios de normalidad:

```
> data <- read.table("data.txt", header = T)
> y <- data$peso[data$sexo == "h"]
> y

 [1] 60 72 64 72 61 78 68 79 74 62 74 60 73 70 72 77 70 76 65 75 55 55 72 75 73
[26] 71 66 71 79 62 73 72 60 67 85 73 82 86 85 65 74

> qqnorm(y)
```



Manejo de Tablas Grandes

```
> tom2<-read.table("base-filtro3-6sept.txt",h=T) #base filtrada con base en expresion
> tom2[1:100,]
```

	grupo	genes.filter	rep1	rep2	rep3	rep4	rep5	rep6	rep7
1	1	1.1.1.2	238.000	426.000	238.000	308.000	405.000	261.000	611.000
2	1	1.1.1.4	1.991	3.552	1.447	2.267	2.672	1.803	3.569
3	1	1.1.1.8	376.000	660.000	207.000	532.000	406.000	435.000	882.000
4	1	1.1.1.10	402.000	627.000	351.000	508.000	465.000	730.000	920.000
5	1	1.1.1.11	295.000	482.000	188.000	421.000	215.000	369.000	517.000
6	1	1.1.1.12	1.797	2.467	1.116	1.450	3.406	2.994	2.841
7	1	1.1.1.14	628.000	912.000	439.000	914.000	564.000	911.000	1.227
8	1	1.1.1.15	821.000	1.128	497.000	1.020	745.000	827.000	984.000
9	1	1.1.1.16	418.000	504.000	333.000	638.000	224.000	223.000	292.000
10	1	1.1.1.17	696.000	1.020	356.000	636.000	790.000	895.000	971.000
11	1	1.1.1.19	1.653	1.980	1.036	1.682	2.370	2.694	2.227
12	1	1.1.2.2	417.000	781.000	297.000	443.000	540.000	393.000	779.000

13	1	1.1.2.4	1.339	2.161	875.000	1.924	1.717	1.320	4.405
14	1	1.1.2.5	357.000	780.000	279.000	582.000	526.000	311.000	932.000
15	1	1.1.2.6	288.000	498.000	250.000	360.000	363.000	246.000	549.000
16	1	1.1.2.7	510.000	898.000	300.000	540.000	617.000	535.000	1.911
17	1	1.1.2.8	478.000	796.000	370.000	539.000	527.000	989.000	1.013
18	1	1.1.2.9	461.000	779.000	279.000	674.000	396.000	488.000	604.000
19	1	1.1.2.10	191.000	312.000	156.000	215.000	171.000	214.000	302.000
20	1	1.1.2.11	244.000	351.000	207.000	294.000	319.000	328.000	398.000
21	1	1.1.2.12	316.000	500.000	255.000	417.000	311.000	258.000	466.000
22	1	1.1.2.14	534.000	813.000	488.000	840.000	309.000	459.000	488.000
23	1	1.1.2.15	194.000	255.000	130.000	180.000	249.000	200.000	278.000
24	1	1.1.2.16	546.000	720.000	379.000	551.000	663.000	650.000	806.000
25	1	1.1.2.17	449.000	614.000	327.000	419.000	548.000	546.000	633.000
26	1	1.1.2.20	811.000	1.260	610.000	859.000	1.031	1.424	1.411
27	1	1.1.2.21	632.000	696.000	353.000	489.000	578.000	820.000	630.000
28	1	1.1.3.4	743.000	1.270	456.000	681.000	674.000	997.000	1.533
29	1	1.1.3.6	2.877	4.995	1.807	2.685	3.524	1.730	5.435
30	1	1.1.3.7	217.000	413.000	193.000	252.000	282.000	268.000	381.000
31	1	1.1.3.8	373.000	925.000	348.000	721.000	513.000	576.000	779.000
32	1	1.1.3.9	2.478	4.749	1.521	2.460	2.675	3.198	4.321
33	1	1.1.3.10	131.000	182.000	128.000	130.000	135.000	170.000	181.000
34	1	1.1.3.11	167.000	286.000	139.000	227.000	203.000	179.000	215.000
35	1	1.1.3.13	240.000	318.000	215.000	290.000	351.000	316.000	473.000
36	1	1.1.3.14	290.000	463.000	224.000	382.000	265.000	352.000	394.000
37	1	1.1.3.15	171.000	246.000	162.000	171.000	194.000	194.000	266.000
38	1	1.1.3.16	702.000	905.000	425.000	560.000	757.000	844.000	1.169
39	1	1.1.3.17	477.000	522.000	340.000	408.000	471.000	498.000	476.000
40	1	1.1.3.19	531.000	632.000	247.000	384.000	577.000	775.000	768.000
41	1	1.1.3.20	252.000	364.000	113.000	254.000	350.000	391.000	389.000
42	1	1.1.3.21	173.000	218.000	132.000	206.000	172.000	200.000	218.000
43	1	1.1.4.17	1.230	1.399	1.294	1.029	2.583	439.000	2.874
44	1	1.1.4.18	2.836	3.209	1.989	2.512	3.357	2.751	4.973
45	1	1.1.4.20	257.000	267.000	172.000	231.000	271.000	290.000	335.000
46	1	1.1.5.2	175.000	420.000	163.000	362.000	343.000	203.000	625.000
47	1	1.1.5.3	226.000	278.000	222.000	408.000	333.000	203.000	526.000
48	1	1.1.5.7	2.222	2.995	1.682	3.003	3.878	2.880	5.486
49	1	1.1.5.8	223.000	447.000	236.000	311.000	419.000	355.000	552.000
50	1	1.1.6.1	100.000	206.000	87.000	132.000	227.000	112.000	291.000
51	1	1.1.6.4	237.000	650.000	279.000	411.000	470.000	430.000	690.000
52	1	1.1.6.6	666.000	990.000	423.000	1.360	1.636	1.193	2.508
53	1	1.1.6.7	395.000	618.000	319.000	459.000	523.000	502.000	388.000
54	1	1.1.6.9	1.235	1.661	556.000	1.000	656.000	1.766	1.975
55	1	1.1.6.10	120.000	175.000	99.000	134.000	215.000	210.000	239.000
56	1	1.1.6.11	142.000	242.000	123.000	155.000	254.000	201.000	260.000
57	1	1.1.6.12	369.000	444.000	307.000	304.000	524.000	619.000	725.000
58	1	1.1.6.13	348.000	533.000	262.000	374.000	454.000	427.000	346.000
59	1	1.1.6.14	369.000	522.000	249.000	395.000	457.000	455.000	631.000
60	1	1.1.6.16	1.401	1.352	1.035	1.398	3.000	2.089	3.825
61	1	1.1.6.17	268.000	317.000	200.000	244.000	332.000	254.000	370.000

62	1	1.1.6.18	1.022	1.455	499.000	751.000	1.254	1.201	1.768
63	1	1.1.6.20	9.777	9.863	11.040	8.307	13.126	11.209	9.726
64	1	1.1.6.21	548.000	507.000	350.000	371.000	856.000	607.000	583.000
65	1	1.1.7.1	1.075	1.996	513.000	1.329	1.622	1.288	2.652
66	1	1.1.7.2	1.120	1.841	627.000	1.488	1.789	1.498	2.677
67	1	1.1.7.3	419.000	980.000	368.000	477.000	571.000	571.000	847.000
68	1	1.1.7.4	555.000	1.210	475.000	827.000	851.000	772.000	1.336
69	1	1.1.7.5	6.338	12.896	3.456	5.964	9.350	6.744	12.759
70	1	1.1.7.6	230.000	401.000	193.000	281.000	307.000	277.000	352.000
71	1	1.1.7.7	136.000	211.000	111.000	154.000	176.000	154.000	190.000
72	1	1.1.7.8	7.156	9.327	4.639	7.166	8.628	9.084	12.111
73	1	1.1.7.9	1.503	3.641	1.247	2.089	2.870	2.347	2.581
74	1	1.1.7.10	362.000	723.000	288.000	418.000	569.000	475.000	785.000
75	1	1.1.7.11	412.000	664.000	305.000	407.000	451.000	383.000	465.000
76	1	1.1.7.12	2.644	3.958	1.365	2.447	4.279	5.282	4.882
77	1	1.1.7.13	434.000	799.000	404.000	488.000	651.000	572.000	846.000
78	1	1.1.7.14	1.437	2.119	910.000	1.099	1.626	1.704	2.266
79	1	1.1.7.15	783.000	719.000	624.000	1.158	995.000	1.140	1.370
80	1	1.1.7.16	489.000	661.000	463.000	424.000	1.038	624.000	932.000
81	1	1.1.7.17	614.000	705.000	381.000	528.000	867.000	757.000	739.000
82	1	1.1.7.19	700.000	681.000	600.000	482.000	1.222	1.255	1.576
83	1	1.1.7.20	454.000	659.000	345.000	335.000	582.000	591.000	583.000
84	1	1.1.8.1	186.000	477.000	153.000	340.000	590.000	331.000	788.000
85	1	1.1.8.2	720.000	915.000	588.000	1.071	1.301	1.143	1.962
86	1	1.1.8.4	222.000	811.000	427.000	618.000	991.000	1.135	1.523
87	1	1.1.8.7	512.000	915.000	361.000	646.000	666.000	716.000	1.018
88	1	1.1.8.8	156.000	295.000	166.000	225.000	161.000	191.000	291.000
89	1	1.1.8.9	99.000	165.000	105.000	143.000	151.000	111.000	211.000
90	1	1.1.8.11	317.000	583.000	295.000	382.000	536.000	670.000	843.000
91	1	1.1.8.12	6.312	12.044	8.662	6.690	15.844	12.568	18.545
92	1	1.1.8.13	435.000	709.000	420.000	457.000	566.000	566.000	812.000
93	1	1.1.8.14	315.000	549.000	263.000	338.000	325.000	440.000	425.000
94	1	1.1.8.15	250.000	424.000	252.000	346.000	224.000	254.000	295.000
95	1	1.1.8.16	731.000	2.935	1.140	1.343	2.400	2.509	3.439
96	1	1.1.8.18	9.064	9.988	4.206	5.501	8.512	7.923	10.851
97	1	1.1.8.19	515.000	605.000	308.000	371.000	425.000	506.000	561.000
98	1	1.1.8.20	137.000	248.000	130.000	149.000	182.000	157.000	176.000
99	1	1.1.8.21	1.972	2.793	1.036	1.319	2.831	3.183	3.162
100	1	1.1.9.4	1.716	2.819	1.068	2.272	1.890	2.579	3.925

	rep8	media	desv	cv	mediana	logrep1	logrep2	logrep3
1	313.000	350.000	127.0905	36.3116	310.5	2.38	2.63	2.38
2	1.274	2.321.875	881.2560	37.9545	2.129.0	3.30	3.55	3.16
3	330.000	478.500	211.1316	44.1236	420.5	2.58	2.82	2.32
4	426.000	553.625	193.0928	34.8779	486.5	2.60	2.80	2.55
5	203.000	336.250	130.0030	38.6626	332.0	2.47	2.68	2.27
6	1.090	2.145.125	900.3981	41.9742	2.132.0	3.25	3.39	3.05
7	493.000	761.000	271.9958	35.7419	769.5	2.80	2.96	2.64
8	411.000	804.125	249.8654	31.0729	824.0	2.91	3.05	2.70
9	141.000	346.625	164.9813	47.5965	312.5	2.62	2.70	2.52

10	466.000	728.750	236.8114	32.4956	743.0	2.84	3.01	2.55
11	1.011	1.831.625	606.2312	33.0980	1.831.0	3.22	3.30	3.02
12	312.000	495.250	191.3716	38.6414	430.0	2.62	2.89	2.47
13	1.560	1.912.625	1.081.8821	56.5653	1.638.5	3.13	3.33	2.94
14	326.000	511.625	241.0186	47.1085	441.5	2.55	2.89	2.45
15	205.000	344.875	123.7791	35.8910	324.0	2.46	2.70	2.40
16	446.000	719.625	510.3184	70.9145	537.5	2.71	2.95	2.48
17	424.000	642.000	254.6718	39.6685	533.0	2.68	2.90	2.57
18	261.000	492.750	183.9858	37.3386	474.5	2.66	2.89	2.45
19	138.000	212.375	64.1938	30.2266	202.5	2.28	2.49	2.19
20	181.000	290.250	74.2308	25.5748	306.5	2.39	2.55	2.32
21	204.000	340.875	107.7437	31.6080	313.5	2.50	2.70	2.41
22	212.000	517.875	218.2930	42.1517	488.0	2.73	2.91	2.69
23	130.000	202.000	55.6956	27.5721	197.0	2.29	2.41	2.11
24	327.000	580.250	164.2609	28.3086	600.5	2.74	2.86	2.58
25	264.000	475.000	133.5729	28.1206	497.5	2.65	2.79	2.51
26	547.000	994.125	344.3198	34.6355	945.0	2.91	3.10	2.79
27	319.000	564.625	170.0016	30.1088	604.0	2.80	2.84	2.55
28	675.000	878.625	361.5028	41.1442	712.0	2.87	3.10	2.66
29	1.903	3.119.500	1.435.4440	46.0152	2.781.0	3.46	3.70	3.26
30	179.000	273.125	84.6698	31.0004	260.0	2.34	2.62	2.29
31	415.000	581.250	209.3860	36.0234	544.5	2.57	2.97	2.54
32	1.888	2.911.250	1.125.9236	38.6749	2.576.5	3.39	3.68	3.18
33	104.000	145.125	28.7374	19.8018	133.0	2.12	2.26	2.11
34	92.000	188.500	58.8169	31.2026	191.0	2.22	2.46	2.14
35	177.000	297.500	91.8959	30.8894	303.0	2.38	2.50	2.33
36	171.000	317.625	97.1669	30.5917	321.0	2.46	2.67	2.35
37	119.000	190.375	47.0408	24.7096	182.5	2.23	2.39	2.21
38	428.000	723.750	253.7354	35.0584	729.5	2.85	2.96	2.63
39	199.000	423.875	107.3970	25.3370	473.5	2.68	2.72	2.53
40	320.000	529.250	198.1282	37.4357	554.0	2.73	2.80	2.39
41	184.000	287.125	103.0374	35.8859	302.0	2.40	2.56	2.05
42	100.000	177.375	42.6378	24.0382	186.5	2.24	2.34	2.12
43	917.000	1.470.625	833.8251	56.6987	1.262.0	3.09	3.15	3.11
44	1.748	2.921.875	995.1092	34.0572	2.793.5	3.45	3.51	3.30
45	144.000	245.875	62.2769	25.3287	262.0	2.41	2.43	2.24
46	242.000	316.625	156.1473	49.3162	292.5	2.24	2.62	2.21
47	229.000	303.125	113.5435	37.4576	253.5	2.35	2.44	2.35
48	2.221	3.045.875	1.189.1129	39.0401	2.937.5	3.35	3.48	3.23
49	220.000	345.375	120.9332	35.0150	333.0	2.35	2.65	2.37
50	134.000	161.125	72.1594	44.7847	133.0	2.00	2.31	1.94
51	319.000	435.750	164.7802	37.8153	420.5	2.37	2.81	2.45
52	885.000	1.207.625	650.0938	53.8324	1.091.5	2.82	3.00	2.63
53	351.000	444.375	99.9399	22.4900	427.0	2.60	2.79	2.50
54	729.000	1.197.250	548.6580	45.8265	1.117.5	3.09	3.22	2.75
55	128.000	165.000	51.8404	31.4184	154.5	2.08	2.24	2.00
56	122.000	187.375	59.0495	31.5141	178.0	2.15	2.38	2.09
57	220.000	439.000	173.1869	39.4503	406.5	2.57	2.65	2.49
58	247.000	373.875	96.0825	25.6991	361.0	2.54	2.73	2.42

59	276.000	419.250	125.7648	29.9976	425.0	2.57	2.72	2.40
60	1.137	1.904.625	1.005.9024	52.8137	1.399.5	3.15	3.13	3.01
61	142.000	265.875	73.8114	27.7617	261.0	2.43	2.50	2.30
62	691.000	1.080.125	424.1585	39.2694	1.111.5	3.01	3.16	2.70
63	2.751	9.474.875	3.062.8402	32.3259	9.820.0	3.99	3.99	4.04
64	251.000	509.125	188.1879	36.9630	527.5	2.74	2.71	2.54
65	984.000	1.432.375	659.7244	46.0581	1.308.5	3.03	3.30	2.71
66	1.036	1.509.500	621.7926	41.1920	1.493.0	3.05	3.27	2.80
67	347.000	572.500	228.8992	39.9824	524.0	2.62	2.99	2.57
68	494.000	815.000	320.0437	39.2692	799.5	2.74	3.08	2.68
69	3.316	7.602.875	3.746.4764	49.2771	6.541.0	3.80	4.11	3.54
70	159.000	275.000	80.2443	29.1797	279.0	2.36	2.60	2.29
71	76.000	151.000	43.4478	28.7734	154.0	2.13	2.32	2.05
72	3.883	7.749.250	2.656.0332	34.2747	7.897.0	3.85	3.97	3.67
73	791.000	2.133.625	929.5564	43.5670	2.218.0	3.18	3.56	3.10
74	308.000	491.000	186.4204	37.9675	446.5	2.56	2.86	2.46
75	191.000	409.750	135.7253	33.1239	409.5	2.61	2.82	2.48
76	2.009	3.358.250	1.432.4883	42.6558	3.301.0	3.42	3.60	3.14
77	297.000	561.375	193.4247	34.4555	530.0	2.64	2.90	2.61
78	698.000	1.482.375	558.1856	37.6548	1.531.5	3.16	3.33	2.96
79	507.000	912.000	300.0029	32.8951	889.0	2.89	2.86	2.80
80	362.000	624.125	245.0711	39.2663	556.5	2.69	2.82	2.67
81	278.000	608.625	200.9669	33.0198	659.5	2.79	2.85	2.58
82	577.000	886.625	403.9568	45.5612	690.5	2.85	2.83	2.78
83	252.000	475.125	149.8070	31.5300	518.0	2.66	2.82	2.54
84	287.000	394.000	213.8825	54.2849	335.5	2.27	2.68	2.18
85	709.000	1.051.125	440.8879	41.9444	993.0	2.86	2.96	2.77
86	564.000	786.375	419.5412	53.3513	714.5	2.35	2.91	2.63
87	430.000	658.000	227.0085	34.4998	656.0	2.71	2.96	2.56
88	121.000	200.750	64.2111	31.9856	178.5	2.19	2.47	2.22
89	86.000	133.875	41.6771	31.1314	127.0	2.00	2.22	2.02
90	295.000	490.125	201.9253	41.1987	459.0	2.50	2.77	2.47
91	4.744	10.676.125	4.902.7395	45.9225	10.353.0	3.80	4.08	3.94
92	302.000	533.375	165.8329	31.0912	511.5	2.64	2.85	2.62
93	152.000	350.875	120.7636	34.4178	331.5	2.50	2.74	2.42
94	135.000	272.500	85.6805	31.4424	253.0	2.40	2.63	2.40
95	1.351	1.981.000	968.3528	48.8820	1.875.5	2.86	3.47	3.06
96	3.425	7.433.750	2.738.2336	36.8352	8.217.5	3.96	4.00	3.62
97	120.000	426.375	158.1915	37.1015	465.5	2.71	2.78	2.49
98	86.000	158.125	47.0423	29.7501	153.0	2.14	2.39	2.11
99	1.082	2.172.250	931.0783	42.8624	2.382.5	3.29	3.45	3.02
100	1.227	2.187.000	930.8036	42.5608	2.081.0	3.23	3.45	3.03

	logrep4	logrep5	logrep6	logrep7	logrep8	medialog	desvlog	cvlog
1	2.49	2.61	2.42	2.79	2.50	2.522099	0.1433	5.6823
2	3.36	3.43	3.26	3.55	3.11	3.338252	0.1662	4.9784
3	2.73	2.61	2.64	2.95	2.52	2.643451	0.1919	7.2595
4	2.71	2.67	2.86	2.96	2.63	2.722080	0.1419	5.2138
5	2.62	2.33	2.57	2.71	2.31	2.496470	0.1757	7.0360
6	3.16	3.53	3.48	3.45	3.04	3.294393	0.1967	5.9693

7	2.96	2.75	2.96	3.09	2.69	2.856732	0.1573	5.5080
8	3.01	2.87	2.92	2.99	2.61	2.883513	0.1540	5.3423
9	2.80	2.35	2.35	2.47	2.15	2.495503	0.2133	8.5490
10	2.80	2.90	2.95	2.99	2.67	2.838896	0.1603	5.6481
11	3.23	3.37	3.43	3.35	3.00	3.239218	0.1584	4.8909
12	2.65	2.73	2.59	2.89	2.49	2.668053	0.1608	6.0286
13	3.28	3.23	3.12	3.64	3.19	3.235008	0.2042	6.3134
14	2.76	2.72	2.49	2.97	2.51	2.668959	0.1966	7.3680
15	2.56	2.56	2.39	2.74	2.31	2.514129	0.1516	6.0295
16	2.73	2.79	2.73	3.28	2.65	2.789950	0.2389	8.5637
17	2.73	2.72	3.00	3.01	2.63	2.778764	0.1673	6.0190
18	2.83	2.60	2.69	2.78	2.42	2.664162	0.1717	6.4463
19	2.33	2.23	2.33	2.48	2.14	2.310506	0.1271	5.5015
20	2.47	2.50	2.52	2.60	2.26	2.449280	0.1183	4.8305
21	2.62	2.49	2.41	2.67	2.31	2.513466	0.1382	5.4998
22	2.92	2.49	2.66	2.69	2.33	2.677107	0.1987	7.4236
23	2.26	2.40	2.30	2.44	2.11	2.289847	0.1264	5.5219
24	2.74	2.82	2.81	2.91	2.51	2.746203	0.1363	4.9617
25	2.62	2.74	2.74	2.80	2.42	2.659520	0.1353	5.0858
26	2.93	3.01	3.15	3.15	2.74	2.972875	0.1593	5.3588
27	2.69	2.76	2.91	2.80	2.50	2.732410	0.1431	5.2360
28	2.83	2.83	3.00	3.19	2.83	2.913638	0.1711	5.8708
29	3.43	3.55	3.24	3.74	3.28	3.455387	0.1942	5.6213
30	2.40	2.45	2.43	2.58	2.25	2.418941	0.1302	5.3811
31	2.86	2.71	2.76	2.89	2.62	2.739686	0.1567	5.7197
32	3.39	3.43	3.50	3.64	3.28	3.435945	0.1675	4.8747
33	2.11	2.13	2.23	2.26	2.02	2.154249	0.0864	4.0127
34	2.36	2.31	2.25	2.33	1.96	2.254337	0.1502	6.6622
35	2.46	2.55	2.50	2.67	2.25	2.455663	0.1332	5.4257
36	2.58	2.42	2.55	2.60	2.23	2.482321	0.1434	5.7771
37	2.23	2.29	2.29	2.42	2.08	2.267809	0.1092	4.8136
38	2.75	2.88	2.93	3.07	2.63	2.835532	0.1563	5.5133
39	2.61	2.67	2.70	2.68	2.30	2.610630	0.1391	5.3277
40	2.58	2.76	2.89	2.89	2.51	2.692979	0.1813	6.7325
41	2.40	2.54	2.59	2.59	2.26	2.426428	0.1900	7.8318
42	2.31	2.24	2.30	2.34	2.00	2.235745	0.1197	5.3543
43	3.01	3.41	2.64	3.46	2.96	3.104440	0.2575	8.2939
44	3.40	3.53	3.44	3.70	3.24	3.445292	0.1405	4.0776
45	2.36	2.43	2.46	2.53	2.16	2.376795	0.1218	5.1252
46	2.56	2.54	2.31	2.80	2.38	2.457459	0.2044	8.3163
47	2.61	2.52	2.31	2.72	2.36	2.458241	0.1475	6.0015
48	3.48	3.59	3.46	3.74	3.35	3.457541	0.1584	4.5807
49	2.49	2.62	2.55	2.74	2.34	2.515136	0.1516	6.0260
50	2.12	2.36	2.05	2.46	2.13	2.171275	0.1861	8.5732
51	2.61	2.67	2.63	2.84	2.50	2.611914	0.1654	6.3340
52	3.13	3.21	3.08	3.40	2.95	3.026960	0.2380	7.8643
53	2.66	2.72	2.70	2.59	2.55	2.638317	0.0965	3.6558
54	3.00	2.82	3.25	3.30	2.86	3.034913	0.2114	6.9668
55	2.13	2.33	2.32	2.38	2.11	2.198153	0.1396	6.3507

```
56     2.19    2.40    2.30    2.41    2.09 2.253213  0.1401 6.2170
57     2.48    2.72    2.79    2.86    2.34 2.612275  0.1747 6.6884
58     2.57    2.66    2.63    2.54    2.39 2.559842  0.1141 4.4587
59     2.60    2.66    2.66    2.80    2.44 2.604545  0.1355 5.2039
60     3.15    3.48    3.32    3.58    3.06 3.234164  0.2049 6.3357
61     2.39    2.52    2.40    2.57    2.15 2.408009  0.1335 5.5449
62     2.88    3.10    3.08    3.25    2.84 3.001357  0.1837 6.1205
63     3.92    4.12    4.05    3.99    3.44 3.942719  0.2114 5.3628
64     2.57    2.93    2.78    2.77    2.40 2.679779  0.1670 6.2300
65     3.12    3.21    3.11    3.42    2.99 3.112718  0.2153 6.9159
66     3.17    3.25    3.18    3.43    3.02 3.144409  0.1907 6.0636
67     2.68    2.76    2.76    2.93    2.54 2.729911  0.1630 5.9712
68     2.92    2.93    2.89    3.13    2.69 2.882295  0.1690 5.8631
69     3.78    3.97    3.83    4.11    3.52 3.831585  0.2264 5.9099
70     2.45    2.49    2.44    2.55    2.20 2.422087  0.1334 5.5087
71     2.19    2.25    2.19    2.28    1.88 2.160408  0.1423 6.5860
72     3.86    3.94    3.96    4.08    3.59 3.864081  0.1639 4.2413
73     3.32    3.46    3.37    3.41    2.90 3.286543  0.2164 6.5849
74     2.62    2.76    2.68    2.89    2.49 2.664205  0.1627 6.1087
75     2.61    2.65    2.58    2.67    2.28 2.589603  0.1566 6.0479
76     3.39    3.63    3.72    3.69    3.30 3.486153  0.2073 5.9464
77     2.69    2.81    2.76    2.93    2.47 2.725743  0.1549 5.6846
78     3.04    3.21    3.23    3.36    2.84 3.140667  0.1793 5.7079
79     3.06    3.00    3.06    3.14    2.71 2.938230  0.1494 5.0849
80     2.63    3.02    2.80    2.97    2.56 2.767745  0.1630 5.8879
81     2.72    2.94    2.88    2.87    2.44 2.758715  0.1688 6.1199
82     2.68    3.09    3.10    3.20    2.76 2.910486  0.1893 6.5034
83     2.53    2.76    2.77    2.77    2.40 2.655298  0.1511 5.6887
84     2.53    2.77    2.52    2.90    2.46 2.538661  0.2409 9.4890
85     3.03    3.11    3.06    3.29    2.85 2.991699  0.1689 5.6468
86     2.79    3.00    3.05    3.18    2.75 2.832730  0.2646 9.3423
87     2.81    2.82    2.85    3.01    2.63 2.794754  0.1547 5.5339
88     2.35    2.21    2.28    2.46    2.08 2.283722  0.1365 5.9749
89     2.16    2.18    2.05    2.32    1.93 2.109091  0.1311 6.2138
90     2.58    2.73    2.83    2.93    2.47 2.658688  0.1764 6.6354
91     3.83    4.20    4.10    4.27    3.68 3.985936  0.2090 5.2443
92     2.66    2.75    2.75    2.91    2.48 2.708437  0.1370 5.0566
93     2.53    2.51    2.64    2.63    2.18 2.519040  0.1691 6.7129
94     2.54    2.35    2.40    2.47    2.13 2.415128  0.1460 6.0471
95     3.13    3.38    3.40    3.54    3.13 3.245413  0.2342 7.2167
96     3.74    3.93    3.90    4.04    3.53 3.840020  0.1847 4.8102
97     2.57    2.63    2.70    2.75    2.08 2.589021  0.2277 8.7960
98     2.17    2.26    2.20    2.25    1.93 2.181786  0.1328 6.0873
99     3.12    3.45    3.50    3.50    3.03 3.295694  0.2102 6.3791
100    3.36    3.28    3.41    3.59    3.09 3.305024  0.1880 5.6879
    respdicotoma  media3 media4  media5  media6 dicotoma1 dicotoma2
1              2  7.0473 1.3612 18.1419 0.95421         0         0
2              2 13.2418 1.4945 36.7253 1.25521         0         0
3              2  7.8216 1.3827 20.4647 1.00428         0         0
```

4	2	8.2112	1.3963	21.6335	1.03558	0	0
5	2	6.9538	1.3566	17.8613	0.94335	0	0
6	2	12.8969	1.4880	35.6906	1.24088	0	0
7	2	9.1298	1.4189	24.3894	1.08728	0	0
8	2	9.2991	1.4233	24.8973	1.09729	0	0
9	2	7.0246	1.3564	18.0737	0.94294	0	0
10	2	8.9990	1.4160	23.9969	1.08056	0	0
11	2	12.2352	1.4796	33.7057	1.22261	0	0
12	2	7.9118	1.3870	20.7354	1.01416	0	0
13	2	12.4130	1.4790	34.2390	1.22120	0	0
14	2	7.9980	1.3871	20.9941	1.01452	0	0
15	2	7.0127	1.3598	18.0382	0.95085	0	0
16	2	8.9613	1.4078	23.8838	1.06193	0	0
17	2	8.6267	1.4059	22.8801	1.05763	0	0
18	2	7.8985	1.3863	20.6954	1.01260	0	0
19	2	5.9662	1.3220	14.8987	0.86129	0	0
20	2	6.6210	1.3480	16.8630	0.92308	0	0
21	2	6.9855	1.3596	17.9565	0.95057	0	0
22	2	8.0305	1.3885	21.0914	1.01778	0	0
23	2	5.8675	1.3181	14.6024	0.85179	0	0
24	2	8.3407	1.4004	22.0222	1.04501	0	0
25	2	7.8025	1.3855	20.4074	1.01074	0	0
26	2	9.9804	1.4379	26.9411	1.13007	0	0
27	2	8.2652	1.3980	21.7956	1.03963	0	0
28	2	9.5778	1.4283	25.7335	1.10845	0	0
29	2	14.6115	1.5118	40.8345	1.29262	0	0
30	2	6.4881	1.3424	16.4644	0.90986	0	0
31	2	8.3455	1.3993	22.0366	1.04247	0	0
32	2	14.2788	1.5090	39.8365	1.28650	0	0
33	1	5.2551	1.2915	12.7653	0.78741	1	1
34	2	5.7337	1.3112	14.2012	0.83528	0	0
35	2	6.6757	1.3491	17.0270	0.92585	0	0
36	2	6.8229	1.3540	17.4688	0.93731	0	0
37	2	5.7527	1.3138	14.2580	0.84158	0	0
38	2	8.9783	1.4154	23.9350	1.07929	0	0
39	2	7.5118	1.3769	19.5355	0.99095	0	0
40	2	8.0889	1.3913	21.2666	1.02409	0	0
41	2	6.5972	1.3438	16.7915	0.91314	0	0
42	1	5.6186	1.3076	13.8559	0.82654	1	0
43	2	11.3719	1.4588	31.1158	1.17671	0	0
44	2	14.2962	1.5103	39.8886	1.28945	0	0
45	2	6.2648	1.3345	15.7943	0.89122	0	0
46	2	6.8158	1.3495	17.4473	0.92662	0	0
47	2	6.7175	1.3496	17.1525	0.92696	0	0
48	2	14.4956	1.5121	40.4869	1.29330	0	0
49	2	7.0161	1.3599	18.0484	0.95127	0	0
50	1	5.4415	1.2949	13.3246	0.79570	1	1
51	2	7.5813	1.3772	19.7440	0.99147	0	0
52	2	10.6490	1.4466	28.9471	1.14947	0	0

53	2	7.6310	1.3818	19.8931	1.00220	0	0
54	2	10.6185	1.4478	28.8554	1.15230	0	0
55	1	5.4848	1.3002	13.4544	0.80866	1	1
56	2	5.7223	1.3110	14.1669	0.83476	0	0
57	2	7.6001	1.3772	19.8004	0.99162	0	0
58	2	7.2040	1.3680	18.6121	0.97002	0	0
59	2	7.4844	1.3759	19.4532	0.98846	0	0
60	2	12.3957	1.4788	34.1870	1.22092	0	0
61	2	6.4302	1.3404	16.2907	0.90505	0	0
62	2	10.2603	1.4425	27.7808	1.14033	0	0
63	2	21.1604	1.5798	60.4813	1.43656	0	0
64	2	7.9850	1.3890	20.9550	1.01884	0	0
65	2	11.2725	1.4601	30.8174	1.17958	0	0
66	2	11.4713	1.4650	31.4138	1.19051	0	0
67	2	8.3034	1.3976	21.9103	1.03865	0	0
68	2	9.3408	1.4231	25.0225	1.09683	0	0
69	2	19.6634	1.5648	55.9903	1.40526	0	0
70	2	6.5030	1.3430	16.5089	0.91124	0	0
71	1	5.3251	1.2927	12.9752	0.79042	1	1
72	2	19.7888	1.5692	56.3665	1.41450	0	0
73	2	12.8738	1.4868	35.6213	1.23830	0	0
74	2	7.8891	1.3863	20.6673	1.01262	0	0
75	2	7.4274	1.3732	19.2823	0.98233	0	0
76	2	14.9751	1.5163	41.9254	1.30226	0	0
77	2	8.2493	1.3969	21.7479	1.03702	0	0
78	2	11.4021	1.4644	31.2064	1.18922	0	0
79	2	9.6976	1.4323	26.0928	1.11747	0	0
80	2	8.5459	1.4040	22.6377	1.05337	0	0
81	2	8.4745	1.4025	22.4236	1.04988	0	0
82	2	9.6068	1.4278	25.8205	1.10728	0	0
83	2	7.8031	1.3847	20.4094	1.00905	0	0
84	2	7.3310	1.3642	18.9931	0.96118	0	0
85	2	10.1676	1.4409	27.5028	1.13686	0	0
86	2	9.2302	1.4149	24.6905	1.07823	0	0
87	2	8.6978	1.4086	23.0934	1.06377	0	0
88	2	5.8553	1.3169	14.5660	0.84896	0	0
89	1	5.1156	1.2824	12.3469	0.76513	1	1
90	2	7.8844	1.3853	20.6532	1.01041	0	0
91	2	22.0194	1.5855	63.0581	1.44851	0	0
92	2	8.1098	1.3939	21.3294	1.03021	0	0
93	2	7.0532	1.3606	18.1595	0.95292	0	0
94	2	6.4832	1.3417	16.4496	0.90818	0	0
95	2	12.5592	1.4806	34.6776	1.22467	0	0
96	2	19.5165	1.5659	55.5496	1.40767	0	0
97	2	7.5266	1.3731	19.5797	0.98209	0	0
98	1	5.4075	1.2970	13.2226	0.80079	1	1
99	2	12.9510	1.4882	35.8530	1.24131	0	0
100	2	12.9802	1.4896	35.9407	1.24437	0	0

clasificador

1	2
2	2
3	2
4	2
5	2
6	2
7	2
8	2
9	2
10	2
11	2
12	2
13	2
14	2
15	2
16	2
17	2
18	2
19	2
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21	2
22	2
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27	2
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29	2
30	2
31	2
32	2
33	1
34	2
35	2
36	2
37	2
38	2
39	2
40	2
41	2
42	2
43	2
44	2
45	2
46	2
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50	1
51	2
52	2
53	2
54	2
55	1
56	2
57	2
58	2
59	2
60	2
61	2
62	2
63	2
64	2
65	2
66	2
67	2
68	2
69	2
70	2
71	1
72	2
73	2
74	2
75	2
76	2
77	2
78	2
79	2
80	2
81	2
82	2
83	2
84	2
85	2
86	2
87	2
88	2
89	1
90	2
91	2
92	2
93	2
94	2
95	2
96	2
97	2
98	1

```
99             2
100            2
```

```
> names(tom2)
```

```
 [1] "grupo"        "genes.filter" "rep1"         "rep2"         "rep3"
 [6] "rep4"         "rep5"         "rep6"         "rep7"         "rep8"
[11] "media"        "desv"         "cv"           "mediana"      "logrep1"
[16] "logrep2"      "logrep3"      "logrep4"      "logrep5"      "logrep6"
[21] "logrep7"      "logrep8"      "medialog"     "desvlog"      "cvlog"
[26] "respdicotoma" "media3"       "media4"       "media5"       "media6"
[31] "dicotoma1"    "dicotoma2"    "clasificador"
```

```
> attach(tom2)
> genesR<-read.table("genes-resist.txt",h=T) #lista de todos los genes antes del filtro
> genesR[1:100,]
```

```
    genes.ori resistance
1     1.1.1.1          0
2     1.1.1.2          0
3     1.1.1.3          0
4     1.1.1.4          0
5     1.1.1.5          0
6     1.1.1.6          0
7     1.1.1.7          0
8     1.1.1.8          0
9     1.1.1.9          0
10   1.1.1.10          0
11   1.1.1.11          0
12   1.1.1.12          0
13   1.1.1.13          0
14   1.1.1.14          0
15   1.1.1.15          0
16   1.1.1.16          0
17   1.1.1.17          0
18   1.1.1.18          0
19   1.1.1.19          0
20   1.1.1.20          0
21   1.1.1.21          0
22    1.1.2.1          0
23    1.1.2.2          0
24    1.1.2.3          0
25    1.1.2.4          0
26    1.1.2.5          0
27    1.1.2.6          0
28    1.1.2.7          0
29    1.1.2.8          0
30    1.1.2.9          0
31   1.1.2.10          0
32   1.1.2.11          0
```

```
33   1.1.2.12          0
34   1.1.2.13          0
35   1.1.2.14          0
36   1.1.2.15          0
37   1.1.2.16          0
38   1.1.2.17          0
39   1.1.2.18          0
40   1.1.2.19          0
41   1.1.2.20          0
42   1.1.2.21          0
43    1.1.3.1          0
44    1.1.3.2          0
45    1.1.3.3          0
46    1.1.3.4          0
47    1.1.3.5          0
48    1.1.3.6          0
49    1.1.3.7          0
50    1.1.3.8          0
51    1.1.3.9          0
52   1.1.3.10          0
53   1.1.3.11          0
54   1.1.3.12          0
55   1.1.3.13          0
56   1.1.3.14          0
57   1.1.3.15          0
58   1.1.3.16          0
59   1.1.3.17          0
60   1.1.3.18          0
61   1.1.3.19          0
62   1.1.3.20          0
63   1.1.3.21          0
64    1.1.4.1          0
65    1.1.4.2          0
66    1.1.4.3          0
67    1.1.4.4          0
68    1.1.4.5          0
69    1.1.4.6          0
70    1.1.4.7          0
71    1.1.4.8          0
72    1.1.4.9          0
73   1.1.4.10          0
74   1.1.4.11          0
75   1.1.4.12          0
76   1.1.4.13          0
77   1.1.4.14          0
78   1.1.4.15          0
79   1.1.4.16          0
80   1.1.4.17          0
81   1.1.4.18          0
```

```
82   1.1.4.19          0
83   1.1.4.20          0
84   1.1.4.21          0
85    1.1.5.1          0
86    1.1.5.2          0
87    1.1.5.3          0
88    1.1.5.4          0
89    1.1.5.5          0
90    1.1.5.6          0
91    1.1.5.7          0
92    1.1.5.8          0
93    1.1.5.9          0
94   1.1.5.10          0
95   1.1.5.11          0
96   1.1.5.12          0
97   1.1.5.13          0
98   1.1.5.14          0
99   1.1.5.15          0
100  1.1.5.16          0
```

```
> dim(genesR)
```

```
[1] 13440     2
```

```
> names(genesR)
```

```
[1] "genes.ori"  "resistance"
```

```
> attach(genesR)
> genes.resistance<-genes.ori[resistance==1] #solamente los genes de resistencia
> genes.resistance
```

```
  [1] 1.1.6.21  1.1.14.19 1.1.18.12 1.1.20.5  1.2.9.8   1.2.11.10 1.2.13.1
  [8] 1.2.14.8  1.2.16.1  1.3.3.17  1.3.5.4   1.3.10.17 1.3.15.8  1.3.18.21
 [15] 1.3.20.12 1.4.14.5  1.4.15.10 1.4.16.1  1.4.17.18 1.4.20.9  2.1.4.14
 [22] 2.1.12.14 2.1.13.17 2.1.13.18 2.1.13.21 2.1.14.4  2.1.16.2  2.2.2.15
 [29] 2.2.3.17  2.2.16.8  2.3.6.13  2.3.9.1   2.3.13.14 2.3.19.16 2.4.1.10
 [36] 2.4.2.15  2.4.3.12  2.4.6.16  2.4.6.21  2.4.7.9   2.4.10.20 2.4.13.18
 [43] 2.4.15.21 2.4.17.3  2.4.18.3  3.1.6.21  3.1.16.7  3.2.6.10  3.2.10.9
 [50] 3.2.12.12 3.2.13.21 3.2.14.13 3.2.15.5  3.3.6.21  3.3.9.1   3.3.10.19
 [57] 3.3.11.4  3.3.14.16 3.3.14.19 3.3.16.6  3.3.16.16 3.3.20.13 3.4.10.20
 [64] 3.4.10.21 3.4.12.3  3.4.16.17 3.4.17.5  4.1.2.6   4.1.14.4  4.1.14.5
 [71] 4.1.14.9  4.1.16.3  4.1.16.5  4.1.16.6  4.1.17.2  4.1.19.3  4.2.13.21
 [78] 4.2.14.9  4.2.17.9  4.3.1.20  4.3.10.14 4.3.10.20 4.3.15.4  4.3.16.2
 [85] 4.3.17.4  4.3.19.16 4.3.20.3  4.4.16.18 5.1.3.3   5.1.5.9   5.1.12.18
 [92] 5.1.19.16 5.1.20.18 5.1.20.19 5.2.3.20  5.2.3.21  5.2.9.3   5.2.12.12
 [99] 5.2.16.4  5.2.20.14 5.2.20.17 5.3.11.10 5.3.13.4  5.3.13.18 5.3.16.1
[106] 5.3.19.5  5.4.3.21  5.4.11.18 5.4.13.3  5.4.14.19 5.4.15.14 5.4.19.2
[113] 6.1.3.3   6.1.12.21 6.2.1.12  6.2.14.19 6.2.15.3  6.2.16.7  6.2.16.12
[120] 6.2.18.1  6.3.2.5   6.3.11.14 6.3.19.21 6.4.1.10  6.4.4.14  6.4.11.6
```

```
[127] 6.4.16.9  6.4.19.20 7.1.9.19  7.1.12.18 7.1.16.10 7.1.18.2  7.2.2.13
[134] 7.2.3.16  7.2.15.14 7.2.20.7  7.2.20.8  7.3.4.16  7.3.9.5   7.3.9.8
[141] 7.3.11.7  7.3.14.3  7.3.15.2  7.3.16.4  7.3.19.10 7.4.5.6   7.4.7.7
[148] 7.4.16.6  7.4.17.14 7.4.19.19 7.4.19.21 8.1.11.1  8.1.13.15 8.1.18.4
[155] 8.2.4.3   8.2.7.7   8.2.10.9  8.2.13.13 8.2.15.5  8.2.16.8  8.2.16.9
[162] 8.2.17.7  8.2.18.4  8.2.19.19 8.3.14.10 8.3.17.8  8.3.19.19 8.3.20.16
[169] 8.4.7.7   8.4.11.17 8.4.13.15 8.4.16.4  8.4.17.9  8.4.19.19
13440 Levels: 1.1.10.1 1.1.10.10 1.1.10.11 1.1.10.12 1.1.10.13 ... 8.4.9.9
```

```
> indres<-which(genes.ori%in%genes.resistance) # ind genes de resistencia en nueva base
> indres
```

```
  [1]   126   292   369   404   596   640   673   701   736   899   928  1046
 [13]  1142  1218  1251  1538  1564  1576  1614  1668  1757  1925  1949  1950
 [25]  1953  1957  1997  2136  2159  2423  2638  2689  2786  2914  2950  2976
 [37]  2994  3061  3066  3075  3149  3210  3255  3279  3300  3486  3682  3895
 [49]  3978  4023  4053  4066  4079  4326  4369  4408  4414  4489  4492  4521
 [61]  4531  4612  4829  4830  4854  4952  4961  5067  5317  5318  5322  5358
 [73]  5360  5361  5378  5421  5733  5742  5805  5900  6083  6089  6178  6197
 [85]  6220  6274  6282  6633  6765  6813  6969  7114  7137  7138  7202  7203
 [97]  7311  7383  7459  7553  7556  7780  7816  7830  7876  7943  8043  8208
[109]  8235  8272  8288  8360  8445  8652  8832  9112  9117  9142  9147  9178
[121]  9266  9464  9639  9670  9737  9876  9984 10058 10267 10329 10405 10439
[133] 10534 10558 10808 10906 10907 10999 11093 11096 11137 11196 11216 11239
[145] 11308 11430 11473 11661 11690 11737 11739 11971 12027 12121 12246 12313
[157] 12378 12445 12479 12503 12504 12523 12541 12577 12883 12944 12997 13015
[169] 13153 13247 13287 13339 13365 13417
```

```
> genesres<-na.omit(unique(genes.ori[indres]))
> genesres
```

```
  [1] 1.1.6.21  1.1.14.19 1.1.18.12 1.1.20.5  1.2.9.8   1.2.11.10 1.2.13.1
  [8] 1.2.14.8  1.2.16.1  1.3.3.17  1.3.5.4   1.3.10.17 1.3.15.8  1.3.18.21
 [15] 1.3.20.12 1.4.14.5  1.4.15.10 1.4.16.1  1.4.17.18 1.4.20.9  2.1.4.14
 [22] 2.1.12.14 2.1.13.17 2.1.13.18 2.1.13.21 2.1.14.4  2.1.16.2  2.2.2.15
 [29] 2.2.3.17  2.2.16.8  2.3.6.13  2.3.9.1   2.3.13.14 2.3.19.16 2.4.1.10
 [36] 2.4.2.15  2.4.3.12  2.4.6.16  2.4.6.21  2.4.7.9   2.4.10.20 2.4.13.18
 [43] 2.4.15.21 2.4.17.3  2.4.18.3  3.1.6.21  3.1.16.7  3.2.6.10  3.2.10.9
 [50] 3.2.12.12 3.2.13.21 3.2.14.13 3.2.15.5  3.3.6.21  3.3.9.1   3.3.10.19
 [57] 3.3.11.4  3.3.14.16 3.3.14.19 3.3.16.6  3.3.16.16 3.3.20.13 3.4.10.20
 [64] 3.4.10.21 3.4.12.3  3.4.16.17 3.4.17.5  4.1.2.6   4.1.14.4  4.1.14.5
 [71] 4.1.14.9  4.1.16.3  4.1.16.5  4.1.16.6  4.1.17.2  4.1.19.3  4.2.13.21
 [78] 4.2.14.9  4.2.17.9  4.3.1.20  4.3.10.14 4.3.10.20 4.3.15.4  4.3.16.2
 [85] 4.3.17.4  4.3.19.16 4.3.20.3  4.4.16.18 5.1.3.3   5.1.5.9   5.1.12.18
 [92] 5.1.19.16 5.1.20.18 5.1.20.19 5.2.3.20  5.2.3.21  5.2.9.3   5.2.12.12
 [99] 5.2.16.4  5.2.20.14 5.2.20.17 5.3.11.10 5.3.13.4  5.3.13.18 5.3.16.1
[106] 5.3.19.5  5.4.3.21  5.4.11.18 5.4.13.3  5.4.14.19 5.4.15.14 5.4.19.2
[113] 6.1.3.3   6.1.12.21 6.2.1.12  6.2.14.19 6.2.15.3  6.2.16.7  6.2.16.12
[120] 6.2.18.1  6.3.2.5   6.3.11.14 6.3.19.21 6.4.1.10  6.4.4.14  6.4.11.6
[127] 6.4.16.9  6.4.19.20 7.1.9.19  7.1.12.18 7.1.16.10 7.1.18.2  7.2.2.13
```

```
[134] 7.2.3.16  7.2.15.14 7.2.20.7  7.2.20.8  7.3.4.16  7.3.9.5   7.3.9.8
[141] 7.3.11.7  7.3.14.3  7.3.15.2  7.3.16.4  7.3.19.10 7.4.5.6   7.4.7.7
[148] 7.4.16.6  7.4.17.14 7.4.19.19 7.4.19.21 8.1.11.1  8.1.13.15 8.1.18.4
[155] 8.2.4.3   8.2.7.7   8.2.10.9  8.2.13.13 8.2.15.5  8.2.16.8  8.2.16.9
[162] 8.2.17.7  8.2.18.4  8.2.19.19 8.3.14.10 8.3.17.8  8.3.19.19 8.3.20.16
[169] 8.4.7.7   8.4.11.17 8.4.13.15 8.4.16.4  8.4.17.9  8.4.19.19
13440 Levels: 1.1.10.1 1.1.10.10 1.1.10.11 1.1.10.12 1.1.10.13 ... 8.4.9.9
```

```
> length(genesres)
```

```
[1] 174
```

- Crear una variable indicadora para una tabla original

```
> gg<-tom2$genes.filter
> gg[1:100]
```

```
  [1] 1.1.1.2  1.1.1.4  1.1.1.8  1.1.1.10 1.1.1.11 1.1.1.12 1.1.1.14 1.1.1.15
  [9] 1.1.1.16 1.1.1.17 1.1.1.19 1.1.2.2  1.1.2.4  1.1.2.5  1.1.2.6  1.1.2.7
 [17] 1.1.2.8  1.1.2.9  1.1.2.10 1.1.2.11 1.1.2.12 1.1.2.14 1.1.2.15 1.1.2.16
 [25] 1.1.2.17 1.1.2.20 1.1.2.21 1.1.3.4  1.1.3.6  1.1.3.7  1.1.3.8  1.1.3.9
 [33] 1.1.3.10 1.1.3.11 1.1.3.13 1.1.3.14 1.1.3.15 1.1.3.16 1.1.3.17 1.1.3.19
 [41] 1.1.3.20 1.1.3.21 1.1.4.17 1.1.4.18 1.1.4.20 1.1.5.2  1.1.5.3  1.1.5.7
 [49] 1.1.5.8  1.1.6.1  1.1.6.4  1.1.6.6  1.1.6.7  1.1.6.9  1.1.6.10 1.1.6.11
 [57] 1.1.6.12 1.1.6.13 1.1.6.14 1.1.6.16 1.1.6.17 1.1.6.18 1.1.6.20 1.1.6.21
 [65] 1.1.7.1  1.1.7.2  1.1.7.3  1.1.7.4  1.1.7.5  1.1.7.6  1.1.7.7  1.1.7.8
 [73] 1.1.7.9  1.1.7.10 1.1.7.11 1.1.7.12 1.1.7.13 1.1.7.14 1.1.7.15 1.1.7.16
 [81] 1.1.7.17 1.1.7.19 1.1.7.20 1.1.8.1  1.1.8.2  1.1.8.4  1.1.8.7  1.1.8.8
 [89] 1.1.8.9  1.1.8.11 1.1.8.12 1.1.8.13 1.1.8.14 1.1.8.15 1.1.8.16 1.1.8.18
 [97] 1.1.8.19 1.1.8.20 1.1.8.21 1.1.9.4
7816 Levels: 1.1.10.1 1.1.10.10 1.1.10.11 1.1.10.12 1.1.10.13 ... 8.4.9.8
```

```
> names(gg)
```

```
NULL
```

```
> enfermos<-gg[tom2$dicotoma2==1]#enfermos son genes predichos de resist
> enfermos[1:100]
```

```
  [1] 1.1.3.10  1.1.6.1   1.1.6.10  1.1.7.7   1.1.8.9   1.1.8.20  1.1.14.2
  [8] 1.1.14.8  1.1.14.19 1.1.15.14 1.1.18.19 1.1.19.19 1.1.20.3  1.1.20.16
 [15] 1.2.2.14  1.2.3.16  1.2.6.9   1.2.9.12  1.2.10.6  1.2.11.17 1.2.13.1
 [22] 1.2.13.20 1.2.14.5  1.2.17.13 1.2.17.18 1.2.17.21 1.2.19.5  1.2.19.8
 [29] 1.2.20.10 1.2.20.16 1.3.3.21  1.3.5.8   1.3.6.9   1.3.8.1   1.3.8.3
 [36] 1.3.8.9   1.3.8.12  1.3.9.6   1.3.12.15 1.3.15.1  1.3.15.10 1.3.17.5
 [43] 1.3.17.10 1.3.17.13 1.3.18.7  1.3.19.12 1.3.20.8  1.4.2.4   1.4.2.16
 [50] 1.4.3.16  1.4.3.21  1.4.6.13  1.4.7.10  1.4.8.8   1.4.9.20  1.4.13.3
 [57] 1.4.15.13 1.4.18.13 1.4.19.18 1.4.20.18 2.1.1.14  2.1.2.16  2.1.5.1
 [64] 2.1.5.6   2.1.5.14  2.1.6.8   2.1.6.21  2.1.7.20  2.1.8.15  2.1.10.15
 [71] 2.1.10.16 2.1.12.11 2.1.12.18 2.1.13.13 2.1.14.5  2.1.15.1  2.1.15.15
```

```
 [78] 2.1.16.17 2.1.20.2  2.1.20.17 2.2.1.17  2.2.2.7   2.2.2.14  2.2.3.16
 [85] 2.2.3.18  2.2.6.15  2.2.7.16  2.2.7.19  2.2.8.8   2.2.8.19  2.2.10.19
 [92] 2.2.14.1  2.2.15.20 2.2.18.7  2.2.18.9  2.2.18.11 2.3.1.19  2.3.2.13
 [99] 2.3.3.9   2.3.3.12
7816 Levels: 1.1.10.1 1.1.10.10 1.1.10.11 1.1.10.12 1.1.10.13 ... 8.4.9.8
```

```
> names(enfermos)
```

```
NULL
```

```
> annot<-read.table("annot.txt",h=T)
> annot[1:100,]
```

```
  [1] 1.1.10.1  1.1.10.10 1.1.10.11 1.1.10.12 1.1.10.13 1.1.10.14 1.1.10.15
  [8] 1.1.10.16 1.1.10.17 1.1.10.18 1.1.10.19 1.1.10.2  1.1.10.20 1.1.10.21
 [15] 1.1.10.3  1.1.10.4  1.1.10.5  1.1.10.6  1.1.10.7  1.1.10.8  1.1.10.9
 [22] 1.1.1.1   1.1.1.10  1.1.1.11  1.1.11.1  1.1.11.10 1.1.11.11 1.1.11.12
 [29] 1.1.11.13 1.1.11.14 1.1.11.15 1.1.11.16 1.1.11.17 1.1.11.18 1.1.11.19
 [36] 1.1.1.12  1.1.11.2  1.1.11.20 1.1.11.21 1.1.1.13  1.1.11.3  1.1.1.14
 [43] 1.1.11.4  1.1.1.15  1.1.11.5  1.1.1.16  1.1.11.6  1.1.1.17  1.1.11.7
 [50] 1.1.1.18  1.1.11.8  1.1.1.19  1.1.11.9  1.1.1.2   1.1.1.20  1.1.1.21
 [57] 1.1.12.1  1.1.12.10 1.1.12.11 1.1.12.12 1.1.12.13 1.1.12.14 1.1.12.15
 [64] 1.1.12.16 1.1.12.17 1.1.12.18 1.1.12.19 1.1.12.2  1.1.12.20 1.1.12.21
 [71] 1.1.12.3  1.1.12.4  1.1.12.5  1.1.12.6  1.1.12.7  1.1.12.8  1.1.12.9
 [78] 1.1.1.3   1.1.13.1  1.1.13.10 1.1.13.11 1.1.13.12 1.1.13.13 1.1.13.14
 [85] 1.1.13.15 1.1.13.16 1.1.13.17 1.1.13.18 1.1.13.19 1.1.13.2  1.1.13.20
 [92] 1.1.13.21 1.1.13.3  1.1.13.4  1.1.13.5  1.1.13.6  1.1.13.7  1.1.13.8
 [99] 1.1.13.9  1.1.1.4
13440 Levels: 1.1.10.1 1.1.10.10 1.1.10.11 1.1.10.12 1.1.10.13 ... 8.4.9.9
```

```
> names(annot)
```

```
[1] "annot"
```

```
> annot2<-annot$annot
> annot2[1:100]
```

```
  [1] 1.1.10.1  1.1.10.10 1.1.10.11 1.1.10.12 1.1.10.13 1.1.10.14 1.1.10.15
  [8] 1.1.10.16 1.1.10.17 1.1.10.18 1.1.10.19 1.1.10.2  1.1.10.20 1.1.10.21
 [15] 1.1.10.3  1.1.10.4  1.1.10.5  1.1.10.6  1.1.10.7  1.1.10.8  1.1.10.9
 [22] 1.1.1.1   1.1.1.10  1.1.1.11  1.1.11.1  1.1.11.10 1.1.11.11 1.1.11.12
 [29] 1.1.11.13 1.1.11.14 1.1.11.15 1.1.11.16 1.1.11.17 1.1.11.18 1.1.11.19
 [36] 1.1.1.12  1.1.11.2  1.1.11.20 1.1.11.21 1.1.1.13  1.1.11.3  1.1.1.14
 [43] 1.1.11.4  1.1.1.15  1.1.11.5  1.1.1.16  1.1.11.6  1.1.1.17  1.1.11.7
 [50] 1.1.1.18  1.1.11.8  1.1.1.19  1.1.11.9  1.1.1.2   1.1.1.20  1.1.1.21
 [57] 1.1.12.1  1.1.12.10 1.1.12.11 1.1.12.12 1.1.12.13 1.1.12.14 1.1.12.15
 [64] 1.1.12.16 1.1.12.17 1.1.12.18 1.1.12.19 1.1.12.2  1.1.12.20 1.1.12.21
 [71] 1.1.12.3  1.1.12.4  1.1.12.5  1.1.12.6  1.1.12.7  1.1.12.8  1.1.12.9
 [78] 1.1.1.3   1.1.13.1  1.1.13.10 1.1.13.11 1.1.13.12 1.1.13.13 1.1.13.14
 [85] 1.1.13.15 1.1.13.16 1.1.13.17 1.1.13.18 1.1.13.19 1.1.13.2  1.1.13.20
 [92] 1.1.13.21 1.1.13.3  1.1.13.4  1.1.13.5  1.1.13.6  1.1.13.7  1.1.13.8
 [99] 1.1.13.9  1.1.1.4
13440 Levels: 1.1.10.1 1.1.10.10 1.1.10.11 1.1.10.12 1.1.10.13 ... 8.4.9.9
```

```
> ind<-which(annot2%in%enfermos)
> ind[1:100]

  [1]  111  112  127  197  219  237  244  273  274  333  334  372  387  395  434
 [16]  449  495  507  533  587  592  596  643  646  649  655  674  697  764  771
 [31]  773  819  851  860  956  957 1000 1014 1038 1045 1082 1118 1166 1187 1209
 [46] 1212 1223 1229 1247 1341 1375 1441 1468 1489 1508 1516 1529 1535 1589 1607
 [61] 1646 1660 1675 1676 1710 1727 1734 1751 1785 1791 1797 1821 1906 1909 1926
 [76] 1982 1987 1998 2014 2015 2021 2035 2050 2095 2131 2184 2215 2271 2287 2289
 [91] 2338 2351 2361 2363 2423 2444 2447 2468 2477 2504

> vec<-rep(0, length(annot2))
> vec[1:120]

  [1] 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
 [38] 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
 [75] 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
[112] 0 0 0 0 0 0 0 0 0

> vec[ind]=1
> predenfermos<-cbind(annot2,vec)
> names(predenfermos)

NULL

> predenfermos[1:10,]

      annot2 vec
 [1,]      1   0
 [2,]      2   0
 [3,]      3   0
 [4,]      4   0
 [5,]      5   0
 [6,]      6   0
 [7,]      7   0
 [8,]      8   0
 [9,]      9   0
[10,]     10   0

> write.table(predenfermos,"predenfermos.csv")
```

Estadísticos de tendencia y posición

```
> x<-c(1,2,3,4,5,6,6,7,8,10)
> x

 [1]  1  2  3  4  5  6  6  7  8 10

> mean(x)
```

```
[1] 5.2

> var(x)

[1] 7.733333

> sqrt(var(x))

[1] 2.780887

> sd(x)

[1] 2.780887

> median(1:4)

[1] 2.5

> range(x)

[1]  1 10

> quantile(x)

   0%   25%   50%   75%  100%
 1.00  3.25  5.50  6.75 10.00
```

Coeficientes de correlación

```
> MicroYprot<-read.table("MicroYProtprom.txt",h=T)
> MicroYprot[1:10,]

       ID promMicro  promProt
1  260709 1.7975710 1.9988333
2  266157 1.6939142 4.6806667
3  266158 1.3075490 2.0431667
4  266176 0.9802853 3.9080000
5  266181 0.8840516 0.8361667
6  266213 0.9336707 0.8572500
7  266215 1.0134012 0.9767083
8  266216 1.1405567 0.8183611
9  266217 1.2771242 0.8947778
10 266218 1.2098090 3.7069167

> names(MicroYprot)

[1] "ID"        "promMicro" "promProt"

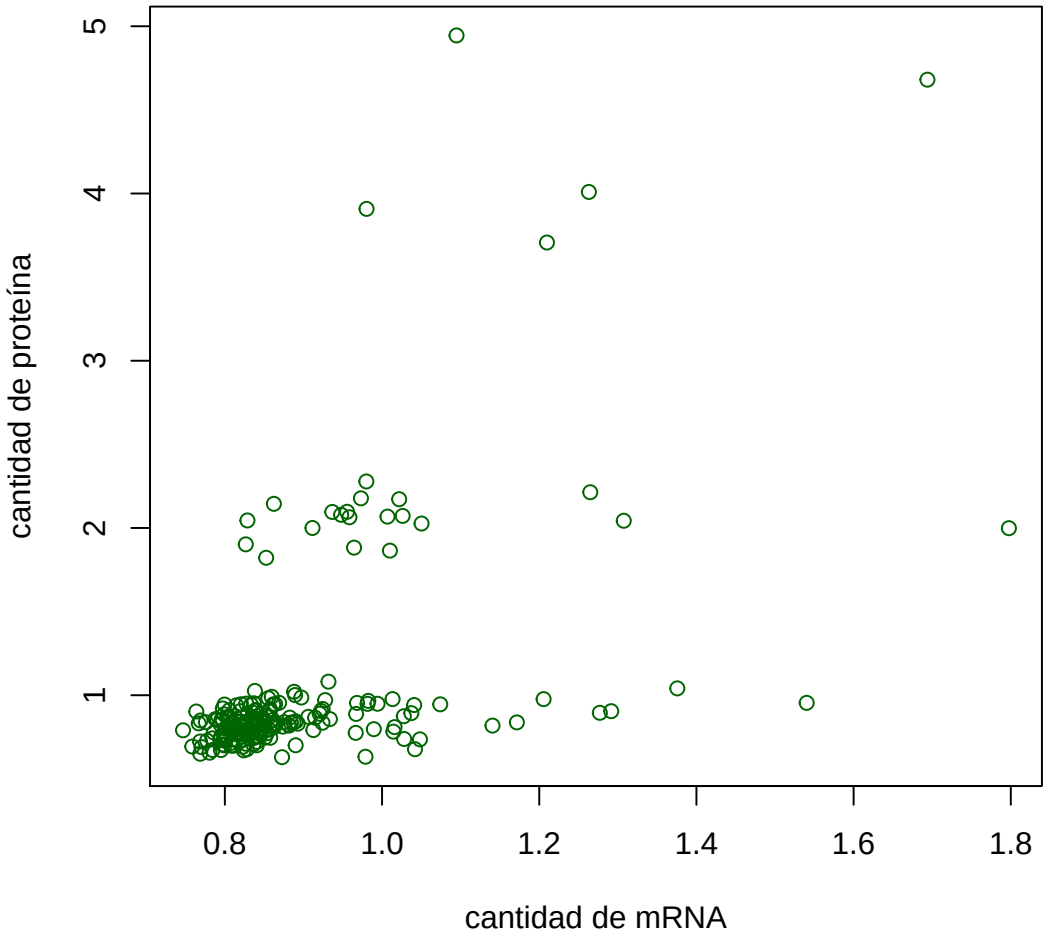
> attach(MicroYprot)
> x<-promMicro
> x[1:10]
```

```
 [1] 1.7975710 1.6939142 1.3075490 0.9802853 0.8840516 0.9336707 1.0134012
 [8] 1.1405567 1.2771242 1.2098090

> y<-promProt
> y[1:10]

 [1] 1.9988333 4.6806667 2.0431667 3.9080000 0.8361667 0.8572500 0.9767083
 [8] 0.8183611 0.8947778 3.7069167

> plot(x,y,xlab="cantidad de mRNA",ylab="cantidad de proteína", col="dark green")
```




```
> cor.test(x, y, method = "pearson", alternative = "greater")

        Pearson's product-moment correlation

data:  x and y
t = 8.8396, df = 202, p-value = 2.22e-16
alternative hypothesis: true correlation is greater than 0
95 percent confidence interval:
 0.4394391 1.0000000
```

```
sample estimates:
      cor
0.5281345

> cor.test(x, y, method = "spearm", alternative = "g")

        Spearman's rank correlation rho

data:  x and y
S = 692594.7, p-value = 3.09e-15
alternative hypothesis: true rho is greater than 0
sample estimates:
      rho
0.5105026

> cor.test(x, y, method = "kendall", alternative = "g")

        Kendall's rank correlation tau

data:  x and y
z = 7.7711, p-value = 3.886e-15
alternative hypothesis: true tau is greater than 0
sample estimates:
      tau
0.3658448

> cor.test(x,y)$estimate

      cor
0.5281345
```