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]   4.162798373  3.541234111  2.065468995  6.297238875  3.348030456
  [6]   0.032100402  5.099711834 -0.928479883 -0.106411191 -0.632952221
 [11]   1.898348459  4.610266669  3.992952212  3.085605873  2.135812695
 [16]   1.152718684  5.661425194  4.590718561  0.537782066  4.786943839
 [21]  -1.686791050  6.227332742  0.117073098  4.877576692  1.890227427
 [26]   1.712770105  2.137725603  3.505049902  2.515843040  2.019453896
 [31]   0.776444979  3.123204488  2.369001347  2.200692890  0.615018444
 [36]   0.720300005  1.774653815  4.249171778  3.562325932  2.901886864
 [41]   5.238779495  6.967281438  2.617172761  5.241247444  3.466599916
 [46]   2.193429851  4.658963316  5.208025770  2.009208613  3.488471104
 [51]   3.906820298  3.115472393  3.029086349  2.553482493  4.640395872
 [56]   6.571099617  3.983087293  4.653764236  2.669548825  2.475776249
 [61]   3.356922432  1.508454977  4.857988399  3.196097083  2.506244227
 [66]   0.063202492  1.902296542  1.572163651  0.862440181  2.986921840
 [71]   3.535613276  4.970445485  2.662265986  4.765024736  2.375057732
 [76]   5.052347515  1.234513723  5.641290724  1.916614919  4.035733823
 [81]   2.555534906  3.156214571  2.840046755  7.253837628  6.469156341
 [86]   0.073529671  2.199529177  7.097303358  4.851327407  4.414880432
 [91]   4.895554593  5.629639953  0.669238839  2.806570772  3.793476863
 [96]   1.879086405  0.320707565  4.836451702  4.341428772  1.733796798
[101]   3.245716283  1.514195110  3.767513858 -0.516934013 -0.747344655
[106]   3.550516459  3.773368757  4.120808209  5.575858823  2.422050425
[111]   0.555916601  2.932061480  2.207133267  2.065465751  5.150338180
[116]   1.954445427  4.762874674  2.773268690  3.602843794  4.206348438
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[121]	2.661002535	2.224695408	3.542238851	2.983214587	6.587020715
[126]	3.272727130	5.396516503	3.775820018	5.286219362	0.987279126
[131]	1.927407601	2.103644571	4.611557657	1.668453258	3.019681412
[136]	3.104761569	5.718128687	1.818905752	0.261354448	2.062944940
[141]	3.495752085	2.577833582	3.359029525	2.765048515	2.043105782
[146]	6.055127946	3.133387473	1.430210860	3.566801085	3.757797181
[151]	3.684172826	5.045742402	2.471063407	5.023897910	2.330646063
[156]	6.805414172	0.941974893	5.955569299	2.627624389	-0.441290660
[161]	1.921203167	0.788913884	0.509203433	2.336205965	-1.942020825
[166]	2.173669773	1.451514670	0.436640740	5.926427407	3.290346795
[171]	1.695341671	2.062177118	3.057963249	2.949915053	3.405270630
[176]	2.686212825	2.333976792	4.470054067	1.269320712	6.203770099
[181]	-0.490172599	2.328816004	1.668527661	1.544876617	5.704891743
[186]	5.869495094	7.864172688	1.419937898	1.617221278	5.057137985
[191]	1.148408295	3.867508085	5.415308203	3.884576285	3.158736915
[196]	5.039226794	3.756851302	3.209424693	-1.301833450	0.486759453
[201]	4.343425194	0.369387468	3.939457634	2.141970542	2.821909151
[206]	4.699245214	3.123037503	2.255298827	0.809781741	6.042810713
[211]	3.099492658	6.123987607	2.803364154	1.722304423	4.610164279
[216]	4.593668133	5.945672146	3.554430353	4.204912889	0.604235673
[221]	2.064153313	4.545589779	3.153434461	1.335604715	3.360046872
[226]	0.913159700	6.387657643	3.743448248	4.964768648	4.529116441
[231]	1.526885252	4.034594325	5.085795248	-0.536633350	2.920239589
[236]	-1.186428458	4.338517704	1.762890732	3.082889779	0.860490726
[241]	4.442348390	1.300641133	4.832602905	6.718096289	2.539737629
[246]	4.717407162	4.518101376	1.958647933	7.391084464	3.213476318
[251]	5.841483311	2.026350804	2.597154042	4.451061944	4.490175716
[256]	3.089303370	4.134246912	3.101736657	3.931627706	3.031856081
[261]	0.043981855	3.235947743	4.436931903	0.394372886	2.621863909
[266]	1.823250396	1.975707914	2.247355741	3.852296111	1.731604849
[271]	2.953921974	5.396425716	3.389968981	-0.760883332	1.554149443
[276]	5.390068118	0.451477134	3.899702743	-0.313597068	5.101904851
[281]	3.901143637	2.345372046	2.132989326	3.786091058	6.112117488
[286]	6.820646766	3.735229288	6.731265398	4.763842218	3.217674567
[291]	2.705774829	2.667766749	1.186936699	3.805744608	3.652909133
[296]	3.793767259	5.082548928	3.109820114	5.466325230	3.104276172
[301]	3.333189805	0.953070825	1.180083968	1.607470967	3.048925766
[306]	-1.712368530	4.881166539	3.734187852	5.378650497	1.460073997
[311]	3.550057266	3.325173628	2.508350269	3.461506280	3.226224242
[316]	-1.310292999	0.380212238	5.313650096	3.315688660	2.740021752
[321]	4.433321193	4.096343010	4.249907333	2.938643961	3.437887568
[326]	3.485628758	0.342634649	3.604126689	1.579468451	1.404377632
[331]	4.115128187	3.223348736	1.438187151	5.075806444	3.431577900
[336]	6.592833014	1.859964270	5.313066819	2.285767720	1.922815675
[341]	0.507999547	0.526993218	1.253200887	9.645994465	1.664491658
[346]	3.398500416	-1.007897548	5.284530888	5.281171709	-1.345039529
[351]	2.002670273	2.541131506	3.177385964	2.268479408	2.593815345
[356]	1.041577176	3.473193637	3.724882620	2.108667416	1.839814505
[361]	3.876868710	6.490296782	4.927838707	-3.823838819	2.188175931

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[366]  3.364229465   2.529969269   4.478918238   2.498044479   0.848924225
[371]  1.904255935   2.658990286   6.202093397  -0.449358606   4.343636780
[376]  3.936248875   2.359701069   1.884447930   1.596022619   1.849230054
[381]  4.794926933   4.595345157   3.359600281   0.891781143   5.073632357
[386]  2.637879943   5.797196445   3.643835836   0.716512384   3.769752911
[391]  3.842904755   1.517823109   6.579094920   1.231317016  -3.530328059
[396]  1.867981003   4.808148450   1.988797991   1.251448840   0.757768263
[401]  2.847071429   1.007226998   0.364264858   3.807470357   3.367928889
[406]  1.262209890   6.344607660   7.083237472   3.664208846   2.967577051
[411]  1.901710240   5.000424372   4.731341943   5.208963887   5.471168717
[416]  3.203570209   3.200969192   1.917946238   3.535872959   0.876633937
[421]  2.733551903   2.886943773   4.801172590   3.565664036   3.482046507
[426]  7.935766477   5.582394131   6.495895222   3.280915486   2.169494594
[431]  3.882775420   1.895975715  -0.926722480   2.586302079   1.998389512
[436] -0.275944701   4.189238900   1.752020195   4.581256065   3.490859398
[441]  4.648913534   1.465013412   4.967428947   4.523535834   6.642203119
[446]  2.443932252   2.217962019   2.046584796   3.203808437   0.575303274
[451]  1.995721169   5.459755569   3.003125261   2.568807917   6.845492989
[456]  6.955413169   5.699263769   5.928838681   3.364899559   4.370274559
[461]  3.105994745   0.202665514   3.211808125   5.375327990   2.048933250
[466]  4.726610714   3.373617480   2.463463732   2.504148556   0.294711784
[471]  6.279732765   5.201465233   1.746430415   4.758720352   4.755108813
[476]  4.655701960   5.602368000   1.928314083  -0.166157025   5.775965473
[481]  4.982831269   2.205045393   1.301973398   2.855197216   1.823253412
[486]  4.938153730   5.370618314   2.072848004   4.405247316   0.740074661
[491]  2.515226988   8.076280421   1.410635248   3.704590413   5.741148500
[496]  2.522142594   0.424987133  -1.959943798   0.654588281   2.802834080
[501]  7.335262519   4.050215471   1.900734704   2.921232789   1.523981498
[506]  5.776040031   1.080623483   3.030140096   1.318099374   2.291469272
[511]  0.514392615   2.438671609   4.903288716  -1.035234810   5.270062794
[516]  0.525977610   5.425660268   5.386732700   1.077836807   3.169584903
[521]  5.011906608   2.619363679   5.966365178   3.655575054   2.022839986
[526]  6.309828596   3.089231785   2.505571213  -0.172526421   0.532775282
[531]  5.211739401   0.649831139   3.059653243   1.637300424   3.135947424
[536]  0.896792540   0.856231512   0.556156191   4.829780533   2.228976308
[541]  3.494052957  -0.130786390  -0.205581404   5.473912270   0.265110512
[546]  4.330608037   4.424194188   1.350464827  -1.903581736   0.690784111
[551]  2.908598910   6.367230182   6.964403189   6.132551830   5.243463400
[556]  2.448228761   5.453535180  -2.243144020   1.295619717   4.071897003
[561]  2.233974069   4.509582839   1.666274325   5.265137139   0.243127632
[566]  3.798760472   0.316283453   2.809582646   3.911992928   1.814627041
[571]  3.506014047   1.995309527   1.432194944   3.182898934   5.471974048
[576]  3.779416654   6.038100553   2.786378578   1.538369768   6.529074307
[581]  2.859324713   4.127561783   5.675119820   0.467306579   5.194113462
[586]  0.941021519   1.318446032   0.294482376   2.834566713   2.568713827
[591]  1.749309508   3.533617359   1.021068852   3.186687341   2.954640996
[596]  2.154158895   2.018796310   5.847741242   3.857847319   1.804691631
[601]  5.163778750   1.075306981   0.910334624   5.128913349   2.027754758
[606]  4.777981619  -0.774876967   4.231276767   1.485134003   4.923923431
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[611]   7.509399234   2.680233911   1.131315656   5.833350319   4.482393298
[616]   2.024161719   0.998188049   4.469898200   4.974747264   4.011632817
[621]   8.406108207   2.254033251   3.677408692   3.066051260   2.172400492
[626]   2.984658210   2.856884645   2.594581241   2.005412532   1.174483126
[631]   3.228358792   6.538436760   3.681262397   1.521826759  -1.083679905
[636]   5.323775918   1.716292201   4.017312753   6.726167979   5.597507604
[641]   1.584099430   3.337133722   5.428256500   5.257585035   4.415968997
[646]   1.735722350   4.859977915   3.808820499   2.563173061   3.488558966
[651]   2.324188697   3.884334293   3.186652968   3.106196405   0.988642461
[656]   4.465726268   5.360791672   2.810020916   0.782476919   3.258642077
[661]   6.867760194   3.361145106   4.450856058   5.446242713   5.984463475
[666]   4.458176739   5.093872218   5.147039558   2.761111752   4.600717981
[671]   3.362921418   4.209036469   5.690989539   4.967770429   2.054301197
[676]   7.087298693   3.006658973   3.804550295   1.148518367   2.159590636
[681]   4.490268196   3.037173675  -0.975427505   1.827689334   4.770325006
[686]   4.178411743   6.172047796   1.604951588   4.065632589   1.590113080
[691]   4.170958144   5.271376705   1.975818544   5.179194313   3.610852543
[696]   3.428401134   1.407439570   3.001147739   1.274581290   4.949371377
[701]   3.433320029  -0.003284189  -2.718863174   2.856042229   3.208481682
[706]   4.384061200   1.218813252   5.462241351   5.059909520   3.057239194
[711]  -2.049491929   6.697066963   4.506146224   6.620120919   1.250943369
[716]   5.669522285   1.926990033   2.202869162   8.574550712   3.534478063
[721]   1.536171342   2.660506303   4.155154280   3.274561328   4.506622527
[726]   2.098673304   4.938829271   2.502292987   0.692475231   1.413603085
[731]   7.515237263   3.323861188   2.628622821   1.393470618   6.557110928
[736]   1.064138666   3.823124192   1.215399630   0.080382715   1.493144334
[741]   4.327332969   3.048916907   0.375218793   3.810756095   4.500332315
[746]   0.533737237   3.304277258   3.872402529   2.985675596   4.600468075
[751]   3.016757163   5.170900395   4.045292312  -0.288655482   5.331610113
[756]   5.765395176   2.688617862   2.216191402  -0.625130789   6.207033134
[761]   0.109940925   4.472740317   4.848722662   4.422617256  -0.625364928
[766]   3.217740842   4.824367756   0.926857692   4.087399539   4.083981675
[771]   1.224020845   4.346124178   7.183899937   5.421098257   2.425292461
[776]   1.109254343   4.880952534   2.440547587   3.027772016   3.621556648
[781]   2.093862740   6.013983550   2.962612732   2.648283131   3.658310017
[786]   4.276486816   7.636167504   1.638619822   4.255725943  -1.357587677
[791]   0.938060142   4.052412564   6.880847025   4.382329558  -1.428912903
[796]   4.445406261  -0.363692911   2.126625547   4.036052432   5.230007803
[801]   3.462360018   3.241099964   5.551445082   3.213596996   1.484332844
[806]  -0.654699040   2.400895937   5.348296684   3.179186281   3.484972081
[811]   1.010632518   5.790534121   3.805303968   4.904514096   5.258815429
[816]   0.515022267   5.775307142   2.479205134   2.249391198   1.988552271
[821]   1.539307499   3.999056719   0.640073822   2.466741726   7.562859384
[826]   2.280484205   3.918834075  -1.157529334   1.816623301   2.767471605
[831]   3.232462324   6.890139606   3.901139700  -0.543858043   3.236563640
[836]   0.322175274   0.882462665   2.504697254  -1.299877307   4.474440781
[841]   4.640295131   2.076857151   1.662492226   3.560569226   3.058347978
[846]   4.193933918   3.423062537   3.865710191   4.775502744   1.333699208
[851]  -0.295547254   7.617142661   4.238975471   2.520030371   2.211598053
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[856]  4.674256334  0.259450651  6.776866684  6.313794901  2.377575890
[861]  0.584594766  1.827680597  4.039331820  4.245910419  2.534026870
[866]  4.309354105  2.246282950  0.470123252  6.393348275  3.701456624
[871]  2.609609518  5.004546160  2.983123771  5.105204444  1.594536028
[876]  4.958303074  3.582372162  6.149722753 -0.885765126  2.544732134
[881]  0.990429018  4.424444917  3.397473950  4.687903247  1.808568111
[886]  3.216400789  0.666612188  6.148819773  0.164178310  1.648245271
[891] -0.395906019  2.312338790  3.904500063  2.112317968  4.688663672
[896]  5.661952160  2.581174748  4.535021481 -0.415079141  0.203637758
[901]  6.183368890  5.155048903 -0.379141112  4.019884072  4.696945072
[906]  3.048581022  2.167352340  2.002660390  4.060088759  3.550160608
[911]  3.589149950  2.758174944  3.781365777  2.718517306  2.005146892
[916] -0.809658206 -1.003727276  3.419634344  0.582028216  4.566198261
[921]  4.018662033  3.077232944  5.422211051  5.880979287  7.111530477
[926]  4.386835004  2.379749254  5.666356851  3.596161340  3.516126935
[931]  5.719160492  3.269673165  2.517018431  3.866259340  2.854990190
[936]  2.446124525  0.935664998  3.026794438  2.656125671  4.780070816
[941]  3.408761362  6.927610547  0.042650367  7.083877524  2.516877087
[946]  2.998770650  3.187220835  3.563741747  6.821000608  1.720352550
[951]  0.103681688  3.572819211  0.034172072  5.982895904  2.731386084
[956]  2.771111226  5.135422734  5.284152975 -0.869569569  1.076767905
[961]  3.093504347  2.436759931  2.571187821  3.944646097  1.842607901
[966]  3.165944265  4.159997137  4.712514977  2.761190652  5.239959488
[971]  1.689411235  1.464582172  5.311270402  7.047831894  2.840865510
[976]  4.426566819  2.842368746  2.705703079  1.802456308  2.642876922
[981]  2.756960923  2.991886615  3.495165608  2.643819370  3.524943833
[986]  5.026838367  2.393039654  1.917628663  4.874978832  3.688472285
[991]  4.391305616  3.155630853  3.201889466  0.647583099  2.454028600
[996]  1.885143788  6.733555617  2.141199990  1.364543545  3.645940904

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

             [,1]       [,2]       [,3]      [,4]      [,5]     [,6]        [,7]
 [1,]  4.1627984 1.8983485 -1.6867910 0.7764450 5.238779 3.906820 3.35692243
 [2,]  3.5412341 4.6102667  6.2273327 3.1232045 6.967281 3.115472 1.50845498
 [3,]  2.0654690 3.9929522  0.1170731 2.3690013 2.617173 3.029086 4.85798840
 [4,]  6.2972389 3.0856059  4.8775767 2.2006929 5.241247 2.553482 3.19609708
 [5,]  3.3480305 2.1358127  1.8902274 0.6150184 3.466600 4.640396 2.50624423
 [6,]  0.0321004 1.1527187  1.7127701 0.7203000 2.193430 6.571100 0.06320249
 [7,]  5.0997118 5.6614252  2.1377256 1.7746538 4.658963 3.983087 1.90229654
 [8,] -0.9284799 4.5907186  3.5050499 4.2491718 5.208026 4.653764 1.57216365
 [9,] -0.1064112 0.5377821  2.5158430 3.5623259 2.009209 2.669549 0.86244018
[10,] -0.6329522 4.7869438  2.0194539 2.9018869 3.488471 2.475776 2.98692184
          [,8]        [,9]      [,10]      [,11]     [,12]     [,13]     [,14]
 [1,] 3.535613 2.55553491 4.8955546  3.2457163 0.5559166 2.6610025 1.9274076
 [2,] 4.970445 3.15621457 5.6296400  1.5141951 2.9320615 2.2246954 2.1036446
 [3,] 2.662266 2.84004675 0.6692388  3.7675139 2.2071333 3.5422389 4.6115577
 [4,] 4.765025 7.25383763 2.8065708 -0.5169340 2.0654658 2.9832146 1.6684533
```

```
      [5,]  2.375058 6.46915634  3.7934769 -0.7473447  5.1503382  6.5870207  3.0196814
      [6,]  5.052348 0.07352967  1.8790864  3.5505165  1.9544454  3.2727271  3.1047616
      [7,]  1.234514 2.19952918  0.3207076  3.7733688  4.7628747  5.3965165  5.7181287
      [8,]  5.641291 7.09730336  4.8364517  4.1208082  2.7732687  3.7758200  1.8189058
      [9,]  1.916615 4.85132741  4.3414288  5.5758588  3.6028438  5.2862194  0.2613544
     [10,]  4.035734 4.41488043  1.7337968  2.4220504  4.2063484  0.9872791  2.0629449
               [,15]      [,16]      [,17]    [,18]      [,19]       [,20]     [,21]
      [1,]  3.495752  3.6841728  1.9212032 1.695342 -0.4901726   1.1484083 4.3434252
      [2,]  2.577834  5.0457424  0.7889139 2.062177  2.3288160   3.8675081 0.3693875
      [3,]  3.359030  2.4710634  0.5092034 3.057963  1.6685277   5.4153082 3.9394576
      [4,]  2.765049  5.0238979  2.3362060 2.949915  1.5448766   3.8845763 2.1419705
      [5,]  2.043106  2.3306461 -1.9420208 3.405271  5.7048917   3.1587369 2.8219092
      [6,]  6.055128  6.8054142  2.1736698 2.686213  5.8694951   5.0392268 4.6992452
      [7,]  3.133387  0.9419749  1.4515147 2.333977  7.8641727   3.7568513 3.1230375
      [8,]  1.430211  5.9555693  0.4366407 4.470054  1.4199379   3.2094247 2.2552988
      [9,]  3.566801  2.6276244  5.9264274 1.269321  1.6172213  -1.3018335 0.8097817
     [10,]  3.757797 -0.4412907  3.2903468 6.203770  5.0571380   0.4867595 6.0428107
               [,22]      [,23]      [,24]    [,25]     [,26]      [,27]       [,28]
      [1,]  3.0994927 2.0641533  1.5268853 4.442348 5.841483 0.04398185  2.9539220
      [2,]  6.1239876 4.5455898  4.0345943 1.300641 2.026351 3.23594774  5.3964257
      [3,]  2.8033642 3.1534345  5.0857952 4.832603 2.597154 4.43693190  3.3899690
      [4,]  1.7223044 1.3356047 -0.5366334 6.718096 4.451062 0.39437289 -0.7608833
      [5,]  4.6101643 3.3600469  2.9202396 2.539738 4.490176 2.62186391  1.5541494
      [6,]  4.5936681 0.9131597 -1.1864285 4.717407 3.089303 1.82325040  5.3900681
      [7,]  5.9456721 6.3876576  4.3385177 4.518101 4.134247 1.97570791  0.4514771
      [8,]  3.5544304 3.7434482  1.7628907 1.958648 3.101737 2.24735574  3.8997027
      [9,]  4.2049129 4.9647686  3.0828898 7.391084 3.931628 3.85229611 -0.3135971
     [10,]  0.6042357 4.5291164  0.8604907 3.213476 3.031856 1.73160485  5.1019049
               [,29]     [,30]      [,31]      [,32]     [,33]    [,34]       [,35]
      [1,]  3.901144 2.705775  3.3331898  3.5500573 4.4333212 4.115128  0.5079995
      [2,]  2.345372 2.667767  0.9530708  3.3251736 4.0963430 3.223349  0.5269932
      [3,]  2.132989 1.186937  1.1800840  2.5083503 4.2499073 1.438187  1.2532009
      [4,]  3.786091 3.805745  1.6074710  3.4615063 2.9386440 5.075806  9.6459945
      [5,]  6.112117 3.652909  3.0489258  3.2262242 3.4378876 3.431578  1.6644917
      [6,]  6.820647 3.793767 -1.7123685 -1.3102930 3.4856288 6.592833  3.3985004
      [7,]  3.735229 5.082549  4.8811665  0.3802122 0.3426346 1.859964 -1.0078975
      [8,]  6.731265 3.109820  3.7341879  5.3136501 3.6041267 5.313067  5.2845309
      [9,]  4.763842 5.466325  5.3786505  3.3156887 1.5794685 2.285768  5.2811717
     [10,]  3.217675 3.104276  1.4600740  2.7400218 1.4043776 1.922816 -1.3450395
               [,36]      [,37]      [,38]     [,39]      [,40]     [,41]     [,42]
      [1,]  2.002670  3.8768687  1.9042559 4.7949269  3.8429048 2.8470714 1.9017102
      [2,]  2.541132  6.4902968  2.6589903 4.5953452  1.5178231 1.0072270 5.0004244
      [3,]  3.177386  4.9278387  6.2020934 3.3596003  6.5790949 0.3642649 4.7313419
      [4,]  2.268479 -3.8238388 -0.4493586 0.8917811  1.2313170 3.8074704 5.2089639
      [5,]  2.593815  2.1881759  4.3436368 5.0736324 -3.5303281 3.3679289 5.4711687
      [6,]  1.041577  3.3642295  3.9362489 2.6378799  1.8679810 1.2622099 3.2035702
      [7,]  3.473194  2.5299693  2.3597011 5.7971964  4.8081484 6.3446077 3.2009692
      [8,]  3.724883  4.4789182  1.8844479 3.6438358  1.9887980 7.0832375 1.9179462
      [9,]  2.108667  2.4980445  1.5960226 0.7165124  1.2514488 3.6642088 3.5358730
```

```
[10,] 1.839815   0.8489242   1.8492301 3.7697529   0.7577683 2.9675771 0.8766339
          [,43]        [,44]        [,45]       [,46]       [,47]       [,48]       [,49]
 [1,] 2.733552   3.8827754   4.6489135   1.995721   3.1059947   6.279733 4.9828313
 [2,] 2.886944   1.8959757   1.4650134   5.459756   0.2026655   5.201465 2.2050454
 [3,] 4.801173  -0.9267225   4.9674289   3.003125   3.2118081   1.746430 1.3019734
 [4,] 3.565664   2.5863021   4.5235358   2.568808   5.3753280   4.758720 2.8551972
 [5,] 3.482047   1.9983895   6.6422031   6.845493   2.0489333   4.755109 1.8232534
 [6,] 7.935766  -0.2759447   2.4439323   6.955413   4.7266107   4.655702 4.9381537
 [7,] 5.582394   4.1892389   2.2179620   5.699264   3.3736175   5.602368 5.3706183
 [8,] 6.495895   1.7520202   2.0465848   5.928839   2.4634637   1.928314 2.0728480
 [9,] 3.280915   4.5812561   3.2038084   3.364900   2.5041486  -0.166157 4.4052473
[10,] 2.169495   3.4908594   0.5753033   4.370275   0.2947118   5.775965 0.7400747
            [,50]       [,51]       [,52]        [,53]       [,54]       [,55]       [,56]
 [1,]  2.5152270   7.335263   0.5143926   5.0119066   5.2117394   3.4940530   2.908599
 [2,]  8.0762804   4.050215   2.4386716   2.6193637   0.6498311  -0.1307864   6.367230
 [3,]  1.4106352   1.900735   4.9032887   5.9663652   3.0596532  -0.2055814   6.964403
 [4,]  3.7045904   2.921233  -1.0352348   3.6555751   1.6373004   5.4739123   6.132552
 [5,]  5.7411485   1.523981   5.2700628   2.0228400   3.1359474   0.2651105   5.243463
 [6,]  2.5221426   5.776040   0.5259776   6.3098286   0.8967925   4.3306080   2.448229
 [7,]  0.4249871   1.080623   5.4256603   3.0892318   0.8562315   4.4241942   5.453535
 [8,] -1.9599438   3.030140   5.3867327   2.5055712   0.5561562   1.3504648  -2.243144
 [9,]  0.6545883   1.318099   1.0778368  -0.1725264   4.8297805  -1.9035817   1.295620
[10,]  2.8028341   2.291469   3.1695849   0.5327753   2.2289763   0.6907841   4.071897
            [,57]       [,58]       [,59]       [,60]        [,61]       [,62]       [,63]
 [1,] 2.2339741   3.506014   2.8593247   1.749310   5.1637787   7.509399 8.406108
 [2,] 4.5095828   1.995310   4.1275618   3.533617   1.0753070   2.680234 2.254033
 [3,] 1.6662743   1.432195   5.6751198   1.021069   0.9103346   1.131316 3.677409
 [4,] 5.2651371   3.182899   0.4673066   3.186687   5.1289133   5.833350 3.066051
 [5,] 0.2431276   5.471974   5.1941135   2.954641   2.0277548   4.482393 2.172400
 [6,] 3.7987605   3.779417   0.9410215   2.154159   4.7779816   2.024162 2.984658
 [7,] 0.3162835   6.038101   1.3184460   2.018796  -0.7748770   0.998188 2.856885
 [8,] 2.8095826   2.786379   0.2944824   5.847741   4.2312768   4.469898 2.594581
 [9,] 3.9119929   1.538370   2.8345667   3.857847   1.4851340   4.974747 2.005413
[10,] 1.8146270   6.529074   2.5687138   1.804692   4.9239234   4.011633 1.174483
            [,64]       [,65]       [,66]       [,67]       [,68]        [,69]       [,70]
 [1,]  3.228359   1.584099   2.3241887   6.867760   3.362921   4.4902682   4.170958
 [2,]  6.538437   3.337134   3.8843343   3.361145   4.209036   3.0371737   5.271377
 [3,]  3.681262   5.428256   3.1866530   4.450856   5.690990  -0.9754275   1.975819
 [4,]  1.521827   5.257585   3.1061964   5.446243   4.967770   1.8276893   5.179194
 [5,] -1.083680   4.415969   0.9886425   5.984463   2.054301   4.7703250   3.610853
 [6,]  5.323776   1.735722   4.4657263   4.458177   7.087299   4.1784117   3.428401
 [7,]  1.716292   4.859978   5.3607917   5.093872   3.006659   6.1720478   1.407440
 [8,]  4.017313   3.808820   2.8100209   5.147040   3.804550   1.6049516   3.001148
 [9,]  6.726168   2.563173   0.7824769   2.761112   1.148518   4.0656326   1.274581
[10,]  5.597508   3.488559   3.2586421   4.600718   2.159591   1.5901131   4.949371
              [,71]       [,72]       [,73]        [,74]       [,75]       [,76]
 [1,]  3.433320029  -2.049492   1.5361713   7.51523726   4.3273330   3.0167572
 [2,] -0.003284189   6.697067   2.6605063   3.32386119   3.0489169   5.1709004
 [3,] -2.718863174   4.506146   4.1551543   2.62862282   0.3752188   4.0452923
```

```
 [4,]    2.856042229   6.620121 3.2745613 1.39347062 3.8107561 -0.2886555
 [5,]    3.208481682   1.250943 4.5066225 6.55711093 4.5003323  5.3316101
 [6,]    4.384061200   5.669522 2.0986733 1.06413867 0.5337372  5.7653952
 [7,]    1.218813252   1.926990 4.9388293 3.82312419 3.3042773  2.6886179
 [8,]    5.462241351   2.202869 2.5022930 1.21539963 3.8724025  2.2161914
 [9,]    5.059909520   8.574551 0.6924752 0.08038271 2.9856756 -0.6251308
[10,]    3.057239194   3.534478 1.4136031 1.49314433 4.6004681  6.2070331
             [,77]     [,78]     [,79]      [,80]      [,81]     [,82]      [,83]
 [1,]    0.1099409 1.224021  2.093863  0.9380601   3.462360 1.0106325  1.5393075
 [2,]    4.4727403 4.346124  6.013984  4.0524126   3.241100 5.7905341  3.9990567
 [3,]    4.8487227 7.183900  2.962613  6.8808470   5.551445 3.8053040  0.6400738
 [4,]    4.4226173 5.421098  2.648283  4.3823296   3.213597 4.9045141  2.4667417
 [5,]   -0.6253649 2.425292  3.658310 -1.4289129   1.484333 5.2588154  7.5628594
 [6,]    3.2177408 1.109254  4.276487  4.4454063  -0.654699 0.5150223  2.2804842
 [7,]    4.8243678 4.880953  7.636168 -0.3636929   2.400896 5.7753071  3.9188341
 [8,]    0.9268577 2.440548  1.638620  2.1266255   5.348297 2.4792051 -1.1575293
 [9,]    4.0873995 3.027772  4.255726  4.0360524   3.179186 2.2493912  1.8166233
[10,]    4.0839817 3.621557 -1.357588  5.2300078   3.484972 1.9885523  2.7674716
             [,84]     [,85]     [,86]      [,87]      [,88]     [,89]      [,90]
 [1,]    3.2324623 4.640295 -0.2955473 0.5845948   2.6096095 0.9904290 -0.3959060
 [2,]    6.8901396 2.076857  7.6171427 1.8276806   5.0045462 4.4244449  2.3123388
 [3,]    3.9011397 1.662492  4.2389755 4.0393318   2.9831238 3.3974739  3.9045001
 [4,]   -0.5438580 3.560569  2.5200304 4.2459104   5.1052044 4.6879032  2.1123180
 [5,]    3.2365636 3.058348  2.2115981 2.5340269   1.5945360 1.8085681  4.6886637
 [6,]    0.3221753 4.193934  4.6742563 4.3093541   4.9583031 3.2164008  5.6619522
 [7,]    0.8824627 3.423063  0.2594507 2.2462830   3.5823722 0.6666122  2.5811747
 [8,]    2.5046973 3.865710  6.7768667 0.4701233   6.1497228 6.1488198  4.5350215
 [9,]   -1.2998773 4.775503  6.3137949 6.3933483  -0.8857651 0.1641783 -0.4150791
[10,]    4.4744408 1.333699  2.3775759 3.7014566   2.5447321 1.6482453  0.2036378
             [,91]      [,92]    [,93]    [,94]      [,95]       [,96]    [,97]
 [1,]    6.1833689  3.5891499 4.018662 5.719160 3.40876136  0.10368169 3.093504
 [2,]    5.1550489  2.7581749 3.077233 3.269673 6.92761055  3.57281921 2.436760
 [3,]   -0.3791411  3.7813658 5.422211 2.517018 0.04265037  0.03417207 2.571188
 [4,]    4.0198841  2.7185173 5.880979 3.866259 7.08387752  5.98289590 3.944646
 [5,]    4.6969451  2.0051469 7.111530 2.854990 2.51687709  2.73138608 1.842608
 [6,]    3.0485810 -0.8096582 4.386835 2.446125 2.99877065  2.77111123 3.165944
 [7,]    2.1673523 -1.0037273 2.379749 0.935665 3.18722084  5.13542273 4.159997
 [8,]    2.0026604  3.4196343 5.666357 3.026794 3.56374175  5.28415297 4.712515
 [9,]    4.0600888  0.5820282 3.596161 2.656126 6.82100061 -0.86956957 2.761191
[10,]    3.5501606  4.5661983 3.516127 4.780071 1.72035255  1.07676791 5.239959
            [,98]    [,99]    [,100]
 [1,] 1.689411 2.756961 4.3913056
 [2,] 1.464582 2.991887 3.1556309
 [3,] 5.311270 3.495166 3.2018895
 [4,] 7.047832 2.643819 0.6475831
 [5,] 2.840866 3.524944 2.4540286
 [6,] 4.426567 5.026838 1.8851438
 [7,] 2.842369 2.393040 6.7335556
 [8,] 2.705703 1.917629 2.1412000
```

```
 [9,] 1.802456 4.874979 1.3645435
[10,] 2.642877 3.688472 3.6459409

> class(x1)

[1] "matrix"

> dim(x)

NULL

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

          V1        V2         V3        V4        V5        V6         V7
1   4.1627984 1.8983485 -1.6867910 0.7764450 5.238779 3.906820 3.35692243
2   3.5412341 4.6102667  6.2273327 3.1232045 6.967281 3.115472 1.50845498
3   2.0654690 3.9929522  0.1170731 2.3690013 2.617173 3.029086 4.85798840
4   6.2972389 3.0856059  4.8775767 2.2006929 5.241247 2.553482 3.19609708
5   3.3480305 2.1358127  1.8902274 0.6150184 3.466600 4.640396 2.50624423
6   0.0321004 1.1527187  1.7127701 0.7203000 2.193430 6.571100 0.06320249
7   5.0997118 5.6614252  2.1377256 1.7746538 4.658963 3.983087 1.90229654
8  -0.9284799 4.5907186  3.5050499 4.2491718 5.208026 4.653764 1.57216365
9  -0.1064112 0.5377821  2.5158430 3.5623259 2.009209 2.669549 0.86244018
10 -0.6329522 4.7869438  2.0194539 2.9018869 3.488471 2.475776 2.98692184
         V8         V9        V10        V11        V12       V13       V14
1  3.535613 2.55553491 4.8955546  3.2457163 0.5559166 2.6610025 1.9274076
2  4.970445 3.15621457 5.6296400  1.5141951 2.9320615 2.2246954 2.1036446
3  2.662266 2.84004675 0.6692388  3.7675139 2.2071333 3.5422389 4.6115577
4  4.765025 7.25383763 2.8065708 -0.5169340 2.0654658 2.9832146 1.6684533
5  2.375058 6.46915634 3.7934769 -0.7473447 5.1503382 6.5870207 3.0196814
6  5.052348 0.07352967 1.8790864  3.5505165 1.9544454 3.2727271 3.1047616
7  1.234514 2.19952918 0.3207076  3.7733688 4.7628747 5.3965165 5.7181287
8  5.641291 7.09730336 4.8364517  4.1208082 2.7732687 3.7758200 1.8189058
9  1.916615 4.85132741 4.3414288  5.5758588 3.6028438 5.2862194 0.2613544
10 4.035734 4.41488043 1.7337968  2.4220504 4.2063484 0.9872791 2.0629449
        V15        V16        V17      V18        V19        V20       V21
1  3.495752  3.6841728  1.9212032 1.695342 -0.4901726  1.1484083 4.3434252
2  2.577834  5.0457424  0.7889139 2.062177  2.3288160  3.8675081 0.3693875
3  3.359030  2.4710634  0.5092034 3.057963  1.6685277  5.4153082 3.9394576
4  2.765049  5.0238979  2.3362060 2.949915  1.5448766  3.8845763 2.1419705
5  2.043106  2.3306461 -1.9420208 3.405271  5.7048917  3.1587369 2.8219092
6  6.055128  6.8054142  2.1736698 2.686213  5.8694951  5.0392268 4.6992452
7  3.133387  0.9419749  1.4515147 2.333977  7.8641727  3.7568513 3.1230375
8  1.430211  5.9555693  0.4366407 4.470054  1.4199379  3.2094247 2.2552988
9  3.566801  2.6276244  5.9264274 1.269321  1.6172213 -1.3018335 0.8097817
10 3.757797 -0.4412907  3.2903468 6.203770  5.0571380  0.4867595 6.0428107
        V22        V23        V24      V25      V26        V27       V28
1  3.0994927 2.0641533  1.5268853 4.442348 5.841483 0.04398185  2.9539220
2  6.1239876 4.5455898  4.0345943 1.300641 2.026351 3.23594774  5.3964257
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10

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3  2.8033642 3.1534345   5.0857952 4.832603 2.597154 4.43693190  3.3899690
4  1.7223044 1.3356047  -0.5366334 6.718096 4.451062 0.39437289 -0.7608833
5  4.6101643 3.3600469   2.9202396 2.539738 4.490176 2.62186391  1.5541494
6  4.5936681 0.9131597  -1.1864285 4.717407 3.089303 1.82325040  5.3900681
7  5.9456721 6.3876576   4.3385177 4.518101 4.134247 1.97570791  0.4514771
8  3.5544304 3.7434482   1.7628907 1.958648 3.101737 2.24735574  3.8997027
9  4.2049129 4.9647686   3.0828898 7.391084 3.931628 3.85229611 -0.3135971
10 0.6042357 4.5291164   0.8604907 3.213476 3.031856 1.73160485  5.1019049
           V29       V30         V31         V32         V33       V34         V35
1   3.901144 2.705775   3.3331898   3.5500573 4.4333212 4.115128   0.5079995
2   2.345372 2.667767   0.9530708   3.3251736 4.0963430 3.223349   0.5269932
3   2.132989 1.186937   1.1800840   2.5083503 4.2499073 1.438187   1.2532009
4   3.786091 3.805745   1.6074710   3.4615063 2.9386440 5.075806   9.6459945
5   6.112117 3.652909   3.0489258   3.2262242 3.4378876 3.431578   1.6644917
6   6.820647 3.793767  -1.7123685  -1.3102930 3.4856288 6.592833   3.3985004
7   3.735229 5.082549   4.8811665   0.3802122 0.3426346 1.859964  -1.0078975
8   6.731265 3.109820   3.7341879   5.3136501 3.6041267 5.313067   5.2845309
9   4.763842 5.466325   5.3786505   3.3156887 1.5794685 2.285768   5.2811717
10  3.217675 3.104276   1.4600740   2.7400218 1.4043776 1.922816  -1.3450395
           V36       V37         V38         V39         V40       V41         V42
1   2.002670  3.8768687   1.9042559 4.7949269   3.8429048 2.8470714 1.9017102
2   2.541132  6.4902968   2.6589903 4.5953452   1.5178231 1.0072270 5.0004244
3   3.177386  4.9278387   6.2020934 3.3596003   6.5790949 0.3642649 4.7313419
4   2.268479 -3.8238388  -0.4493586 0.8917811   1.2313170 3.8074704 5.2089639
5   2.593815  2.1881759   4.3436368 5.0736324  -3.5303281 3.3679289 5.4711687
6   1.041577  3.3642295   3.9362489 2.6378799   1.8679810 1.2622099 3.2035702
7   3.473194  2.5299693   2.3597011 5.7971964   4.8081484 6.3446077 3.2009692
8   3.724883  4.4789182   1.8844479 3.6438358   1.9887980 7.0832375 1.9179462
9   2.108667  2.4980445   1.5960226 0.7165124   1.2514488 3.6642088 3.5358730
10  1.839815  0.8489242   1.8492301 3.7697529   0.7577683 2.9675771 0.8766339
           V43       V44         V45       V46         V47       V48         V49
1   2.733552  3.8827754 4.6489135 1.995721 3.1059947   6.279733 4.9828313
2   2.886944  1.8959757 1.4650134 5.459756 0.2026655   5.201465 2.2050454
3   4.801173 -0.9267225 4.9674289 3.003125 3.2118081   1.746430 1.3019734
4   3.565664  2.5863021 4.5235358 2.568808 5.3753280   4.758720 2.8551972
5   3.482047  1.9983895 6.6422031 6.845493 2.0489333   4.755109 1.8232534
6   7.935766 -0.2759447 2.4439323 6.955413 4.7266107   4.655702 4.9381537
7   5.582394  4.1892389 2.2179620 5.699264 3.3736175   5.602368 5.3706183
8   6.495895  1.7520202 2.0465848 5.928839 2.4634637   1.928314 2.0728480
9   3.280915  4.5812561 3.2038084 3.364900 2.5041486  -0.166157 4.4052473
10  2.169495  3.4908594 0.5753033 4.370275 0.2947118   5.775965 0.7400747
           V50       V51         V52         V53         V54         V55         V56
1   2.5152270 7.335263   0.5143926   5.0119066 5.2117394   3.4940530   2.908599
2   8.0762804 4.050215   2.4386716   2.6193637 0.6498311  -0.1307864   6.367230
3   1.4106352 1.900735   4.9032887   5.9663652 3.0596532  -0.2055814   6.964403
4   3.7045904 2.921233  -1.0352348   3.6555751 1.6373004   5.4739123   6.132552
5   5.7411485 1.523981   5.2700628   2.0228400 3.1359474   0.2651105   5.243463
6   2.5221426 5.776040   0.5259776   6.3098286 0.8967925   4.3306080   2.448229
7   0.4249871 1.080623   5.4256603   3.0892318 0.8562315   4.4241942   5.453535
```

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8  -1.9599438 3.030140  5.3867327  2.5055712 0.5561562  1.3504648 -2.243144
9   0.6545883 1.318099  1.0778368 -0.1725264 4.8297805 -1.9035817  1.295620
10  2.8028341 2.291469  3.1695849  0.5327753 2.2289763  0.6907841  4.071897
          V57       V58       V59       V60         V61      V62       V63        V64
1  2.2339741 3.506014 2.8593247 1.749310   5.1637787 7.509399 8.406108   3.228359
2  4.5095828 1.995310 4.1275618 3.533617   1.0753070 2.680234 2.254033   6.538437
3  1.6662743 1.432195 5.6751198 1.021069   0.9103346 1.131316 3.677409   3.681262
4  5.2651371 3.182899 0.4673066 3.186687   5.1289133 5.833350 3.066051   1.521827
5  0.2431276 5.471974 5.1941135 2.954641   2.0277548 4.482393 2.172400  -1.083680
6  3.7987605 3.779417 0.9410215 2.154159   4.7779816 2.024162 2.984658   5.323776
7  0.3162835 6.038101 1.3184460 2.018796  -0.7748770 0.998188 2.856885   1.716292
8  2.8095826 2.786379 0.2944824 5.847741   4.2312768 4.469898 2.594581   4.017313
9  3.9119929 1.538370 2.8345667 3.857847   1.4851340 4.974747 2.005413   6.726168
10 1.8146270 6.529074 2.5687138 1.804692   4.9239234 4.011633 1.174483   5.597508
          V65       V66      V67      V68         V69      V70         V71
1  1.584099 2.3241887 6.867760 3.362921   4.4902682 4.170958   3.433320029
2  3.337134 3.8843343 3.361145 4.209036   3.0371737 5.271377  -0.003284189
3  5.428256 3.1866530 4.450856 5.690990  -0.9754275 1.975819  -2.718863174
4  5.257585 3.1061964 5.446243 4.967770   1.8276893 5.179194   2.856042229
5  4.415969 0.9886425 5.984463 2.054301   4.7703250 3.610853   3.208481682
6  1.735722 4.4657263 4.458177 7.087299   4.1784117 3.428401   4.384061200
7  4.859978 5.3607917 5.093872 3.006659   6.1720478 1.407440   1.218813252
8  3.808820 2.8100209 5.147040 3.804550   1.6049516 3.001148   5.462241351
9  2.563173 0.7824769 2.761112 1.148518   4.0656326 1.274581   5.059909520
10 3.488559 3.2586421 4.600718 2.159591   1.5901131 4.949371   3.057239194
          V72       V73        V74       V75         V76         V77      V78
1  -2.049492 1.5361713 7.51523726 4.3273330   3.0167572  0.1099409 1.224021
2   6.697067 2.6605063 3.32386119 3.0489169   5.1709004  4.4727403 4.346124
3   4.506146 4.1551543 2.62862282 0.3752188   4.0452923  4.8487227 7.183900
4   6.620121 3.2745613 1.39347062 3.8107561  -0.2886555  4.4226173 5.421098
5   1.250943 4.5066225 6.55711093 4.5003323   5.3316101 -0.6253649 2.425292
6   5.669522 2.0986733 1.06413867 0.5337372   5.7653952  3.2177408 1.109254
7   1.926990 4.9388293 3.82312419 3.3042773   2.6886179  4.8243678 4.880953
8   2.202869 2.5022930 1.21539963 3.8724025   2.2161914  0.9268577 2.440548
9   8.574551 0.6924752 0.08038271 2.9856756  -0.6251308  4.0873995 3.027772
10  3.534478 1.4136031 1.49314433 4.6004681   6.2070331  4.0839817 3.621557
          V79       V80       V81       V82        V83        V84      V85
1   2.093863 0.9380601 3.462360 1.0106325   1.5393075  3.2324623 4.640295
2   6.013984 4.0524126 3.241100 5.7905341   3.9990567  6.8901396 2.076857
3   2.962613 6.8808470 5.551445 3.8053040   0.6400738  3.9011397 1.662492
4   2.648283 4.3823296 3.213597 4.9045141   2.4667417 -0.5438580 3.560569
5   3.658310 -1.4289129 1.484333 5.2588154   7.5628594  3.2365636 3.058348
6   4.276487 4.4454063 -0.654699 0.5150223   2.2804842  0.3221753 4.193934
7   7.636168 -0.3636929 2.400896 5.7753071   3.9188341  0.8824627 3.423063
8   1.638620 2.1266255 5.348297 2.4792051  -1.1575293  2.5046973 3.865710
9   4.255726 4.0360524 3.179186 2.2493912   1.8166233 -1.2998773 4.775503
10 -1.357588 5.2300078 3.484972 1.9885523   2.7674716  4.4744408 1.333699
          V86       V87       V88      V89         V90       V91      V92
1  -0.2955473 0.5845948 2.6096095 0.9904290 -0.3959060  6.1833689 3.5891499
```

```
2    7.6171427 1.8276806   5.0045462 4.4244449   2.3123388   5.1550489   2.7581749
3    4.2389755 4.0393318   2.9831238 3.3974739   3.9045001  -0.3791411   3.7813658
4    2.5200304 4.2459104   5.1052044 4.6879032   2.1123180   4.0198841   2.7185173
5    2.2115981 2.5340269   1.5945360 1.8085681   4.6886637   4.6969451   2.0051469
6    4.6742563 4.3093541   4.9583031 3.2164008   5.6619522   3.0485810  -0.8096582
7    0.2594507 2.2462830   3.5823722 0.6666122   2.5811747   2.1673523  -1.0037273
8    6.7768667 0.4701233   6.1497228 6.1488198   4.5350215   2.0026604   3.4196343
9    6.3137949 6.3933483  -0.8857651 0.1641783  -0.4150791   4.0600888   0.5820282
10   2.3775759 3.7014566   2.5447321 1.6482453   0.2036378   3.5501606   4.5661983
           V93      V94         V95        V96      V97       V98      V99
1    4.018662 5.719160 3.40876136  0.10368169 3.093504 1.689411 2.756961
2    3.077233 3.269673 6.92761055  3.57281921 2.436760 1.464582 2.991887
3    5.422211 2.517018 0.04265037  0.03417207 2.571188 5.311270 3.495166
4    5.880979 3.866259 7.08387752  5.98289590 3.944646 7.047832 2.643819
5    7.111530 2.854990 2.51687709  2.73138608 1.842608 2.840866 3.524944
6    4.386835 2.446125 2.99877065  2.77111123 3.165944 4.426567 5.026838
7    2.379749 0.935665 3.18722084  5.13542273 4.159997 2.842369 2.393040
8    5.666357 3.026794 3.56374175  5.28415297 4.712515 2.705703 1.917629
9    3.596161 2.656126 6.82100061 -0.86956957 2.761191 1.802456 4.874979
10   3.516127 4.780071 1.72035255  1.07676791 5.239959 2.642877 3.688472
          V100
1    4.3913056
2    3.1556309
3    3.2018895
4    0.6475831
5    2.4540286
6    1.8851438
7    6.7335556
8    2.1412000
9    1.3645435
10   3.6459409

> class(x2)

[1] "data.frame"

> y <- x1[3, ]
> y

  [1]   2.06546900  3.99295221  0.11707310  2.36900135  2.61717276  3.02908635
  [7]   4.85798840  2.66226599  2.84004675  0.66923884  3.76751386  2.20713327
 [13]   3.54223885  4.61155766  3.35902952  2.47106341  0.50920343  3.05796325
 [19]   1.66852766  5.41530820  3.93945763  2.80336415  3.15343446  5.08579525
 [25]   4.83260290  2.59715404  4.43693190  3.38996898  2.13298933  1.18693670
 [31]   1.18008397  2.50835027  4.24990733  1.43818715  1.25320089  3.17738596
 [37]   4.92783871  6.20209340  3.35960028  6.57909492  0.36426486  4.73134194
 [43]   4.80117259 -0.92672248  4.96742895  3.00312526  3.21180813  1.74643042
 [49]   1.30197340  1.41063525  1.90073470  4.90328872  5.96636518  3.05965324
 [55]  -0.20558140  6.96440319  1.66627432  1.43219494  5.67511982  1.02106885
 [61]   0.91033462  1.13131566  3.67740869  3.68126240  5.42825650  3.18665297
```

```
 [67]  4.45085606  5.69098954 -0.97542750  1.97581854 -2.71886317  4.50614622
 [73]  4.15515428  2.62862282  0.37521879  4.04529231  4.84872266  7.18389994
 [79]  2.96261273  6.88084702  5.55144508  3.80530397  0.64007382  3.90113970
 [85]  1.66249223  4.23897547  4.03933182  2.98312377  3.39747395  3.90450006
 [91] -0.37914111  3.78136578  5.42221105  2.51701843  0.04265037  0.03417207
 [97]  2.57118782  5.31127040  3.49516561  3.20188947
```

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

```
             [,1]        [,2]       [,3]     [,4]     [,5]        [,6]     [,7]
 [1,] 1.8983485 -1.6867910 0.7764450 5.238779 3.906820 3.35692243 3.535613
 [2,] 4.6102667  6.2273327 3.1232045 6.967281 3.115472 1.50845498 4.970445
 [3,] 3.9929522  0.1170731 2.3690013 2.617173 3.029086 4.85798840 2.662266
 [4,] 3.0856059  4.8775767 2.2006929 5.241247 2.553482 3.19609708 4.765025
 [5,] 2.1358127  1.8902274 0.6150184 3.466600 4.640396 2.50624423 2.375058
 [6,] 1.1527187  1.7127701 0.7203000 2.193430 6.571100 0.06320249 5.052348
 [7,] 5.6614252  2.1377256 1.7746538 4.658963 3.983087 1.90229654 1.234514
 [8,] 4.5907186  3.5050499 4.2491718 5.208026 4.653764 1.57216365 5.641291
 [9,] 0.5377821  2.5158430 3.5623259 2.009209 2.669549 0.86244018 1.916615
[10,] 4.7869438  2.0194539 2.9018869 3.488471 2.475776 2.98692184 4.035734
              [,8]       [,9]       [,10]     [,11]     [,12]     [,13]    [,14]
 [1,] 2.55553491 4.8955546  3.2457163 0.5559166 2.6610025 1.9274076 3.495752
 [2,] 3.15621457 5.6296400  1.5141951 2.9320615 2.2246954 2.1036446 2.577834
 [3,] 2.84004675 0.6692388  3.7675139 2.2071333 3.5422389 4.6115577 3.359030
 [4,] 7.25383763 2.8065708 -0.5169340 2.0654658 2.9832146 1.6684533 2.765049
 [5,] 6.46915634 3.7934769 -0.7473447 5.1503382 6.5870207 3.0196814 2.043106
 [6,] 0.07352967 1.8790864  3.5505165 1.9544454 3.2727271 3.1047616 6.055128
 [7,] 2.19952918 0.3207076  3.7733688 4.7628747 5.3965165 5.7181287 3.133387
 [8,] 7.09730336 4.8364517  4.1208082 2.7732687 3.7758200 1.8189058 1.430211
 [9,] 4.85132741 4.3414288  5.5758588 3.6028438 5.2862194 0.2613544 3.566801
[10,] 4.41488043 1.7337968  2.4220504 4.2063484 0.9872791 2.0629449 3.757797
             [,15]      [,16]     [,17]      [,18]      [,19]     [,20]     [,21]
 [1,]  3.6841728  1.9212032 1.695342 -0.4901726  1.1484083 4.3434252 3.0994927
 [2,]  5.0457424  0.7889139 2.062177  2.3288160  3.8675081 0.3693875 6.1239876
 [3,]  2.4710634  0.5092034 3.057963  1.6685277  5.4153082 3.9394576 2.8033642
 [4,]  5.0238979  2.3362060 2.949915  1.5448766  3.8845763 2.1419705 1.7223044
 [5,]  2.3306461 -1.9420208 3.405271  5.7048917  3.1587369 2.8219092 4.6101643
 [6,]  6.8054142  2.1736698 2.686213  5.8694951  5.0392268 4.6992452 4.5936681
 [7,]  0.9419749  1.4515147 2.333977  7.8641727  3.7568513 3.1230375 5.9456721
 [8,]  5.9555693  0.4366407 4.470054  1.4199379  3.2094247 2.2552988 3.5544304
 [9,]  2.6276244  5.9264274 1.269321  1.6172213 -1.3018335 0.8097817 4.2049129
[10,] -0.4412907  3.2903468 6.203770  5.0571380  0.4867595 6.0428107 0.6042357
             [,22]      [,23]    [,24]    [,25]      [,26]      [,27]    [,28]
 [1,] 2.0641533  1.5268853 4.442348 5.841483 0.04398185  2.9539220 3.901144
 [2,] 4.5455898  4.0345943 1.300641 2.026351 3.23594774  5.3964257 2.345372
 [3,] 3.1534345  5.0857952 4.832603 2.597154 4.43693190  3.3899690 2.132989
 [4,] 1.3356047 -0.5366334 6.718096 4.451062 0.39437289 -0.7608833 3.786091
 [5,] 3.3600469  2.9202396 2.539738 4.490176 2.62186391  1.5541494 6.112117
```

```
 [6,] 0.9131597 -1.1864285 4.717407 3.089303 1.82325040  5.3900681 6.820647
 [7,] 6.3876576  4.3385177 4.518101 4.134247 1.97570791  0.4514771 3.735229
 [8,] 3.7434482  1.7628907 1.958648 3.101737 2.24735574  3.8997027 6.731265
 [9,] 4.9647686  3.0828898 7.391084 3.931628 3.85229611 -0.3135971 4.763842
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[569] 2.126626 4.036052 5.230008 3.462360 3.241100 5.551445 3.213597 2.400896
[577] 5.348297 3.179186 3.484972 5.790534 3.805304 4.904514 5.258815 5.775307
[585] 2.479205 2.249391 3.999057 2.466742 7.562859 2.280484 3.918834 2.767472
[593] 3.232462 6.890140 3.901140 3.236564 2.504697 4.474441 4.640295 2.076857
[601] 3.560569 3.058348 4.193934 3.423063 3.865710 4.775503 7.617143 4.238975
[609] 2.520030 2.211598 4.674256 6.776867 6.313795 2.377576 4.039332 4.245910
[617] 2.534027 4.309354 2.246283 6.393348 3.701457 2.609610 5.004546 2.983124
[625] 5.105204 4.958303 3.582372 6.149723 2.544732 4.424445 3.397474 4.687903
[633] 3.216401 6.148820 2.312339 3.904500 2.112318 4.688664 5.661952 2.581175
[641] 4.535021 6.183369 5.155049 4.019884 4.696945 3.048581 2.167352 2.002660
[649] 4.060089 3.550161 3.589150 2.758175 3.781366 2.718517 2.005147 3.419634
[657] 4.566198 4.018662 3.077233 5.422211 5.880979 7.111530 4.386835 2.379749
[665] 5.666357 3.596161 3.516127 5.719160 3.269673 2.517018 3.866259 2.854990
[673] 2.446125 3.026794 2.656126 4.780071 3.408761 6.927611 7.083878 2.516877
[681] 2.998771 3.187221 3.563742 6.821001 3.572819 5.982896 2.731386 2.771111
[689] 5.135423 5.284153 3.093504 2.436760 2.571188 3.944646 3.165944 4.159997
[697] 4.712515 2.761191 5.239959 5.311270 7.047832 2.840866 4.426567 2.842369
[705] 2.705703 2.642877 2.756961 2.991887 3.495166 2.643819 3.524944 5.026838
[713] 2.393040 4.874979 3.688472 4.391306 3.155631 3.201889 2.454029 6.733556
[721] 2.141200 3.645941

> getwd()

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

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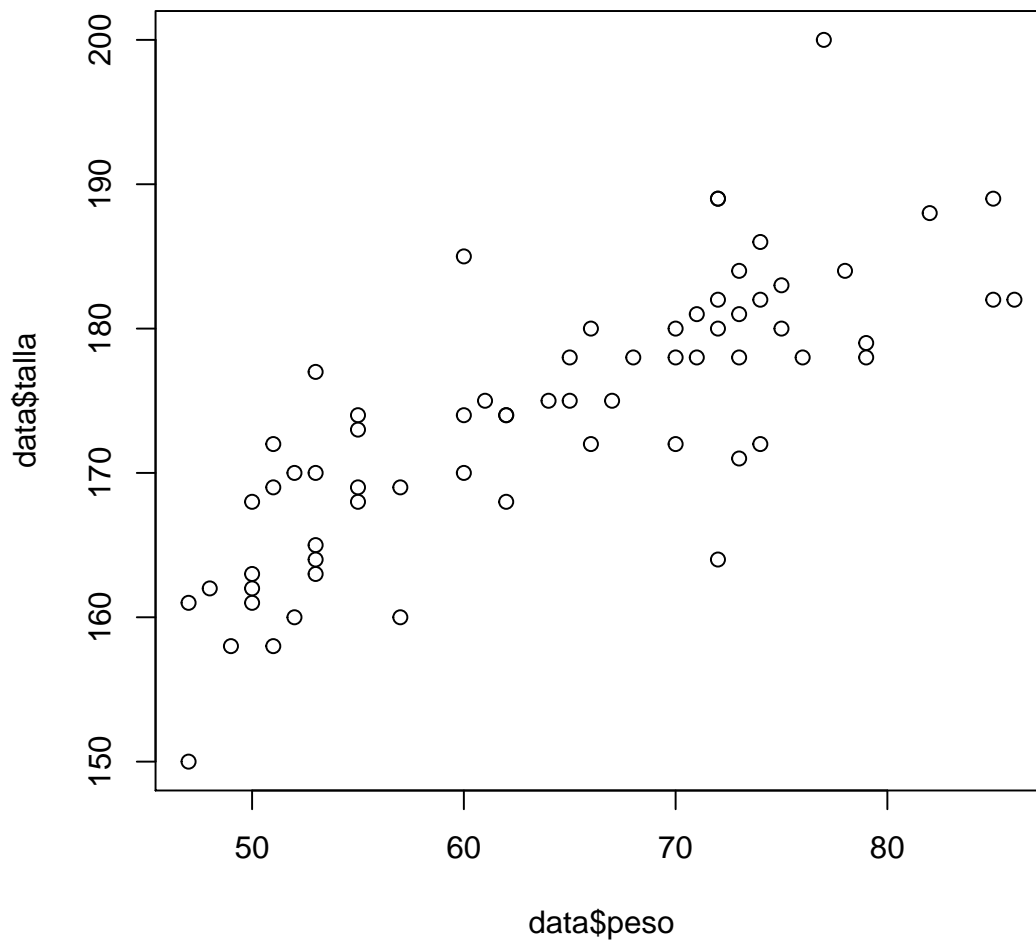
```
> x <- data$talla[data$sexo == "h"]
> x

 [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)
```
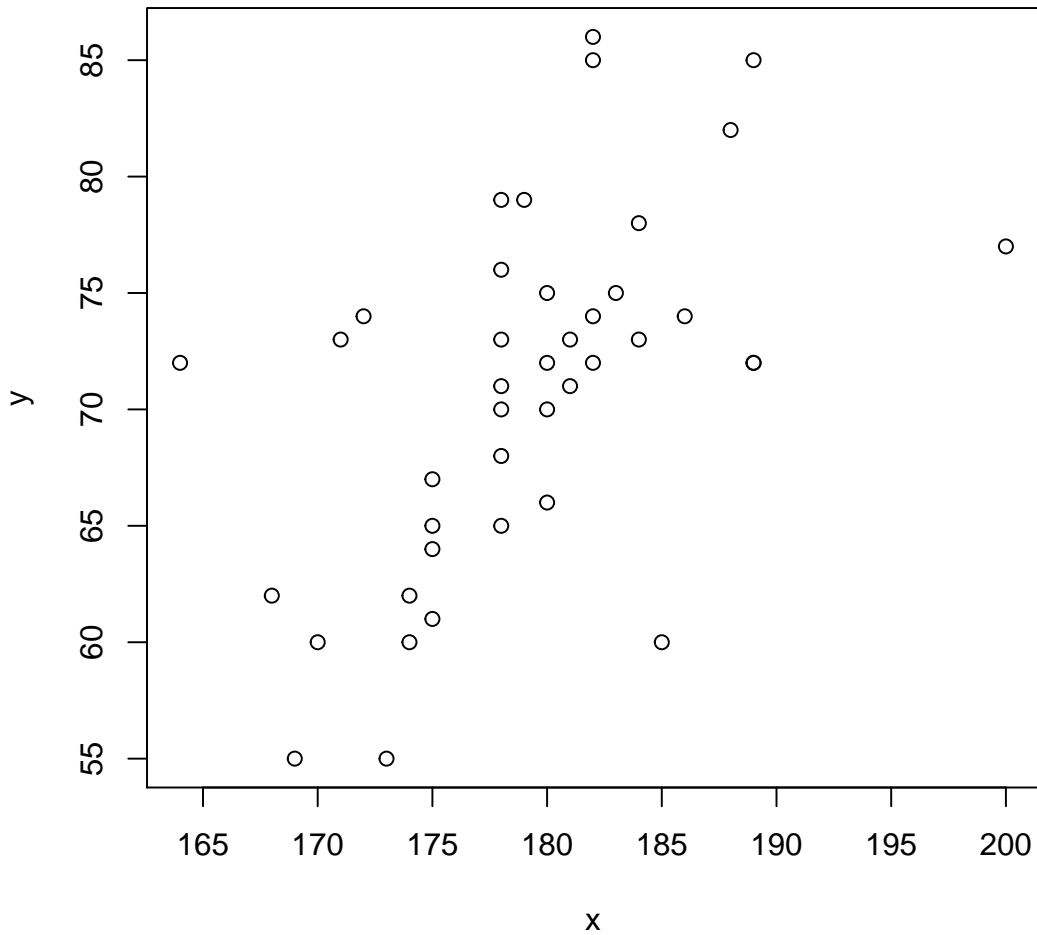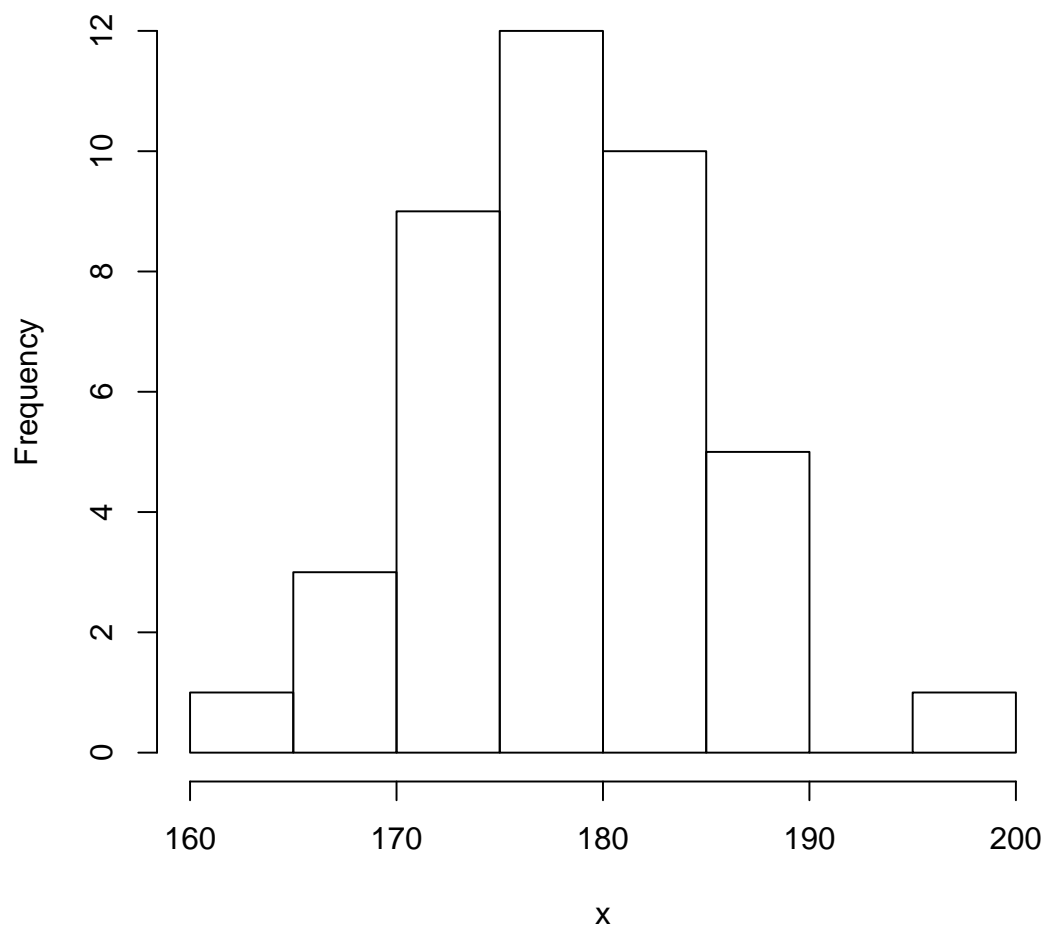
Histogram of x


```
> hist(y)
```

Histogram of y
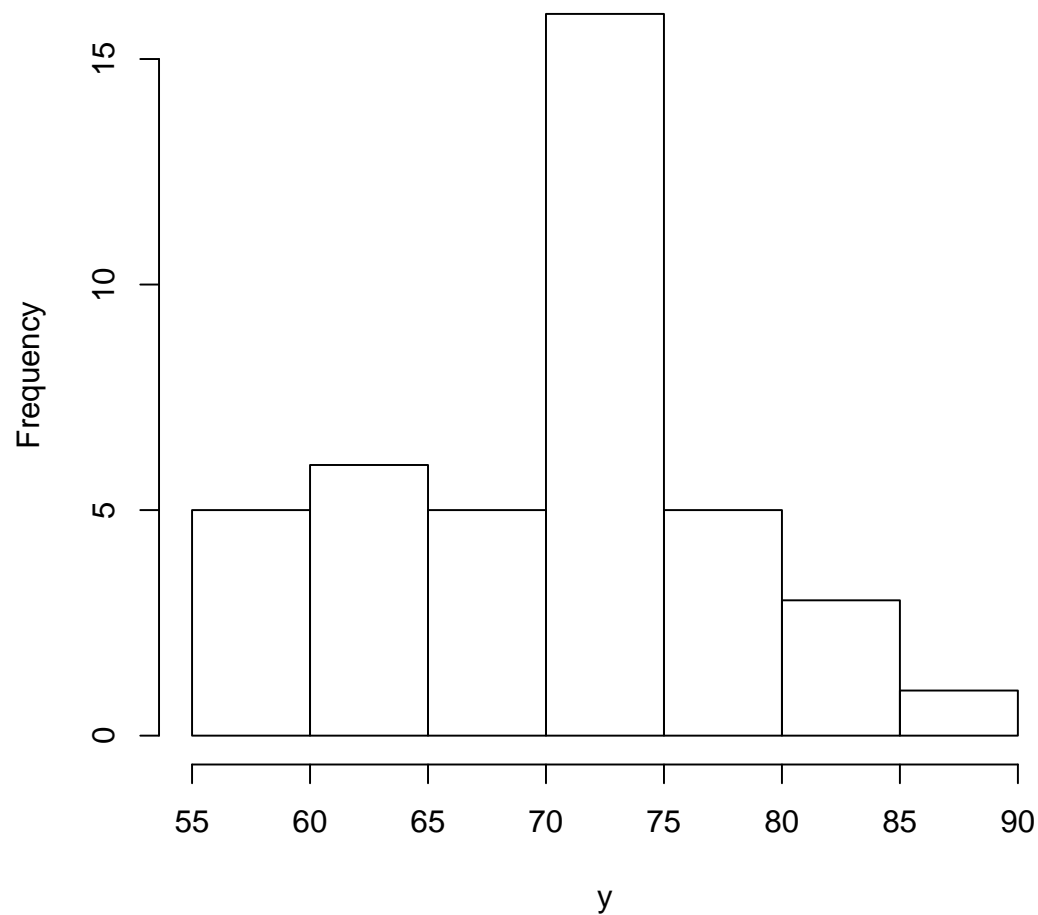

```
> par(mfrow = c(2, 2))
> x <- data$talla[data$sexo == "h"]
> x

 [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)
```
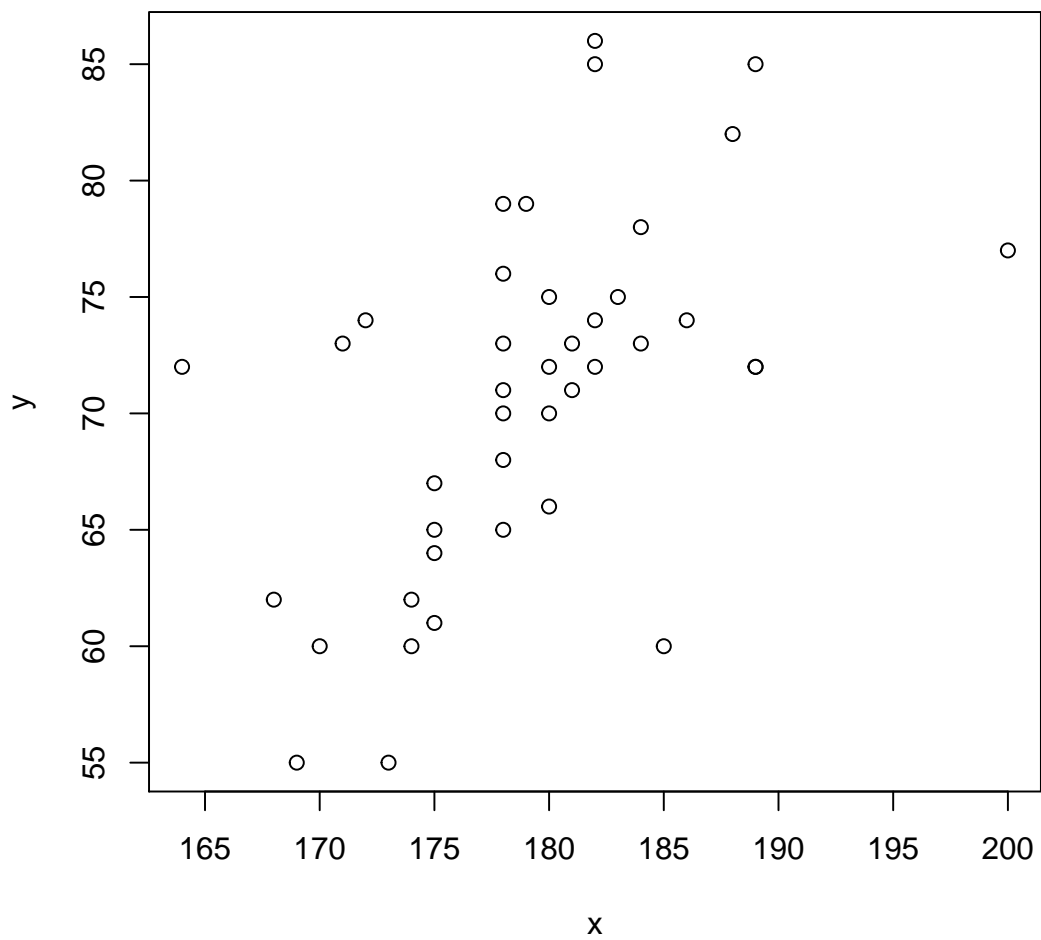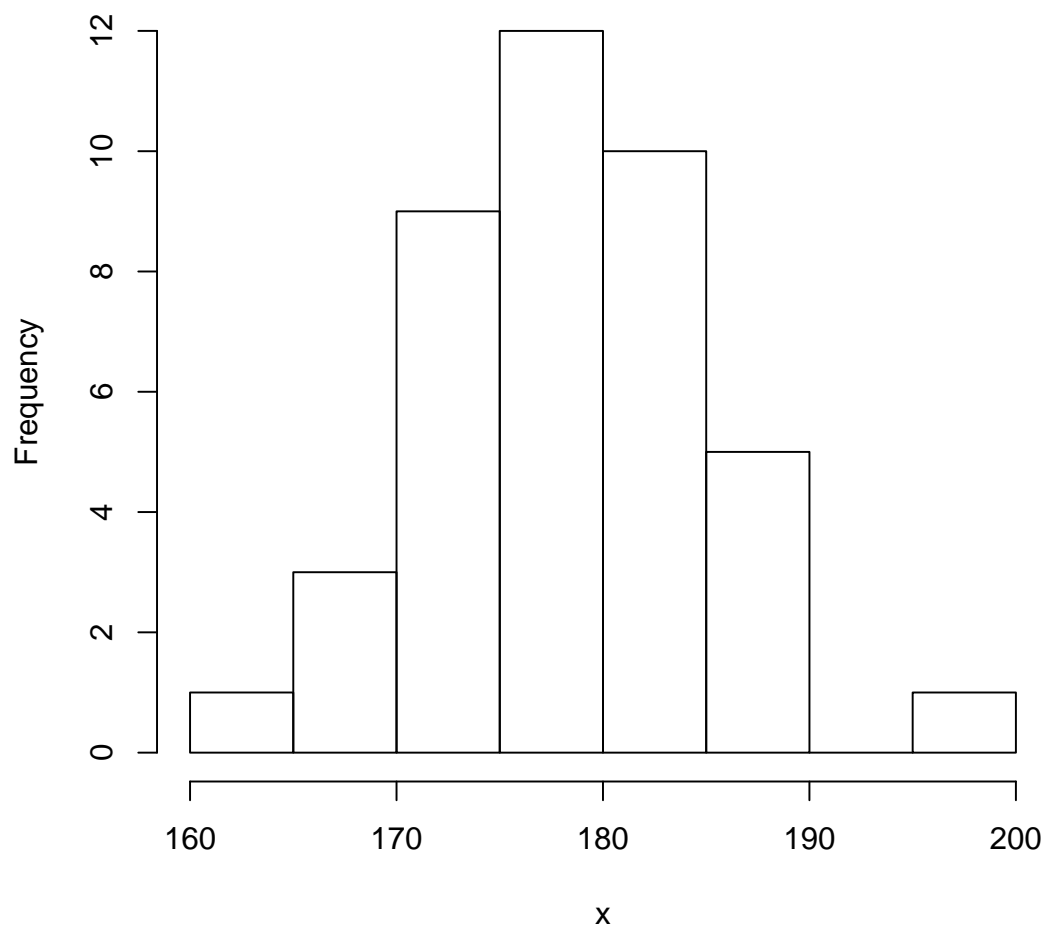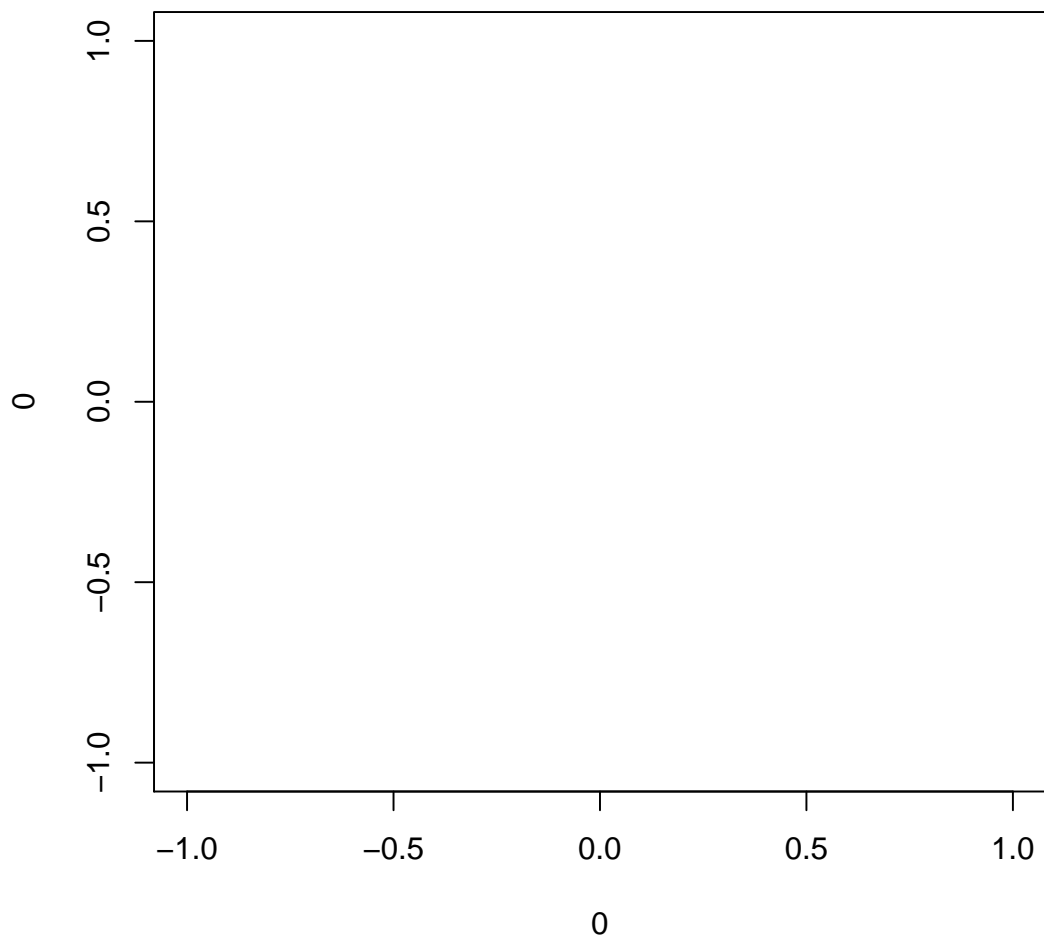
Histogram of x


```
> hist(y)
```

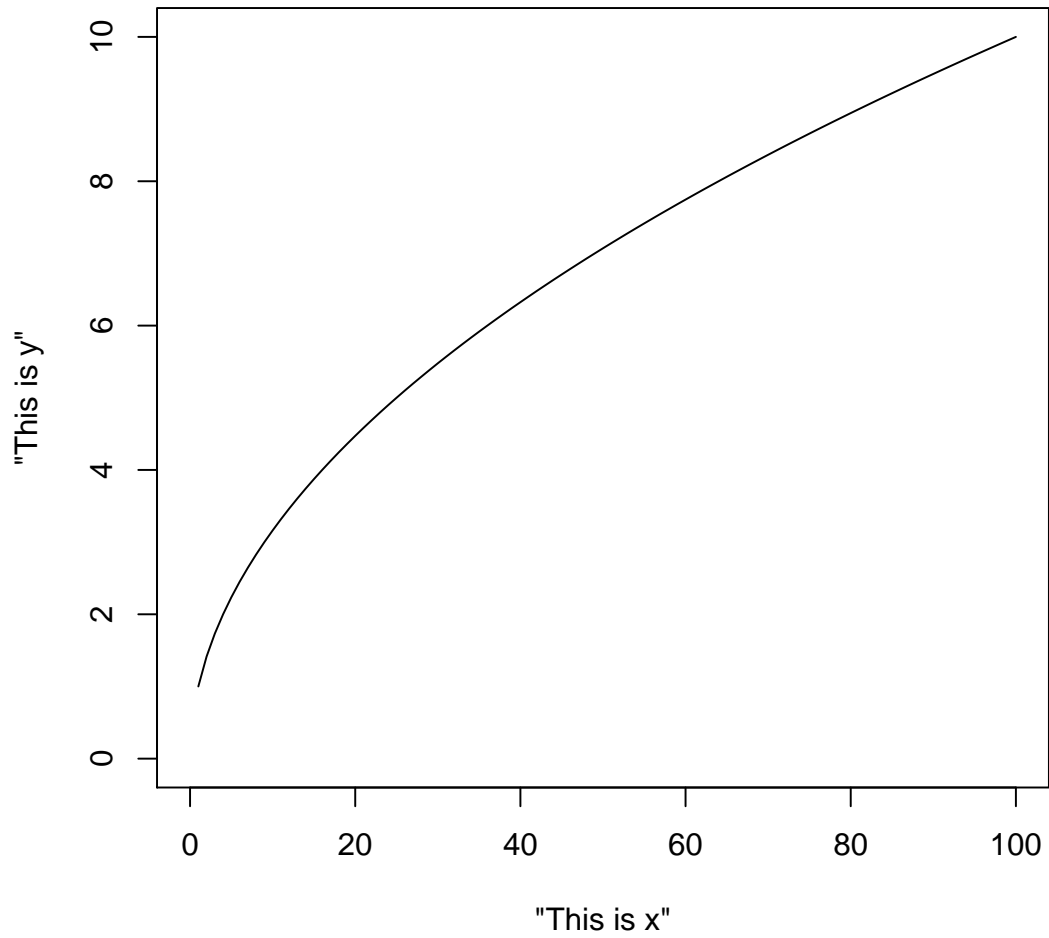**Histogram of y**
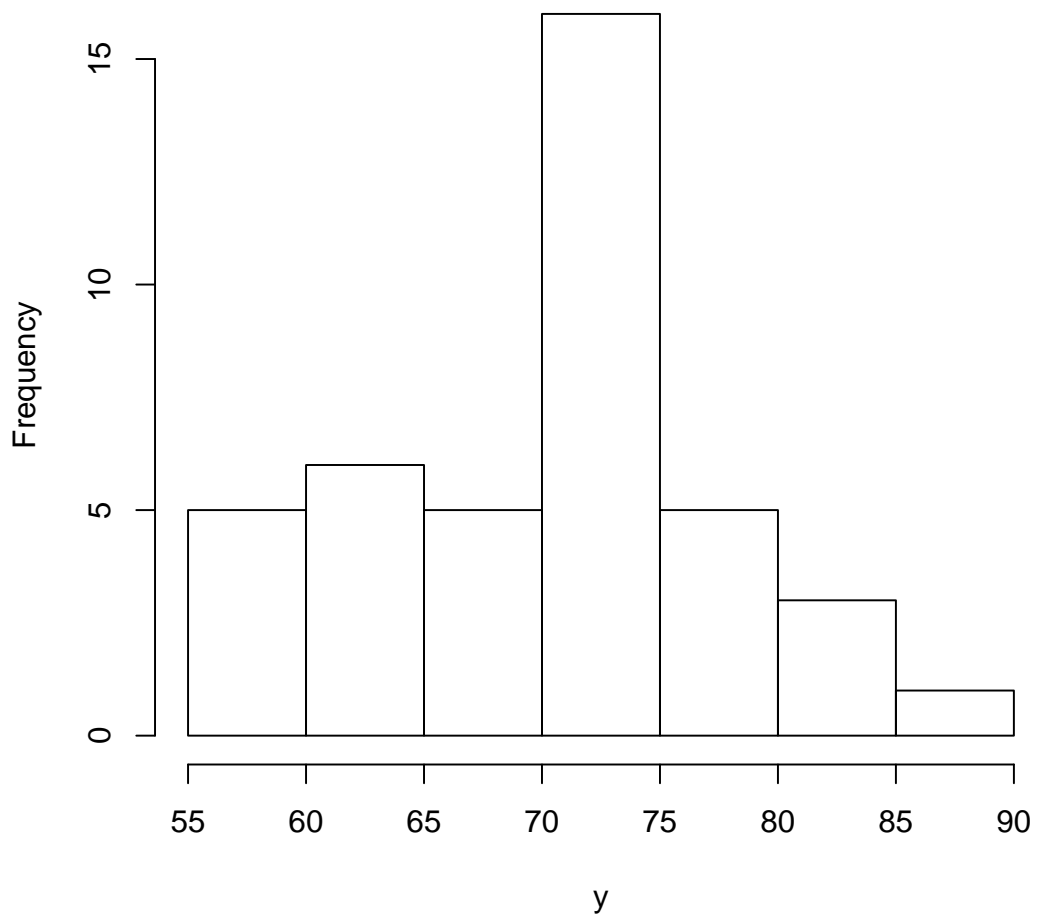

```
> plot(0,0)
```
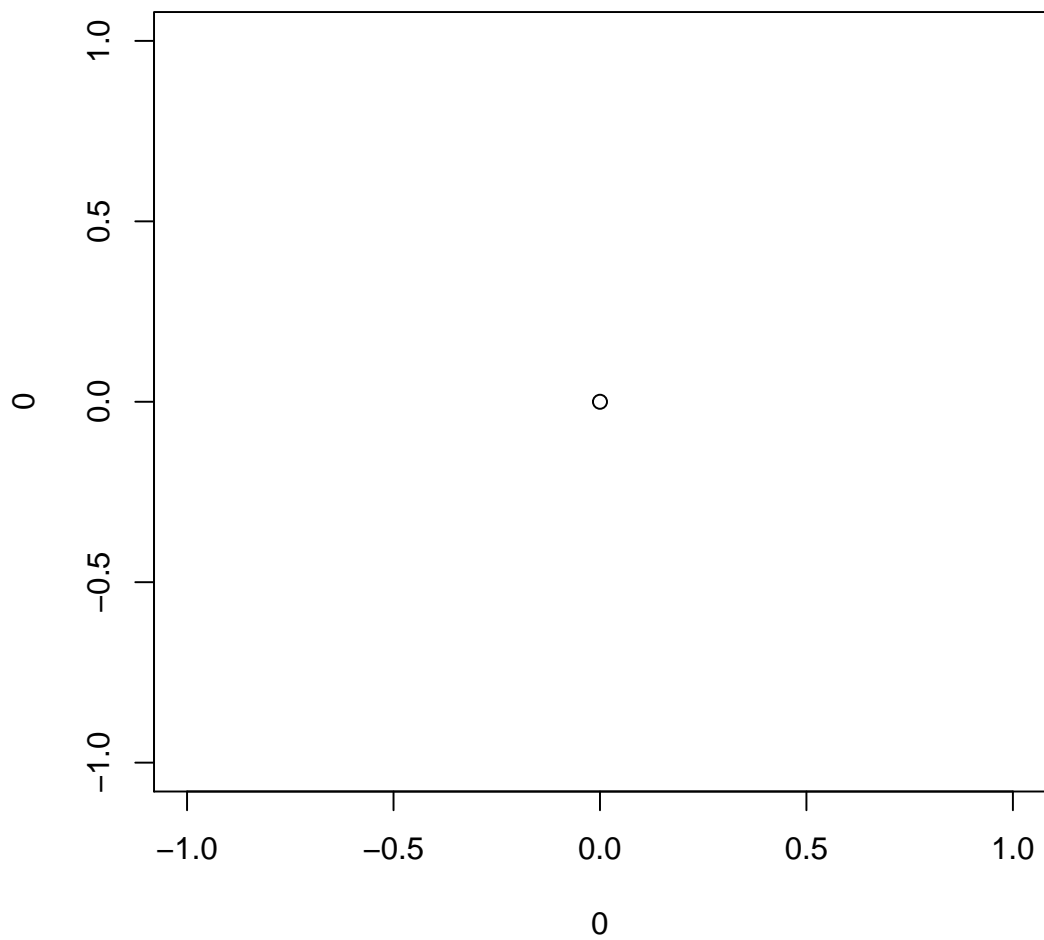
```
> plot(0,0, type="n")
```

```
> 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")
```

raiz cuadrada

1. Cuidado con las variables cualitativas