```
> ssdat = read.table("D:\\drr13\\ed493\\ss423", header = T)
> dim(ssdat)
[1] 137  12
> summary(ssdat)
     grade           gender       schoolgrades        Age
 Min.   :6.000   Min.   :1.000   Min.   :1.000   Min.   :11.00
 1st Qu.:6.000   1st Qu.:1.000   1st Qu.:4.000   1st Qu.:12.00
 Median :7.000   Median :2.000   Median :6.000   Median :13.00
 Mean   :6.993   Mean   :1.526   Mean   :5.762   Mean   :12.92
 3rd Qu.:8.000   3rd Qu.:2.000   3rd Qu.:8.000   3rd Qu.:14.00
 Max.   :8.000   Max.   :2.000   Max.   :9.000   Max.   :17.00
                                 NA's   :7
   SpecialEd            SES             belong         hopeless
 Min.   :0.00000   Min.   :1.000   Min.   :32.00   Min.   :17.00
 1st Qu.:0.00000   1st Qu.:3.000   1st Qu.:52.00   1st Qu.:18.00
 Median :0.00000   Median :3.000   Median :61.00   Median :20.00
 Mean   :0.07353   Mean   :3.161   Mean   :61.77   Mean   :20.46
 3rd Qu.:0.00000   3rd Qu.:3.000   3rd Qu.:72.00   3rd Qu.:23.00
 Max.   :1.00000   Max.   :5.000   Max.   :89.00   Max.   :30.00
 NA's   :1
    depress          master           idea           behavior
 Min.   :10.00   Min.   : 7.00   Min.   : 7.000   Min.   :4.000
 1st Qu.:14.00   1st Qu.:40.00   1st Qu.: 7.000   1st Qu.:4.000
 Median :20.00   Median :54.00   Median : 7.000   Median :4.000
 Mean   :19.68   Mean   :50.79   Mean   : 7.613   Mean   :4.467
 3rd Qu.:25.00   3rd Qu.:61.00   3rd Qu.: 8.000   3rd Qu.:5.000
 Max.   :37.00   Max.   :80.00   Max.   :14.000   Max.   :8.000
 NA's   :1
> ssdat$depress
  [1] 14 19 23 16 17 15 29 29 11 15 10 22 15 12 20 16 19 11 26 20 14 13 13 23 24 15 29
 [31] 14 28 23 22 24 22 20 17 29 25 21 27 17 27 10 28 28 14 13 13 17 13 16 25 28 21 12
 [61] 10 23 32 27 18 18 25 13 12 27 20 18 28 33 16 26 12 15 26 10 27 27 11 18 23 25 19
 [91] 22 18 15 22 25 20 21 20 12 27 16 37 25 13 27 12 15 18 30 20 26 12 24 23 25 16 15
[121] 33 12 19 22 15 22 12 22 13 10 23 10 12 27 10 15 24
> attach(ssdat)
> cor(ssdat, use = "pairwise.complete.obs")
                    grade      gender schoolgrades          Age   SpecialEd          SE
grade         1.000000000  0.12007161   0.10324966  0.734537653  0.03288994  0.00210796
gender        0.120071606  1.00000000  -0.07693380  0.111785222 -0.01660040  0.08280056
schoolgrades  0.103249658 -0.07693380   1.00000000 -0.036878790 -0.12149464  0.08078070
Age           0.734537653  0.11178522  -0.03687879  1.000000000  0.17137161 -0.04921041
SpecialEd     0.032889941 -0.01660040  -0.12149464  0.171371614  1.00000000 -0.02857142
SES           0.002107961  0.08280056   0.08078070 -0.049210411 -0.02857143  1.00000000
belong        0.165002057  0.13290907   0.32461877  0.020568292 -0.12735146  0.31256444
hopeless     -0.043621530 -0.11000899  -0.26012870  0.033950951  0.04260438 -0.35331780
depress       0.041356609 -0.14628074  -0.23805195  0.114296820  0.04913473 -0.25545168
master        0.178163488  0.26860484   0.25281286  0.063919356  0.03180739  0.34131229
idea         -0.180486806 -0.18685063  -0.06102518 -0.005341527  0.08341562 -0.12990632
behavior     -0.267367122 -0.17665021  -0.14875906 -0.083403825 -0.01597250 -0.11311648
                  belong    hopeless     depress      master         idea    behavior
grade         0.16500206 -0.04362153  0.04135661  0.17816349 -0.180486806 -0.26736712
gender        0.13290907 -0.11000899 -0.14628074  0.26860484 -0.186850627 -0.17665021
schoolgrades  0.32461877 -0.26012870 -0.23805195  0.25281286 -0.061025178 -0.14875906
Age           0.02056829  0.03395095  0.11429682  0.06391936 -0.005341527 -0.08340382
SpecialEd    -0.12735146  0.04260438  0.04913473  0.03180739  0.083415617 -0.01597250
SES           0.31256444 -0.35331781 -0.25545169  0.34131230 -0.129906324 -0.11311649
belong        1.00000000 -0.53386517 -0.50984362  0.59237433 -0.249387198 -0.16690321
hopeless     -0.53386517  1.00000000  0.50487406 -0.62739248  0.221453622  0.20342006
depress      -0.50984362  0.50487406  1.00000000 -0.46763766  0.292176215  0.27719693
master        0.59237433 -0.62739248 -0.46763766  1.00000000 -0.187823985 -0.23182823
```

```
idea         -0.24938720  0.22145362  0.29217622 -0.18782399  1.000000000  0.72197708
behavior     -0.16690321  0.20342006  0.27719693 -0.23182823  0.721977076  1.00000000

> reg1 = lm(depress ~ belong)
> summary(reg1)

Call:
lm(formula = depress ~ belong)

Residuals:
    Min      1Q  Median      3Q     Max
-14.791  -3.491   0.109   3.566  16.323

Coefficients:
            Estimate Std. Error t value Pr(>|t|)
(Intercept) 35.59112    2.36527  15.047  < 2e-16 ***
belong      -0.25715    0.03748  -6.861  2.3e-10 ***
---
Signif. codes:  0 ‘***’ 0.001 ‘**’ 0.01 ‘*’ 0.05 ‘.’ 0.1 ‘ ’ 1

Residual standard error: 5.386 on 134 degrees of freedom
  (1 observation deleted due to missingness)
Multiple R-squared: 0.2599,     Adjusted R-squared: 0.2544
F-statistic: 47.07 on 1 and 134 DF,  p-value: 2.303e-10

> reg2 = lm(schoolgrades ~ belong)
> reg3 = lm(depress ~ schoolgrades + belong)
> summary(reg3)

Call:
lm(formula = depress ~ schoolgrades + belong)

Residuals:
     Min       1Q   Median       3Q      Max
-15.3857  -3.4017  -0.1492   3.6832  15.7179

Coefficients:
             Estimate Std. Error t value Pr(>|t|)
(Intercept)  35.99046    2.56219  14.047  < 2e-16 ***
schoolgrades -0.26774    0.25091  -1.067    0.288
belong       -0.23974    0.04172  -5.747 6.38e-08 ***
---
Signif. codes:  0 ‘***’ 0.001 ‘**’ 0.01 ‘*’ 0.05 ‘.’ 0.1 ‘ ’ 1

Residual standard error: 5.472 on 127 degrees of freedom
  (7 observations deleted due to missingness)
Multiple R-squared: 0.2514,     Adjusted R-squared: 0.2396
F-statistic: 21.32 on 2 and 127 DF,  p-value: 1.039e-08


> summary(reg2)

Call:
lm(formula = schoolgrades ~ belong)

Residuals:
    Min      1Q  Median      3Q     Max
-5.2527 -1.2272  0.2203  1.5314  3.5029

Coefficients:
```

```
            Estimate Std. Error t value Pr(>|t|)
(Intercept)  2.42056    0.87688   2.760 0.006621 **
belong       0.05397    0.01390   3.883 0.000165 ***
---
Signif. codes:  0 ‘***’ 0.001 ‘**’ 0.01 ‘*’ 0.05 ‘.’ 0.1 ‘ ’ 1

Residual standard error: 1.928 on 128 degrees of freedom
  (7 observations deleted due to missingness)
Multiple R-squared: 0.1054,     Adjusted R-squared: 0.09839
F-statistic: 15.08 on 1 and 128 DF,  p-value: 0.0001645
```