Homework Solutions
Applied Regression Analysis

WEEK 3

Exercise One

Determine the ANOVA tables for the following regressions:

For each of the regressions, type "regress" followed by the Y and X variables, into the command box. From this command, you should see an ANOVA table, as well as a t-statistic for the slope coefficient below, and an F-statistic of model fit in the upper right corner *(See images below)*

1. SBP (Y) on SMK (X)

```
. regress sbp smk

  Source |       SS       df       MS              Number of obs =      32
---------+------------------------------           F(  1,    30) =    1.95
   Model |  393.098162     1  393.098162            Prob > F      =  0.1723
Residual |  6032.87059    30  201.095686            R-squared     =  0.0612
---------+------------------------------           Adj R-squared =  0.0299
   Total |  6425.96875    31  207.289315            Root MSE      =  14.181

------------------------------------------------------------------------------
     sbp |      Coef.   Std. Err.       t     P>|t|       [95% Conf. Interval]
---------+--------------------------------------------------------------------
     smk |   7.023529   5.023498      1.398   0.172      -3.235823    17.28288
   _cons |      140.8   3.661472     38.454   0.000       133.3223    148.2777
```

2. SBP (Y) on QUET (X)

```
. regress sbp quet

  Source |       SS       df       MS              Number of obs =      32
---------+------------------------------           F(  1,    30) =   36.75
   Model |  3537.94585     1  3537.94585            Prob > F      =  0.0000
Residual |  2888.0229     30  96.2674299            R-squared     =  0.5506
---------+------------------------------           Adj R-squared =  0.5356
   Total |  6425.96875    31  207.289315            Root MSE      =  9.8116

------------------------------------------------------------------------------
     sbp |      Coef.   Std. Err.       t     P>|t|       [95% Conf. Interval]
---------+--------------------------------------------------------------------
    quet |   21.49167   3.545147      6.062   0.000       14.25151    28.73182
   _cons |   70.57641   12.32187      5.728   0.000        45.4118    95.74102
------------------------------------------------------------------------------
```

3. QUET (Y) on AGE (X)

```
. regress quet age

      Source |       SS       df       MS              Number of obs =      32
-------------+------------------------------           F(  1,    30) =   54.37
       Model |  4.93597216     1  4.93597216           Prob > F      =  0.0000
    Residual |  2.72371324    30  .090790441           R-squared     =  0.6444
-------------+------------------------------           Adj R-squared =  0.6326
       Total |   7.6596854    31  .247086626           Root MSE      =  .30131

------------------------------------------------------------------------------
        quet |      Coef.   Std. Err.      t    P>|t|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
         age |   .0573642   .0077799     7.37   0.000     .0414755    .0732529
       _cons |   .3864517   .4176903     0.93   0.362    -.4665857    1.239489
------------------------------------------------------------------------------
```

4. SBP (Y) on AGE (X)

```
. regress sbp age

      Source |       SS       df       MS              Number of obs =      32
-------------+------------------------------           F(  1,    30) =   45.18
       Model |  3861.63037     1  3861.63037           Prob > F      =  0.0000
    Residual |  2564.33838    30  85.4779458           R-squared     =  0.6009
-------------+------------------------------           Adj R-squared =  0.5876
       Total |  6425.96875    31  207.289315           Root MSE      =  9.2454

------------------------------------------------------------------------------
         sbp |      Coef.   Std. Err.      t    P>|t|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
         age |      1.6045   .2387159     6.72   0.000     1.116977    2.092023
       _cons |   59.09162   12.81626     4.61   0.000     32.91733    85.26592
------------------------------------------------------------------------------
```