1) We are going to re-visit the study in HW3 where our closet-ecophysiologist wanted to build a multiple linear regression model to predict CO$_2$ flux ($\mu$mol m$^{-2}$ s$^{-1}$) from the soil surface. He measured diurnal soil CO$_2$ fluxes along with soil moisture content (grams) and soil temperature ($^\circ$C) over the entire growing season. You will use the same n = 28 mean fluxes with their corresponding soil temperature and soil moisture measurements included in HW3. You will use SAS (or another appropriate statistical software package) to perform all calculations...be sure to include your organized SAS programs & output with your homework.

In HW3, you constructed a multiple linear regression model that predicts soil CO$_2$ flux from soil moisture and soil temperature (Flux = $b_0 + b_1$*Temp + $b_2$*Moisture + $b_3$*Temp$^2$ + $b_4$*Moisture$^2$). In this homework assignment, I want you to:

1. Use extra sums of squares to test if each regression coefficient is significantly different from zero (i.e., use partial F-tests).
2. Test if the coefficients for the squared terms are significantly different from zero (i.e., Ho: $\beta_3 = \beta_4 = 0$).
3. Determine the percentage that each independent variable contributes to the overall R-squared (i.e., use partial coefficients of determination).
4. Estimate the standardized regression coefficients for this model and use them to assess the contribution of each independent variable to predicting soil CO$_2$ flux for this study (be careful to check if the variables are too highly correlated to make this type of comparison!). Comment on any multicollinearity that you think may or may not be present.