**Name:\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

**NOTE: Type your answers in the appropriate fields; please make answer fields larger as needed. Please turn in a printed copy to Melissa after next Tuesday’s lecture or Melissa’s mailbox by 12 PM next Tuesday (please contact Melissa regarding exceptions; e.g., illness and travel). Please note, assignments will lose 5% of the total possible points for each day they are late.**

*Conceptual Problems*

1. In your own words describe how RM ANOVA can be used to test for differences between groups, differences between repeated observations, and differences in observations as a function of group membership. These tests have specific names we discussed in lecture.

2. Why do we say that in RM ANOVA time is treated as a categorical variable?

3. What is the difference between polynomial contrasts and comparisons of means between different observation periods?

*Computer Problem*

Researchers were interested in how confidence in students fluctuates from the end of sophomore year through the end of senior year in college. Further, researchers were interested in whether students attended a private (i.e., Harvard, Stanford, and Yale) or public (i.e., UMass – Boston, San Francisco State University, and Southern Conneticut State University) university would influence end-of-year student confidence ratings, and possible trajectories.

Use the data set “confidence.csv” to answer the following questions. For your information, t1-t3 indicate time of observation 1-3; i.e., end of sophomore year, end of junior year, and end of senior year, respectively. The variable public indicates whether the student attended a public (public = 1) or private (public = 0) university.

1. Convert the wide format data set to a long format data set. Remember that you will need to create an ID variable, and an Observation/Time variable. Show syntax and the header and footer of the long format data set.

Syntax:

Data header and footer:

2. Test whether public and private unveristies differed in their confidence scores. Conduct any pairwise comparison necessary. Report your conclusions.

Syntax:

Results:

3. Test whether confidence differs over time. Do this by comparing all observations to each other. Also do this by testing the maximum allowable number of polynomial contrasts. Report your conclusions for both tests.

Syntax:

Results:

4. Test for a possible interaction between variables tested in question 2 (university type) and 3 (mean differences between observations and significant trends in confidence). Conduct any follow-up analyses necessary if there is a significant interactions. Report your conclusions for all tests.

Syntax:

Results:

5. Create a plot of the data that represents the trajectory for public and private students. Make sure the trajectories have some indication of variability around the average trajectory. Sufficiently label and describe your figure.

Syntax:

Figure and comments: