Final Project (STAT 390)

Instructions:

a) The final project consists of 1 problem and 1 project.
b) Please follow the requirements of the problem; submit you **SAS code, output (ie. Results), and your answers/discussions.**
c) Do not print the entire original data for the problems. If necessary, print only a part of the data.
d) Due Date is on sakai.

Problem 1: The "car data" (on sakai) are observations of cars sold in the North American market. Five variables were collected for each car: Weight, Disp. (the engine displacement in liters), Mileage, Fuel, and Type.

1) Fit the following regression model:

$$\text{Mileage} = a + b1 * \text{weight} + b2 * \text{Disp} + b3*\text{Fuel} + b4*\text{Type} + \text{error}$$

[Hint: Use PROC GLM rather than PROC REG and use the class statement in GLM. Report the coefficient estimates and check the estimated coefficients by adding the "selection" option to the MODEL statement.]

2) Create a new data set which does not contain the "Type" variable. Find the best regression model for this new data set. [Hint: Now we can use PROC REG.]

If you are interested, you can add the option 'SELECTION':

```
MODEL Mileage = Weight Disp Fuel/SELECTION = backward; /*forward, stepwise*/
```

3) Preform model checking procedures for the regression model you created in Part 2.

For parts 1-3 make sure you have clear titles for the output and labels for the variables.

Problem 2: For this part of the assignment, you must research a SAS procedure that was **NOT** discussed in the class. Write a Word document introducing the procedure and apply this procedure to a dataset.

Be sure to include the following:

- What is the procedure is used for? What are some of the options or methods?
- An example dataset (you may find your own dataset or you may pick one from class).
- An example using the procedure including code and the output (ie. results).