* **Save your midterm exam with the usual file name format: First Name Last Name Midterm.xlsm**
* **Upload your finished midterm exam to ReggieNet – Assignments before 7:00 PM.**

**Problem 1 (4 points):**

On the “Problem 1” tab, the table contains the information about the MVR (Moving Vehicle Report) result for each driver in 3 states (MI, TX, and LA) between 7/1/2014~6/30/2015. Given the following:

* The combination of state and DLN (Driver’s License Number) can uniquely identify each driver.
* A driver could show up multiple times in the table. (For example, row 1 & 2 are same driver, but with different order dates.)
* For the analysis, you are only interested in the latest record. For example, you want to keep the 6/23/2015 record, instead of 11/8/2014 for the first driver (MI, H777420077).

Your task is to remove the duplicate drivers from the dataset and keep the latest record for each driver. The final dataset needs to be sorted by State, DLN, and Order Date.

**Problem 2 (4 points):**

On the “Problem 2” tab, fill the tables based on the result of problem 1.

2.a: Use only TX’s data. Fill in the table with number of driver in the 2X2 table. Just the raw count.

2.b: Use only LA’s data. Fill in the table with number of driver in the 2X2 table, but show it as % of row total.

2.c: Use only MI’s data. Fill in the table with number of driver in the 2X2 table, but show it as % of grand total.

2.d: Use the result from 2c above. Calculate the disagreement rate, by adding the off-diagonal cells. (Where the predicted results disagree with actual results.)

\*Even if your problem 1’s final answer is wrong, as long as your calculation in problem 2 is correct, you will get full credit.

**Problem 3 (4 points):**

Based on the data in “Problem 3” tab, create a chart that

* Display Company Group in the X-axis
* Display two series of data:
  + 2014’s Written Premium (000’s) on primary y-axis (Using Column Chart Type)
  + Growth rate on secondary y-axis (Using Line Chart Type)
* Change the Chart title to “Top 50 Insurance Company’s WP & Growth Rate in 2014”.

Save the graphs on the same tab (Problem 3).

**Problem 4 (4 points):**

Calculate the expected loss from the mortality tables on the 'Mort2010' & 'Mort2015' tabs for each policy shown on the 'Anticipated Death Claims' tab. To do so, multiply the 'Policy Size' by the mortality found on each of the 'newmort2010' and 'newmort2015' ranges based on the age on the 'Anticipated Death Claims' tab.

I would like you to set up the formula such that you can copy and paste it for the whole table. (Create the formula in C2, and just copy across the whole table.) Make sure the range references in your lookup formulas differentiate which range they are selecting from based on the description in row one.

In row 23, calculated the weighted average of the expected loss you calculated above (row 2 ~ row 21), use the Policy Size as weight. Here is the formula for weighted average:

Where Xi is each observation, and Wi is the weight assigned to each observation.

**Problem 5 (4 points):**

On the “Problem 5” tab, there are two tables: Policy Table and Loss Table. Your goal is to merge the loss amount from loss table to policy table (D3~D1002). Below are some hints you will need:

* Each policy only has at most 1 claim. Most of the policies don’t have a claim, in that case, display 0.
* You would need to use policy number and loss date as keys to do the merge.
* The claim’s loss date has to occur between the policy’s effective date and expiration date. Otherwise, don’t include that claim.
  + For example, Claim number A0001 is not valid, because it occurred prior to policy number 26’s effective date. However, Claim number A0002 would be valid, since it occurred between policy 45’s effective date and expiration date.
* Every claim’s loss amount are positive non-zero values.
* You are encouraged to use array function to do the merge. However, utilizing other functions is also acceptable.