**Homework 3**

Due date: November 04, 2020

Homework 3 uses the same Apple financials data set we used in the last class, and creates a Shiny app. This Shiny app is more involved. You should check out the app here: https://malshe.shinyapps.io/homework_4/ before you start building it.

There are several nuances to the app with the following features:

1. The app shows 2 instructions when no file is loaded. It mentions that the data has to be in sas7bdat format and it must contain variables with specified names. **(3 points)**

   **Hint:** For this, you will have to use `validate()` function from `shiny` package. We did not cover this in the class so here is a detailed article on how to use it: https://shiny.rstudio.com/articles/validation.html

   *As always, my request is to keep it simple. This is basically two lines of code. In the first line, save the instructional message in an R object. On the second line, use `validate()` to check whether any data set is loaded in the app and, if not, just display the instructions from the previously created R object.*

2. When you load a SAS data file (available with this homework assignment from Blackboard), the app shows a scatterplot with X and Y variables.
   1. The plot appears with a line (LOESS) overlaid. (No separate points for this)
   2. The axes labels show descriptive names of the variables and also the units, which are in million $. **(2 points)**
3. The sidebar panel lets you choose X and Y variables. Note that these variable names are different from the variable names inside the data set. **(2 points)**
4. Select the model to fit on the scatterplot. Also, if the user wants no model, they should be able to see only the scatterplot without any line overlaid. **(3 points)**
5. You can select whether the scale will be in levels or in logs (base 10). The log scale will apply to both the axes simultaneously. **(3 points)**
6. A checkbox lets you select whether you want standard errors on the model or not. **(2 points)**

Make sure that your app file is named app.R. Submit only your app.R file on Blackboard. I highly recommend adding your name inside the app as a comment. Please DON'T include the data set with your submission!