**Assignment 1**

SafeBabies is a large company who is producing car seats for babies and toddlers. They sell their products all over the US and abroad. The management team has hired you as a Business Analytics consultant to help them maximizing their profit.

Your primary task is to determine:

1. the optimal price for selling the car seats at those stores where the shelve location is good (i.e. the product is highly visible)?
2. the optimal price for selling the car seats at those stores where the shelve location is bad (i.e. the product is highly visible)?

You have been told that the cost of producing each car seat is $55.0

1. Plot the optimal price for selling the car seats at those stores where the shelve location is good and those where the shelve location is bad when varying the production costs from $40 to $85.

**Data**:

All what you have been given is the following dataset (SafeBabies dataframe) which contains 3 variables for 400 stores of SafeBabies.

Library(ISLR)

SafeBabies <- Carseats %>% select("Sales", "Price", "ShelveLoc")

Where

Sales is unit sales (in thousands) at each location  
Price is the price that company charges for car seats at each site, and   
ShelveLoc is a factor with levels Bad, Good and Medium indicating the quality of the shelving location for the car seats at each store.

**Deliverables:**

A single PDF file which is the output of your notebook/markdown that shows your code, output and explanation and logic is sufficient.

**Note:** This assignment is similar to what you will get in reality. Of course, not in terms of the data (because you will get 300 additional irrelevant and noisy variables!), but more in terms of project expectations. You will be given a dataset and then management expectation! Remember, problem formulation sometimes is more difficult than solving the problem itself.

**Hint:** If you needed to build a generalized linear model (such as lasso or ridge) with a single predictor, be aware of the following issue with glmnet (I cannot nag enough with the design of this package) and look at the solution (well, more like a hack than the solution)

[**https://stackoverflow.com/questions/46698836/how-to-perform-lasso-regression-with-a-single-predictor-column**](https://stackoverflow.com/questions/46698836/how-to-perform-lasso-regression-with-a-single-predictor-column)

I am just saying!