Statistics Lab, Homework 3

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This week we complete the project started last week. If we run the program we created last week lots of times, we should be able to compute the average number of runs scored in an inning. We are also interested in determining how important the chance of our first hitter getting a hit is to how many runs we score. So, we will simulate a number of innings with our first hitter hitting at a range of different values. Simulate 400 innings each for the first hitter having battering average $0.280, 0.330, 0.380, \ldots 0.730$. It is also important to create visuals for you data. Therefore I will require some plots be included with the homework.

For this homework you should:

1) Turn the program you wrote last week into a function accepting the batting average of the first hitter as an input and it will output the number of runs.

2) Simulate the desired number of innings for each batting average of our first hitter.

3) Create a histogram for the number of runs scored when the hitter's batting average is 0.280.

4) Create a scatter-plot with average number of runs on the x-axis and the batting average of the first hitter on the y-axis.

Note: To do numbers 3 and 4, you will need to create variables (lists, probably) to store the appropriate data to be graphed. Another very important note: Your code should take about 15 minutes to run. If it is taking more than 45 minutes you likely have an error.