MATLAB Assignment 5

Spring 2017, Section A

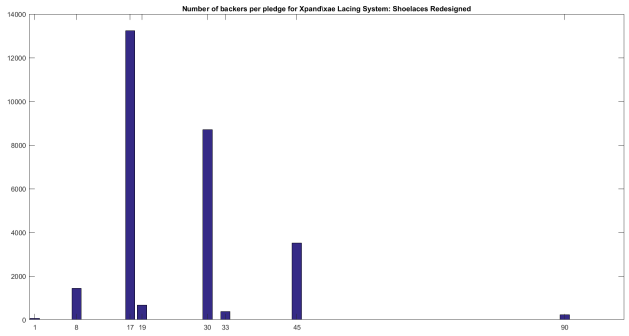
In this homework, we will go through a few advanced data structures in MATLAB, such as structures, classes, chars, as well as file input and output in MATLAB. You would be importing in a kickstarter project statistic (https://www.kaggle.com/socathie/kickstarter-project-statistics) and encapsulating it in classes. After obtaining all the data, you would be required to write some funtions for the class you just created. It is advised that after each stage, you save your variables, say, all your kickstarter instances, into a .mat file such that you would not need recreate all the classes again. Please send the homework to so@cooper.eduby March 1st, 2017 .

1. First, create a class called *kickstarter*. In your *kickstarter* class, you should have the following properties. Note that you do not need to specify the data type of the properties when you are declaring a class – the following properties are just here to impress on you what type of properties you would be expecting

- amtpledged : Double
- by : Char
- category : Char
- currency : Char
- goal : Double
- City : Char
- State : Char
- numbackers : Double
- pledgetier : A cell array of structs with the fields pledge and num_backers, which store the pledge amount and the number of backers of that pledge.
- title : Char
- url : Char

2. Now, import the entries from most_backed.csv the into MATLAB and store it in a cell array of *kickstarter* instances. Note that you would want to use a for loop to create every instance of *kickstarter* and store it in the cell array. Make sure that the properties of kickstarter are the datatype listed above! Note that in the dataset, the city and the state are in the same char. You would need to split the char first before you assign City and State to your values.

3. In your class, create a function called *plotTiers*, which plots a bar chart of the number of tiers against the number of backers of a certain tier. When you call the function, it should look something like this:



Note that you might not be able to run this function for some instances. It is because the data itself has a problem, some of the pledges have duplicate pledge amounts. So you will need to sum up number of backers for same amount pledges before plotting the graph.

4. In your class, create another function called *convertCurrency*, which takes a char as an input. The goal of this function is to take in a char representation of a currency ('gbp','usd','eur','cad') and then perform a currency conversion on all the properties that involve money. At the end, the object should have a new currency char and all its numeric value should be converted to said currency. The following table is the currency conversion:

Currency	usd	gbp	eur	cad
Conversion	1	0.80	0.95	1.31

5. At last, save your large cell array that contains 4000 kickstarter projects as a .mat file. Send all your code, as well as the .mat file, to me so that I can run your code and inspect your classes as well.