Vg101. Introduction to Computer and Programming (Fall 2018)

Homework #3

Assigned: 10/9/2018 Due: 10/16/2018

**Notes for submission:** Please submit ONE Matlab source file to Canvas for the problem. You need to name the file using the format "**sYourID_hw3.m**" in order to speed up our grading process. For example, the file submitted by the student with ID#518370900000 for this homework assignment should be "s518370900000_hw3.m". Also notice that you will be working with a Matlab function below, where the m-file name generally should be the same as the function name. You should stick to this rule during your testing of the codes. However, please remember to rename your file according to the above rule before submitting it to Canvas so that submissions from different people can be differentiated. And we will handle the inconsistency during the grading process.

**Homework problem**: Write a Matlab function to load an 8-bit **grayscale** image and convert it to a binary image by thresholding, and then save to an image file. The function should have the following prototype:

*function myim2bw(filename, threshold)*

where the input *filename* is a character string of the image file name, for example 'lena_gray.jpg', and the input *threshold* is an integer between 0-255. For thresholding, any pixel value in the input image that is smaller or equal to *threshold* should be set to 0 (black), or otherwise set to 255 (white). You can use the provided file lena_gray.jpg to test your function. Notice that you don't need to consider invalid inputs and you also don't need to show the image in Matlab as we will check your output image file directly. For the image file that you generate, you should set the name as 'bw_[threshold]_[filename]', that is, add 'bw_', the threshold number and '_' before the original filename. For example, a function call of myim2bw('lena_gray.jpg', 100) should generate an image file with the name of "bw_100_lena_gray.jpg". The following shows an example of converting a grayscale image to a binary image: