Assignment 02

Question 1: Intensity Transformations

Tasks you have to do to complete the assignment:

1. Take a RGB photo
2. Make it a grayscale image, say I
3. Calculate and plot histogram of image I
4. Take gamma value input from user, say Y = 2.5
5. Apply Power Law Transformation on image I with c = 1.5 6. Calculate and plot histogram of the Power Law transformed image
7. Take a threshold value input from user, say A = 200
8. Increase brightness by 50% for pixels with intensity smaller than A; else decrease it by 25% of image I
9. Calculate and plot histogram of the thresholded image
10. Apply Log Transformation on image I with c = 1.9
11. Calculate and plot histogram of the log transformed image 12. Apply Negation Transformation on I
13. Calculate and plot histogram of the negative image
14. Understand the histograms, differences, and their indications.

******Note That:*** **im2double**: the function scales any integer **image values** to the **range** [**0**,**1**].

Question 2: Contrast Stretching

a.	Take a RGB photo. Make it grayscale image, say ***I***	
b.	Find the minimum pixel value of the input image. Store the value in a variable, say ***A***.	1
c.	Find the maximum pixel value of the input image. Store the value in a variable, say ***B***.	1
d.	Store the difference of variable ***B*** and ***A*** in a variable ***D***. Store the highest possible intensity value in a variable ***M***. (If your input image is 4 bit, highest possible intensity value = 2^4 – 1 = 15)	1
e.	Say your output image is ***R***. Use the following equation for **each pixel** of the input image ***I*** - $\mathbf{R} = \frac{I-A}{D} * M + A$	3
f.	Display the input image ***I*** and output image ***R***.	1
g.	Show the histogram of the input image **I** and output image **R**. Do not use any built-in function.	3