Assignment # 1

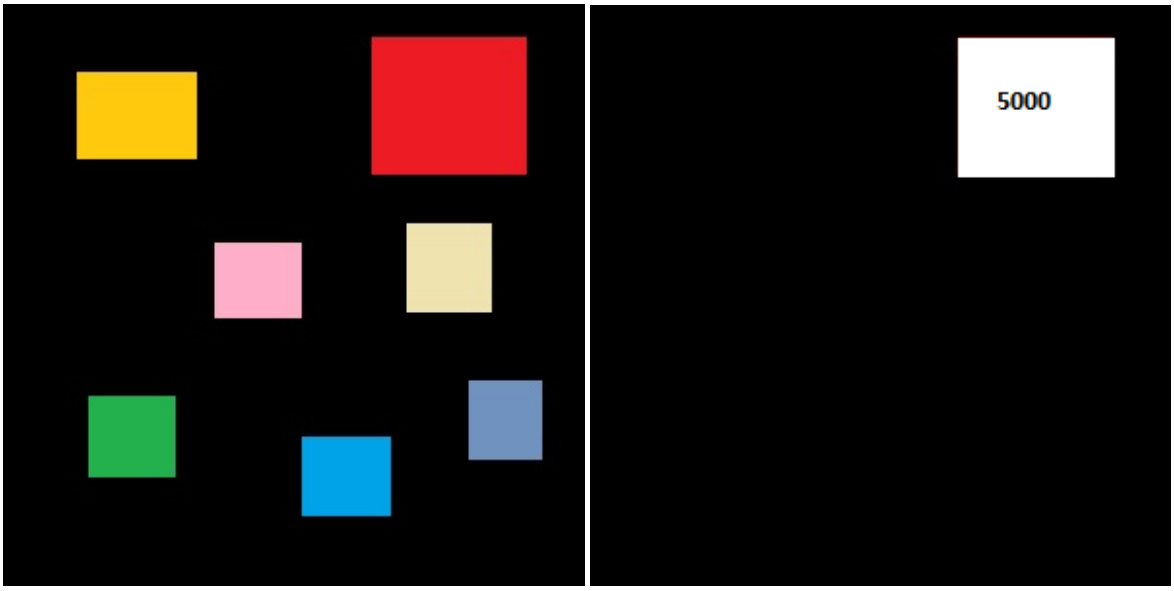
Course Title Digital Image Processing Due Date: 10/10/2020

- Every student must do his/her own assignment individually.
- Zero tolerance for plagiarism.
- All code must be properly commented. I am expecting detailed comments on each line of code so that a naive reader even should understand the code logic from your comments.

You are required to write a detailed report on how you implemented the methods for each question and how the output is obtained. You must submit a word or pdf document containing both code and detailed report.

Question 1. Perform following tasks.

a. Read the given image and convert it to grayscale image.
b. Use intensity slicing to separate each object. For each object count its pixels and display their count inside the object as shown in the following sample output. For this step, you are not allowed to use any Library or Package. You must use loops to reach each pixel and perform the required processing.
c. Perform intensity slicing using OpenCV and compare the results with your implementation done in b) part.

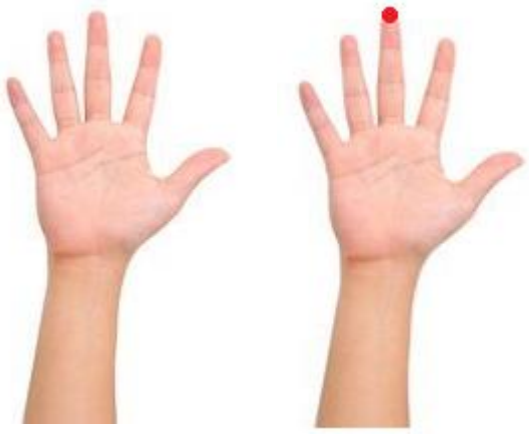


(a) (b)

Figure 1. a) Input image b) A sample output image

Question No 2.

a) Read the given image and convert it to grayscale image.
b) Use thresholding to obtain only hand
c) Find the tallest figure in the image and draw a circle on that finger's tip. A sample input image and a sample output is shown in the Figure 2.



(a) (b)

Figure 2. (a) Input Image (b) Output image

Question No 3. Read any grayscale image and perform following operations with various range of possible values for each method and show their outputs. Also explain the effects of each variable such as C and gamma on the output of the image

- Log and Inverse Log transform
- Power law n^{th} power and n^{th} root
- Power Law transformation