Benha University

4th year CS – Midterm Exam 2
Computer Vision Course
11 – April - 2012

Name : ……..……..

Section:…… ……...

Faculty of Computers & Informatics

مستعيناً بالله أجب عن الأسئلة التالية باللغة الإنجليزية فقط و بدون إستخدام الحاسبة:

Question 1: (8 marks)

A) Define the following terms:

- Intensity:……..…..…..…..

  ……..…..…..…..…..

- Hue: ……..……

  ……..…..…..…..…..…..

- Saturation: ……

  ……..…..…..…..…..…..

- Complementary Colors:……..…..

  ……..…..…..…..…..…..

B) Perform a comparison between the following:

- HSV: ……..……..

- HSL: ……..……..……..

- Opening: ……..

- Closing: ……

- Lightness: ……..……

- Brightness: ……..……

- RGB and HSV when performing intensity adjustment operation.

RGB: ……

HSV: ……

Question 2: Answer the following questions: (7 marks)

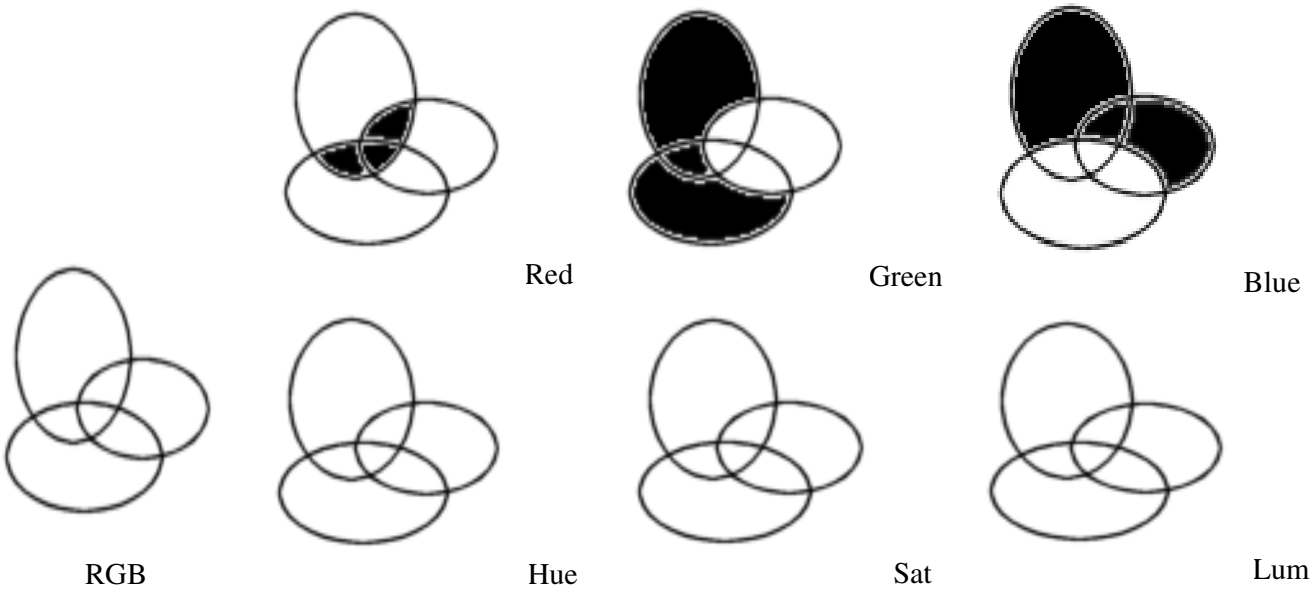
A) What are the differences between computer vision, Image processing and computer graphics? Applications of computer vision?

B) You have performed a division procedure by 2 on a gray image.

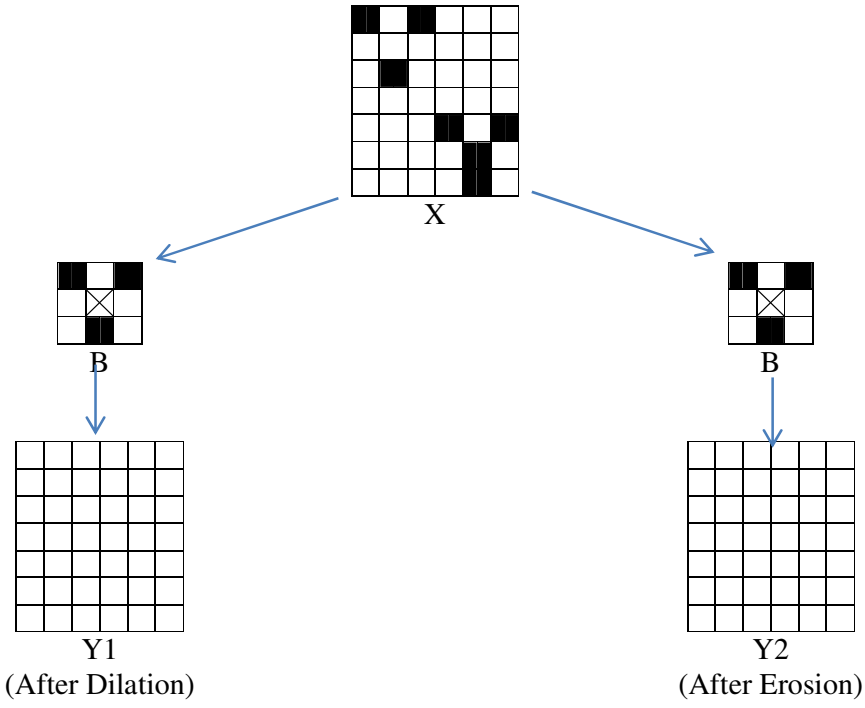
1. What effect you have obtained?
2. Draw the transformation function of the process.
3. Will you obtain the original image again by the inverse operation (Multiplication by 2)? Why?

Question 3: (4marks)

A) Consider the following RGB channels. Draw the expected RGB image and then get the expected HSL channels. (write color names in the right places):

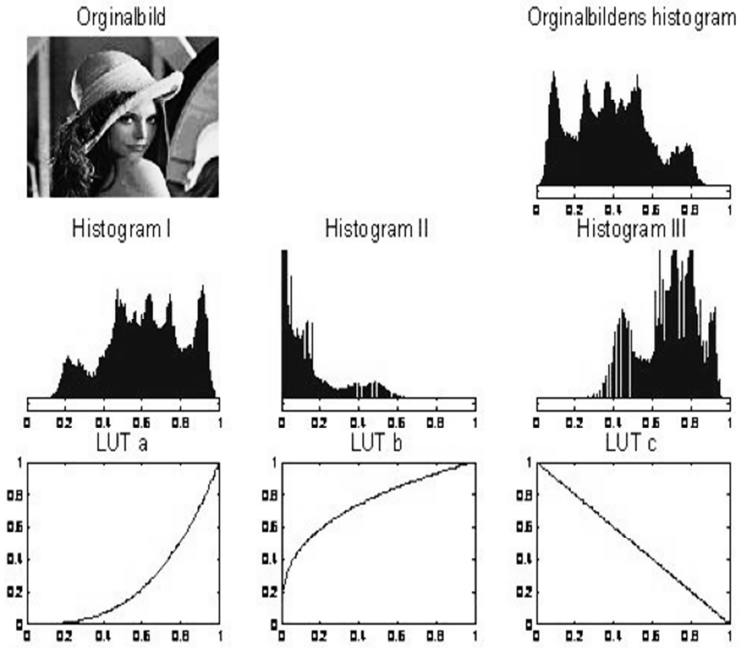


B) A binary image X is shown below. Design the output images Y1 and Y2 after applying Dilation and Erosion operations using the structure element B. (Consider black foreground and white background) (4marks)



Question 4: (7marks)

a. In the row above you see one image with its corresponding histogram. Three different look-up tables (a-c) have been used to transform the image and the resulting histograms after transformation are shown (I-III). Combine each histogram (I-III) with the corresponding LUT (a-c). Justify shortly.



B) Given a gray image I, design a matlab function J = ElimR(I) eliminates the red channel from the image. Show both the original and result images in one figure.

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…… **Good Luck**

Dr.Noura A.Semary