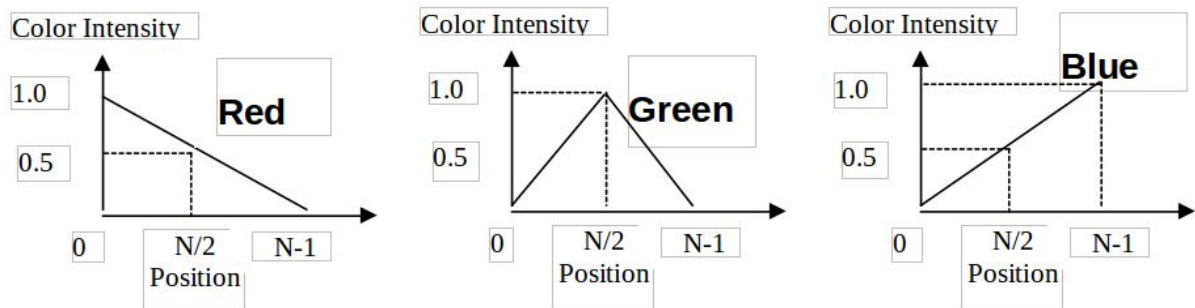


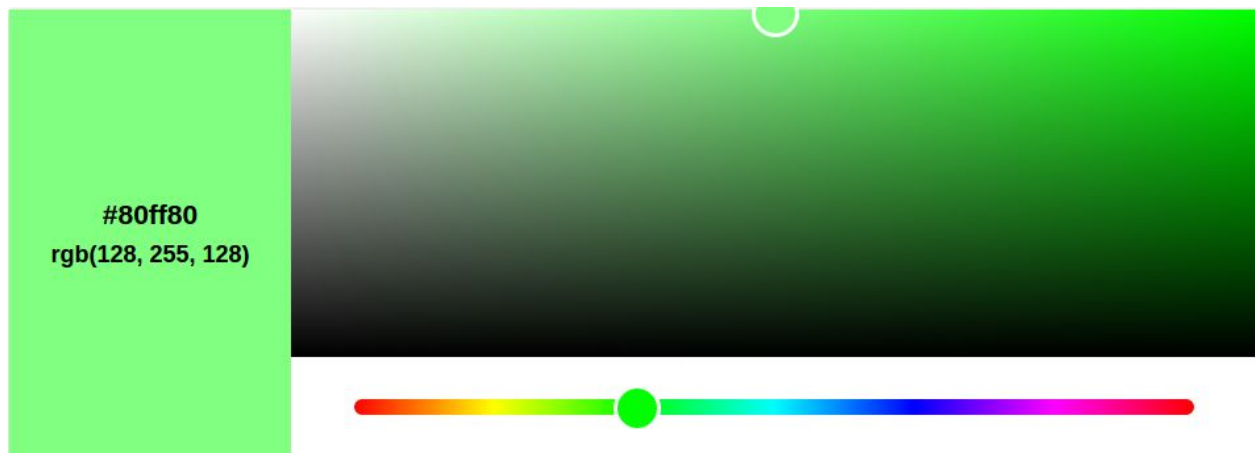
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CS455 Assignment 4
Part A

(1) [9%] In the simple RGB image, the R, G and B component images have the intensity for each line as shown in the following diagram. What color would a person see in the middle column of this image?

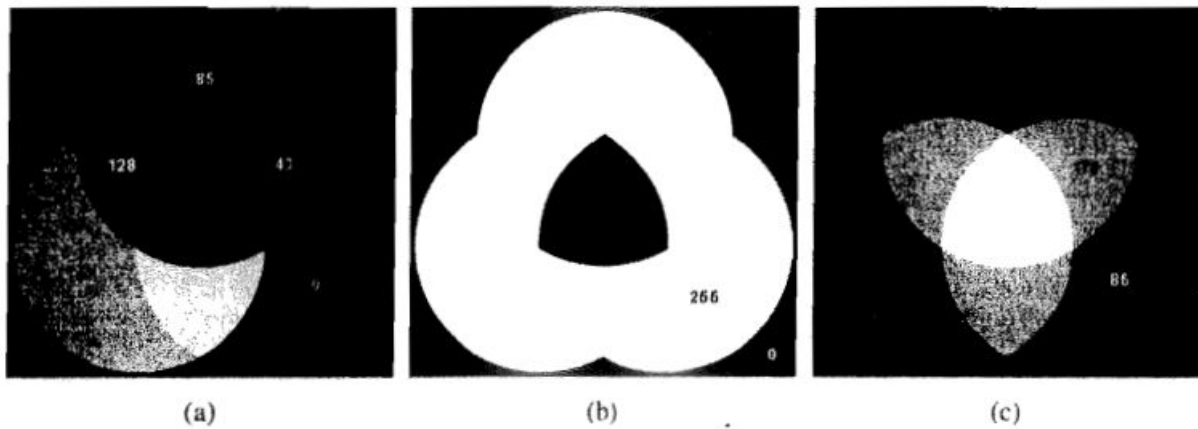


Red Channel	0.5	128
Green Channel	1.0	255
Blue Channel	0.5	128

rgb(128, 255, 128) is a pale green.



(2) [9%] The 8-bit images shown in Q6.16 (page-459) are (left to right) the H, S, and I component images. The numbers indicate gray-level values. Answer the following questions, explaining the basis for your answer in each. If it is not possible to answer a question based on the given information, explain the reason.



The textbook version I have doesn't have color images...

(a) Give the gray level values of all regions in the hue image.

Cannot tell from image in textbook.

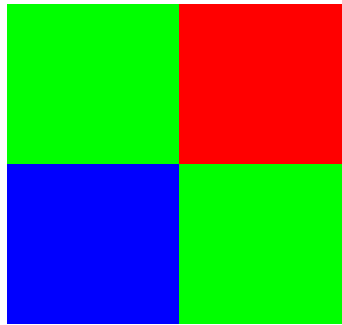
(b) Give the gray level values of all regions in the saturation image.

Outer region is 255 and inner rounded triangle is 0.

(c) Give the gray level values of all regions in the intensity image.

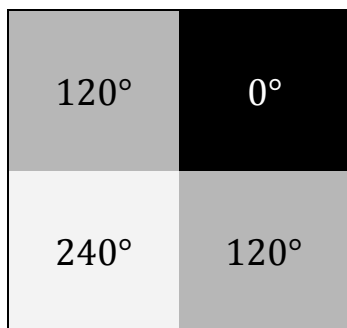
Cannot tell from image in textbook.

(3) [9%] Consider the following 500×500 RGB image, in which the squares are fully saturated red, green and blue, and each of the colors is at maximum intensity [e.g., (1, 0, 0) for the red square]. An HSI image is generated from this image.

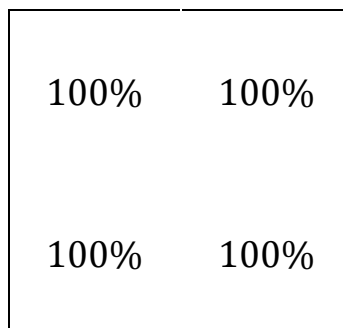


Original RGB Image

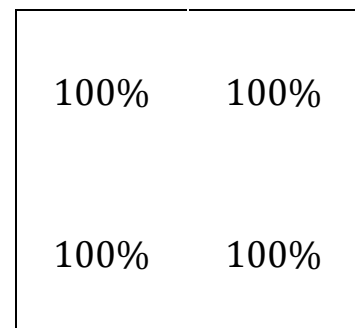
(a) Describe the appearance of each HSI component image.



Hue



Saturation

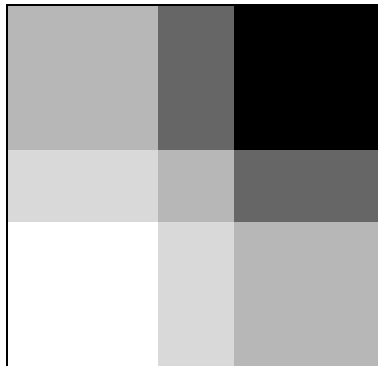


Intensity

(b) The saturation component of the HSI image is smoothed using an averaging mask of size 125×125 . Describe the appearance of the result (you may ignore image border effects in the filtering operation).

It will look the same as before because the saturation of the entire image is 100%.

(c) Repeat (b) for the hue image.



4 extreme corners will remain the same, but the arms of the middle cross where the 4 regions meet will have bands of their average colors depending on which two regions it's between.