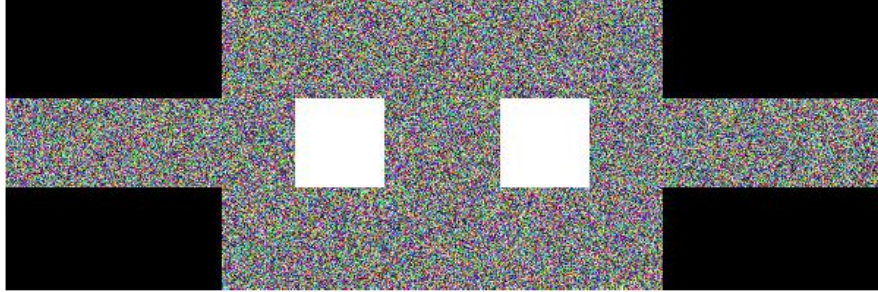


COM322 LAB3

Problem 1. Create a color image that is 200 pixels high and 600 pixels wide. Fill the regions shown below with white, black and random color pixels.



Problem 2. (a) Create a grayscale image with the same dimensions as above that has a grayscale gradient from black to white as show below.



(b) Now create a color image with the same size that has a green horizontal color gradient.



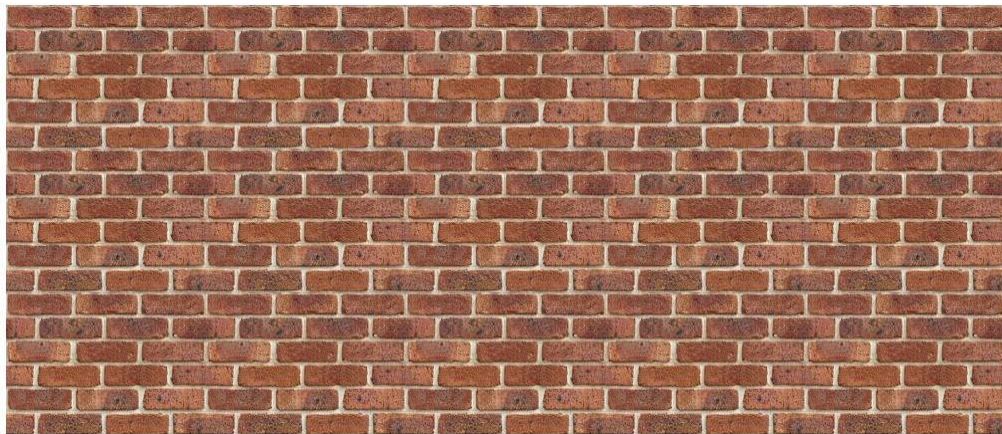
(c) Add a red color gradient in the other direction. That is, as the green intensity is increasing the red intensity will decrease as you move right.



Problem 3. Read the grayscale image called 'clock.jpg' and make a new image that contains four copies of this image with the original, a copy that is flipped horizontally, another that is flipped vertically and finally one that is flipped both ways.

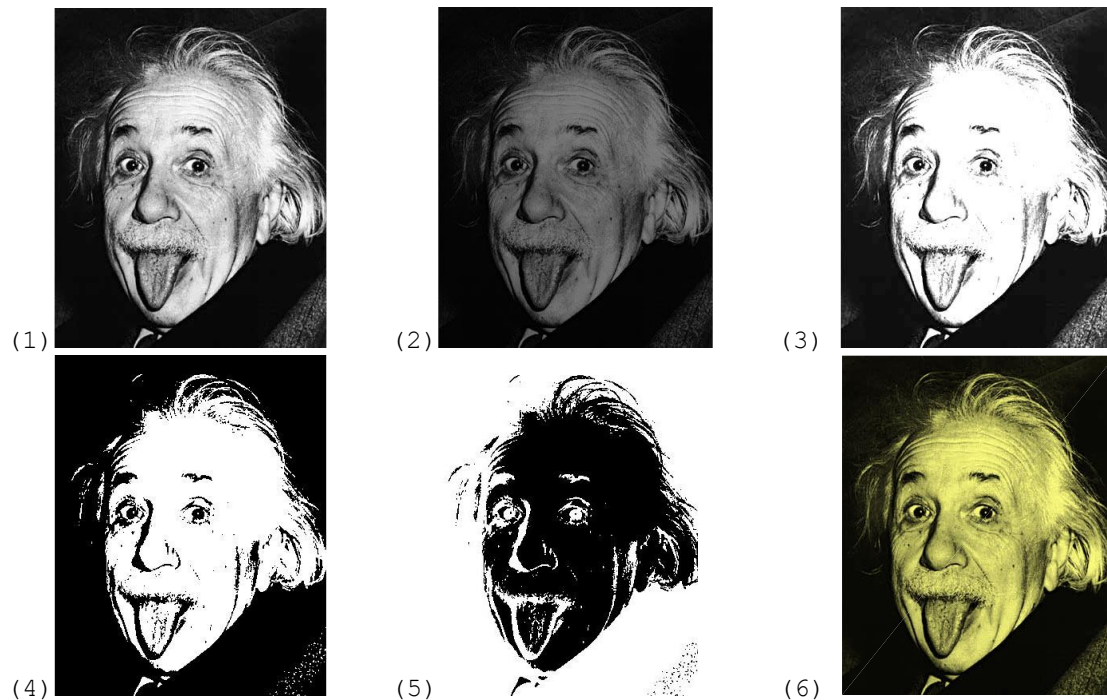


Problem 4. Display the image called 'bricks.jpg' in Figure 1 (shown in upper image). Next, write a program that uses this image as a building block for creating a larger tiled image (shown below for 3x5 tiles). The number of tiles will be determined by the values of two variables XTILES (for horizontal) and YTILES (for vertical) initialized at the beginning of the program. Display the new image in Figure 2. Test your program for different values of XTILES and YTILES.



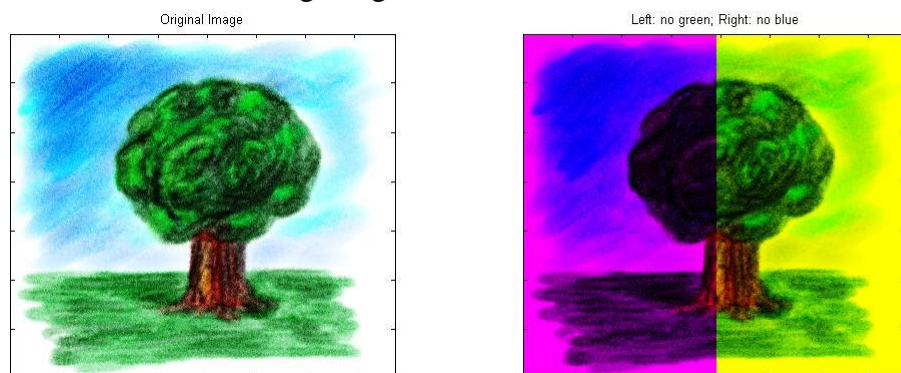
Problem 5. Display the following images in separate figures with corresponding numbers shown below:

1. Load the color image called 'einstein.jpg' and display it. Note that although the image looks like a grayscale image the image is represented with 3 color channels.
2. Make the image darker
3. Make the image brighter
4. Create a new black and white image that has only two intensities by quantizing the original image. Make all 3 color channels the same value.
5. Display the negative of (4).
6. Give the original image a yellow tint.

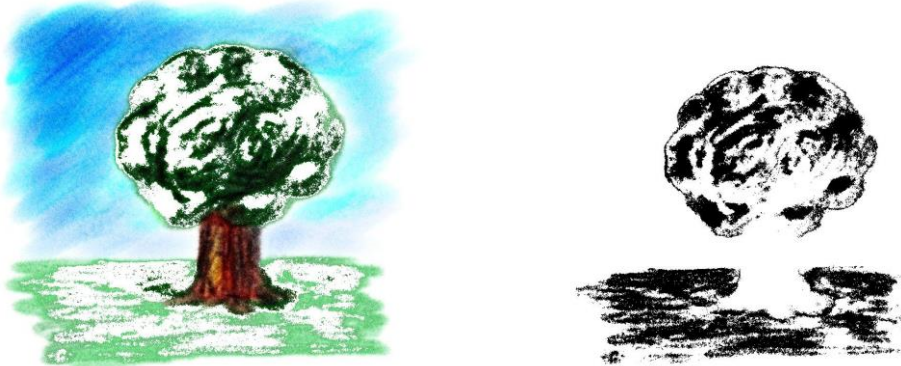


Problem 6.

(a) Load the image called 'treePainter.jpg' (keep the type as uint8) and display it. Take away the green component from the left half and take away the blue component from the right half to obtain the following image.



(b) Find the percentage of pixels that have a value of green > 100 , red < 100 and blue < 100 in the original image. Now replace all those pixels that satisfy the above condition with white to obtain the image on the left. In another figure, display only the pixels that have been changed (in black) on a white background as shown on the right.



Problem 7. The image in the middle is a modified version of the left image (both images are given: warhol_campbells.jpg, warhol_campbells_ed.jpg). Display the parts that are different between the two images by creating a new image as shown on the right.

