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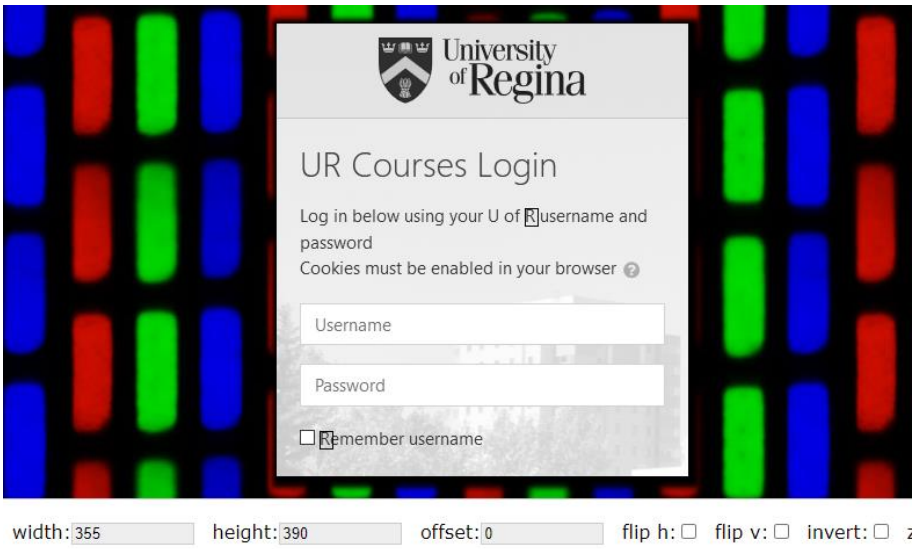
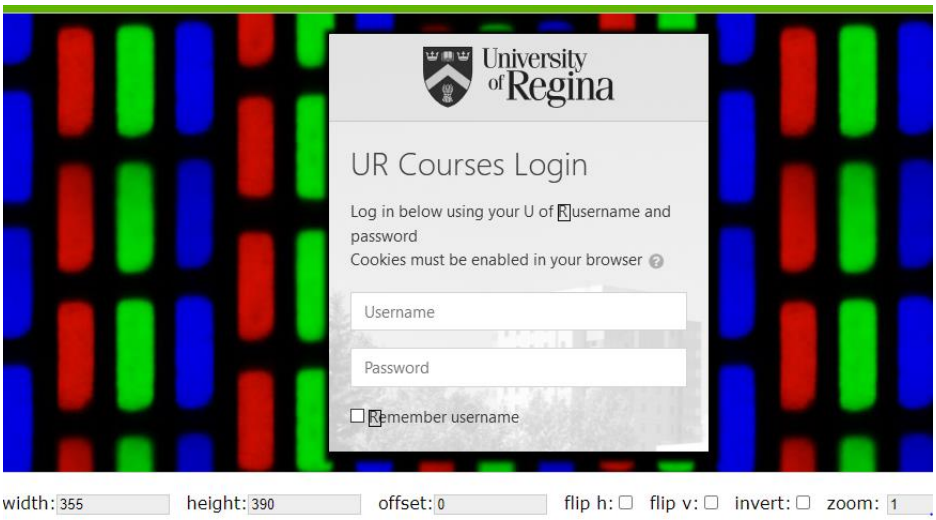
CS825 – Assignment3

Problem 1.

a. Write a complete program for template matching using cross-correlation. Test it on "text_image.raw" using "letter_R.raw" as the template. The output is a gray scale image displaying the magnitudes of the cross-correlation results.



b. Repeat a) using zero-normalized cross-correlation.

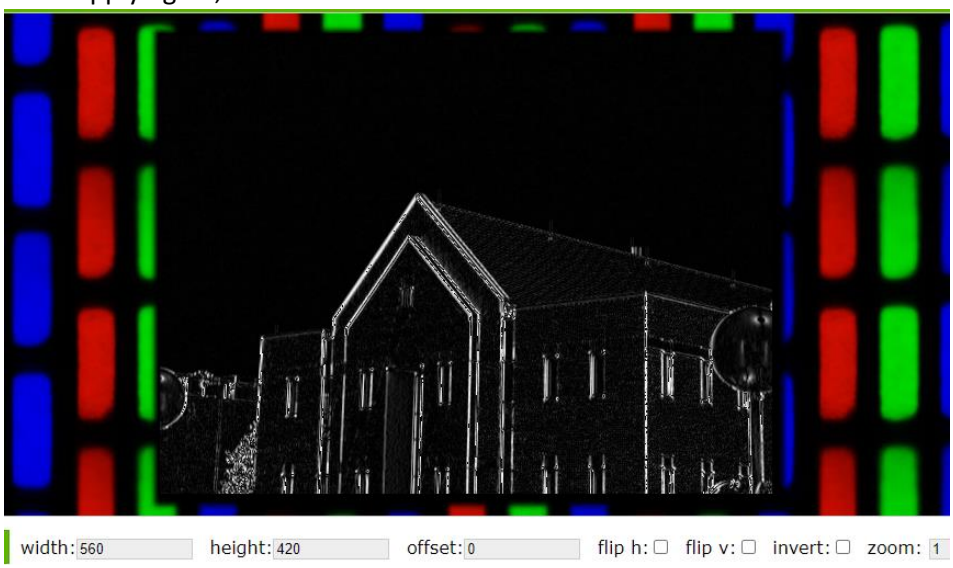


c. Discuss the results and reasons behind.
Both the images are similar. The strategy of approaching to compute the image is same.

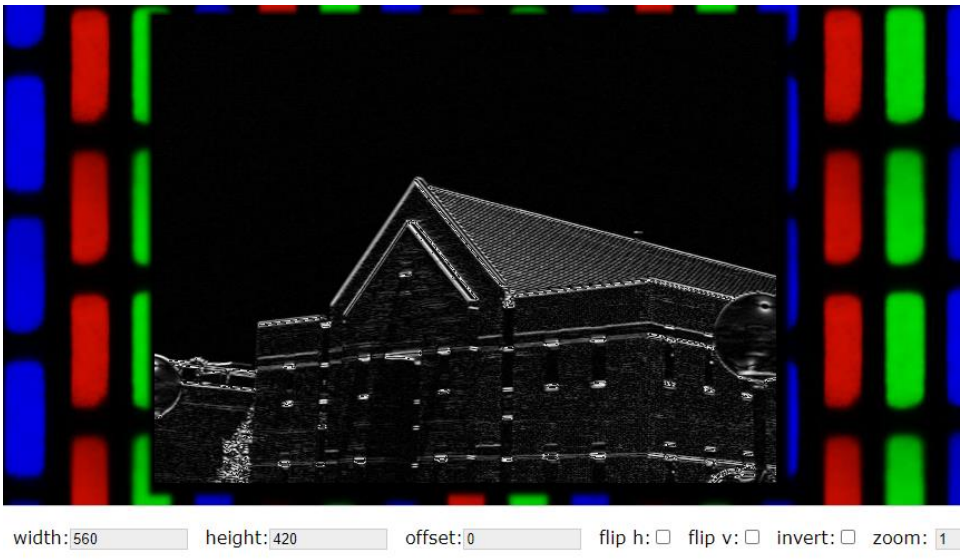
Problem 2.

Write a complete program to implement the 3 × 3 Sobel operators. The input image is “building.raw”. The output images are:

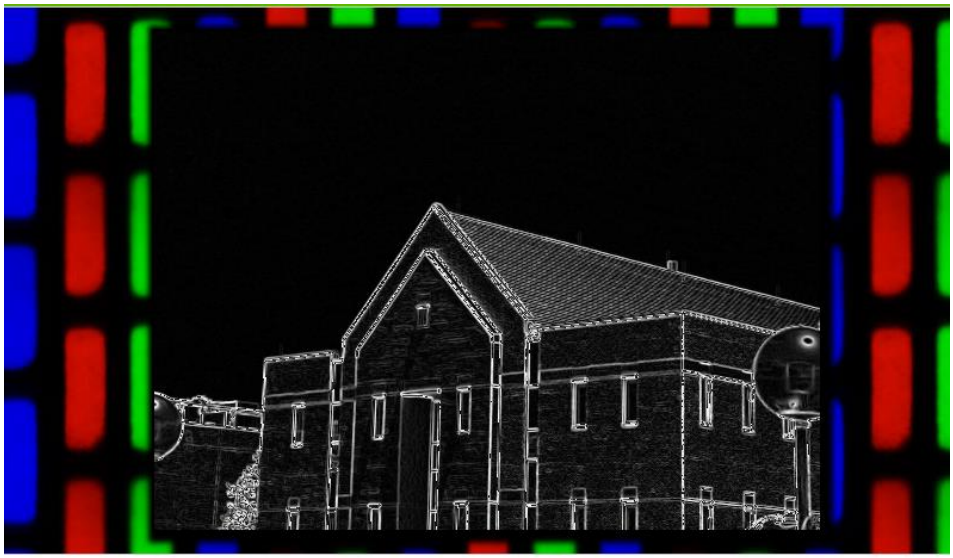
a. the result of applying Gx;



b. the result of applying Gy;

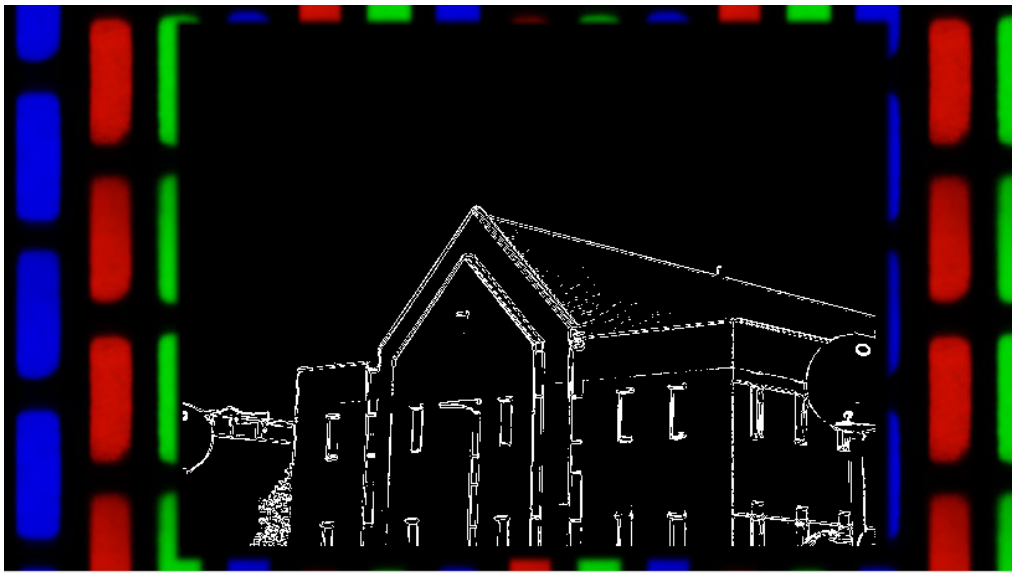


c. the gradient [Gx 2+Gy 2] 0.5;



width: 560 height: 420 offset: 0 flip h: ☐ flip v: ☐ invert: ☐ zoc

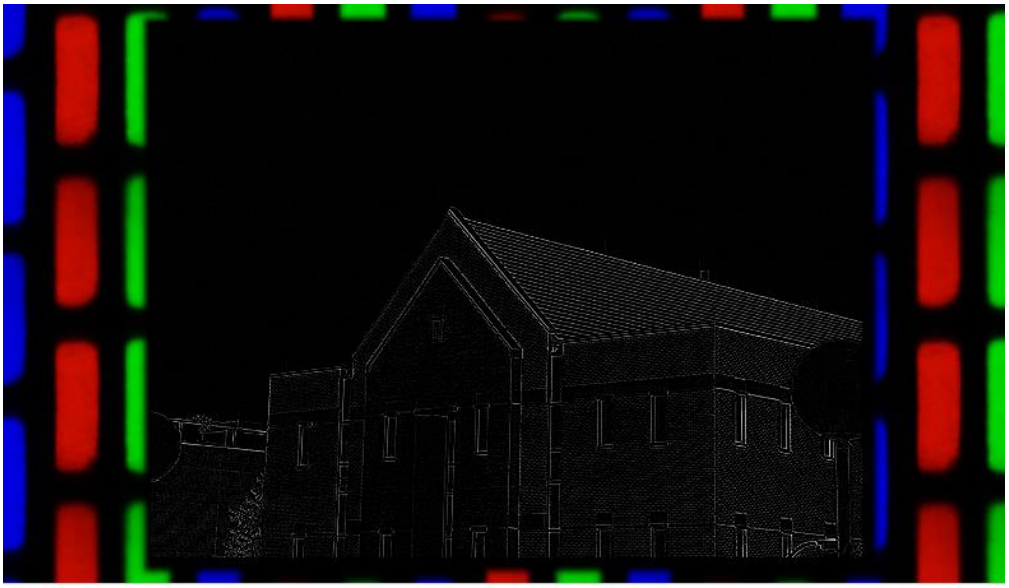
d. the edge map with threshold TE = 128.



width: 560 height: 420 offset: 0 flip h: ☐ flip v: ☐ invert: ☐ zoc

Problem 3

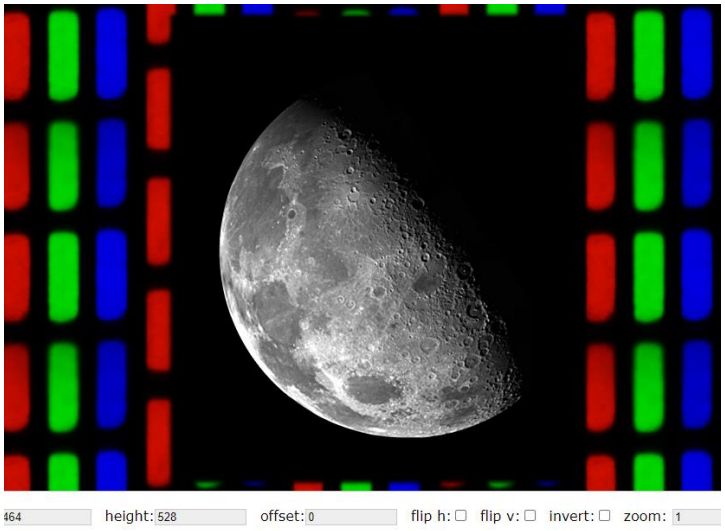
Write a complete program to implement the 3 × 3 Laplacian operator. The input image is also “building.raw”. The output image is the zero-crossing points map



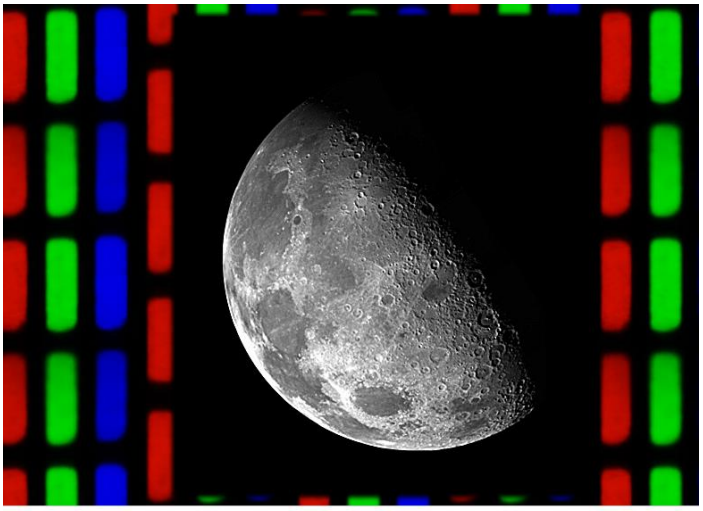
Problem 4.

Write a complete program to implement the 3 × 3 Laplacian sharpening filter. Test your program with the image “moon.raw”, with at least two different values of w.

W=1

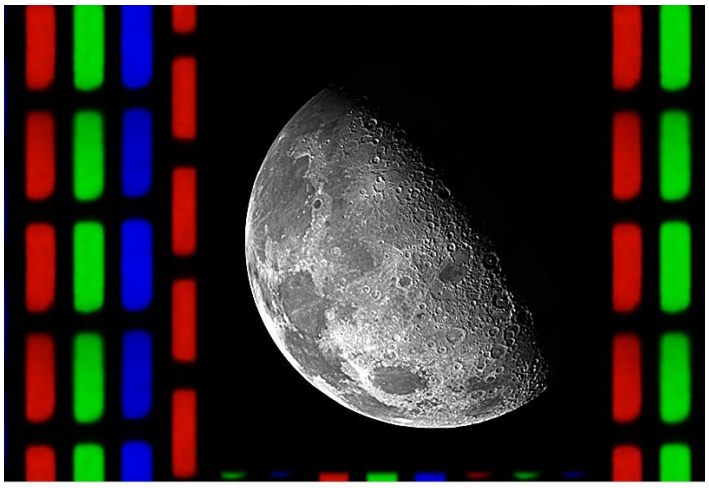


W=2



i64 height: 528 offset: 0 flip h: ☐ flip v: ☐ invert: ☐ zoom: 1

W=3



th: 464 height: 528 offset: 0 flip h: ☐ flip v: ☐ invert: ☐ zoom: 1