Mini HW 3 for Module 1:

1. In the provided Sobel.c code, the dimensions of the xmask is 3x3, and hence MR is 1. Suppose the dimensions of xmask had been 7x7, what would the value of MR need to be?

MR = 3

1. In the provided Sobel.c code, what is the purpose of the “b” in “wb” and “rb” for fopen?

Because we open a binary image file, not a text file. We need to specify the ‘b’ so that the operating system won’t interpret the input file as a normal text file

1. In the provided Sobel.c code, why does the double-for loop process have the mr in the code? i.e., why do the loops go for

for (i=mr;i<256-mr;i++)

for (j=mr;j<256-mr;j++)

The double for loops is doing the scanning convolution at each position of the input array with the masks. The mr is the center position of each convolution between the input and the masks

1. In the provided Sobel.c code, what is the purpose of maxival, and explain why the code has the line

ival[i][j] = (ival[i][j] / maxival) \* 255;

maxival is used to keep track of the highest magnitude so that we can use it for scaling the magnitude at each position in the magnitude array back to values between 0 and 255. The line above does exactly that since we divide the magnitude of each position with the maximum magnitude and multiply with 255 we will get values from 0 to 255