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 = 1 when xmask is 3x3 because from the central point of 3x3, there is 1 row up, down, to the left, to the right
   For 7x7 dimensions of xmask, MR= 3 because, from the central point, there are 3 rows up, down, to the left or to the right.

2) In the provided Sobel.c code, what is the purpose of the "b" in "wb" and "rb" for fopen?

Wb: open file for writing

Rb: open file for reading

"b" is for working with the binary file

3) 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++)
```

Since mr is the number of column or row on the side (up, down, left, right). However, 256 is the maximum value, therefore, there is no column or row before/after the "mr".

In detailed, there is no rows on the top before "mr" or on the bottom after "mr", also, no column before "mr" on the left or after "mr" on the right. Therefore, the limitation of neighbor col/row "mr" is the condition for this loop.

4) 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;
```

ival values are calculated from x mask value and y mask value. Moreover, the highest values in ival is located in maxival.

We divide the ival value by maxival to get number in range of (0, 1) since ival is always smaller than maxival. Then multiplying with 255 to convert into the color value from 0 to 255