Name: Mubashar Khan **Assignment #:** 9

Summary of Problem Statement

Problem # 2

Without using implicit functions, create a program that will locate Waldo within a large picture

Known / Input

Waldo1 = imread('P2_Waldo1.png');
Map = imread('P2_wheresWaldo1.jpg');

Unknown / Output

yxoor1 = upper left y value of Waldo
xcoor1 = x value of ycoor1
ycoor2 = lower right y value of Waldo
xcoor2 = x value of ycoor2

Assumptions

None

Other Variables

Waldo_sqr1 = sum of outer corners
Waldo_sqr2 = sum of outer corners - 1 level
Waldo_sqr3 = sum of outer corners - 2 level
Waldo_sqr4 = sum of outer corners - 3 level
redWaldo1 = Waldo1(:,:,1); Stores the red layer of Waldo1
redMap = Map(:,:,1); Stores the red layer of Map

Algorithm

```
Start by importing the image you want to search and a template that you would like to search for
        (Waldo and Map)
get the size of each image
Create a new variable to store the 1st layer of Waldo and Map
        This first layer is what the code will use to compare the two pictures
Set up a data validation to make sure the Waldo picture is smaller than the Map
Function:
        function [ycoor1,ycoor2,xcoor1,xcoor2] = getLocation(redWaldo1,redMap)
        get the size of the 2 matrices
        Create 4 squares starting at the edge of the Waldo picture and working your way in my 4 pixels
                Then sum the for edges of each square together. You will have 4 different sums
                        These are a sum of the rgb values of each square
        The next step is to create a single nested for loop with a conditional in it checking at each pixel a square that is
        proportional to the Waldo squares the you created. If all the squares of Waldo match a square on Map, record
                the upper left square (x,y) pair and the lower right (x,y) pair as ycoor1,xcoor1,ycoor2,xcoor2
Call the function in your script
Create a rectangle to box the 2 (x,y) pairs
Use fprintf to output the (x,y) pairs
```

Test Cases

Using the test cases provided, the output is correct in locating and highlighting the location of Waldo in addition to outputting the range wherein he can be found.