ECE 6310- INTRODUCTION TO COMPUTER VISION

LAB 4: REGION INTERACTION

Submitted To:

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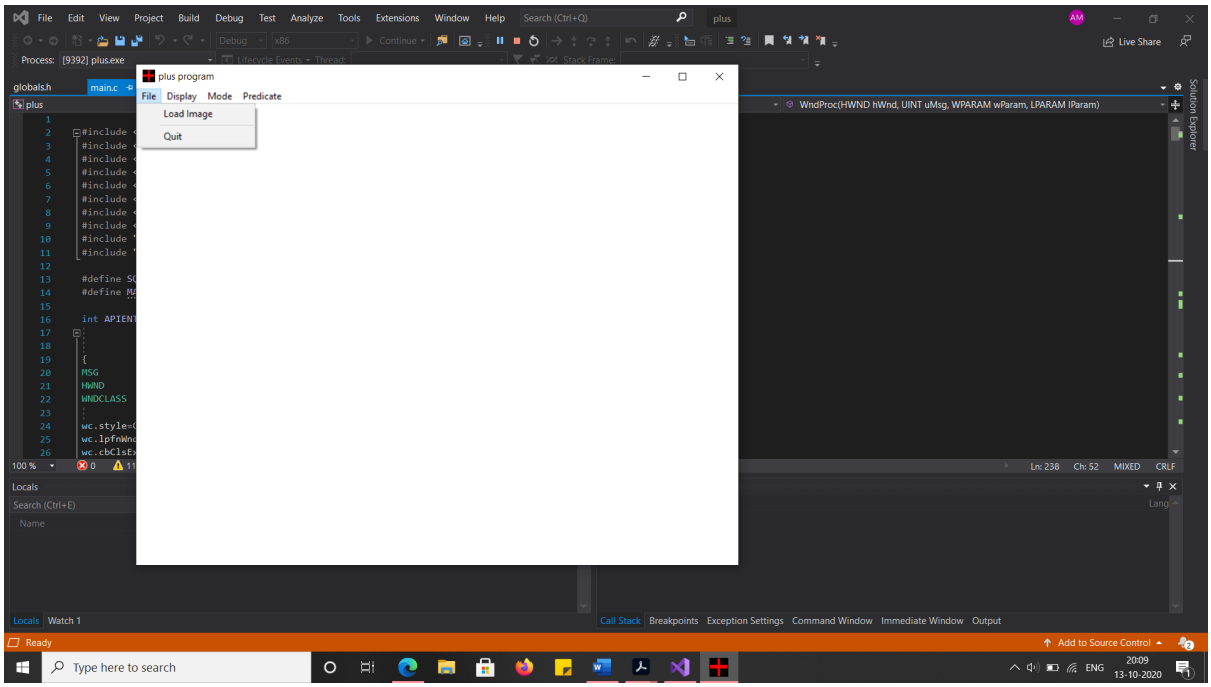
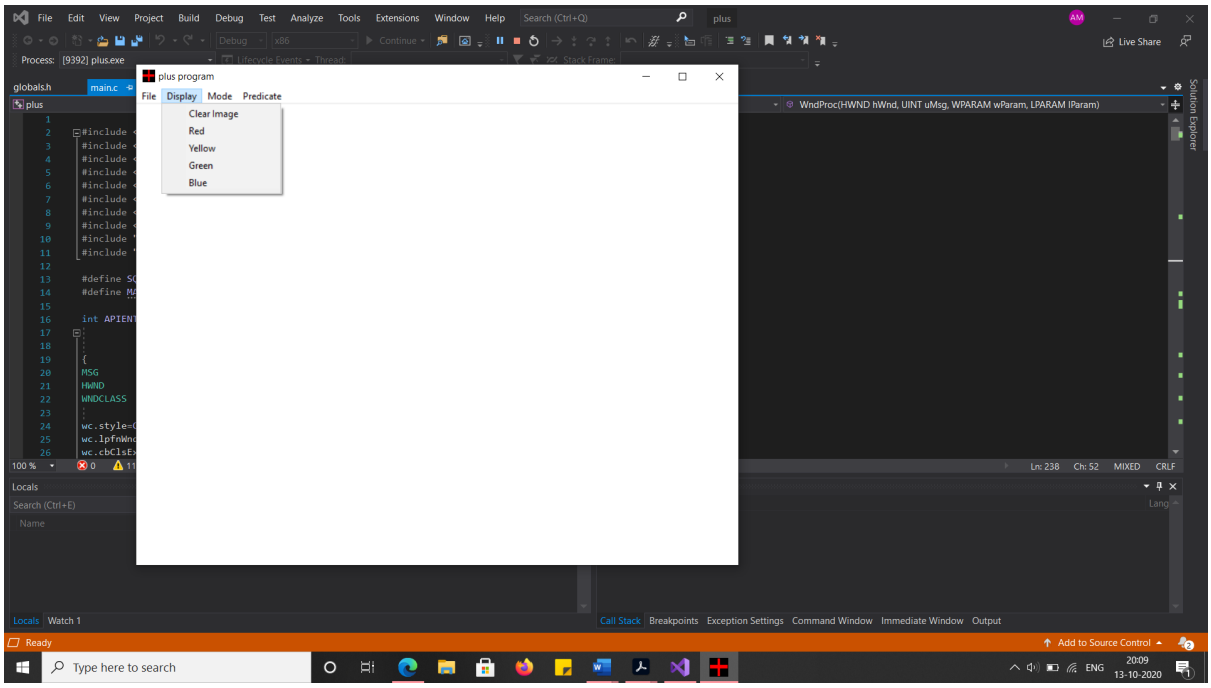
MENU

This part of the lab report shall run through the various options available for a user who wishes to perform segmentation of the image.

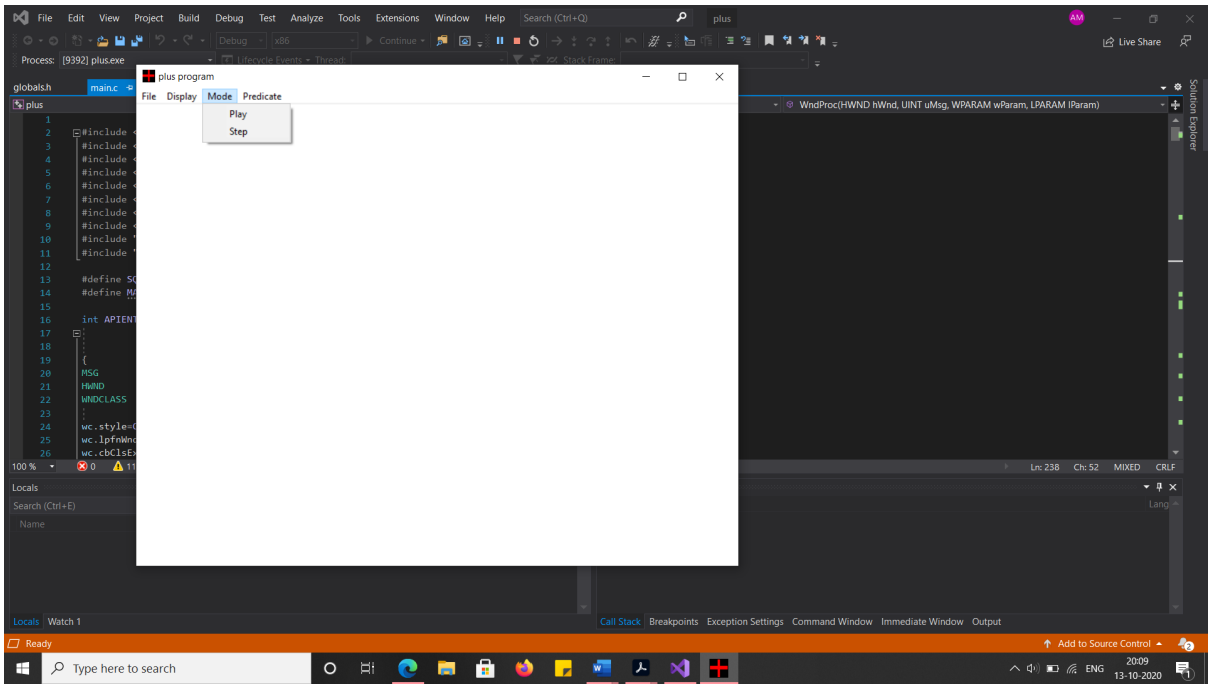
- The first menu feature to be explained is the File tab. The plus program accepts a file, that shall be selected by the user. This can be done by clicking the “Load Image” option. This is present under the File tab of the menu bar. The other feature under the File tab is the “Quit” option, that kills the plus program.



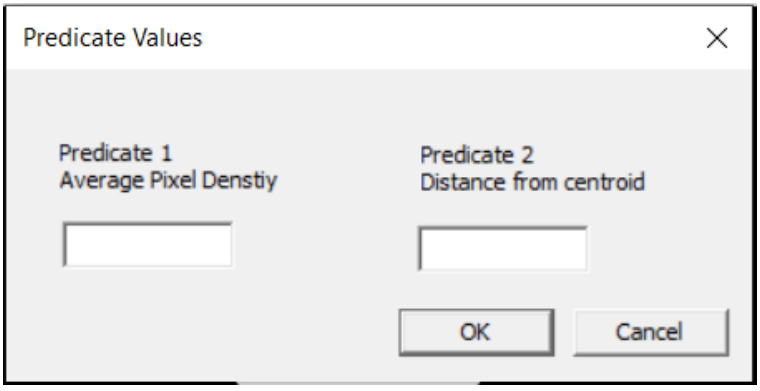
- The next menu feature is the Display tab. This feature is used to control how one wants to see the segmentation. The user has the option to select any one of the four colors, at a time, to witness the segmentation in that color. This tab also has the feature to clear the image and start from the original image right from the beginning.

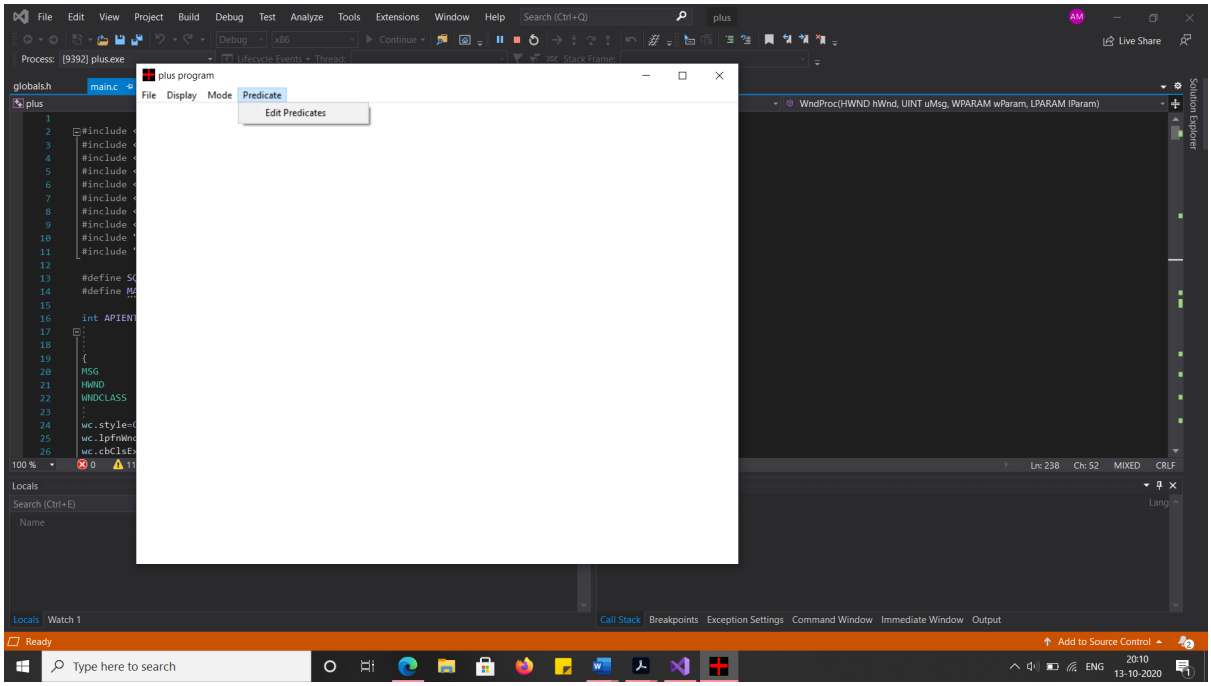


- The third feature is the Mode tab. This tab helps the user to toggle between the Play mode and the Step mode. In the Play mode the pixels are colored automatically once the thread has been started. The thread must be started by the user from a single click. Based on where the user clicks, the segmentation starts from that location. In the step mode, the pixels get colored every time the user presses the button ‘j’ on the keyboard. To toggle between the modes, the user just has to click the other mode.



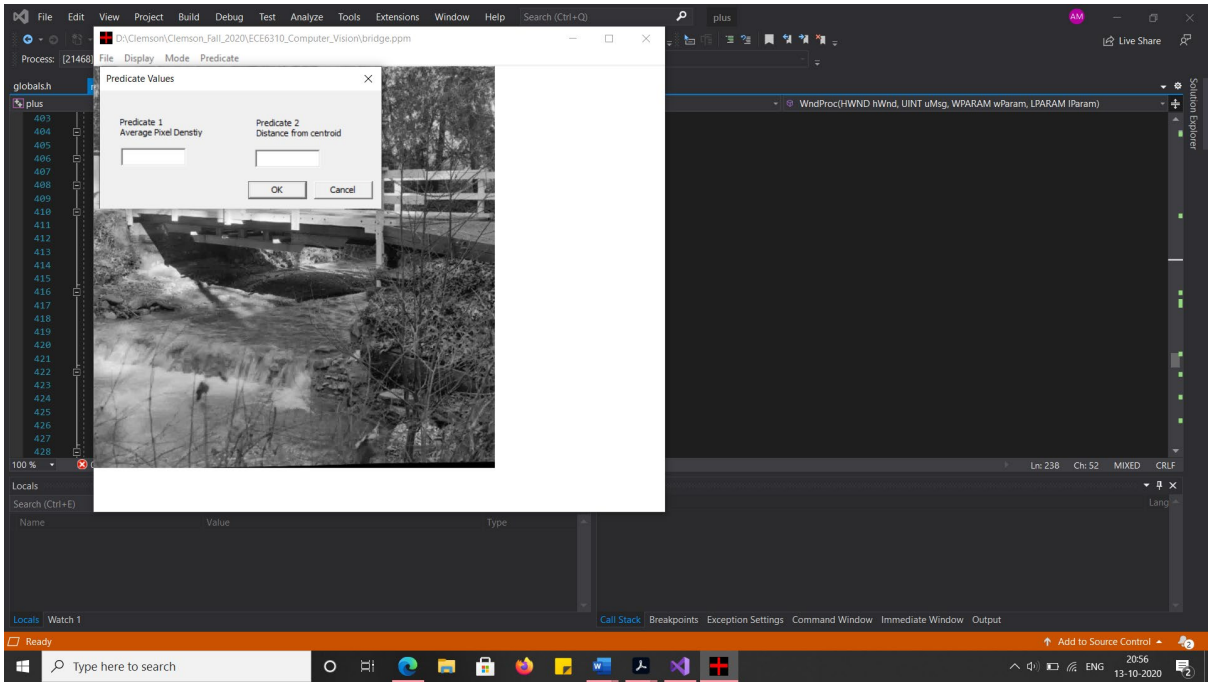
- The final tab on the plus program is the Predicate tab. The segmentation works on two predicates. The value of the two predicates is entered by the user. This window of setting the predicate values pops up as soon as the user loads the image. If the user wishes to change the values at the beginning or midway the segmentation, this tab can be selected to change the values.
    1. The first predicate is average pixel intensity. The program checks if the difference between the average pixel intensity and the intensity of the particular pixel, for every 50 pixels, is lesser than the value entered by the user. If yes, the pixel gets colored.
    2. The second predicate is the distance between the centroid of the segmented region and the pixel. If the distance between the centroid of the segmentation, which is assumed to be the pixel that the user clicks on i.e. the first segmented pixel, and the pixel that is currently under investigation is lesser than the value entered by the user, then the pixel gets colored.



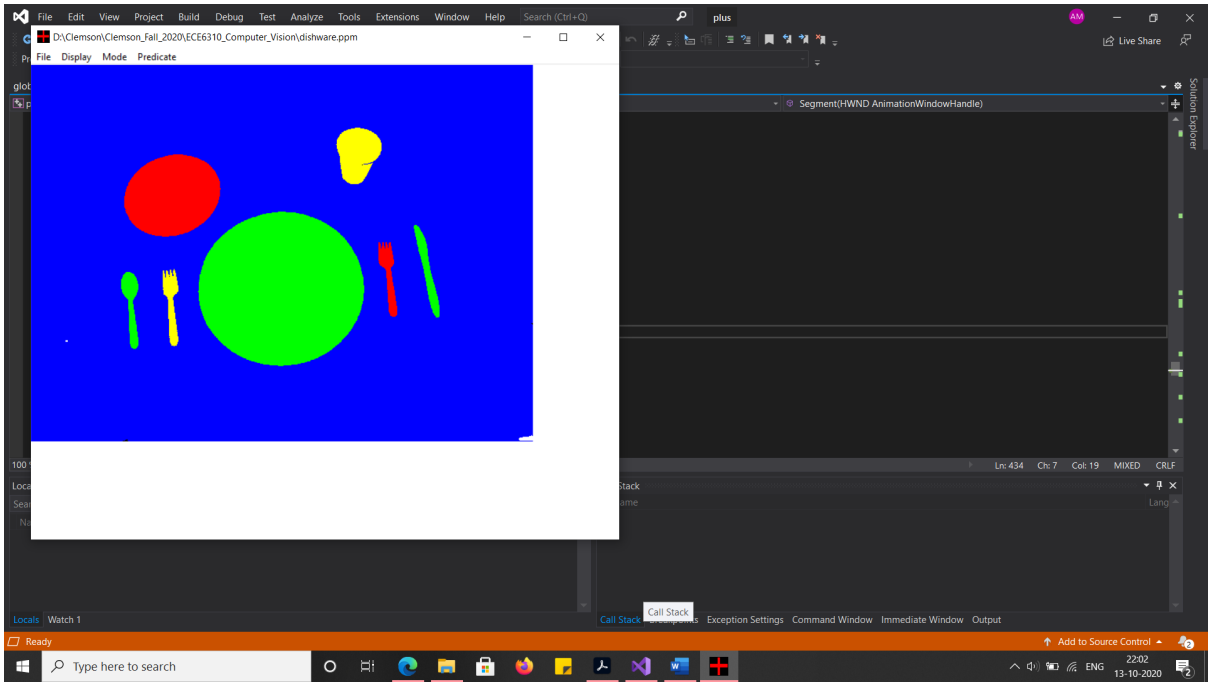


DEMONSTRATIONS

- **Image showing the predicate tab popping up, on uploading the image**

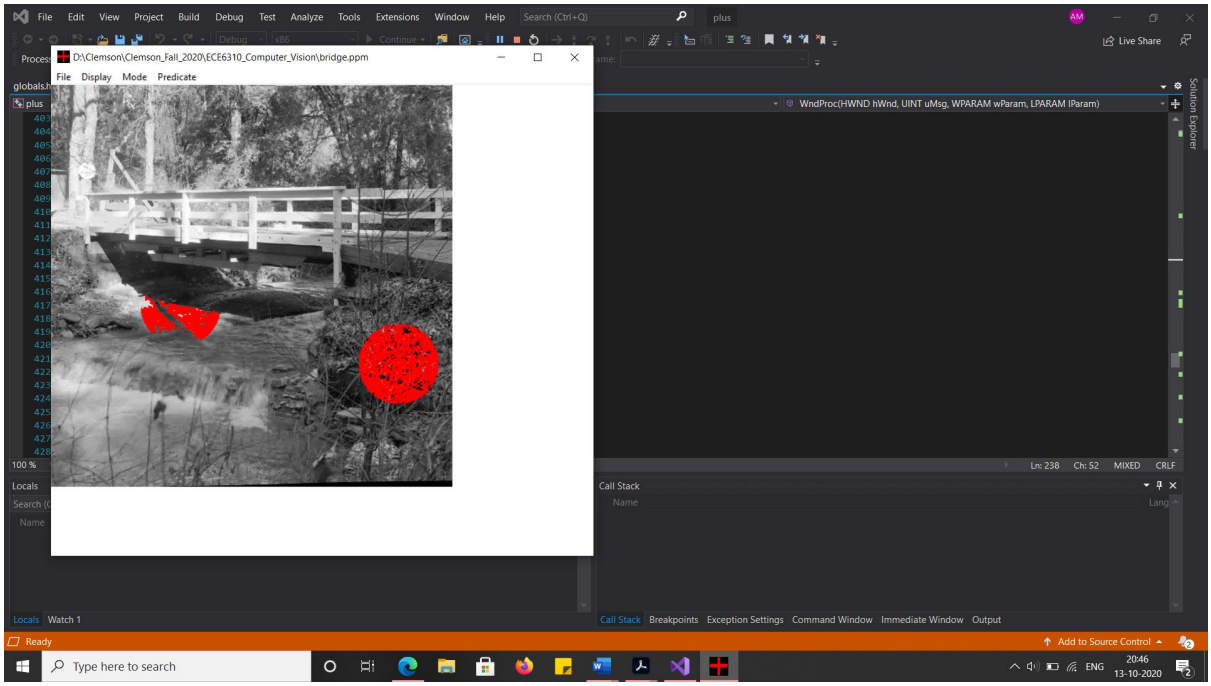


- **Image showing an entirely filled region on dishware.ppm**

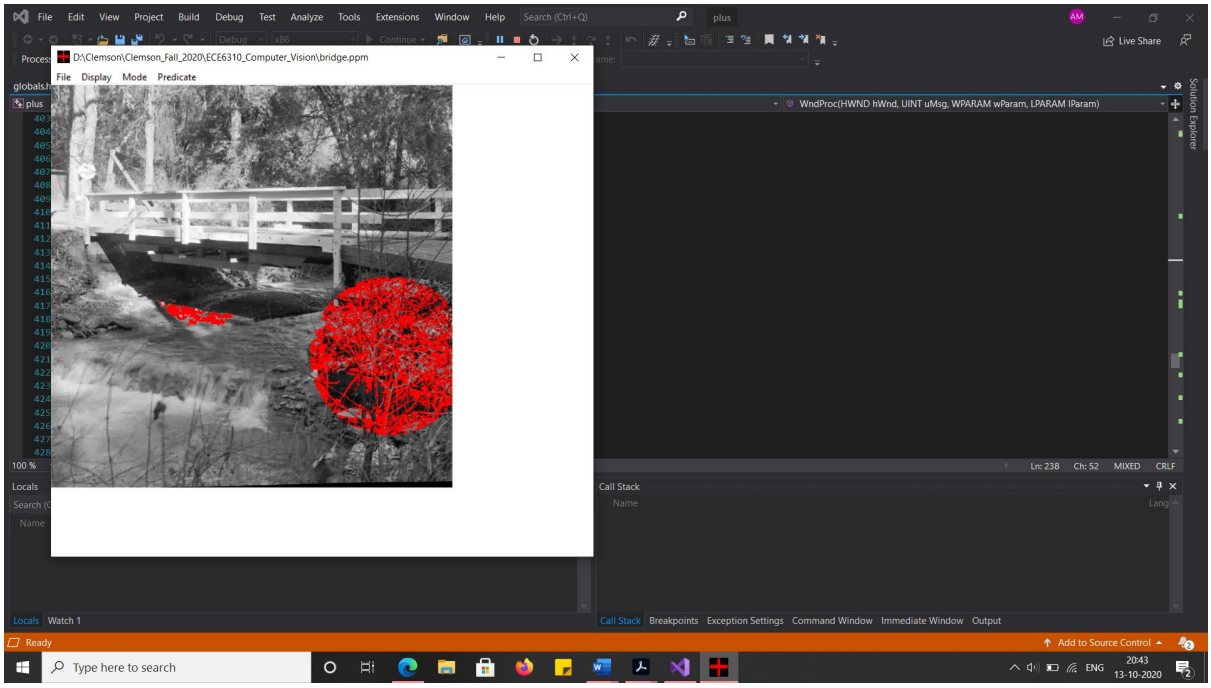


- **Image showing the multiple regions grow at two different regions at the values of predicates as entered by the user. The image selected is bridge.ppm**

    1. **Value of predicate 1 = 50 and the value of predicate 2 = 50.**

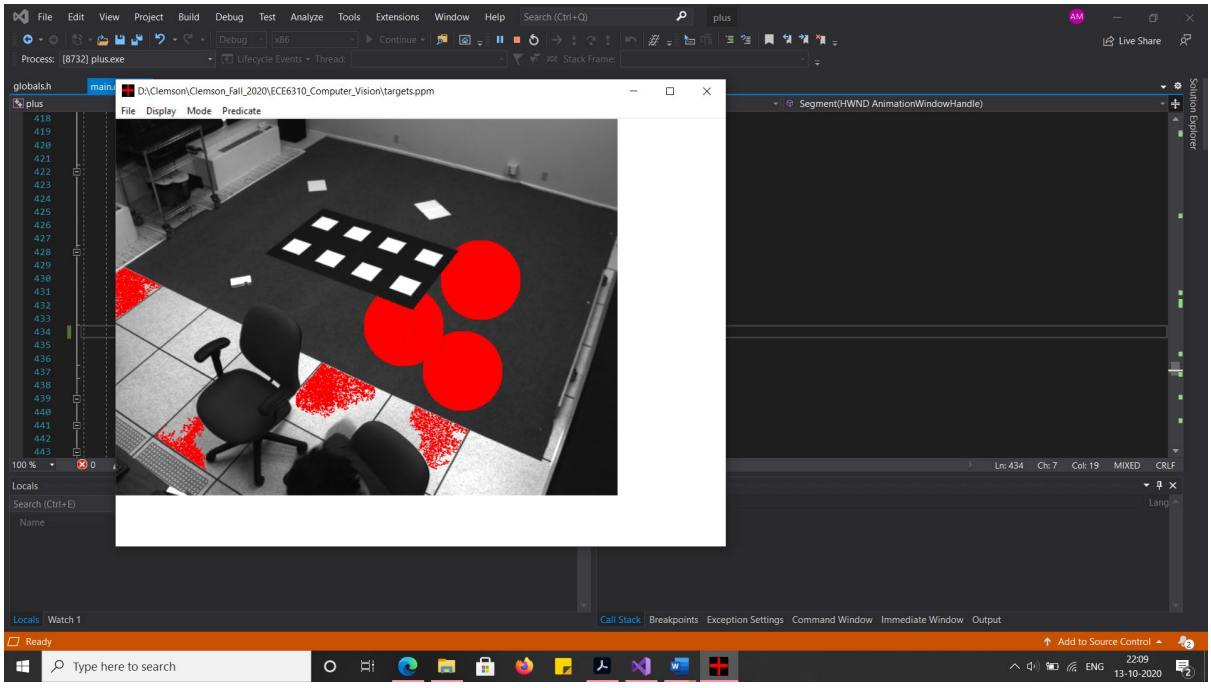


2. **Value of predicate 1 = 25 and the value of predicate 2 = 100**

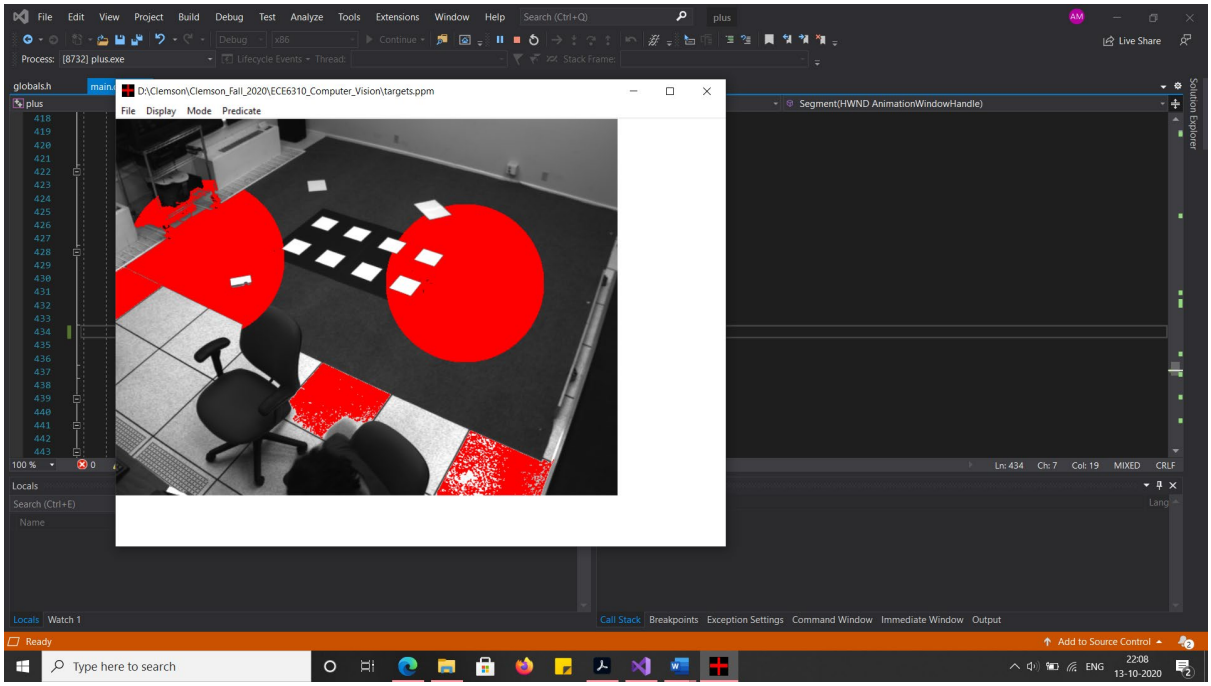


- **Image showing the multiple regions grow at two different regions at the values of predicates as entered by the user. The image selected is targets.ppm**

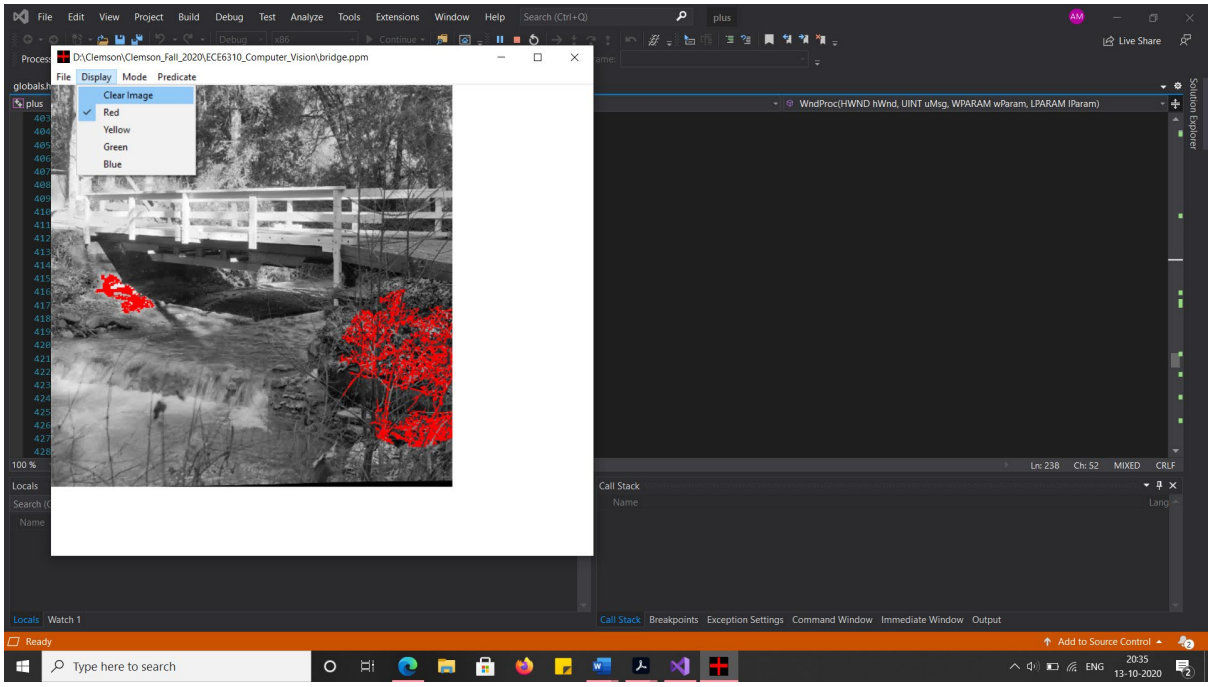
1. **Value of predicate 1 = 15 and the value of predicate 2 = 50.**



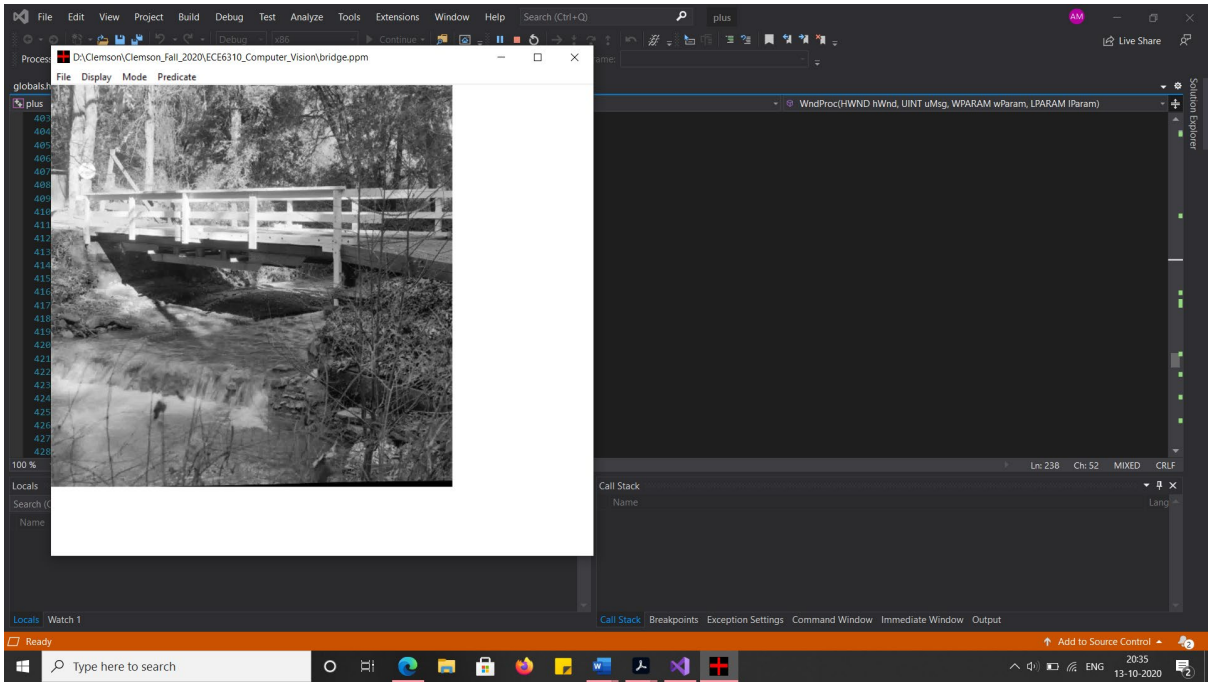
2. **Value of predicate 1 = 35 and the value of predicate 2 = 100.**



- **Images showing the Clear Image feature**

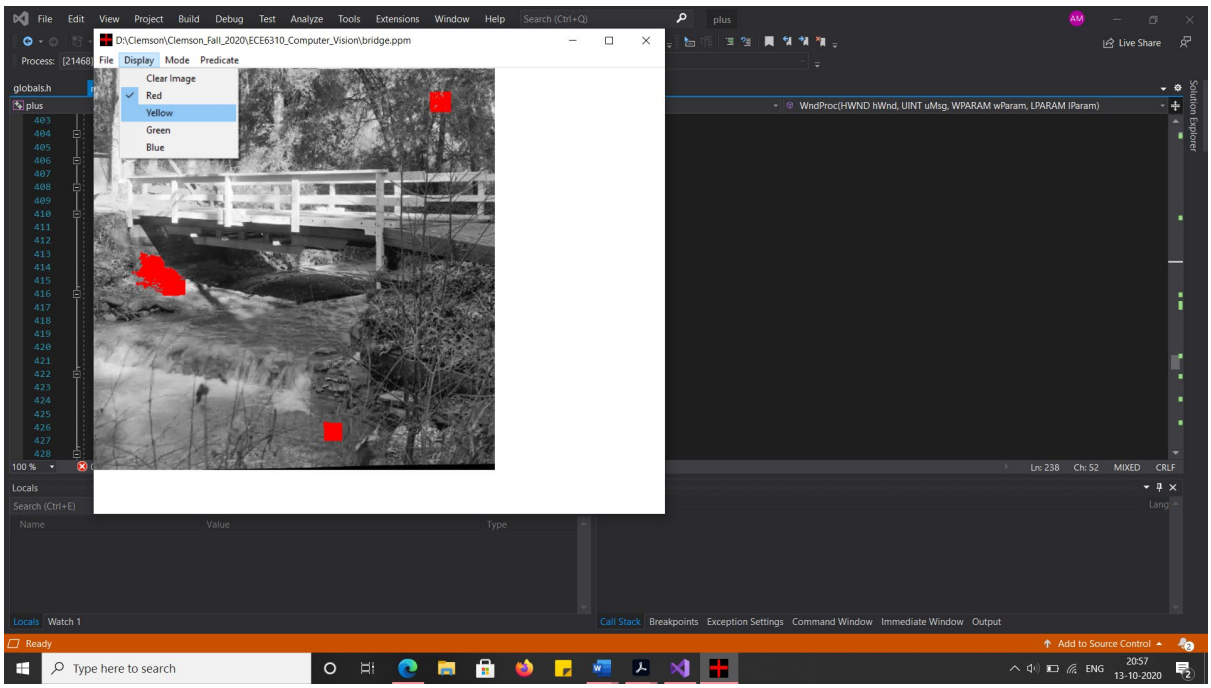


The image cleared as shown in the attached image underneath.

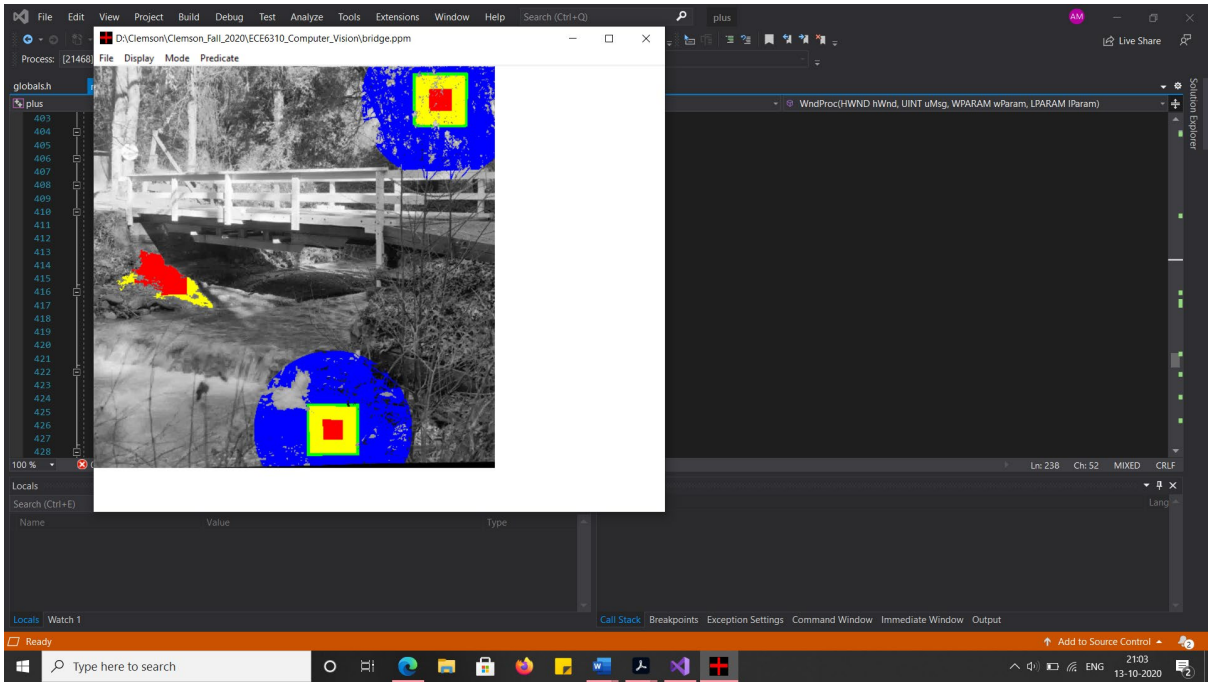


- **Images showing the multiple color feature on the region grow. The colors are changed midway during the segmentation.**

The segmentation starts with the red color and the segmentation propagates.



The colors are changed from red to yellow to green to blue midway the segmentation. Hence the segmentation propagates as the color changes.


File Edit View Project Build Debug Test Analyze Tools Extensions Window Help
Search (Ctrl+Q)
plus
Live Share
D:\Clemson\Clemson_Fall_2020\ECE6310_Computer_Vision\bridge.ppm
File Display Mode Predicate
globals.h
plus
WndProc(HWND hWnd, UINT uMsg, WPARAM wParam, LPARAM lParam)
Solution Explorer
Ln: 238 Ch: 52 MIXED CRLF
Locals
Search (Ctrl+E)
Name
Value
Type
Locals Watch 1
Call Stack Breakpoints Exception Settings Command Window Immediate Window Output
Ready
Add to Source Control
Type here to search
ENG
21:03
13-10-2020