

COSC 4370 - Homework 1

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1 Problem

This assignment required the rasterization of an ellipse: $(x^2/12^2) + (y^2/6^2) = 64^2$ where $x \geq 0$. The output provided by running the code as is was just a white line across the middle of the screen.

2 Method

There were only two functions that needed to be edited in the entire Main.cpp file. Those functions include bmpNew and then set pixel. I needed to change the original size of the window that was created in assignment of bmpNew to be able fit the entire ellipse. I also needed to change set pixel because all that does is draw out the line / shape that is needed.

3 Implementation

3.1 bmpNew

All that needed to be done with bmpNew was create a bigger window; what I did was change the assignment from `bmpNew = (500,500,false)`; to `bmpNew = (1000,1000,false)`; There was no exact method of finding this window, I just guessed and checked myself to see what would comfortably fit the ellipse.

3.2 set pixel

This was the trickiest portion of the assignment being that in order to draw the ellipse I needed to know what I was to solve for in the ellipse equation. To plot my ellipse originally, I solved for y and got $y = (\sqrt{(768 + x)} + \sqrt{(768 - x)})/2$. So I then changed my set pixel function to $= (i, (\sqrt{(768 + i)} + \sqrt{(768 - i)})/2)$; however, this alone was giving me out of bounds errors and I then realized I had to also account for the negative. I added another set pixel statement below it instead being $= (i, (-\sqrt{(768 + i)} + \sqrt{(768 - i)})/2)$. I then saw the ellipse that I had been looking for.

4 Results

