Homework 1: Rasterization

COSC4370 Interactive Computer Graphics (Fall 2022)

DUE: SEPTEMBER 22, 2022 AT 11:59 PM

1. Introduction

In this assignment, you will be implementing an algorithm for rasterizing ellipse.

You will rasterize the ellipse $(\frac{x}{12})^2 + (\frac{y}{6})^2 = 64^2$ where $x >= 0$.

It is suggested that you read "Computer Graphics Principles and Practice -Foley et. al" section 3.2 “Scan Converting Lines" and section 3.3 "Scan Converting Circles". It is included in the handout as reading.pdf.

2. Setup

a. Create a C++ project on repl.it. (https://replit.com/)

b. Upload the provided starter files (*main.cpp* and *BMP.h*) to the project, and replace the default, existing main.cpp file with the provided one.

c. Press “Run” button, your code should create a file named *output.bmp,* showing a white horizontal line drawn in the middle of the black background.

d. Start your modification of main.cpp. You can make any modification and/or write additional functions within main.cpp if needed, but **you are not allowed to add or replace any include header files and libraries.**

e. Tips: If your output file looks weird, try download *output.bmp* from repl.it and view it in your photo viewer application. Repl.it has some issue with rendering BMP image occasionally.

f. The use of repl.it is optional, you can use any IDE or code editor as you wish as long as it works. However, repl.it allows you to write code without installing additional libraries, which is necessary for future assignments.

3. Deliverables

Submit all deliverables to your GitHub HW1 folder including but not limited to:

- main.cpp, BMP.h files (30%).
- output.bmp (20%)
- A file called “Report.pdf” (50%).
- Any other materials that you referred to can be listed in a txt file (Optional, may use for plagiarism check).

4. How to write report

The report should be itemized, at least include objective, method, important implementation details, and results. A sample report from previous semesters was provided for your reference.

5. Late submission and plagiarism check

A punishment deduction of 50% credit will be applied if your submission later than the due date for less than 2 days. Later than that will be treated as give up, and the grade will be 0.

All your submissions will be subjected to plagiarism check, if found, your behavior will be reported to department directly. Any referred materials should be labelled in your source code and declared in your report.