CP411 Project: Two-Dimensional Tic-Tac-Toe

Author(s): Pranav Gangwani (193097120), Yash Rojiwadia (203039360), Jay Vora (203321900)

Date: 2022-11-29

Introduction

The purpose of this project is to develop an application that will demonstrate a game of tic-tac-toe in a two-dimensional setting. The user interacts with this project primarily through the use of their mouse, while the keyboard is only used in a limited capacity.

The reason why our team has decided to carry out this project is that we believe it will be interesting to the user, particularly given that the user's participation will play a significant role in the overall programme. To save time and focus on developing user interaction phases, we decided against creating a simple three-dimensional object instead. It gives us the opportunity to demonstrate the knowledge and skills that we have gained from taking this course.

The creation of the shapes, as well as the location of the Xs and 0s that would represent the user's choice, and the development of algorithms by which we could determine which user had won or if there had been a tie were the primary challenges posed by this project. For instance, how to differentiate between the nine squares of the grid, the inputs in each, and then how to analyze these inputs into algorithms to determine the outcome of the problem.

Problem-solving and algorithms

First, to create this 2D tic-tac-toe game, we used default libraries and math in-built libraries along with the OpenGL library. Also, when creating the circle, we used the Midpoint algorithm, which seems efficient because of the right structure of the algorithm. The mid-point algorithm calculates all the perimeter points of the circle in the first part, which means (pi degree) and mirrors the other half part, and this will work because of the symmetry around a circle’s centre. Furthermore, we have implemented a reshape function which will let users either transform or rotate the shape of the X and O.

Design consideration

The project is a 2-D Tic Tac Toe game. It uses the MCV model for the architecture of the game. We will create different methods for defining the data structure, controlling the logic and displaying the output on the screen. The game is created as an instance, which is closed after playing and doesn't store any data of victories or defeats of the players. The game is a two-player, turn-based game with no option for the computer-generated opponent(AI) to play against. It's a simple game with two options after it is over, Yes or No as Y or N. Pressing Yes (y or Y), users can replay the game, and by pressing No (n or N), users exit the game window. The same window will show the game's results, like who won the game or if it was a draw.

Milestones & schedule

Task ID	Description	Due date	Lead
1	Project research & team up	Day 6 of week 09	Jay, Yash. Pranav
2	Project proposal	Day 5 of week 10	Jay, Yash, Pranav
3	Implementation (Shapes)	Day 4 of week 11	Yash
4	Implementation (Window)	Day 6 of week 11	Jay
5	Implementation (Result & Options)	Day 7 of week 11	Pranav
6	Project demonstration	NYD (not yet done)	Jay, Yash, Pranav
7	Project submission	NYD	Jay, Yash, Pranav

References

Lecture notes of the course and https://www.glprogramming.com/red/index.html
Ch03 Viewing and Ch04 Colour from the OpenGL programming book.

1) Viewing
2) Colour