Assignment 2

Due Date: 24/03/2024 Programming in C/C++

Winter 2024 INFR2100U

- Read the requirements of your game in this document carefully before you start coding.
- You can work on this assignment in groups of two students. Only one of you should submit your assignment in Canvas and clearly specify your partner's name in your assignment document and in the comment section in Canvas.
- This assignment is 7.5% of the total grade.

Your task is to create a classic game called pong, where the player is able to control the direction of a paddle to return the ball against a paddle controlled by a CPU (think ping-pong but birds eye view) in C++. There are 75 marks available for meeting the following criteria:

- Creating a game menu where there are options to: **[10 marks]**
  - Start the game or quit (2.5 marks)
  - View a highscore table where you can access, delete, and reset the highscores which are loaded from a file (7.5 marks)
- Create the environment: **[15 marks]**
  - Adding a countdown (3,2,1,Go) from in between when the menu start is clicked and the game begins (2 marks)
  - Create a 20 width and 15 height grid (x,y) and display it in the console (2 marks)
  - Create a 1*1 ball within this grid, have it initially move to the right (x) but randomly choose whether it goes up or down to begin with (y). You will need to update the consol for each time step. (5.5 marks)
  - The ball has a move direction property that you will need functions to adjust, as the ball collides with the top or bottom edges, have its movement reflected so that it continues traveling in the same direction on X, but reverses its travel up or down (on Y) (it bounces) (5.5 marks)
- Create the game: **[50 marks]**
  - At each end (left and right), with 1 column padding, create a 3 tall and 1 wide paddle [The paddle represent a player on the left and a CPU on the right] (2 marks)
  - Create these paddles as classes (5 mark)
  - The players paddle (left) is controllable via user input [w,s] to go up or down (6 marks)
  - If the paddle makes contact with the ball it reflects the direction (11 marks)
  - The CPU paddle can be programmed in one of two ways, choice of which will determine the mark you can get:
    - You can have them choose a random direction to travel in (6 mark)
    - Calculate interception/track the ball (10 marks)

- If the ball hits the right edge, +1 point is recorded for the player and the round restarts maintaining the score (6 marks)
- If the ball hits the left edge, game over, game score is printed and evaluated whether it is in the top 5 highscores, if so it is saved alongside with the players name (which they are prompted input) and then this is saved to the highscore file, returning to main menu (10 mark)