Project 4: Turtle Race

Abstract:

This project focuses on creating objects with unique roles and properties. The scene we were making is where turtles are racing each other in a circular racecourse. We designed scenes with a flag, a track, and trees, and turtles with various roles such as racers and scorekeepers.

Main tasks:

- Draw race scene

I created a goto, flag, circle, and tree function to design the race scene on which turtles race each other. Together, the functions made a circular racing course, as the image is shown below.

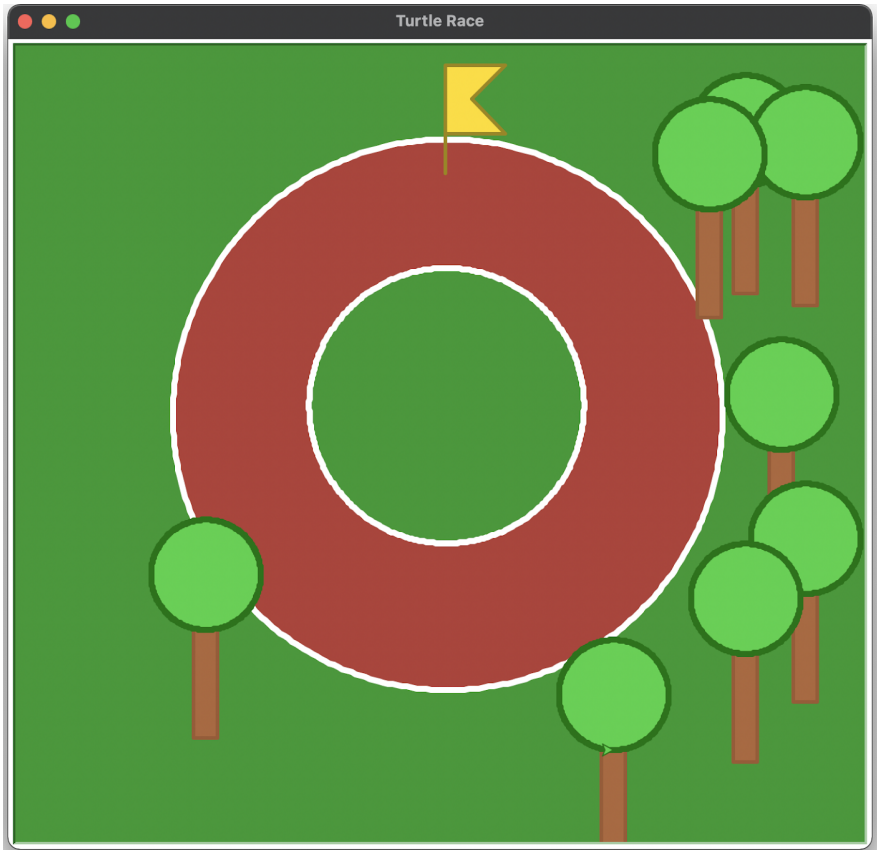

Image 1: The scene of the racing track and other decorations

- Creating and moving turtles

The second step was making racing turtles and scorekeepers and putting them in specific positions to fulfill their roles perfectly. Two racing turtles are created with different colors and

shapes for better differentiation, and two scorekeepers are also designed with similar colors accordingly. In function move_turtle, I set up a specific radius and extent for their movement.

- Racing

The last step was to start the animation so that turtles could race with their speed and scorekeepers write each of them's score. This step involves using for and if loops with conditions.

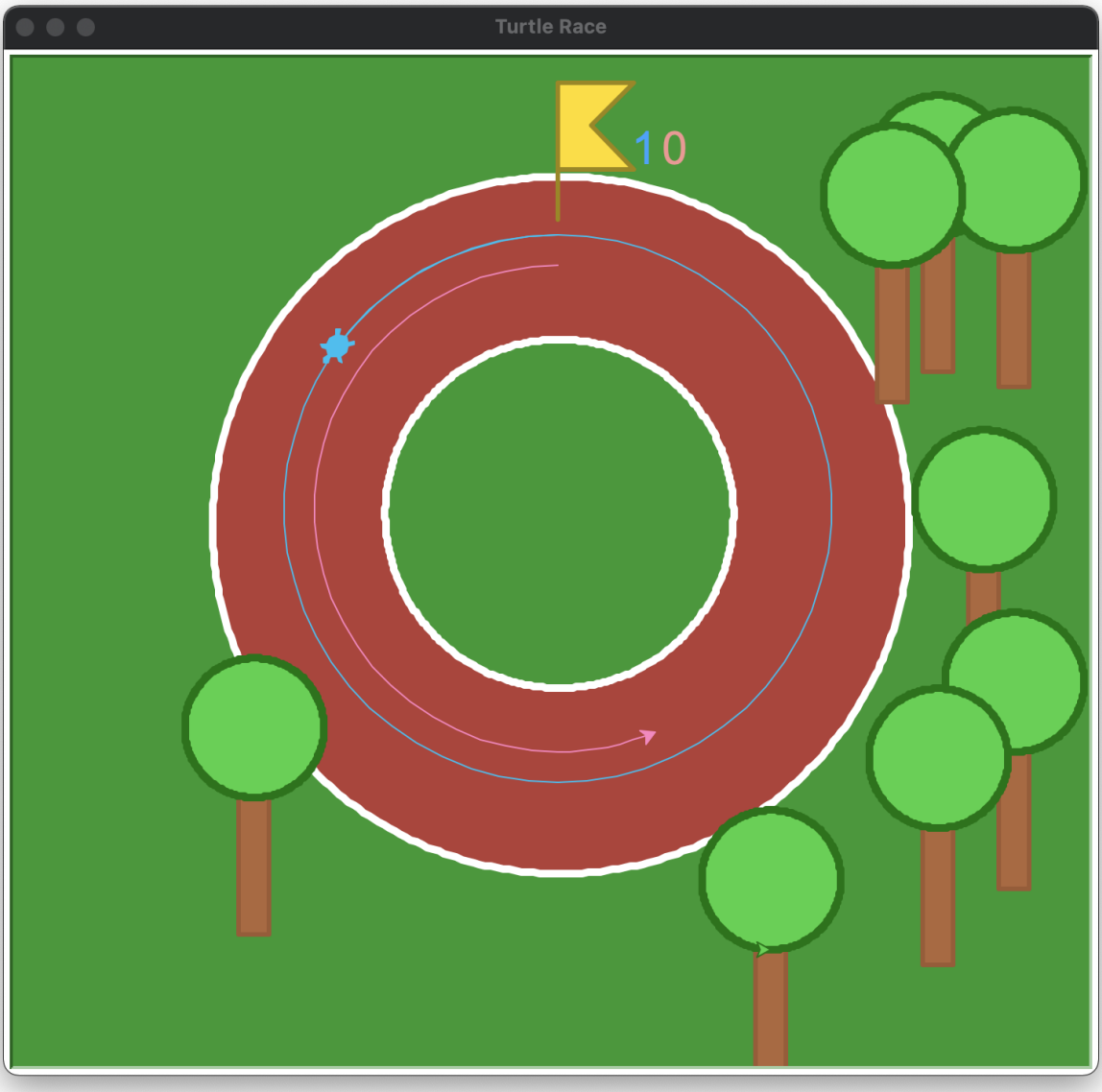

Image 2: The racing scene of two turtles

Extensions:

Extension 1 - Code Rain

For the first extension, as shown in file extension1, I created the animation turtles made in the collage from lab04 to make it look more like code rain. I made turtles drawing letters rather than turtle shapes and leave the “stamps” disappear after each turtle has moved. Specifically, I mainly used methods like turtle.clear(), turtle.write(), and turtle.stamp() with the implementation of randomness to make the whole screen more colorful. (p.s. Please watch the animation to discover the sentence the turtles wrote.)

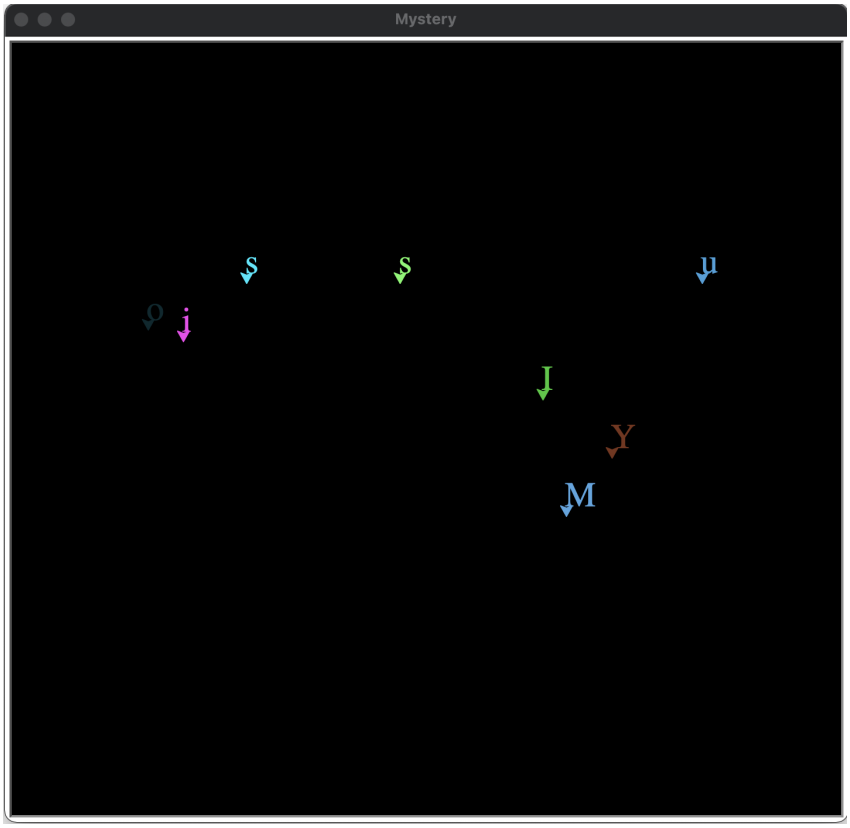

Image 3: The display of extension 1

Extension 2 - Additional Racing Turtles

For extension 2, I added several racing turtles and scorekeepers to the race to make the animation more interesting.

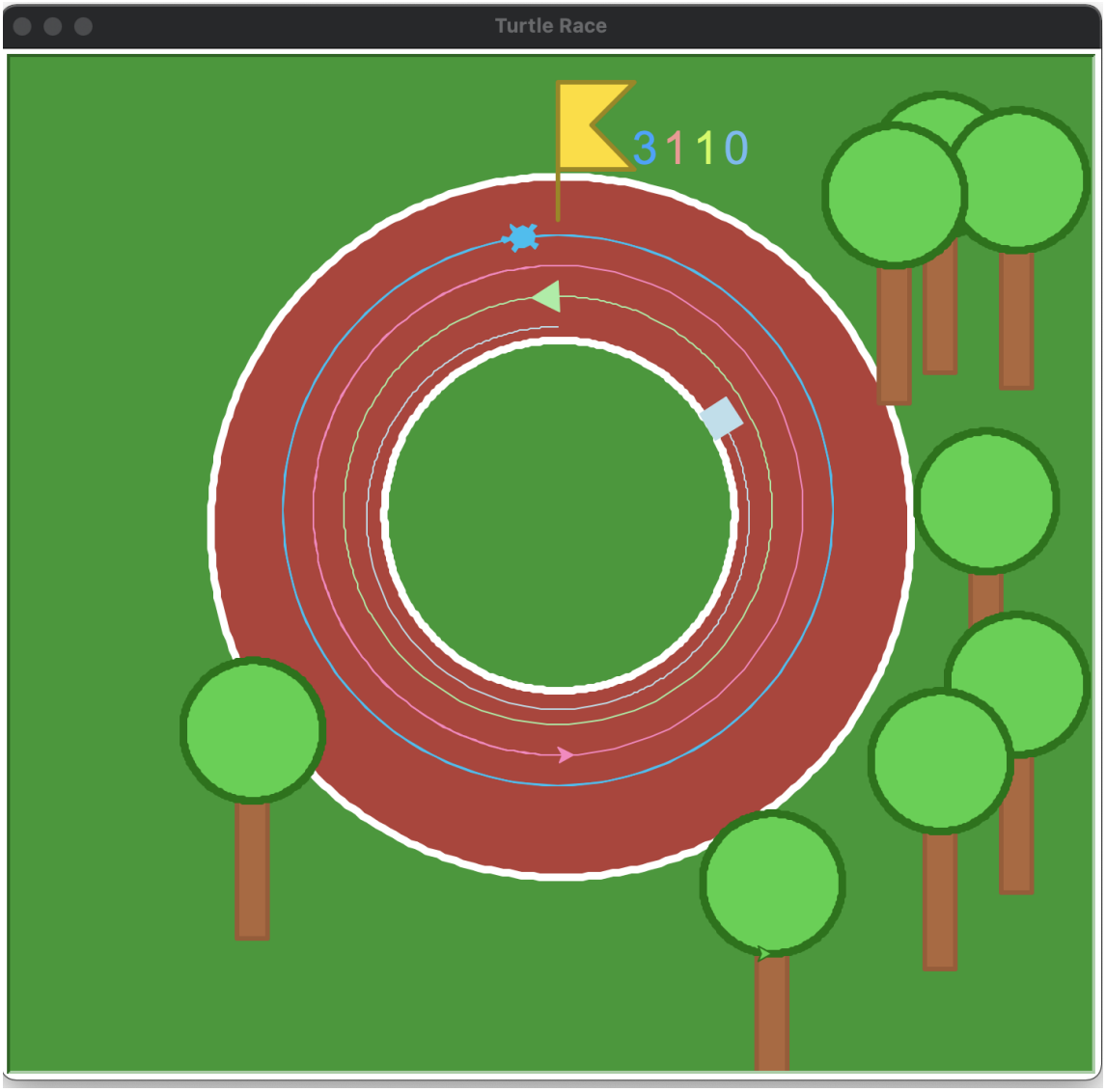

Image 4: The display of extension 2 by adding more racing turtles and scorekeepers

Learning outcomes:

Through this project, I learned how to assemble the same shape into a more significant scene several times with specific roles and parameters. The uses of randomness and loops with conditions deepened my understanding of programming commands and familiarity with loops.