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Mini-Project 1 Design

07/07/2019

1. General program design. How is the program organized? What major data structures were used?

The main function first declares some variable then starts a loop that runs when finishLine = 0. Each loop calls the newPosition method twice, once for the hare and once for the tortoise, which takes in the old position integer and a character representing the racer. It then either calls the hareMove or tortoiseMove methods. Both of these calculate a random number then return integer array, the first value is the number of squares to move, and a number representing the direction to move (I used a direction integer because I didn’t know you could use negative integers). The newPosition function then calculates and returns the new position based on the old position and make sure it doesn’t go past position 0. Still within the while loop, it takes the new postions and prints there postion on a line with each space representing a square. Both position integers are both the input to the finishRace method, which check to see if they are on the same square, if the hare, tortoise, or both won and will print any cometary of the events.

2. What alternative approaches were considered and why were they rejected?

At first I wanted to make one method that would just control movement. Then I realized it either way I would have to repeat about 15 lines of similar but different code for the different player movements so I made a separate method for each (hareMove and turtMove). In the separate methods it was natural to generate a random number for both players, I also almost used the same random number for both movements but this would have limited the game to only 10 outcomes.

3. What did you learn from doing this project and what would you do differently?

One concept I specifically learned was how to return an array from a method, I used this to return the number of squares and direction of the each movement. If I was to go past the requirements I wanted to added a sleep timer for each turn so you would slowly watch the race turn by turn. I also thought about adding more “commentation” to each move, like “ the hare takes the lead” or “the tortoise is almost at the finish”, to make it more entertaining.