Simulation: The Tortoise and the Hare

Chapter 6 Arrays and ArrayLists | Problem 6.28 | Soobin Rho | July 15, 2022

DESIGN APPROACH

The first thing I decided to do was to rephrase the specific requirements of the problem set. I rephrased what the book says in my own words so that I can better understand the program:

Specifications

- The tortoise is “T” and the hare is “H”
- T and H can move left or right. On our program output, their movement will be expressed by using a white space. “ ” = 1 square
- They move each time unit. The book says they move each second, but since waiting one second for each move will take too long to watch, I’ll make the time unit around half a second in my program, using the sleep function.
- The program starts with “BANG !!!!!\nAND THEY’RE OFF!!!!!”
- T bites H if they happen to be at the same square, displaying “OUCH!!!”
- Each iteration of the main loop will check if either has reached the position 70.
- If T wins, print “TORTOISE WINS!!! YAY!!!”; if H wins, print “Hare wins. Yuch.”

I was deciding between whether or not to set the maximum time, since there’s a small chance that neither reaches the finish line. However, it’d be interesting to watch such a case, so I decided to not set a time limit. Also, I’ve decided to use the class SecureRandom instead of Random, although there’s no practical benefit in this case, because I just wanted to practice using SecureRandom. My final project - although I have no idea what it’s gonna be about - might involve SecureRandom. Finally, here’s what kind of objects I’ll use:

Core Variables

- Both

```
private static int getRandomValue …;
private static void moveToNextPosition …;
private static void printPosition …;
private static int time;
```

- T

```
private static int positionT;
```

- H

```
private static int positionH;
```