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1 /**
2  * A Test class for {@link MarketPlace}.
3  *
4  * @author Silas Agnew
5  * @version December 4, 2017
6  */
7
8 import java.util.Random;
9
10 public class MarketTest
11 {
12     // Test constants
13     private static final int    NUM_CASHIERS = 4;
14     private static final double AVG_ARRIVAL  = 3.0;
15     private static final double AVG_SERVICE  = 5.0;
16
17     public static void main(String[] args)
18     {
19         Random rand = new Random();
20
21         System.out.println("-Starting Test-");
22
23         MarketPlace store = new MarketPlace();
24         store.setParameters(NUM_CASHIERS, AVG_SERVICE, AVG_ARRIVAL, true);
25
26         // Check parameters
27         assert (store.getNumCashiers() == NUM_CASHIERS) :
28             "Cashier count not set. Expected: "
29             + NUM_CASHIERS + " Got: " + store.getNumCashiers();
30         assert (Math.abs(store.getServiceTime() - AVG_SERVICE) < .001) :
31             "Service time not set. Expected: "
32             + AVG_SERVICE + " Got: " + store.getServiceTime();
33         assert (Math.abs(store.getArrivalTime() - AVG_ARRIVAL) < .001) :
34             "Arrival time not set. Expected: "
35             + AVG_ARRIVAL + " Got: " + store.getArrivalTime();
36
37         // Time method
38         String time = store.formatTime(542);
39         assert (time.equals("9:02am")) :
40             "Time Format incorrect. Expected: 9:02am, Got: " + time;
41
42         time = store.formatTime(720);
43         assert (time.equals("12:00pm")) :
44             "Time Format incorrect. Expected: 12:00pm, Got: " + time;
45
46         // Run test simulations
47         for (int i = 0; i < 3; i++)
48         {
49             double arrival = rand.nextDouble() * 3.5 + 3;
50
51             store.setParameters(NUM_CASHIERS, AVG_SERVICE, arrival, true);
52             store.startSimulation();
53             System.out.println(store.getReport());
54             int before = store.getNumCustomersServed();
55
56             arrival = rand.nextDouble() * 3.5;

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57
58     store.setParameters(NUM_CASHIERS, AVG_SERVICE, arrival, true);
59     store.startSimulation();
60     System.out.println(store.getReport());
61     int after = store.getNumCustomersServed();
62
63     assert (before < after) :
64         "Smaller Arrival time should produce more customers" +
65         "\nBefore: " + before + " After: " + after;
66 }
67
68 System.out.println("-Test Finished-");
69 }
70 }
71
```