Assignment 2 FAQ

Help

Hello all,

This is the FAQ document for week 2 - we're listing answers to common questions here. Make sure you read this before posting a question - maybe the answer's already here!

1. The hottest debate on the forum here is about whether we should mutate the internal state of a person in the test. For the "Die rate test", we can totally design it in a way that, we run the simulation for sufficient days until we find a dead person, where we will start the following test to make sure this dead guy doesn't change state. To check some properties we need to get into specific configurations, which don't depend solely on the initial state. But we design it carefully to make sure this mutation won't destroy your program logic.
2. To clarify the instruction "a person moves to one of their neighbouring rooms within the next 5 days (with equally distributed probability)" :
   a. The day and the room to move are both random. It means: first, you pick a day randomly; then, when you come to that day, you choose a neighbouring room randomly.
   b. By "within the next 5 days", we mean a person can move after 1 to 5 days depending on your random choice (i.e., in your code, you can write afterDelay(Days), where Days should be 1 to 5). Some people may have implemented in a way that Days is 0 to 4. But this is incorrect. If a person can move on day 0, what happens after this move? He may choose to move on day 0 again. So, this guy can have a chance (although very low) to keep moving again and again on the same day. And in the extreme case, your program goes into an infinite loop. The agenda time will never go ahead. You are just lucky to get 10 score (though by probability, you will get passed sometime).
3. In this thread, people wonder whether we check for the exact probability. The answer is **no**, because it's impossible to check this. As the simulations are random, we test that over multiple runs, we should get a reasonable result (e.g., for die rate, if we run the simulation for 100 times, each time going after 14 days, your should at least kill one person for me, right? By probability, it makes sense.). If a test fails, it does not mean that you got unlucky, but rather that your implementation is not following the rules.
4. (related to this thread). A person just gets infected, they can't infect others proactively. (we are not doing zombie simulations :-)). The rules indicate that you may only get infected when you change rooms. But this simplifies your implementation. When an infected person moves to another room, he can't decide whether to infect other persons in that room, he just wait for some unlucky guy to move into the room and that unlucky guy will get infected by transmissibility rate.
5. There are only 4 neighboring rooms. You can't move diagonally.
6. Thanks to Shaun Mangelsdorf in this thread. I did make a mistake in the previous test. Actually, it's not the problem of state check. I read your code which got a score 8.77, and it's correct. Now I have fixed this bug.

Use case

Assume a fictitious Bob in this world. Bob is *not* among the initially infected people, he is just a normal guy trying to survive.

- On day 0, he picks a day in the next 5 to schedule the movement. In other words, he rolls a 5-

faced die. Let's assume that day is 3.

- On day 3, Bob looks at the neighbouring rooms. There are 4 neighbouring rooms, up, down, left, right. Let us assume that up and down have visibly infected people. Bob avoids both these rooms. He rolls a 2-faced die (or flips a coin) to decide which room between left and right to go into. Let us assume it is left.
- Bob moves into the left room. At this point, if there are some infected people in the room, according to the transmissibility rate, he gets infected. Let us assume that he is lucky, and does not get infected.
- At the point Bob moved into the left room, he also decides on *when to move next.* Once again, he rolls his 5-faced die. Let us assume that he gets 2 this time. On day 3 + 2, ie 5, he *once again* looks at the neighbouring rooms. At this point he sees that all the neighbouring rooms have visibly infected people. So he stays put.
- Because he stays put, he does not get sick (an invisible aura makes it impossible to infect him when he stays put).
- Of course, he needs to roll his 5-faced die again, to decide *when* to move next. And so on and so forth.

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