

Virus Simulator

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Run the simulation and the SimulationDriver will guide you to enter the values of the following parameters:

- How many cities

Then it will ask if you want to set unique parameters or use the default ones for (default values in parenthesis):

- Duration of the simulation (150)
- How infectious the virus is (60%)
- How fatal the virus is (4%)
- Time to recover people and disinfect rooms (20)
- How likely are people to move (70%)

Then it will ask if you want to enter manually the following values or use default ones **for each city** (default values in parenthesis):

- How many people take protective measures (50%)
- Initially infected people (1)
- How many ports the city has (one fifth of how many it fits +1)

In all cases it asks for each city:

- Length
- Width
- Amount of people

Note that:

- It's half as likely for a room to get infected than a human.
- It's half as likely for a human to get infected from being in an infected room than human to human transition.
- Protective measures make chances of getting infected 1/9 of normal.
- Diseased people are removed from the grid.
- People can also move diagonally

Travel Mechanics:

If a person is standing on a port (color a) and decides to move outside the grid, they will appear at a random available position in the room of color a.


```
Console Output:
OF THE 15 INITIAL PEOPLE:
11 : GOT INFECTED
2 : RECOVERED
0 : PASSED AWAY
4 : NEVER GOT INFECTED
20 : TRAVELS OCCURED
```

- Invariants:
1. Cannot have less than 1 cities
 2. Cannot run simulation for <0 steps
 3. An immune human cannot get infected again or infect others
 4. Length and height of city cannot be less than zero
 5. Amount of people in a city cannot exceed amount of available spaces
 6. Amount of people who take measures cannot be greater than total amount of people
 7. Amount of initially infected people cannot be greater than total amount of people
 8. Amount of airports cannot exceed the amount of spaces in the perimeter
 9. People cannot move beyond city bounds if the bound they are on is not an port
 10. People cannot move on spaces that other people are on
 11. People cannot change cities if they are not on an airport
 12. Cannot have 2 people at same block
 13. Cannot have 2 ports at same block
 14. A room cannot have a port that leads back to the same room
 15. A port cannot get infected
 16. Duration that people and rooms need to get disinfected must be >0


Graphics:

Humans:


Without protective measures:



Healthy Human




Infected Human




Recovered (Immune) Human


With protective measures:



Healthy Human




Infected Human




Recovered (Immune) Human


Rooms:



Normal



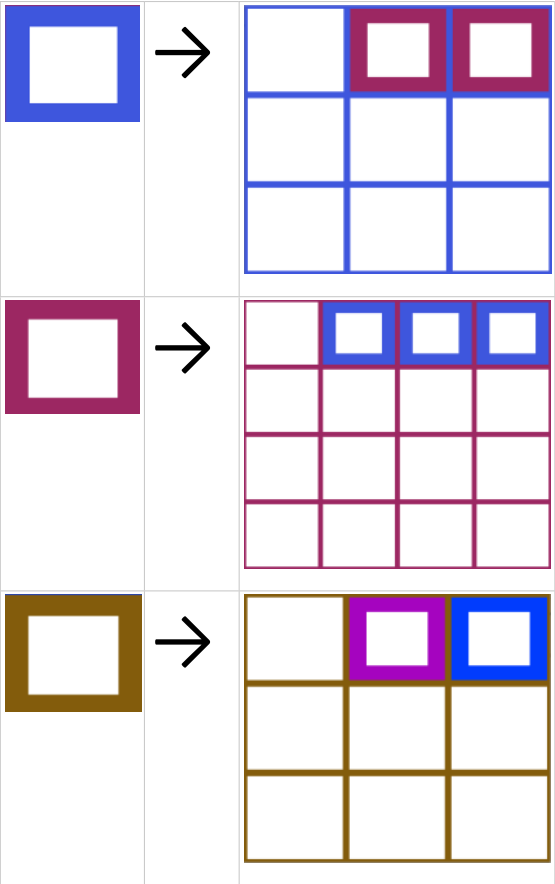
Infected



Ports (the color indicates to which city the port leads)

Grid:

The color of the grid itself acts as an identifier for the room,
Purple grid = purple room, therefore, purple port will lead to purple room



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