**CS112 Assignment One**

**Group name:** dopers

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| Member ID | Percentage contribution of allocated task |
| S11219345 | 50% |
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**Certification:**

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| --- | --- | --- |
| ID | Member Name | Signature |
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**Infection Simulator User Manual**

To get started, you'll need to compile and run the provided C++ code using a compatible compiler, such as g++ or Visual Studio. Once the program is running, follow the instructions provided in the console.

Stuffs to know before running the program:

1. Simulation Parameters

a. Number of People: This refers to the total number of individuals in the simulation population.

b. Number of Initially Infected: This is the number of people who are initially infected on Day 0.

c. Number of Simulation Days: Specify how many days the simulation should run for.

2. Simulation Execution

After entering the simulation parameters, the program will perform the following steps:

a. Initialization: The program will set up the simulation by randomly assigning initial positions to individuals and infecting a specified number of people on Day 0.

b. Daily Simulation: For each day of the simulation, the program will simulate the movement of healthy individuals and the potential for infection spread among them.

c. Data Collection: The program will collect data on the number of infected individuals for each day and store it.

3. Viewing Results

The simulation results are provided in two main ways:

a. Console Output: During the simulation, you'll see the movements of individuals, their positions, and their health status (infected or healthy) displayed in the console.

b. File Output: The program will generate output files that contain detailed information about the simulation results, including infection summaries and movement details.

4. Menu Options

After the simulation is complete, you'll have several menu options available:

a. Print Infection Summary with Results: This option displays a detailed summary of infection spread for each day, along with movement details and health statuses.

b. Print Summary Only: This option generates a summary of infected individuals' details and saves it in a separate file.

c. Print Result in Console: This option allows you to view the simulation results again in the console.

d. Exit the Program: Choose this option to exit the program.

How to use this program:

1. compile and run the cpp file.

2. Then it would ask you, "Enter the number of days for simulation: " and then enter the amount of days you would like to run it for.

3. Then it would display the following screen:

Select an option:

1. Print infection summary with every day's result:

2. Print summary only

3. Print result in console

4. Exit the program

Enter your choice:

Then you are to choose how would you like to see the results. If you choose option one or option two, the text file would be wrote into the "Results" folder which is available in the zip format. But if you choose the third option, it would display your results in the console. Option 4 exits the program.

NOTE:

1. The cpp file has appropriate comments for each section of the code.

2. This program fully works but sometimes there are no new infection cases, which works with reality. However, i did 10 trials in which 7 out of 10 trials had several new cases while the remaining three has no cases.

Reference:

youtube: https://youtu.be/zyQXhPUM4hc?si=hzPSZtArILVbPyly

https://www.w3schools.com/

https://www.geeksforgeeks.org/