

# AntiVirus Game User's Guide

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# 1 Introduction

Welcome to the Console-Based Antivirus Puzzle Game! This strategic puzzle game challenges you to move virus pieces around a unique board to ultimately move the red virus piece out of the puzzle. It's a test of logic, strategy, and spatial awareness.

## 2 Game Setup

### 2.1 Installation

On the GitHub repository, navigate to the green button entitled “Code”, located towards the top right of the screen, and select “Download ZIP” to download the zipped file of the game. Unzip the file and open it with any code editor (Visual Studio Code, CLion, etc.).

It is also necessary to ensure that the CMakeLists file has been properly generated to include the ‘Board.hpp’, ‘piece.hpp’, and ‘main.cpp’ files (not required for VSCode).

### 2.2 Pieces

There are different virus types, each represented by a character on the board. They are:

- Red (0)
- Blue (1)
- Orange (2)
- Pink (3)
- Dark Green (4)
- Dark Blue (5)
- Purple (6)
- Light Green (7)

- Yellow (8)
- Blocker (W)

The objective is to move the Red Virus (“0”) piece to the end of the top right corner of the board.

## 2.3 Board

The game features a 9x9 board, displayed with “X” as the borders and “e” as the empty spaces. Here is a comparison of the board displayed in the console vs the real game board.

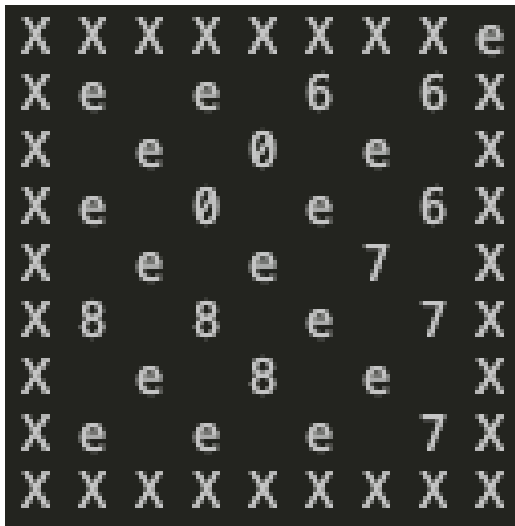


Figure 1: Console Board

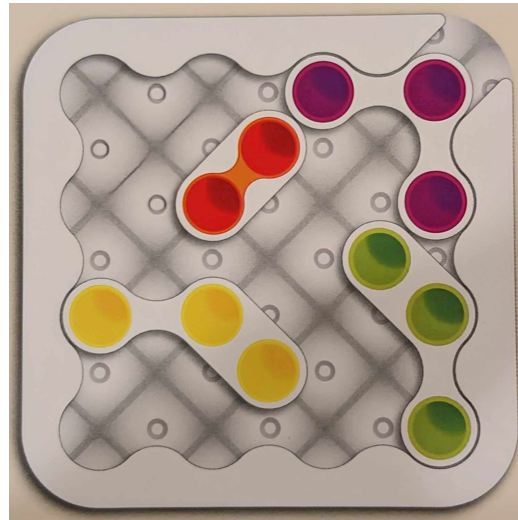


Figure 2: Game Board

## 3 Starting the Game

If you are using a terminal:

```
>> Open terminal
>> Navigate to the game directory
>> Write these commands (for the GNU compiler)
```

```
g++ main.cpp -o main
./main
```

If you are using CLion:

```
>> Open the files in CLion
>> Run the main.cpp from the code editor
```

This will start the game.

## 4 Gameplay Mechanics

### 4.1 Rules for Movement

Pieces can only move in specified directions and number of steps. They cannot overlap with any other piece or move outside the board. If a move is invalid, a message will be displayed and you will be prompted to make a new move.

### 4.2 Making a Move

To move a piece, enter the piece type, direction, and steps in the format: `<piece type><spacebar><direction><spacebar><steps>`. For example, to move the Red Virus one step to the southwest, type: `0 SW 1`.

## 5 Winning the Game

Move the Red Virus piece to the top right location on the board to win. If you win, a victory message will be displayed.

## 6 Ending the Game

Enter `q` as the 'direction' to quit the game. For example, type: `0 q 1`. You will get a quit message after you successfully quit the game.

## 7 Crashes and Limitations (Walker)

- If the correct input format is not followed, the game goes into an infinite loop. To make sure this does not happen, make sure you follow the correct input format as outlined in section 4.
- Sometimes the top row of the “X” border will shift over by one character during gameplay, making it appear as though the exit in the top right corner where you would remove the virus piece is blocked off. This is merely an appearance bug, and the function of moving the virus piece to that corner in order to win the game should still behave normally, although it may not appear as such on the visual representation of the board.

## 8 Frequently Asked Questions (FAQs)

- **Q: Can I move multiple pieces in one turn?**

**A:** No, you can only move one piece per turn.

- **Q: What happens if I try to move a piece outside the board?**

**A:** The game will prompt you for a valid move.

- **Q: Is there a way to reset the board?**

**A:** Currently, the game does not support a reset function during gameplay. You would need to restart the game.

## 9 Game Walkthrough (Walker)

Once the game folder has been unzipped and opened in CLion, and the CMakeLists has been properly generated, clicking the green ‘Run’ arrow in the top right corner of the screen will initiate the game. As shown in the first printout of the board below, running the program will display the game board with a pre-loaded piece setup.

The game will then prompt you to move a piece. Following the instructions detailed in section 4, type the piece, direction, and number of steps for your desired move and press the ‘enter’ key.

In this case, I choose to move the ‘0’ (virus) piece by 1 step to the southwest.

```
C:\Users\johns\Desktop\moving-objects-puzzle-main\cmake-build-debug\moving_objects_puzzle_main.exe
X X X X X X X e
X e e 6 6 X
X e 0 e X
X e 0 e 6 X
X e e 7 X
X 8 8 e 7 X
X e 8 e X
X e e e 7 X
X X X X X X X X

Enter direction and steps:0 SW 1
X X X X X X X e
X e e 6 6 X
X e e e X
X e 0 e 6 X
X 0 e 7 X
X 8 8 e 7 X
X e 8 e X
X e e e 7 X
X X X X X X X X
```

As shown in the second board printout of the above screenshot, the ‘0’ piece successfully moves 1 step to the southwest.

Next, the game will once again prompt you to move a piece. In this case, I choose to move the ‘7’ piece by 1 step to the northwest. Since the ‘0’ and ‘8’ pieces are occupying spaces where the ‘7’ piece would end up if it moved in the indicated direction, the game notifies you that such a move is invalid. It then prompts you to make a different move.

```
Enter direction and steps:7 NW 1
Invalid Move
X X X X X X X e
X e e 6 6 X
X e e e X
X e 0 e 6 X
X 0 7 e X
X 8 8 7 e X
X e 8 e X
X e e 7 e X
X X X X X X X X
```

After many other moves not depicted (so as to not spoil the solution to the puzzle) but made following the same format described above, I arrived at the board state depicted below. As shown, the second bug described in section 7 occurred. Nonetheless, moving the ‘0’ piece 1 step to the

northeast places it into the victory condition space in the top right corner, and thereby wins the game—as indicated by the ‘Victory’ banner.

```
Enter direction and steps: N 10
  X X X X X X X e
X 6 6 e 0 X
X e e 0 X
X e 6 e e X
X 7 e e X
X e 7 e e X
X e 8 8 X
X e 7 e 8 X
X X X X X X X X

Enter direction and steps: N 10

*****
* Victory! *
*****
```