***STAGE 2/4***

***STAGE 2.1 – PRINTING LAND***

Though normally we would always be able to see the state of the land in real life at any point in time, in a simulation, this is not always practical. Hence, the simulation needs a **Printing Land** command which prints the state of the land on that moment. The command is specified by the argument l. This command needs to call the function print\_land.

***STAGE 2.1 OUTPUT***

**./cse\_valley**

Welcome to CSE Valley, farmer!

Congratulations, you have received 60 seeds.

How many different seeds do you wish to have? **3**

Enter the names of the seeds to be given:

**b**

**c**

**a**

Game Started!

Enter command: **l**

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Enter command:

***STAGE 2.2 – MOVING AROUND THE LAND***

A farmer will need to move around the land to attend to their farm. Hence, the simulation needs to be able to track and show a farmer's movements. Currently, the **Moving Commands** are specified by the characters >, <, ^, and v that corresponds to moving to the right, left, up, and down respectively.

At the start of the simulation, the farmer is located at the top left corner (row 0, col 0) of the farm, facing to the right (i.e. cse\_farmer.curr\_col and cse\_farmer.curr\_row are both 0 and cse\_farmer.curr\_dir is >).

To move to an adjacent struct land, the farmer must already be facing that direction. This means that the farmer can only go from (row 0, col 0) to (row 0, col 1) by putting in the > command. Any other movement commands would change the farmer's direction to the given command. The same command would need to be given again for the farmer to actually move in that direction.

Invalid Inputs and Clarifications

* A farmer can't go outside outside the boundary of the farm. (E.g if the farmer is currently located in (row 0, col 0) and facing up, the command ^ will not do anything)

***2.2 outputs - No directions changed.***

**.**

Welcome to CSE Valley, farmer!

Congratulations, you have received 60 seeds.

How many different seeds do you wish to have? **3**

Enter the names of the seeds to be given:

**b**

**c**

**a**

Game Started!

Enter command: **l**

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Enter command: **>**

Enter command: **>**

Enter command: **l**

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Enter command:(CNTRL D PRESSED)

***2.2 OUTPUT - CHANGE OF DIRECTIONS.***

Welcome to CSE Valley, farmer!

Congratulations, you have received 60 seeds.

How many different seeds do you wish to have? **3**

Enter the names of the seeds to be given:

**b**

**c**

**a**

Game Started!

Enter command: **l**

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Enter command: **v**

Enter command: **l**

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Enter command: **v**

Enter command: **l**

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Enter command: **>**

Enter command: **v**

Enter command: **l**

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Enter command:

### ***2.3: Attending to an Adjacent Land***

A farmer should be able to take care of the adjacent land that they are currently facing. If the farmer wishes to water the land, the o command argument will be followed by the character w. Similarly, if the farmer wishes to plant a seed into the land, the o command argument will be followed by the character p and the seed\_name that the farmer wishes to plant.

The pre-made print\_land function shows any land that is watered by having a W printed on the top right section of the land. Similarly, it shows any land that has a seed planted by having the name of the seed printed on the top left section of the land.

#### Invalid Inputs and Clarifications

* Trying to plant a seed or water into a land that is outside the boundary of the farm will not do anything.
* When a piece of land is watered, then it will stay watered when watered again, i.e. you cannot unwater land
* A seed that has been previously planted on the land spot prior to the command will be replaced by the new seed.
* You can assume that the farmer will always plant a seed that they own (i.e. in seed\_collection). In other words, you will never be asked to plant a seed you do not have in your seed\_collection.

***2.3 OUTPUT watering next to adjacent land. Example 1***

**./cse\_valley**

Welcome to CSE Valley, farmer!

Congratulations, you have received 60 seeds.

How many different seeds do you wish to have? **3**

Enter the names of the seeds to be given:

**b**

**c**

**a**

Game Started!

Enter command: **o w**

Enter command: **l**

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| | W| | | | | | |

| f>| | | | | | | |

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Enter command: **v**

Enter command: **o w**

Enter command: **l**

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| W| | | | | | | |

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Enter command:

***2.3 output planting next to adjacent land example 2***

**./cse\_valley**

Welcome to CSE Valley, farmer!

Congratulations, you have received 60 seeds.

How many different seeds do you wish to have? **3**

Enter the names of the seeds to be given:

**b**

**c**

**a**

Game Started!

Enter command: **o p b**

Enter command: **l**

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| |b | | | | | | |

| f>| | | | | | | |

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Enter command: **v**

Enter command: **o p a**

Enter command: **l**

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| |b | | | | | | |

| f | | | | | | | |

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Enter command: **a**

Seeds at your disposal:

- 19 seed(s) with the name 'b'

- 20 seed(s) with the name 'c'

- 19 seed(s) with the name 'a'

Enter command:

### ***2.4: Scattering Seeds***

In order to plant more seeds faster, farmers can use a tool which scatters (plants multiple) seeds in one direction, either until the edge of the farm, or until they run out of seeds. Unfortunately (since the wind in COMP1511 land always blows south or east), this tool only works if the farmer is facing down, or to the right. Specifically:

* First, perform error checking for invalid inputs as described in the "Invalid Inputs" section.

If the farmer is facing left (i.e. <) or up (i.e. ^), this command should do nothing, except print out the following error message:  
 You cannot scatter seeds ^ or <

* If the farmer is facing down (i.e. v), a line of seeds should be planted, starting at the farmer, going until either you run out of seeds, or you reach the bottom of the farm.
* If the farmer is facing right (i.e. >), a line of seeds should be planted, starting at the farmer, going until either you run out of seeds, or you reach the rightmost edge of the farm.

This is done through the command argument p (for "plant multiple"), followed by the name of the seed that the farmer wishes to scatter.

#### Invalid Inputs and Clarifications

* Anything that has been previously planted on the land prior to the command should be replaced by the new seed.

Just like in [Stage 1.3](https://cgi.cse.unsw.edu.au/~cs1511/21T3/assignments/ass1/index.html#stage-1.3), If the seed name is not a lowercase letter, you should print:  
 Seed name has to be a lowercase letter

if the seed is one you do not currently have, you should print:  
 There is no seed with the name 'n'

* where n is the seed name.

**2.4 output - planting multiple seeds.**

**./cse\_valley**

Welcome to CSE Valley, farmer!

Congratulations, you have received 60 seeds.

How many different seeds do you wish to have? **3**

Enter the names of the seeds to be given:

**b**

**a**

**c**

Game Started!

Enter command: **>**

Enter command: **>**

Enter command: **l**

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Enter command: **p b**

Enter command: **a**

Seeds at your disposal:

- 14 seed(s) with the name 'b'

- 20 seed(s) with the name 'a'

- 20 seed(s) with the name 'c'

Enter command: **l**

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| | |b |b |b |b |b |b |

| | | f>| | | | | |

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Enter command: **v**

Enter command: **p c**

Enter command: **a**

Seeds at your disposal:

- 14 seed(s) with the name 'b'

- 20 seed(s) with the name 'a'

- 12 seed(s) with the name 'c'

Enter command: **l**

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| | |c |b |b |b |b |b |

| | | f | | | | | |

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Enter command: