### ***STAGE 3.1 Square Watering***

One perk of being in the COMP1511 Land is the ability to summon the god of rain, known as the Square Watering command. This command is specified by the argument w, followed by a number representing the size of the square section of the farm land.

To demonstrate this, say you are on (row 2, col 3) of the farm. When the command of w 2 is played, all the land from row 0 (2 - 2) and col 1 (3 - 2) until row 4 (2 + 2) and col 5 (3 + 2) now become watered (as shown in the image and in Example 3.1.1)

#### Invalid Inputs and Clarifications

If the farm puts in a negative number as the size, your program should output:  
 The size argument needs to be a non-negative integer

* When a piece of land is watered, then it will stay watered when watered again, i.e. you cannot unwater land
* The farmer will still be watering even if some of the expected squares are outside of the whole farm (as shown in the Example 3.1.2)

***3.1 OUTPUT - WATERING A SQUARE***

**./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: **>**

Enter command: **v**

Enter command: **v**

Enter command: **v**

Enter command: **w 2**

Enter command: **l**

|---|---|---|---|---|---|---|---|

| | W| W| W| W| W| | |

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| | W| W| W| W| W| | |

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| | W| W| W| W| W| | |

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| | W| W| W| W| W| | |

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Enter command:

***OUTPUT 3.1 - SQUARE WATERING NEAR THE EDGE***

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: **w 1**

Enter command: **l**

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| W| W| | | | | | |

| f>| | | | | | | |

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| W| W| | | | | | |

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Enter command:

### ***STAGE 3.2: Advancing to the Next Day and Harvesting***

#### **a. Advancing to the Next Day**

Once you have done your farming for the day, you can go to the next day using the Advancing to the Next Day command, which is specified by the character n. It should give an output of which day you are heading into. For example, the first time you enter the command, it should say

Advancing to the next day... Day 2, let's go!

When you advance to the next day, the following things will happen:

* If a seed has been planted in a particular struct land and that particular struct land has been watered, the seed would have grown into a plant that is able to be harvested on the day.
* Seeds that are not watered when advancing to the next day will die
* Harvestable plants that are not harvested when advancing to the next day will die
* All land becomes unwatered and farmer is reinitialised to be facing to the right and located at the top left corner of the farm (just like at the start of the simulation)

#### **b. Harvesting Adjacent Land**

Aside from planting and watering into a land, you can also harvest plants. Just like the water adjacent land command, a farmer could harvest an adjacent land that they are currently facing using the character h. When harvesting a plant, you get 5 seeds of the same type.

When a plant is able to be harvested, it should output:  
 Plant 'X' was harvested, resulting in 5 'x' seed(s)

* where X is the harvested plant (i.e. uppercase form) and x is the name of the seeds received (i.e. lowercase form).

#### Invalid Inputs and Clarifications

* Trying to harvest a plant from a land that is outside the boundary of the farm will not do anything.

***3.2 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**

**a**

**c**

Game Started!

Enter command: **p a**

Enter command: **o w**

Enter command: **v**

Enter command: **p b**

Enter command: **o w**

Enter command: **l**

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|b |a W|a |a |a |a |a |a |

| f | | | | | | | |

| v | | | | | | | |

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|b W| | | | | | | |

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|b | | | | | | | |

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|b | | | | | | | |

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Enter command: **n**

Advancing to the next day... Day 2, let's go!

Enter command: **l**

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| |A | | | | | | |

| f>| | | | | | | |

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|B | | | | | | | |

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Enter command: **a**

Seeds at your disposal:

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

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

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

Enter command: **h**

Plant 'A' was harvested, resulting in 5 'a' seed(s)

Enter command: **a**

Seeds at your disposal:

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

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

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

Enter command: **l**

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| f>| | | | | | | |

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Enter command: **n**

Advancing to the next day... Day 3, let's go!

Enter command: **l**

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| f>| | | | | | | |

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Enter command:

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### ***3.3: Trading Seeds***

This is done through the Trading Seeds command using the t argument, followed by 3 (three) additional arguments: the name of the seed that you have and wish to trade and its amount, in adition to the name of the seed that you want to trade for.

Trading can result in you receiving seeds you have not had before. If this happens, you should ensure they appear first when you use the a command. A portion of the marks for seed trading relies on you implementing this behaviour correctly.

A few things to note:

When the farmer tries to put in seed names that are not lowercase letters, your program should output:  
 Seed name has to be a lowercase letter

When the farmer tries to put in a negative number of seeds, your program should output:  
 You can't trade negative seeds

When the farmer does not have the seeds that they wish to trade, your program should do nothing except output:  
 You don't have the seeds to be traded

When the farmer does not have enough seeds that they wish to trade, your program should output:  
 You don't have enough seeds to be traded

* You should check for validity in the order listed above

***3.3 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: **a**

Seeds at your disposal:

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

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

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

Enter command: **t a -5 b**

You can't trade negative seeds

Enter command: **t d 5 b**

You don't have the seeds to be traded

Enter command: **t a 21 b**

You don't have enough seeds to be traded

Enter command: **t c 10 b**

Enter command: **a**

Seeds at your disposal:

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

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

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

Enter command: **t c 10 d**

Enter command: **a**

Seeds at your disposal:

- 10 seed(s) with the name 'd'

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

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

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

Enter command: