**4.1: Natural Disasters - Droughts**

In order for any plant in the land to survive in a drought, it needs to not be surrounded by too many other plants. The more plants nearby, the more competition there is for the nutrients in the soil. Hence, if there are too many plants surrounding a plant, then that particular plant will die. The Droughts command is specified by the character d to specify that it is a natural disaster, followed by another d to further specify that it is a drought, followed by the minimum number of plants in the plant's adjacent lands for a plant to die following this command.

Adjacent lands are the lands that are within 1 column/row away from a particular land. For example, surrounding lands of (1, 1) are (0, 0), (0, 1), (0, 2), (1, 0), (1, 2), (2, 0), (2, 1), and (2, 2).

#### Invalid Inputs and Clarifications

* Nothing happens to the state of water in a land in a disaster

***STAGE 4.4 OUTPUT***

**./cse\_valley**

...

...Some earlier commands were used and not shown here...

...

Enter command: **l**

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

|a |a | |b |b |b | | |

| f>| | | | | | | |

| | | | | | | | |

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

|a |a | |b |b |b | | |

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

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

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

| | | | | | | | |

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

|d |d |d |d | | | | |

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

|d |d |d |d | | | | |

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

|d | |d |d | | | | |

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

|d |d |d |d | | |c | |

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

Enter command: **d d 5**

Enter command: **l**

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

|a |a | |b | |b | | |

| f>| | | | | | | |

| | | | | | | | |

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

|a |a | | | | | | |

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

| | | |b | |b | | |

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|d | | |d | | | | |

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|d | | | | | | | |

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

|d | | | | | | | |

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|d |d |d |d | | |c | |

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

Enter command:

### ***STAGE 4.2: Natural Disasters - Wind Storms***

Unlike in a drought, in order for any plant to survive in a wind storm, it needs to now be surrounded by a certain number of plants so that it can be shielded in a cluster to survive the wind. Hence, if there are too few plants surrounding a plant, then that particular plant will die after a wind storm. The Wind Storm command is specified by the character d to specify that it is a natural disaster, followed by w to specify that it is a wind storm, followed by the minimum number of plants in the plant's adjacent lands for a plant to survive following this command.

**STAGE 4.2 OUTPUTS**

**./cse\_valley**

...

...Some earlier commands were used and not shown here...

...

Enter command: **l**

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

|a |a | |b |b |b | | |

| f>| | | | | | | |

| | | | | | | | |

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

|a |a | |b |b |b | | |

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

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

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

| | | | | | | | |

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

|d |d |d |d | | | | |

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

|d |d |d |d | | | | |

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

|d | |d |d | | | | |

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

|d |d |d |d | | |c | |

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

Enter command: **d w 5**

Enter command: **l**

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

| | | | |b | | | |

| f>| | | | | | | |

| | | | | | | | |

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

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

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

| | | | |b | | | |

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

| | | | | | | | |

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

| |d |d | | | | | |

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

| |d |d |d | | | | |

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

| | |d |d | | | | |

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

| | | | | | | | |

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Enter command: