

# Test Case

<b>ID/Title:</b>	Ant Lions
<b>Team:</b>	INFT2100-702, PROG2100-702: Ben Allen 1111111, Isaac Benoit 2222222, Jamie Curnew 3333333, Will Matheson 4444444
<b>Type:</b>	White Box
<b>For System:</b>	Ant Lions
<b>Use Case:</b>	Run Program
<b>Prerequisites:</b>	Console executable running and in touch with the display.

## Program Elements Listing:

Element #	Program Element Function/Purpose	Program element type
1	Populate Grid	Function (with For Loops)
2	Execute game logic	Loop, Functions
3	Display results	Function
4	Continue executing “time steps”	Timer

## Program Element Tests:

Element #	Scenario	Expected Result	Actual Result
1 Populate Grid	100 ants and 5 antlions (hereafter ‘lions’) are distributed on a 20x20 grid	100 ants and 5 antlions randomly distributed (should show clustering)	
2 Game Logic	Checking neighbours of cells on the outside of the grid (x: 0 or 19, y: 0 or 19)	Only valid neighbours are checked; “index out of range” exception not thrown	

	for moving or eating purposes		
	Lions move (and eat)	<p>If an ant is in the surrounding 8 squares, the lion moves to that square and “eats” the ant (it disappears). If no ants are available, the lion tries to move randomly N, E, S, or W. If movement in that direction is impossible (space off the edge or occupied by a lion), it does nothing. The lions should eat/move only once per time step.</p>	
	Ants move	<p>The ant tries to move randomly N, E, S, or W. If movement in that direction is impossible (space off the edge or occupied), it does nothing. The ants should move only once per time step.</p>	
	Lions breed	<p>Lions that have survived for eight time steps may breed into an adjacent random empty space. If no empty space is available, nothing happens, but lion may breed at the next available opportunity.</p>	
	Ants breed	<p>Ants that have survived for three time steps may breed into an adjacent random empty space. If no empty space is available, nothing happens, and the ant must survive three more turns before having another opportunity.</p>	

	Lions starve	If a lion has not eaten an ant within three time steps, at the end of the third time step it will die (and disappear from the grid).	
	Maintain state	Every five seconds, a new time step is executed that builds on the results of the previous time step.	
<b>3</b> <b>Display Results</b>	Display results of the game	Empty cells are blank; cells with ants are indicated with a green O, lions with a red X.	
<b>4</b> <b>Time Steps</b>	New time steps	Every 5 seconds, a new time step is executed.	
	User enters Ctrl+C	No exceptions thrown when running from console	
	User enters Ctrl+V	EOF character is detected and program gracefully exits without infinite looping	
<b>Notes:</b> 1. <i>(forthcoming)</i> 2. ...			

**Project Closure Report Version Control**

Version	Date	Printed By	Change Description
0.1	Dec 1 2012	WM	Initial draft (of “Ant Lion” – “Game of Life” has been deemed a dead end)
1.0	Dec 11 2012	WM	Final submission (unchanged)