

Requirement Tests

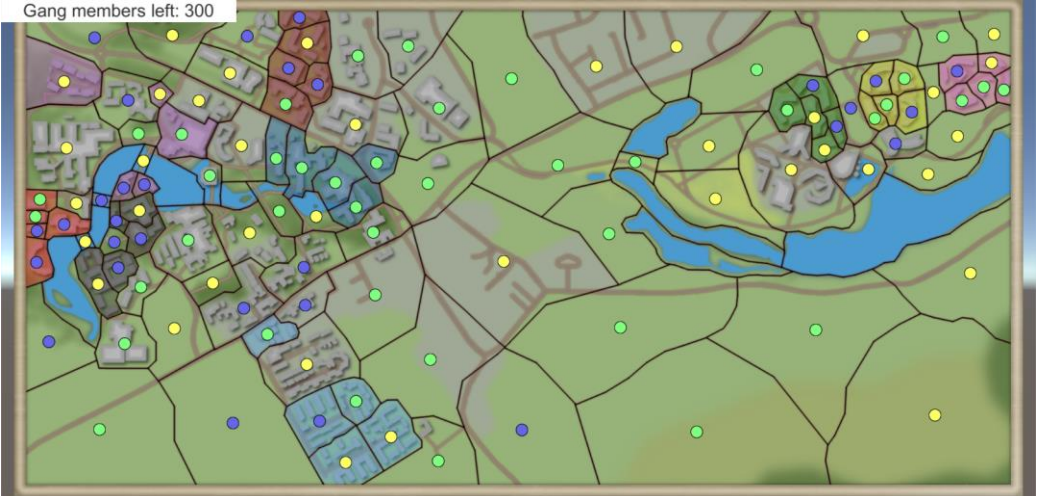
Requirement ID	Test Description/Success Criteria	Result	If fail: Additional Notes	Evidence ID	Related Unit Tests
REQ-1.1	The player is given 10 gang members to allocate for each territory they own. To pass the test, the number of members the player is given should be ten times the amount of territories that they own.	Pass		RE 1.1	U10 U23
REQ-1.2	At the start of their turn the player is able to allocate however many troops they want to go into whichever sector they select, as long as the amount they are allocating is less than or equal to the remaining troops they have. This is done until the player runs out of troops at which point the turn progresses.	Pass		RE 1.2	U10 U23
REQ-1.3	Once player 1 allocates all units to their sectors, player 2 has to allocate units, followed by player 3. After that, player 1 can start attacking enemy sectors.	Pass		RE 1.3	U6 U10 U14
REQ-1.4	If player 1 owns all the sectors of a college but one, and chooses to attack the last sector of the college, if they win, they get special units.	Not Yet Implemented.			
REQ-2.1	When a territory is selected in the movement phase, the adjacent territories belonging to the player should be highlighted.	Pass		RE 2.1	U4 U15 U18
REQ-2.2	Should test whether the combat system takes into account the attack strength of the attacking sector and the defence strength of the defending sector, in order to calculate the outcome of the combat.	Unable to test without looking at the code.			
REQ-2.3	The Combat is decided by	Pass		RE 2.3	

	a Random Value multiplied by and value obtained by the Slider Game making the combat dependent on luck and Skill.				
REQ-3.1	During the combat stage, when a player has declared an attack the slider interface appears and the button must be pressed twice, the first time for the attacker's score and the second for the defender's, after which the result of the combat is calculated.	Pass		RE 3.1	
REQ-3.2	Once all of the players have allocated gang members, player 1 selects one of their own sectors, then clicks on an adjacent enemy sector to start the slider minigame. Within the minigame the Score value is observed in the inspector. The score value should be ≈ 1 when the marker is near the centre of the slider, and should be ≈ 0 when at the edge of the slider.	Pass		RE 3.2	U14 U19
REQ-4.1	When a sector is selected during the movement phase the surrounding available territories should light up.	Pass		RE 4.1	U15 U16
REQ-4.2	The user will allocate some gang members to one sector and then allocate other gang members from their total to another sector.	Pass		RE 4.2	U23
REQ-4.3	The user should be told which units they have not moved yet and also be able to end their turn without moving them.	Not Yet Implemented.			
REQ-5.1	The map in the game is representative of the University of York campus and surrounding buildings, and is also split up into	Pass		RE 5.1	U11 U12 U13

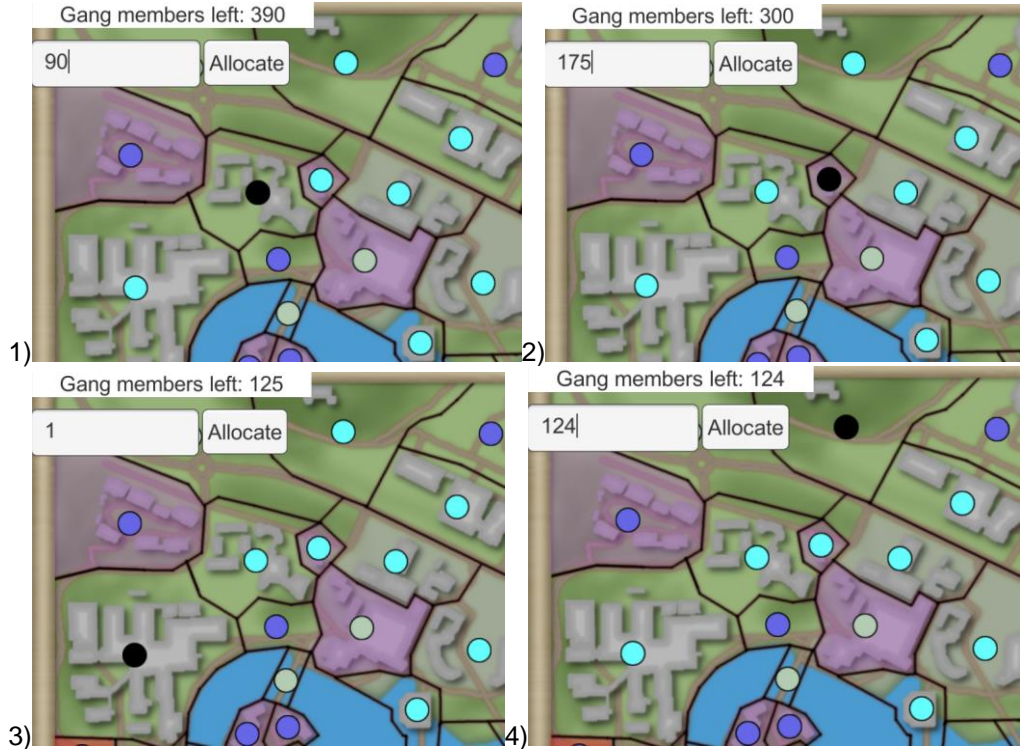
	sectors.				
REQ-5.2	Count the total number of sectors and the number of sectors containing university buildings. 110 total sectors so at least 83 sectors should contain university buildings (75+%).	Fail	Only 66 out of the 110 sectors contain university buildings, which is 60%.	RE 5.2	
REQ-6.1	Every element of the game should be controllable by a GUI. [<i>Partial test as not all features are implemented</i>]	Pass		See <i>GUI tests</i>	
REQ-6.2	The GUI must display a UoY map, along with a representation of the sectors, sector ownership and number of gang members in each sector.	Fail	All sections of the test pass except for displaying the number of gang members in each sector. This hasn't been implemented.	RE 6.2	U11 U12 U13
REQ-6.3	Pause the game mid play. Save the game whilst paused.	Not Yet Implemented			
REQ-7.1	The system shall contain at least three players, one of which is a neutral player that does not attack sectors.	Not Yet Implemented			
REQ-7.2	Players have one turn per round and take their turns in order. This order should be preserved between rounds.	Fail	Apart from in the troop allocation phase, there is currently no way in which the turn is automatically changed to the next player, although order is preserved such that the first player to allocate their troops will be the first to attack in the combat phase.	RE 7.2	U6 U7 U8

REQ-7.3	Unable to fully test. Find a sector owned by the current player, which has adjacent sectors that are also owned by the current player. Click the sector using the left-mouse button. This should cause the clicked sector to become black, and the player-owned adjacent sectors to become white. Then left-click one of the white sectors. This should move gang members from the first sector to the second.	Fail	Currently, the game does not automatically switch to the movement phase. If the GameState is manually changed to MOVEMENT, then running the test causes a message to be printed to the console saying "Move gang members from [name of 1st-clicked sector] to [name of 2nd-clicked sector]."	RE 7.3	U15 U18 U20 U22
REQ-7.4	Player 1 should be able to move its units through at most 2 of their other sectors to attack an opposition sector in one move. Example: it would be a valid move if units in sector A were to be used to attack sector D and there was a path from A to D through 2 player-owned sectors.	Not Yet Implemented			
REQ-7.5	There should be three types of player; human, passive computer and aggressive computer.	Not Yet Implemented			
REQ-7.6	Start the game and see if each player is assigned 5 sectors, the remaining sectors should be assigned to passive computer player. Not Testable.	Not Yet Implemented			
REQ-7.7	The system shall allow players the option to do nothing on their turn, passing their turn onto the next player.	Not Yet Implemented			
REQ-8.1	At the start of the game the VC should be spawned into a random sector.	Not Yet Implemented			
REQ-8.2	Locate the sector which contains the VC unit. Move enemy units into the sector. The VC minigame	Not Yet Implemented			

	should begin.				
REQ-8.3	If player A is attacking an opposition sector from a sector that has a VC, they have to be able to attack twice.	Not Yet Implemented			
NFRQ-1.1	The game should run at more than 30 fps.	Pass		NFRE 1.1	
NFRQ-1.2	A message to encourage players to take breaks should appear.	Not Yet Implemented			
NFRQ-1.3	There is no security features as they are not required for the game or the safety of the user.	Not Applicable			
ORQ-1.1	A run through of the game should last at least 20 minutes.	Not Testable - Requires multiple player to be implemented.			
ORQ-1.2	The user should be able to play two turns within 2 minutes.	Fail	Currently the game does progress at a fast enough speed as many actions don't have a limit		

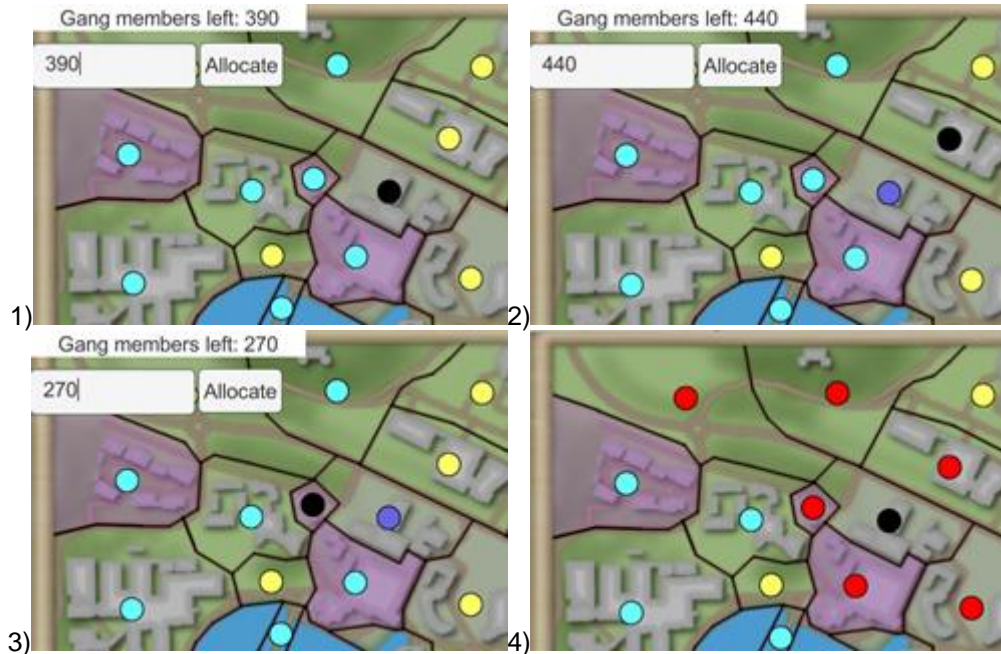
Evidence ID	Evidence Of Testing
RE 1.1	<p>Gang members left: 300</p>  <p>In the screenshot it is Blue's turn to allocate gang members. The screenshot shows 300 gang members available to allocate. Blue has 30 territories and for each territory they are given 10 members.</p>

RE 1.2



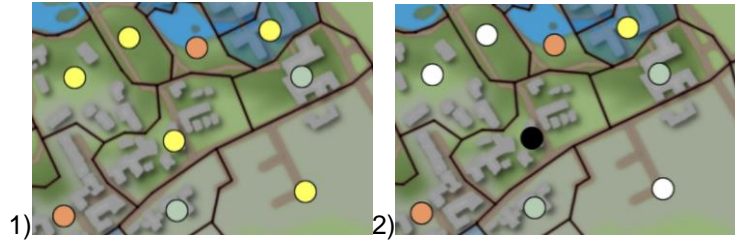
Screenshots showing examples of the player (cyan) allocating different amounts of troops to different sectors.

RE 1.3



Screenshots showing that the users must allocate all their new gang member units before player 1 (cyan) can make their first attack move. 1) shows player 1 (cyan) allocating their units, 2) shows player 2 (yellow) allocating their units, 3) shows player 3 (blue) allocating their units & 4) shows player 1 starting an attack once all players have allocated units.

RE 2.1



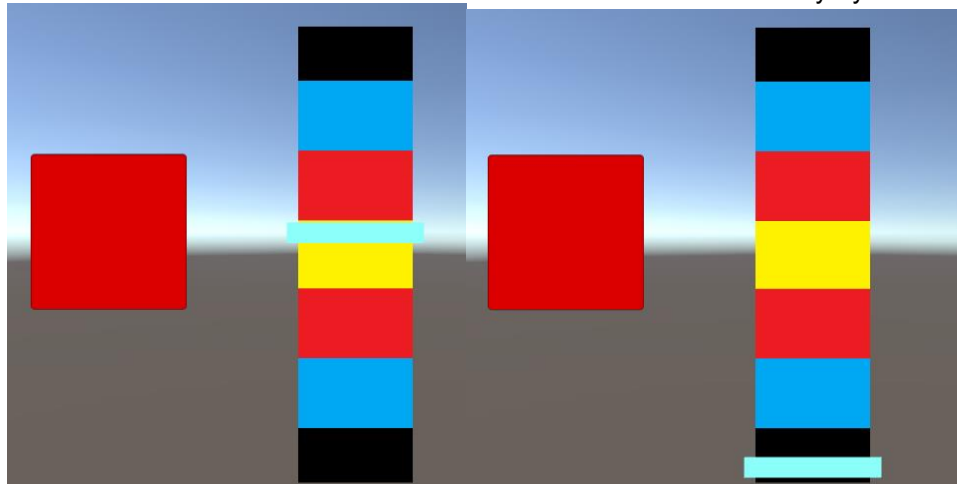
When the central yellow territory is selected the adjacent yellow territories are highlighted.

RE 2.3

These two Sectors Each Have 200 Gang members in each

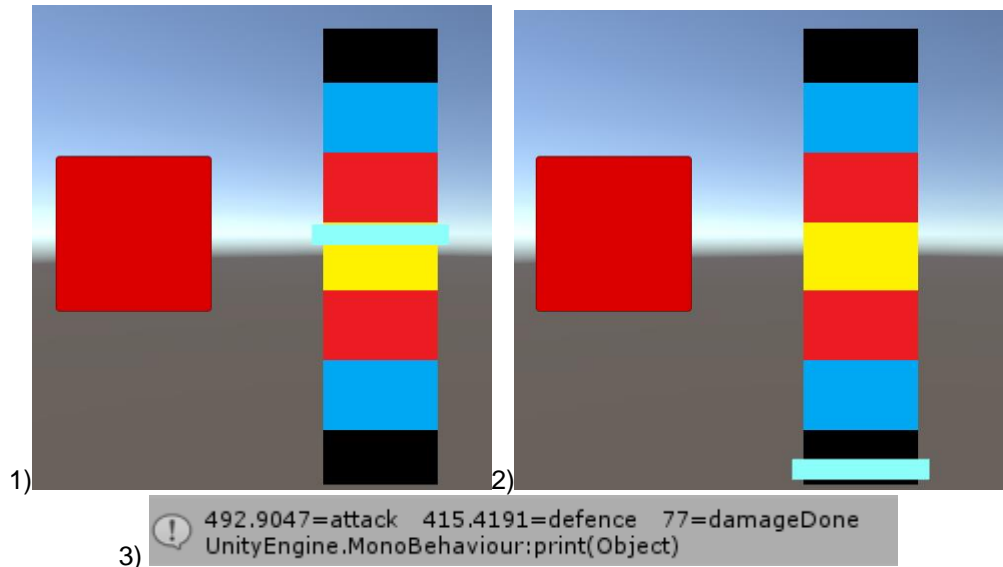


In attacker's Slider Game the user tries their best and the defender's they try to fail



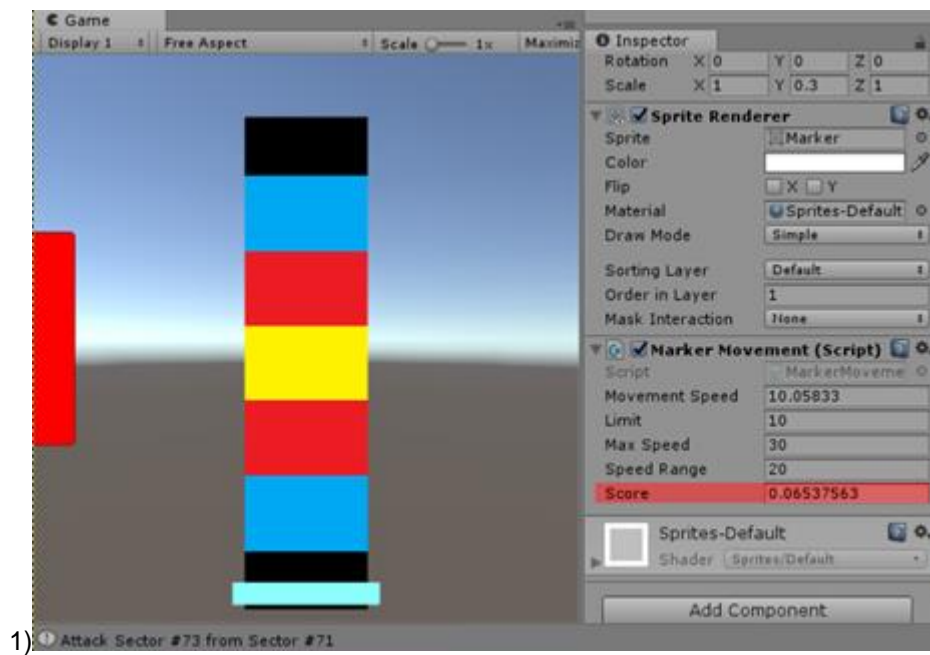
This was repeated 20 times and each time the attacker won showing that skill does affect the outcome

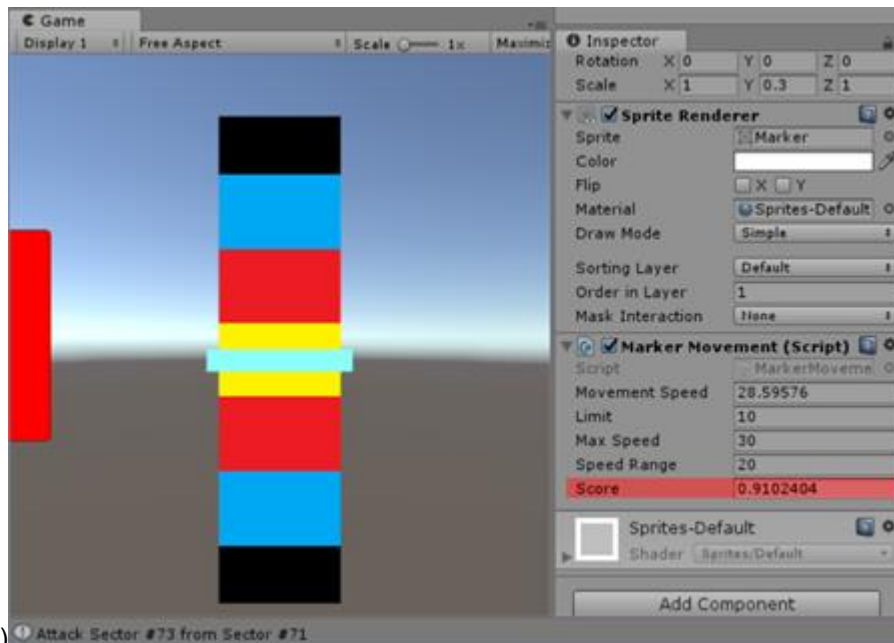
RE 3.1



Screenshots showing the attacker (1) and then the defender (2) playing the slider game. The result is that the attacker has a higher attack value despite having a lower number of troops (390 vs 410), as shown in the logs (3).

RE 3.2





Screenshots displaying the score/multiplier value (highlighted in red) changing as the marker moves along the slider. 1) show that the score value is equal to 0.06537563 when the marker near the edge of the slider, and 2) shows the score value equal to 0.9102404 when the marker is near the centre of the slider.

RE 4.1

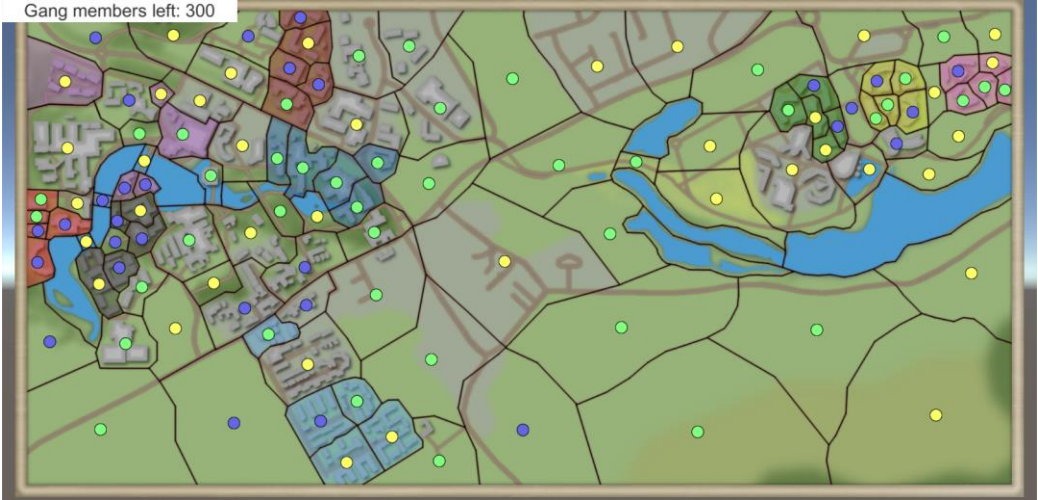



This Shows that when a sector is selected during the movement phase the available territories are highlighted

RE 4.2



The screenshots show 10 gang members being allocated to 1 sector and 10 gang

	members being allocated to another sector.
RE 5.1	<p>Gang members left: 300</p>  <p>Screenshot showing the map of the game. The map is based off of the university's geography and is split up into sectors.</p>
RE 5.2	 <p>Screenshot showing the count of sectors containing university building. The screenshot shows that 66 out of a total of 110 sectors contain university building. This equates to 60%.</p>

RE 6.2



This is a picture of the Map here you can see it represents the territories (black Lines) and ownership of territories (color of the Nodes). The Map does not show how many gang member are in each territory currently.

RE 7.1









This shows that Gang Members can be allocated to any of the three factions in this current game. This means that all three are being controlled by players rather than one under the control of the AI

RE 7.2



1)

2)

	<div data-bbox="379 208 879 568">  <p>3)</p> </div> <div data-bbox="900 221 1370 568">  <p>4)</p> </div> <p>Screenshots showing player turns. In this game the turn order is red (1) then green (2) then grey (3). After allocation red (4) is the first to attack. However no further turns have been implemented.</p>
RE 7.3	<div data-bbox="379 692 858 1178">  <p>1)</p> </div> <div data-bbox="879 692 1370 1178">  <p>2)</p> </div> <div data-bbox="488 1182 1260 1767">  <p>3)</p> </div> <div data-bbox="379 1771 1353 1827"> <p> Move gang members from Sector #48 to Sector #49</p> </div> <p>Screenshots showing each stage of the movement test. 1) shows the game before any of the sectors have been selected. 2) shows the sector highlighting when Sector #48 was clicked. 3) shows the game after Sector #49 (NW of #48), with the message "Move gang members from sector #48 to Sector #49" printed to the console.</p>

NFRE
1.1



Screenshot from the Unity editor showing the FPS during runtime. This screenshot shows that the FPS is 82.8, which is greater than 30.