

Requirement	Requirement ID	Requirement description
1.0	FR_MENU_KB_INPUT	The game shall accept keyboard input for menu navigation
1.1	FR_VIEWPORT_SCALING	The game shall render on a 13"-27" monitor
1.2	FR_MIN_FPS	The game shall render at a minimum of 30 FPS
1.3	FR_CROSS_PLATFORM_WIN	The game shall be playable on Windows
1.4	NFR_COLOURBLINDNESS	Game map and assets should be distinguishable by a colourblind person
2.0	FR_GAME_RESET	The game shall allow restarting play from an initial configuration
3.0	FR_SHIP_KB_INPUT	The game shall accept keyboard input for ship control
3.1	NFR_USER_INPUT_LAG	The game shall be responsive to user input
3.2	NFR_RENDER_SMOOTHNESS	The game world shall render smoothly during player movement
4.0	FR_COLLEGE_ENTITY_TRACKING	The game shall keep track of ships and buildings for a minimum of 3 distinct factions
4.1	NFR_WORLD_COLLISIONS	The game shall detect collisions between ships and world objects
5.0	UR_LEARNING_CURVE	The user shall play the game without training
6.0	UR_GAME_DURATION	The user shall be able to complete the game within a ~5 minute timespan
7.0	UR_GAME_OBSERVABILITY	The game shall accomodate onlookers in the PCs surroundings
8.0	FR_FRIENDLY_AI	The game shall control the actions of friendly ships
8.1	FR_FRIENDLY_INTERACT	The game shall allow user interaction with friendly ships
9.0	FR_HOSTILE_AI	The game shall control the actions of enemy ships
9.1	NFR_AI_LAG	NPC actions' responsiveness shall approximate that of player actions
9.2	NFR_SHIP_COLLISIONS	The game shall detect collisions between different ships
10.0	FR_PLAYER_FIRE	The game shall enable the user to fire ship weapons
10.1	FR_PLAYER_AMMO	The game shall maintain the state of the user's ship armament and ammunition
11.0	FR_BULLET_TRAVEL	The game shall render the travel of a ship's fired munition
11.1	NFR_BULLET_COLLISIONS	The game shall detect collisions between game entities and fired munitions
12.0	UR_FRIENDLY_BUILDING_INTERACT	The user shall interact with friendly buildings
13.0	UR_HOSTILE_BUILDING_COMBAT	The user shall engage in combat with hostile buildings
14.0	UR_HOSTILE_COLLEGE_CAPTURE	The user shall capture other colleges via combat
15.0	FR_MONEY_TRACKING	The game shall keep track of a player's money
15.1	FR_MONEY_UPDATE	The game shall give money on success in quests and encounters
16.0	FR_QUEST_TRACKING	The game shall maintain the state of the user's progress through multiple objectives
16.1	FR_QUEST_OBJECTIVE	The game shall associate quest objectives with game entities
17.0	FR_BOSS_UNLOCK_TRACKING	The game shall monitor quest progression status prior to unlocking final objective

Test cases ID	Requirement	Description	Author	Input	Expected outcome	Actual outcome	Status	Comment
1.0.0	1.0	Navigate each button in the homepage	Logan	Keyboard Input	Corresponding instructions	Same as expected	Pass	
	1.1			Switch to full screen	Resolution and aspect ratio unchanged			
	1.2			Start Game	around 30fps			
1.3.0	1.3	Subjective screenshot test via colourblind accessibility evaluation app	Previous team	-	Pass evaluation	Same as expected	Pass	
2.0.0	2.0	Record some details about the current game and quit, restart a new game and check if the new game has difference from the previous game	Logan	Restart game	A game different from the previous one	Same as expected	Pass	
3.0.0	3.0	Press ↑↓←→ and see how the ship react, use screen recorder to record the game screen reaction in 60fps, use photoshop to open the video (note: photoshop could be used to open video files as well in order to edit the video frame by frame) and check the reaction of the ship frame by frame	Logan	Arrow Keys	Ship moved in expected direction, input lag <200ms	Ship moved in expected direction, the ship react to keyboard in 5 frames, which is 85ms, 85 < 200	Pass	
	3.1							
3.0.1	3.0	Use [Space] to test if bullets shot from player's ship are working properly, chase the bullet shot from player's boat to check requirement 11.0, observe the number of remaining ammo to check requirement 10.1	Logan	Press Space	Bullet shot, number of ammo -1, bullet destroy buildings	Same as expected	Pass	
	3.1							
	10.0							
	10.1							
	11.0							
	11.1							
3.2.0	3.2	Using a screen recording tool, record at 60fps the delay in the appearance of the tiles when the player's ship enters an area it has not yet ventured into, then open the video in photoshop to view it frame by frame.	Logan	-	Tiles and sprites displayed correctly, visual render lag <200ms	Tiles and sprites displayed correctly. The tiles appear with a delay of 0, which <200ms - as soon as the player's ship moves out of view, the new tiles are all displayed immediately.	Pass	
4.0.0	4.0	(White box testing)	Harry	(See JUnit docs)	(See JUnit docs)	(See JUnit docs)	Pass	There are 3 factions and the game keeps track of ships via arrays
4.1.0	4.1	Manoeuvring player's ship collide with the beach. After maximising the game screen, taking a screenshot, open file Assessment-2-Game-main\desktop\build\resources\main\Beach Tileset.png in photoshop as well as the screenshot, maximise the two images and open the pixel scale, compare the two images and speculate on the number of pixels between the ship's sprite and the beach's tiles	Logan	Arrow Keys	The ship is blocked by the beach, distance between graphics drawn assets <5px	When the boat hits the yellow beach horizontally, the number of pixels embedded into the beach is approximately 4 to 6, based on the bow of the boat, and when the boat hits the yellow beach vertically, the number of pixels embedded into the beach is 3.	Pass	
	5.0	Try to forget about the code we have written for a while, follow the game's instructions exactly to			Good instructions	Same as expected		Need to test again after difficulty selection is

5.0.0	6.0	While, follow the game's instructions exactly to complete the game and start timing the moment the game starts.	Logan	Keyboard Input	Complete game within 5min	Complete in 3:45	Pass	Need to test again after difficulty selection is fully implemented.
7.0.0	7.0	Standing 2m away from the laptop running the game, see if the tester (me) could observe the game state 2m from the laptop screen	Previous team	-	Able to observe	Same as expeted	Pass	
8.0.0	8.0	Proactively approach ships identified as friendly and try to bump them, move away from them, and fire bullets at them to see how they react	Logan	Keyboard Input	Follow the player's ship but do not attack the player, AI response time <200ms	Same as expeted	Pass	Need to test again after college building attack is fully implemented.
	8.1				Attack enemy ships/buildings	No reactions to enemy	Fail	Not implemented yet
9.0.0	9.0	Proactively approach ships identified as hostile and try to bump them, move away from them, and fire bullets at them to see how they react	Logan	Keyboard Input	Follow the player's ship and attack the player and his/her allies, AI response time <200ms	None of the collages' ships have attack behavior	Fail	Not implemented yet, cannot identify friend and enemy
	9.1				Attack player/ player's allies' ships/buildings			
	9.2				Collision would cause health			
12.0.0	12.0	Try to use player's ship to approach the buildings identified as friendly and observe the reaction of the buildings	Logan	Arrow Keys	Nothing happens	Same as expeted	Pass	Need to test again after college building attack is fully implemented.
13.0.0	13.0	Try to use player's ship to approach the buildings identified as enemy and observe the reaction of the buildings	Logan	Arrow Keys	Buildings on the island fire tracking bullets at the player, cause damage to the player	Nothing happens	Fail	Not implemented yet
14.0.0	14.0	After completing the task of killing the assigned collage according to the "Kill Requests" assigned to the player, observe the difference in the reaction of the ships of the collage they belong to that have already been totally killed	Logan	Arrow Keys	The remaining ships of the destroyed enemy collage become allies of your own	Cannot identify friend and enemy as enemies are not able to attack yet	Fail	Not implemented yet
15.0.0	15.0	Check that the player's remaining money is as expected by completing tasks and purchasing items	Logan	Purchasing behavior, complete quests	Matching values for increase and decrease of money	Same as expeted	Pass	
	15.1							
16.0.0	16.0	(White box testing)	Logan	(See JUnit docs)	(See JUnit docs)	(See JUnit docs)	Pass	
16.1.0	16.1	Test to see if the quest is marked complete when the player has destroyed all the buildings in the target collage	Logan	Complete destroy collage quests	Prompt for game win or update a new quest	Same as expeted	Pass	
16.1.1	16.1	Test whether it will be judged as quest completed when the player's ship touches the chest box	Logan	Player's ship collide with edge of the chest sprite	Get award, prompt for game win or update a new quest	The player is regarded as have touched the chest before his ship has touched it	Fail	Need to be fixed, the chest's collision determination area is too large
17.0.0	17.0	(White box testing)	Logan	(See JUnit docs)	(See JUnit docs)	(See JUnit docs)	Pass	

[illegible]