Team iPatch

Assessment 4: Requirements

Christian Pardillo Laursen, Filip Makosza, Joseph Leigh, Mingxuan Weng & Oliver Relph

Final requirements

User requirement	System requirements	Fit criteria	Risks / assumptions / alternatives
1. The player must control a ship with their keyboard	1.a The player shall be able to change the spatial coordinates of the ship through input from the keyboard 1.b The ship has a numerical health parameter 1.c When the ship takes damage from any source the player's health is reduced	The player is able to command the ship to move forward. When the ship is hit by an enemy, the ship's health is reduced	Risk - the player is unable to figure out the controls Mitigation - show the controls on screen at the start of the game Assumption - the player has access to a keyboard
2. The game must allow for navigation and combat to happen	2.a The player can fire their cannons and cause damage to enemy ships or colleges	When the player gets close to an enemy, the mode changes	Alternative - only have one mode and combat is always enabled.
3. The UI must display health, gold and points	3.a There are elements on the screen that display health, gold and points values in real time 3.b These do not obscure gameplay by being placed close to an edge or a corner	Health, gold and points are shown on the screen in an unobtrusive spot	Alternative - hide the gold and points from the UI and only show them when paused
4. The game perspective must be top-down 2D	4.a The camera is positioned to view the game from the top down. 4.b The camera is far enough away to allow for awareness of the surroundings while being close enough to not hinder gameplay	The player sees the ship from the top and can confidently maneuver it while being aware of incoming enemies	Risk - the player is unfamiliar with the perspective
5. The game must have a pause function	5.a When the player presses the escape key the game mode changes to paused 5.b When paused, there are be no updates to the game state. 5.c When paused, a pause menu appears and allow the user to tweak options or quit the game	The player has a way of making the pause menu appear and thus pause the game until play is resumed	Assumption - the pause function is obvious to the player
6. There is a points system that indicates general performance	6.a Points added via combat and overcoming hazards. 6.b The amount of points received scales with how difficult the enemies are 6.c Points are added at the end of the game depending on how quickly the game is finished	When the player defeats an enemy, their points increase. As time passes, fewer points are granted at the end of the game	Assumption - player understands that points are good
7. The player is able to accumulate gold, and spend it to regain health and obtain upgrades	7.a Gold count is increased when an enemy is defeated or captured 7.b The cost of items is subtracted from current gold when purchasing and the item is added to the list of owned items 7.c The player cannot have a negative gold count and is therefore impeded from purchasing items that would lead to this state	When the player defeats an enemy, they obtain gold as a reward. If the player has enough gold, they can purchase a repair to regain health or an upgrade to e.g. improve their weapons	Assumption - the function of gold is obvious to the player
8. The player has	8.a The player has a health value that can be	When the player takes a	Assumption - the

health and can be damaged in combat. When the player's health reaches zero, they die	depleted by hazards or in combat 8.b When the health value reaches zero the gameplay ends and a game over screen is shown	hit their health is reduced. If this puts them below 0 health, they die and the game over screen shows	player understands the repercussions of death. Risk - the player is demoralised by dying and stops playing
9. The map must contain islands. The player can interact with some	9.a Islands cannot be passed through 9.b The player can interact with certain kinds of islands	When the player tries to pass through an island they instead collide with it. The player has a way to interact with islands	Assumption - there will be no structures that cannot be represented as islands.
10. The player can purchase upgrades and repairs from departments	10.a The player can purchase repairs which restore their health value 10.b The player can purchase upgrades which increase their maximum health and alter their attacks	When interacting with a department, the player is presented with a screen that allows them to purchase items	
11. There must be at least five colleges and three departments in the game	11.a Colleges can be either allied or hostile, this state can be altered by capturing them. Capturing is done through combat. 11.b Departments are split into branches, and each department sells one specific kind of upgrade 11.c Each level contains one college and at least one department branch	There are 5 levels the player can progress through, each containing their own college. In each level a branch from each department is present	
12. The player must be able to capture enemy colleges and obtain a reward from it	12.a The player can engage an enemy college, and will enter combat mode upon doing so 12.b When the college is defeated it adopts a friendly behaviour. 12.c Upon defeating a college the player will gain a crew member, which grants them increased shot count.	When the player brings a college's health to zero, a gate to the next level unlocks and they gain a reward in gold, as well as a crew member.	
13. Levels are finite and have defined edges. Going past them results in damage to the player	13.a If the player travels beyond the playable area, their ship begins to take sustained damage over time 13.b The player is warned that they are approaching the edge of the playable area so they have time to turn back	When the player sails outside of the playable area, their ship is destroyed before they reach the edge of the map	Alternative - add walls around the edges of levels to prevent the player from leaving
14. While roaming the sea, the player may encounter bad weather	14.a Patches of bad weather are randomly placed on the map 14.b When the player is inside bad weather, they will periodically take damage and gain points	The player can encounter bad weather distributed throughout the map and takes damage if they stay inside for too long	Risk - bad weather makes navigation frustrating. Mitigation - clearly indicate what direction the storm is pushing the player in
15. The game must have an objective. It should not be achievable at the start	15.a The objective corresponds to defeating the last college 15.b The final objective shall be defeating an enemy with the highest health count in the game.	The player wins the game when they complete the objective	

	15.c Enemy difficulty scales with colleges defeated.		
16. The player can encounter enemy ships and can engage in combat with them	16.a There are several enemy classes which are distinguishable and have different behaviours 16.b When the player is close to an enemy, the enemy will engage and the mode will switch to combat 16.c The gold count shall increase by a variable amount upon defeating an enemy	When sailing around, the player can randomly encounter different kinds of enemies that will attempt to shoot at them	Risk - the amount of enemies is overwhelming Mitigation - a maximum amount of enemies on the screen at one time is established and enforced
17. There must be a minigame separate from the main game	17.a The UI shall change to indicate the player is in the minigame 17.b The player can earn loot from the minigame 17.c The minigame is accessible from departments	When the player interacts with departments, they can choose to play the minigame. If they succeed they receive gold.	Risk - player does not understand the minigame Mitigation - add an explanation and demonstration before letting the player have their first go
18. There are whirlpools distributed throughout the map	18.a The whirlpool can be identified as such by the player 18.b If the player enters the whirlpool they will start spinning and be transported to their spawn location	The player can encounter whirlpools on the map, which they are sucked into and teleported elsewhere when they get too close.	

Constraints

Constraint	Reason
C.1 The game must be playable on a typical home windows pc	The game will be used to show at open days, therefore we want it to run on the PCs the university will use
C.2 The game must on average last between 20-25 minutes from start to finish	As the game will be shown in open days, we'd like the players to complete it in one play session. In addition, since development time is limited, it allows us to focus on core mechanics rather than on extending game time
C.3 A 5 minute demo must show each gameplay mechanic in the game	For the game to be shown in open days, we want the player to feel like they understand the mechanics without having to play through the whole game

References

[1] Kolovos, Dimitris. 2018. "Introduction To Requirements Engineering". Lecture, University of York, 2018.

[2] IEEE Std. 830-1998, "IEEE Recommended Practice for Software Requirements Specifications, IEEE Computer Society," Software Engineering Standards Committee, 20 October 1998, No. SH94654.