Implementation

Group 29
Shard Software

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6a

Git Repository: https://github.com/uoy-jb2501/ENG1-Pirate-Game/

The game jar file can be located in the Release section of the GitHub repository. Alternatively, this is a direct link to the release: https://github.com/uoy-jb2501/ENG1-Pirate-Game/releases/tag/1.0.0

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Most of the requirements we elicited from our customer were met. However, there are a few that have been partially met or otherwise require more work. One requirement that has been only partially met is requirement UR5. Requirement UR5 states that *'The player should be able to complete an objective that is not immediately achievable.'*
The current objective in the game is to destroy every other college (i.e every college except the one the player started at). At present there is very little challenge to this requirement; the player simply needs to sail to each College and fire at it until it runs out of health. Since we haven't implemented ship combat yet (as it was not a required for this assessment) there is very little challenge in destroying the other colleges. This requirement will be better met once ship combat is implemented.

Another requirement not yet fully met is requirement UR11: *'The player should be able to identify the game without relying on colours'*. This is true for most parts of the game; colleges and entities are differentiated by their texture and the mute sound/expand-map button both feature different symbols as well as colours to differentiate their states. However, some parts of the game rely on colour. For example it might be difficult for a colourblind user to differentiate between which tiles are land and which are water, which could make playing the game difficult. If we had more time it would be best to implement a 'colourblind mode' to the game which would use a colour palette that is easier to distinguish for colourblind users.

Requirement SR2 could also be partially implemented, depending on how you interpret it. SR2 states: *'The system should have AI, complex enough to mimic a ship'.* We have implemented ship AI through the EntityAIShip class, but whether you could consider it 'complex' is a matter of opinion. At present the ships move towards and maintain a set distance from the player, but do little else outside that. Furthermore the ships don't use any kind of pathfinding and so sometimes will get stuck. If we had more time we would have liked to implement a pathfinding algorithm such as A* to improve the ships' AI.

One requirement where we encountered some issues is requirement SR7: *'The gameplay should be randomized each playthrough.'* This requirement has been fully implemented; the map is randomly generated on each playthrough, however one issue is that since colleges are also placed in random positions, they can sometimes be cut off from each other making finishing the game impossible. We have taken steps to make this eventuality unlikely; Colleges are positioned on a sand tile that is adjacent to water, however uncommonly the colleges may generate inside an in-land lake, making them completely inaccessible. For the purposes of demonstration we have hard-coded a set of seeds in the DebugUtil that are known to be possible to win, but this is obviously not ideal. If we had more time we would have liked to use the A* algorithm to ensure that there is a valid path between each College. This problem happens fairly infrequently but is nonetheless a very serious problem that needs to be addressed. Currently while the map is fully randomised, the set of playable randomised seeds is much smaller than we would like it to be.