WASHINGTON STATE UNIVERSITY
VANCOUVER

PROJECT 2: GROUP GAME
TITLE PENDING!!

CSE 447: Project 2

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1 Game Overview

1.1 Description

Title Pending is a multiplayer battle royale genre of ship sailing game that can be played with 2 to 8 players. Each player has a ship that they can customize and optimize how they see fit. It is a game reminiscent to Subspace and Windward.

1.2 Objective

This game is a PvPvE game, also known as Player vs Player vs Everything. The goal of the game is to be the last one standing by any means necessary so you can take the treasure on the center island. This includes, hiding out away from other players or seeking the other players out to sink their ship. But being the last man standing still doesn't mean victory, as you must also make it to the center island to take the prize of victory.

1.3 Visual

This game will be top down, Sprites will be 32 x 32 and the player will be able to view only a portion of the map where they are located, as their screen will be centered on their ship and its movements. Also on the players screen there will be an indicator of their hp and the wind direction. There will also be a picture of the captain of the ship that will change expressions based on the condition of the ship.

1.4 Interactions

Players will be able to interact with other players via collisions and attacks. The player will also be able to collide with islands preventing them to be able to sail through them. There will also be usable items the player can pick up by running over them with their ship. One of these items can change the wind direction which can influence the players speed based on their direction. Another item will summon a giant fish that can deal a large amount of damage, and move player(s) to a random location within the available sail arena. How this will work is a random player will be selected, and a large dark circle will appear below a players ship. If that ship doesn't move out of the way in time, then the effects will take place, giving the player a chance to dodge or use it to their advantage. The last interaction is a deadly fog that surrounds the map. The play field is surrounded by a thick fog at its boarder which will take health from a players ship until they're able to escape it. As the game goes on the fog will slowly move towards the center which will shrink the size of the games boundaries.

1.5 Why this is fun

This game takes elements from many other fun games such as Subspace, Windward, Fortnite, and Legend of Zelda: Wind Waker. Games are normally more fun when they have a set goal and competition or challenges. With this

game being a competitive online multiplayer game this game will be different every time due to the unpredictability of real players making the game more fun as a result. Games like League of Legends, Fortnite, DOTA, and even Playerunknowns Battleground implement this sort of game style that holds millions of monthly players because of the game formula not changing, but the multiplayer aspect adds a new flavor every round they play.

2   Architecture

We plan on using a dumb client and a server, the server will do all of the heavy lifting while the clients only issue commands and receive a view back from the server to display. The server and client will communicate over TCP/IP as we need to ensure that data is not lost.

2.1   Server

This is where the majority of our work will be put into as mentioned previously the server is going to do the majority of the heavy lifting. The server will have all our major classes and transmit back what the client needs to see. It will place the players at the start of the round, handle the incoming fog, check the players health, and check all entities on the map.

2.1.1   Lobby

As players will need to customize their ships we will need to place them in a lobby and wait for a ready signal from them. The server will start a new thread every time a client connects to it, if a lobby already exists they will be placed into it else a new lobby will be created. Once players are in the lobby they can then customize their ships, as this will tell the server what ships to spawn once the game has started. Once a lobby is created a three minute timer will start once this timer runs down or all players have readied up the match will commence.

2.1.2   Map

Starting off we plan on having a static map that the players traverse, this will be a tiled based map. Players will be spawned the same distance from the center as every other player however, the distance from the center will be based on the amount of players in the game e.g. if it's a two player game then players will spawn closer to the center than if it were an eight player game where they would spawn at the edges of the map. The map will be forcibly made smaller by a fog mechanic that will periodically encroach on the map.

2.1.3   Ship

This will be a customized object that players can build in the lobby. It will have weight, speed, damage and hp all based on the ship parts each player selects. We haven't fully fleshed out how the different stats will interact with each other yet but a simple example of how they might work will be that weight will affect your ships speed e.g. the heavier your ship is the slower your top speed will end up being.

2.1.4   Enemies

These will be an extension of the ship class itself. In addition to the base stats that a ship will have, these ships will have a detection radius if a player enters this radius they will use A* to try and line up shots on the player and eliminate them. Of course their difficulty with vary, as their job is to make it more difficult for players to reach the center of the map.

2.2   Client

We are planning on having a dumb client the only thing we want the client to do is issue commands to the server and render what the server tells it to render. The client should be fairly basic all it may need is a menu system to either start a new game or view player stats. The selection of a new game will give the option of connecting to other games or starting a new one. Additionally, some of the basic player stats that the client may store would include things like win loss ratio, hit percentage, favorite ship sections etc.
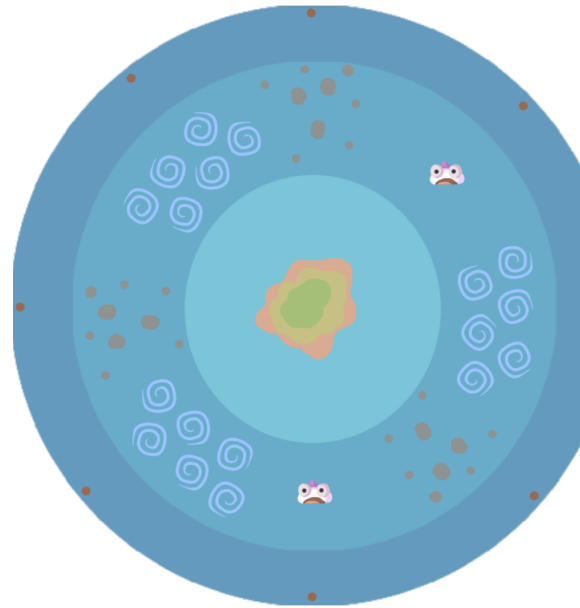
3   Development Strategy

This project is being built from the ground up, we have no intention of bringing in code from our previous projects. The first main goal we are aiming for is the networking for the game. There is going to be a server that can host 2 to 8 players. All team mates plan on working on this part together, as to be a learning experience and objective for us three. A lot of this will be done with pair programming and an agile development method. The next milestone will be the basics of the game, this will include map generation, player collision and controls, player interaction with enemies/other payers, and item usage. Again the team plans to tackle this milestone together, though a heavy majority of it will be on both on Matt and Matt. The reason for this is that Jessica will need time to work on the graphics of the game, and for us to apply those graphics and test them. The third milestone will include customized ships, captain, and crew. This milestone will also include more aesthetic things such as sound effects, music, and sprites. This milestone will be split a little differently, Jessica will be handling the sprite work while Matt and Matt will handle the rest.

4   High Bar Items

When we were discussing this game we came up with roughly five different high bar items that we think would be great additions to the game but not necessarily required for it.

4.1   Randomly Generated Maps

This was originally part of our initial idea for the game but as there is a multiplayer mechanic to this project we determined that this would move to our high bar items instead and we would do a static map instead. The idea behind this would be to have a randomly generated level so players would be unable to memorize a static map keeping the game more interesting for everyone. The challenges with this is that we would need to ensure that the minimum path distance from every players starting location to the center island would be the same and then generate the terrain around that.

4.2   Items

Items would fall into the vein of power-ups, these would be object players could find floating in the sea that could help or hurt them. A few simple examples of items would be:

1. Recovery Item - simple enough this would heal a percentage of the players hull to help them keep fighting

2. Sea Mines - Another simple item these could be randomly placed on the map and disguised as salvageable debris that would then cause damage to the player when picked up

3. Wind Manipulator - An item that will change the direction of the wind in the direction the player is moving when picked up.

4. Summon Kraken - An item that when picked up will summon a Kraken to attack a random enemy player. The Kraken will swallow the player ship and then spit them out in a random location and deal a percentage of their total health to their hull.

We haven't decided if the items will be placed randomly or if they will be statically placed. We don't want players to be able to memorize where items are even on the static map so it's likely we will use random events to allow players to get items.

4.3   Island Types

This is an idea we are toying with adding different kind of islands that don't just block a players path to the center but can also provide negative and positive buffs depending on the island. These islands would provide their buff in a large radius around and it would linger on the player for a duration after they leave the radius. This would make it to where players would want to either try to be near them or alter their course to avoid them.

4.4 Music

Music is something we want to add to the game but haven't fully determined what we want as far as music goes.

4.5 Art/Animation

As we have our own in-house artist we would like to use fully custom sprites and animations allowing us to have a fairly unique looking game.

4.6 Spectator Mode

We'd like to add a mode where once a player is defeated instead of just getting a game over screen they have the option to spectate the remainder of the match. They would be able to cycle through the remaining players a see what they are doing and eventually see the results of the match.

4.7 Portability

One thing the group pondered on is possibly making it playable on a mobile platform. Given that one of the Matt's have worked on apps before, he figured that if we work on the game mechanics using a form of mouse/point click mobility and actions, we could translate that to mobile play quite easily and give it a platform to work off of. Of course this is a far reached objective, but an objective no less.

5 Low Bar Checklist

Our goals for the low-bar items are the following:

☐ Map with a battle royale style mechanic - We plan on having a large map for players to explore with the objective being to get to the center. Periodically a killer fog will encroach on the map making the explorable/battle area smaller. If a player is caught inside the fog they will have a few seconds to escape before they are destroyed, this will force players to move to the center.

☐ 2-8 Players per map - Players will be spawned on the map in a random starting location. In the map design we will ensure that the minimum distance from the players starting location to the center is the same for all players, giving each person the same distance to travel (it's not our fault if they can't find the shortest path to the center).

☐ Last ship standing wins - If a player either defeats all of the other players or is the last ship standing and they get to the center of the map they will become the Pirate King, that is if they can reach the center.

☐ Wind Mechanic- As we are working with ships and sails we want to have a mechanic that periodically adjusts the direction of the wind. Players will be able to adjust their sails to match the wind giving them a range of speeds they can achieve.

☐ NPC enemies for a PvPvE mechanic - Throughout the map NPC pirate ships will be spawned once a player enters a specified radius of these ships they will move into attack them. Players will either need to fight them off or run away from them to stay alive. If all players are killed by the NPC ships or other means the game ends with no Pirate King.

☐ Player built ships - We want ships to have a major impact on the game so players will be able to change their ship to match their play-style. Ships will have a few main stats Weight, Health Points, Damage and Speed. These stats will be modified by the choices a player makes when creating their ships, they will have the option to modify the following aspects of their ship:

    Hull - Affects a players HP and weight

    Cannons - Affects a players damage and weight

    Crew - Provides a buff depending on the crew type a player chooses to employ

    Sails - Affects a players speed and HP stats