

Event: **Video Game Design**

Game: **Sea Defender**

Location: **Layton, Utah**

16 March 2022

Team Identification Number: **104AT**

STUDENT COPYRIGHT CHECKLIST

(for students to complete and advisors to verify)

- 1) Does your solution to the competitive event integrate any music? YES NO

If NO, go to question 2.

If YES, is the music copyrighted? YES NO

If YES, move to question 1A. If NO, move to question 1B.

1A) Have you asked for author permission to use the music in your solution and included that permission (letter/form) in your documentation? If YES, move to question 2. If NO, ask for permission (OR use royalty free/your own original music) and if permission is granted, include the permission in your documentation.

1B) Is the music royalty free, or did you create the music yourself? If YES, cite the royalty free music OR your original music properly in your documentation. *The music was generated by the team members.*

CHAPTER ADVISOR: Sign below if your student has integrated any music into his/her competitive event solution.

I, L. Rhodes (chapter advisor), have checked my student's solution and confirm that the use of music is done so with proper permission and is cited correctly in the student's documentation.

- 2) Does your solution to the competitive event integrate any graphics? YES NO

If NO, go to question 3.

If YES, is the graphic copyrighted, registered and/or trademarked? YES NO

If YES, move to question 2A. If NO, move to question 2B.

2A) Have you asked for author permission to use the graphic in your solution and included that permission (letter/form) in your documentation? If YES, move to question 3. If NO, ask for permission (OR use royalty free/your own original graphic) and if permission is granted, include the permission in your documentation.

2B) Is the graphic royalty free, or did you create your own graphic? If YES, cite the royalty free graphic OR your own original graphic properly in your documentation. *These graphics were all created under the members of the team.*

CHAPTER ADVISOR: Sign below if your student has integrated any graphics into his/her competitive event solution.

I, L. Rhodes (chapter advisor), have checked my student's solution and confirm that the use of graphics is done so with proper permission and is cited correctly in the student's documentation.

- 3) Does your solution to the competitive event use another's thoughts or research? YES NO

If NO, this is the end of the checklist.

If YES, have you properly cited other's thoughts or research in your documentation? If YES, this is the end of the checklist.

If NO, properly cite the thoughts/research of others in your documentation.

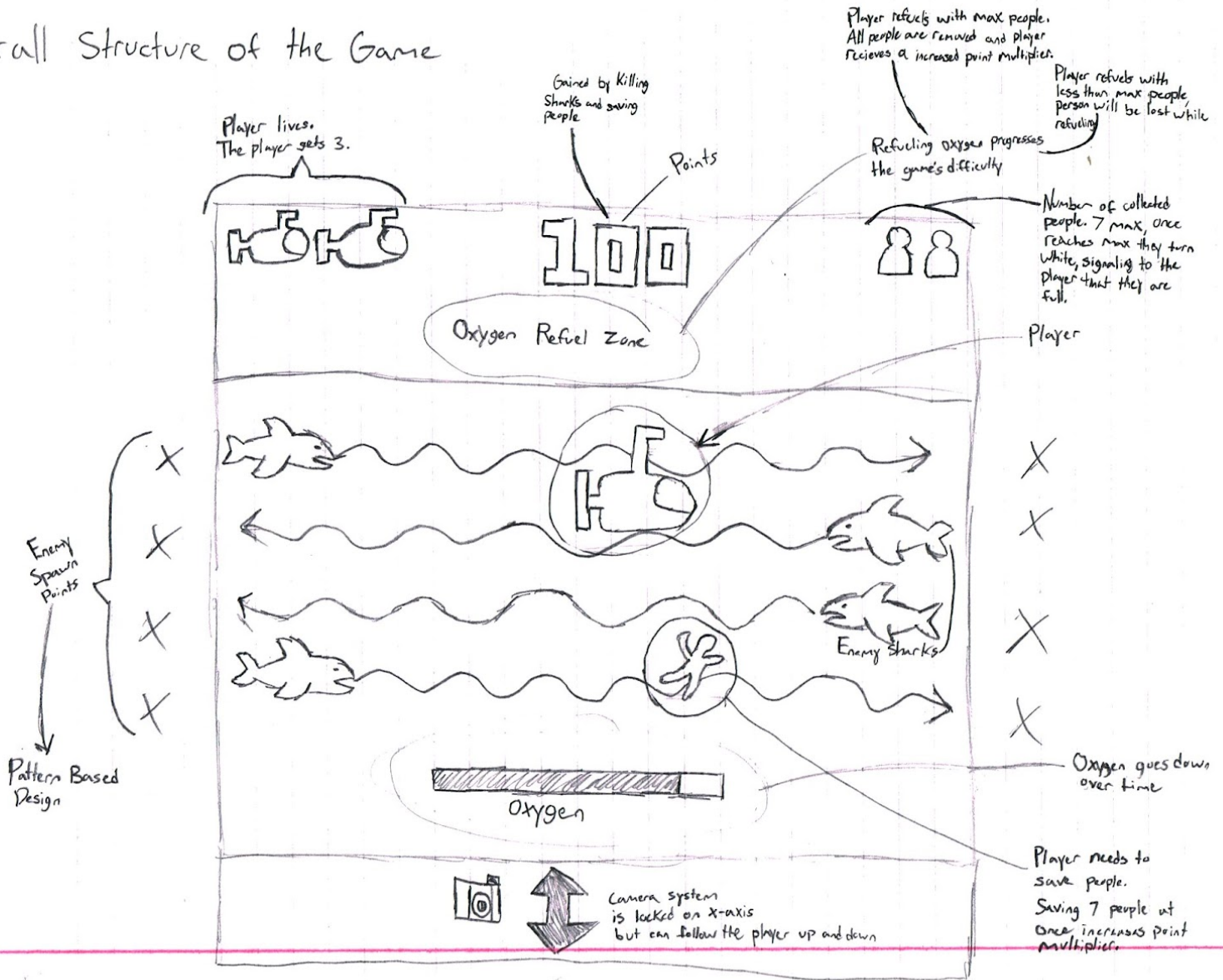
CHAPTER ADVISOR: Sign below if your student has integrated any thoughts/research of others into his/her competitive event solution.

I, L. Rhodes (chapter advisor), have checked my student's solution and confirm that the use of the thoughts/research of others is done so with proper permission and is cited correctly in the student's documentation.

Story Board & Game Structure

Game URL: <https://plug-world.com/seadefender/>

Overall Structure of the Game



Purpose and description:

Sea Defender is about saving people from sharks and like most arcade games racking up as many points as possible. Gotta compete to get those high scores. The player only has a limited amount of oxygen so they have to periodically refuel with air from the surface. The goal is to collect a full crew of people (7 people) before refueling oxygen at the surface. This is because points will become worth more everytime the player performs this action. Although if the player comes to the surface early without a full crew the player loses 1 crew member. Whenever the player refuels for oxygen the difficulty increases. The player soon discovers the best way to get the most points is to delay getting oxygen from the surface for as long as possible, and to collect ideally a full crew of 7 people and then refuel. That way the player only increases difficulty while proportionally gaining points at the same time. As the game naturally progresses the player will find a new enemy. A smaller submarine that moves slower than the sharks, but has the ability to periodically launch shots in the direction that they are moving. This makes it so the player has to be more careful about how they position themselves the further the game progresses. As difficulty increases both the player's speed and the enemy's speed increase. This allows the player to still be able to be fast enough to doge enemies, but the faster speed will make the game much more challenging

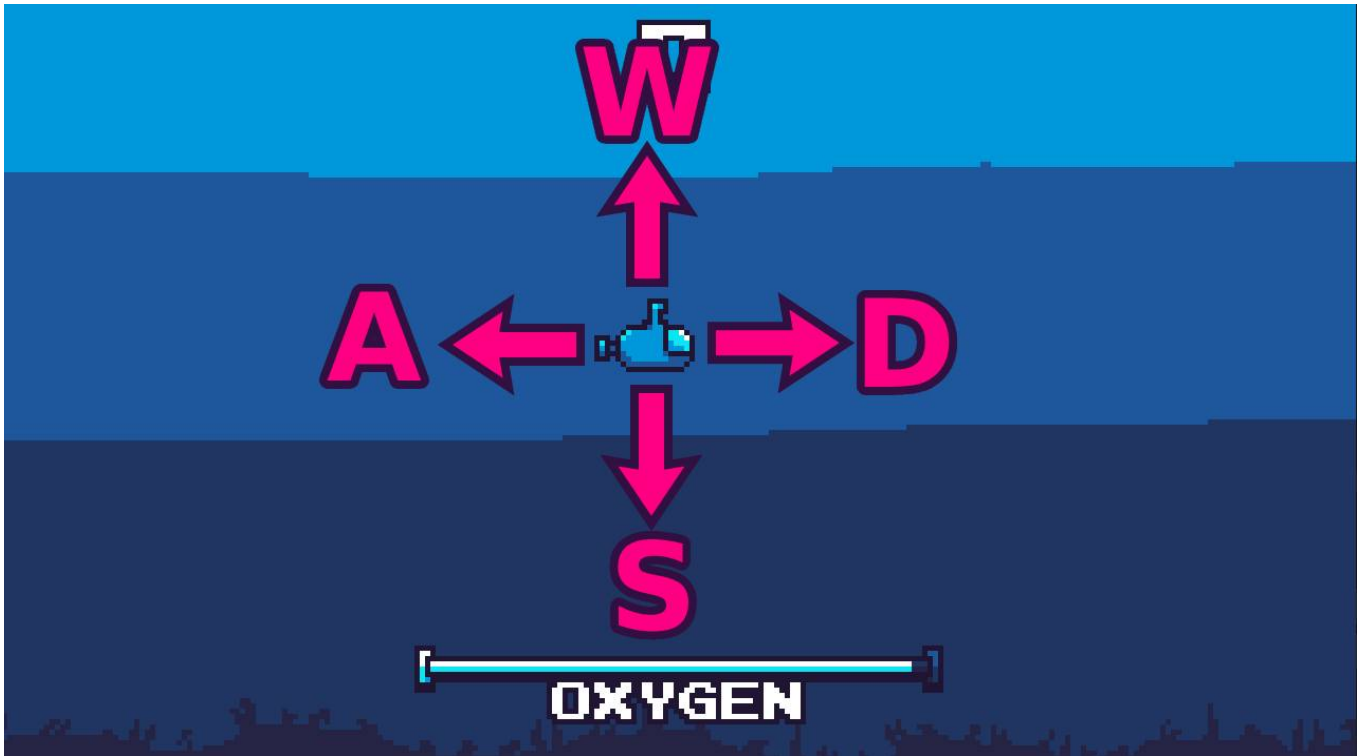
Target audience:

Casual gamers who like retro games



Controls:

- W or Up Arrow - Moves player up
- S or Down Arrow - Moves player down
- D or Right Arrow - Moves player right
- A or Left Arrow - Moves player left
- Space bar - Player Shoot



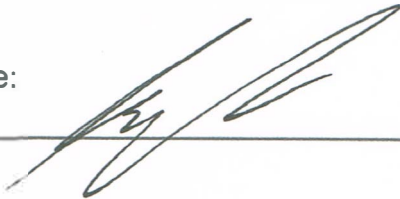
Technology Student Association Plan of Work Log

Date	Task	Time Involved	Team Member	Comments
1. 3/7/22	Laying out the user interface and designing the art style.	2 hours	P.A.	Limiting the color palette should give the art more of a retro style. The user interface has been designed to be as simple and intuitive as possible. That way it doesn't detract from the overall gameplay. Limiting the resolution to be pixel perfect simulates a lower resolution display better.
2. 3/7/22	Prototyping player's basic movement and shooting.	1 hour	P.A.	Just getting the movement to feel responsive and interesting to use. Added the ability for the player to maintain the same direction and move backwards while shooting. This creates an interesting gameplay dynamic where the player can run away from the sharks while still being able to shoot at them.
3. 3/8/22	Added people that the player needs to save.	30 minutes	P.A.	The people play an important role in progressing the game and the score. On one hand they grant you more points and they create a greater score multiplier. This inclines the player to gather and save as many people as possible to ensure an exponentially higher score.

Advisor Name: Lance Rhodes

Students Initials: P.A. L.N.

Advisor Signature: _____

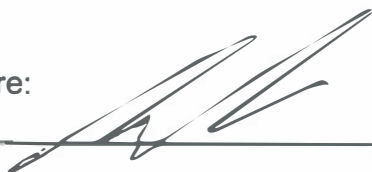


L. Rhodes

4. 3/8/22	Added the user interface when people are collected.	25 minutes	P.A.	The player can carry a maximum of 7 people. The user interface is updated dynamically reflecting the amount of people that you currently have. The player will know when they have all the people because the interface turns white when they are full.
5. 3/8/22	Added a simple base to the camera system	15 minutes	P.A.	The camera system only follows the player on the y axis. And will get clamped once it reaches the bottom of the screen. This gives the player a better sense of visibility and space.
6. 3/8/22	Created a simple enemy spawning system.	1 hour and 30 minutes	P.A.	The enemy spawning system is based on patterns. Only 4 rows of sharks can be spawned at once. The rows from each side of the screen are inverses of each other. This creates a smooth and satisfying system that ensures that the game is being fair to the player in the way it's randomly spawning enemies. It also helps to ensure that two sharks won't collide with each other which wouldn't break any functionality, it would just not look good.

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7. 3/8/22	Oxygen refueling system implemented.	1 hour	P.A.	The player's oxygen level decreases over time. The player is forced to routinely go to the surface to get oxygen. The downside of doing this is that the game's difficulty is tied to this mechanic. This makes it so that the player delays going back to the surface for as long as possible in order to stretch out the exponential difficulty curve as long as possible. This mechanic is also tied to the people. In order to make the people a priority to the player, if you refuel with 7 people it allows you to exponentially increase your score. This is the only way to get the highest scores in the game so it encourages players to take big risks to get the highest scores. But if you decide to refuel early you will be punished, not only will you lose one person, but the difficulty is also increased.
8. 3/8/22	Background elements added	30 minutes	P.A.	Just a bit of background scenery helps the player feel more immersed in the game and helps with the coordination between the player in the game space with the camera.
9. 3/8/22	Made Prototype of main menu	15 minutes	L.N.	The menu proto needs to be added to the game.

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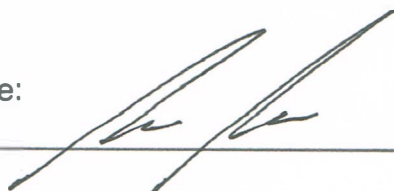
Advisor Signature:  L. Rhodes

10. 3/8/22	Made Prototype of Controls menu	8 minutes	L.N.	I worked on the controls but more controls might need to come.
11. 3/8/22	Made Prototype of Settings menu	10 minutes	L.N.	There might be more settings that come.
12. 3/8/22	Made Prototype of Credits menu	5 minutes	L.N.	The credits might be added to the end of the game.
13. 3/9/22	Added Menu	20 minutes	L.N.	I still need a bit of the menu done. I worked on the play button design.
16. 3/9/22	On screen points HUD	10 minutes	P.A.	When gaining points the amount of points that you gain is now displayed. This makes it easier for the player to be able to tell how many points they are making.
17. 3/9/22	Added more to Main Menu	30 minutes	L.N.	The Menu needs to be scripted. P.A. will need to do that later.
18. 3/9/22	Added Controls Menu design	20 minutes	L.N.	The Control Menu needs to be scripted. P.A. will need to do that later.
19. 3/9/22	Added player death	25 minutes	P.A.	The player now is able to die once touching a shark. The game automatically restarts for now, but I will add a game over screen in the future.

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20. 3/9/22	Screenshake Implemented	30 minutes	P.A.	Self explanatory, just gotta have it to feel the impact of the game.
21. 3/9/22	Game Over Screen Implemented	30 minutes	P.A.	The player dies, the game over screen appears, showing both the score that they got on the run and the player's high score. Currently the game over screen waits 2.5 seconds before dropping the player back to the game. I'm hoping to change that later so the player just has to press a button to progress.
22. 3/10/22	Added game over transition and a fix to people switching directions too early	25 minutes	P.A.	Overall improved user experience. Through play testing I found it frustrating when the people would change directions right after they get on screen which gives the player no chance of being able to save them. So now the people won't be able to change directions as soon as they appear on screen. The game over screen was given a better transition that way it isn't so sudden. Still could be improved.
23. 3/10/22	Added Red and Green shark png	20 minutes	L.N.	They still needed to be approved by you
24. 3/10/22	Play testing	5 minutes	L.N.	Playtester: Jimena Zamudio

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Advisor Signature:



L. Rhodes

25. 3/10/22	Better visibility when the player dies	25 minutes	P.A.	The player now destroys into a lot of pieces, and the game pauses for a second before going to the game over screen. This allows the player to see how they died better.
26. 3/10/22	Mini Sub Enemy Added	1 hour	P.A.	Just a new enemy, it moves straight left or right based on the side they spawn on. Unlike the sharks they don't bob up and down when going through the water. They are slower than the sharks, and do occasionally shoot in the direction they are moving. The bullets will kill the player if they come in contact with them.
27. 3/10/22	Oxygen Level now alerts when it's getting low	15 minutes	P.A.	Previously while playtesting the players would often be confused on how they died while playing the game. This is due to how they weren't paying attention to the oxygen level, and died before noticing it. Now it should be extremely apparent once the oxygen level is getting low. The time it takes between flashes once it's less than 25% happens exponentially. So the oxygen level will not start flashing like crazy.

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28. 3/10/22	Mini Sub Enemy Incorporated in Spawning System	15 minutes	P.A.	The game will now be able to spawn in mini submarine enemies dynamically based on how far you are in the difficulty.
29. 3/10/22	Sound System Functionality Complete	30 minutes	P.A.	The game now has functionality to play sounds. The only sounds that have been implemented thus far are shark death sounds, and player shoot sounds. Other sounds will be added later.
30. 3/10/22	Music & Sound Effects Complete	30 minutes	P.A.	Created music using an online random music generator "ecrett music". Royalty Free. Created sounds effects using "sfxia" randomly generated. Royalty Free.

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