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Report For Phase 4

The Game

Our game, as planned, is a 2-D maze game that is space-themed. We included the player as an astronaut, enemies as aliens, collectables as batteries and oxygen tanks, an interactable black hole, and the end tile as a rocket ship. Other aspects of our game included multiple menus/screens for instructions, controls, a leaderboard, pause, and winning or losing. We also implemented multiple maps with difficulties that fit a scale of 1-5.

In terms of how faithful we were to our original plan, we would say that we stayed in line for the majority of what we wanted and envisioned for the game. Minor changes did occur with the UML diagram being the biggest one. Our original UML diagram was too simple and upon adding attributes we were able to implement our game more easily. One example of a smaller change was balancing the scoring system that had originally been planned. This scoring system resulted in extremely large numbers and was hard to implement into the high score screen. Upon changing it to produce numbers that were smaller and predictable, we could then accurately design an appropriate leaderboard to fit scores in a visually pleasing way.

The most important lessons learned were related to testing, group/work communication, and the effectiveness of working on things sooner rather than later. Even despite occasionally having poor group communication, the fact that we worked on each phase in bits over multiple days allowed our group to meet our expectations regarding our game. If we were to improve on communication and work together, we would have most certainly been able to implement large changes that would have made our game better. For example, we would have been able to add music to our game or sound effects. We also could have implemented a proper searching algorithm for the enemy so that it wouldn’t get stuck in certain areas of the map. Through testing, we were able to identify and fix errors within our code. One notable fix was regarding the scoreboard edge case where the displayed score was able to be at or below 0. The other fix was with the collision checking where it would check for a collision on a grid that did not exist. Conclusively, our game has gone through multiple changes but overall is something that we as a team are proud of. Further details can be found in previous phase reports.

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Tutorial/Demo

We chose to provide a video (click here to watch video) for our tutorial/demo section. A brief description about the game can be read (recommended) while watching the video:

First, we see the home/main menu screen. Here, the user can select 4 options with their mouse. The user may start the game, view the game controls, view the instructions of the game, or view the leaderboard. Each of these is quickly shown in the video. If the user starts the game, they will be able to select a level difficulty that ranges from 1-5 and is either easy, normal, intermediate, hard or very hard. In the video, the user selected level 2 which was of normal difficulty.

Once in the game, the user can see their time in the top left corner and their score, oxygen percentage, and total batteries collected in the top right corner. Using keyboard controls W, A, S, and D, the user controls the astronaut in traversing the level's terrain. The user collects 2 out of the 3 batteries while being chased by a moving enemy. Upon entering the black hole, the astronaut/user is teleported to the bottom half of the map and can complete the level after collecting the oxygen tank and the last battery. Note that the oxygen tank is not required to finish the level but does help and increase the score. Additionally, the user shows what happens when you run into a spike (static enemy). The oxygen decreases by a flat amount but you will not lose the game (Unless your oxygen is below the flat amount).

Finally, the user is greeted with a victory screen that shows the base score which is increased by leftover oxygen percentage and decreased by total time in seconds. This places their final score on the leaderboard as their score of 1171 is higher than the current top 3 scores. Two screens (The pause and loss screen) are not shown in this video but are shown/were discussed in our presentation (linked here) on slides 4 and 5. The pause screen can only be accessed in-game through a press of the ESC key on the keyboard. The user can then unpause by pressing ESC again or restart the level, or exit to the main menu. The loss screen is the same as the win screen except with a different message at the top indicating a win or a loss.