README

STARSHIP – GOLD

# How to Use

General Controls:

1. Key ‘S’ and ‘F’ in the keyboard (Or) the left joystick in controller rotate the player ship.
2. Key ‘E’ in keyboard (Or) the left joystick in controller thrusts the player.
3. Key ‘Spacebar’ in keyboard (Or) Button A in Controller shoots bullets.
4. Key ‘N’ in keyboard (Or) start button in controller respawns the player ship.
5. Key ‘Y’ in keyboard (Or) Button Y in controller puts the player in rewind mode.
6. Key ‘Spacebar’ in keyboard (Or) start button in Controller starts the game.
7. Key ‘Escape’ exits to the attract screen if you are in game mode or quits the game if you are attract mode.

General Gameplay instructions:

* The Game starts in the attract screen with background music. Press start in controller or space bar to start the game. There are 5 levels. And in each level the number of enemies keep increasing. You win the game if you can successfully kill all enemies without losing 3 lives. You lose if are killed four times. Use the time meter at the top to use the time rewind economically. It resets every level and gives you a total of 10 seconds rewind every reset. Get used to the gameplay controls before using time rewind as you can’t use it before the initial 10 seconds of the game. Notice the music also rewinds when you are rewinding your gameplay.

Debug Controls:

1. Key ‘F1’ draws debug lines and shows the fps counter
2. Key ‘F8’ restarts the game.
3. Key ‘O’ puts the game in step mode.
4. Key ‘P’ pauses the game.
5. Key ‘T’ puts the game in slow mode.

(All the above-mentioned keys are in keyboard)

# Known Issues

None. I implemented the circular buffer to ensure the game does not consume too much memory. I let it idle for an hour and tried reversing it. It did not seem to increase the memory consumption in the task manager in any way. You can’t use time rewind for the initial 10 seconds of the game, but this was done intentionally so the player can get used to the controls and can’t rewind the game to the start over and over again.

# Deep Learning

When I started the assignment, Since I had more experience with C# and unity than C++, Where the concept of pointers doesn’t exist, I really wanted to implement a feature that would help me understand memory management and pointers in C++ more. Towards the end of the assignment, I did learn a lot about memory management and pointers. But that wasn’t half of what I had learnt. I was more of iterative programmer where I used to focus on basically three concepts:

1. Is the function taking the right parameters?
2. Is the function running without errors?
3. Is the function returning the correct output datatype?

I never paid much attention to the readability of the code like using const reference type parameters, why to name private variables with an m\_ etc. During the assignment, I understood why that was important. Because I had to revisit every part of my code and make sure it was part of the state machine. This was a mere 500 lines of code across 5-6 game entities. I imagined how hard it would be for a new programmer to revisit a bulky game engine code with 50000 lines and 100 cpps.

Also, during the assignment I was obsessed with making the feature work and I was pulling all-nighters when I really didn’t have to. This is a habit which I must control and understand productivity is more important than personal satisfaction. I could have done more by planning and keeping a proper schedule.

Finally, throwing away unused code which I changed breaks my heart. I am always thinking like ‘What if I need it?’ This came back to bite me when I was revisiting the code and found multiple unused functions and commented out line which I wasn’t using anymore. Though it’s a small thing I had to scroll an extra bit to get to the function I really wanted and it ended up wasting time. So, it’s a mentality I must change.