Week Three Report

Time Estimate

Predicted

1. LEDs: 15 Minutes
2. Shield: 1 Hours
3. Laser: 1 Hour
4. Additional Items (Menu, settings, difficulty): unpredicted

Actual

1. LEDs: 30 Minutes
2. Shield: 45 Minutes
3. Laser: 45 Minutes
4. Additional Items: 1.5 Hours

Test Plan

Week 1:

The first point at which we can perform more comprehensive testing is when the physics engine is completed. This will be the backbone of the game and run relatively often. Having a “cutting point” here would minimize bugs down the line.

Another point at which we can do comprehensive testing is once the player movement is implemented. This task involves a lot of peripherals and unforeseen behavior will be easier to find when I can interact with the game.

Week 2:

I have created unit tests for the physics engine. I have run into a problem where I need to implement stubbing of some OS structures that the functions use as the kernel isn’t started at the time I run my tests. Besides that the basic structure will be the same, I have 7 smaller tests to ensure the sub functionality is working and one integration test where I will run the engine through multiple ticks . I need to add a way for game overs to occur in order for one of the tests to be implemented and I also still need to finish the full integration test of the physics system, but I am leaving that until next week.

Week 3:

I finished up unit tests for the physics engine. I have decreased the amount of tests to five following the new requirements, and worked through last weeks problem with being stuck pending the mutex. The mutex error was solved by abstracting the pends up to a higher level and making the tested physics functions isolated from the RTOS. I will likely have more than five tests in the end as my initial reading of the requirements lead me to believe I needed five for the physics engine alone, while I meet the requirements, only testing one component of the system well likely lead to errors in the rest of the application.

Week 4:

Same spot as last week, all tests work. Only change is that I likely won't implement more than five tests as everything seems to be functioning in the game.

Weekly Summary

This week I finished all the main functionality of the game as well as added additional features. Having already set up the physics system to handle the shield, implementation was relatively straightforward. The laser system was also simple to implement. The LED system took longer to implement than initially assumed due to some confusion on the requirements. Additionally, some out of scope items were added, a menu screen for pregame and after a game over was implemented that keeps track of a highscore between games.

I have completed **100.0%** of my currently-scoped, estimated work (17.25 actually spent /17.25hr total estimate) in **75.4%** of the initially-estimated time. (13 for the items I have completed, of 17.25r total estimate). For the work that has been completed, I took **0.75x** (13 / 17.25) as much time as I estimated.

Scope

Completed this week:

- Shield (Estimate 1 hours, actual 0.75 hours)

  The shield task was fairly simple, just two timers controlling the active and recharge time.

- Laser Task (Estimate 1 Hours, actual 0.75 hours)

  The laser task was straightforward just finding the lowest HM and respawning it.

- LED's (Estimate: 15 min, actual: 30 min)

  The Led task took longer than expected due to some confusion on requirements.

- Extra Scope (1.5 Hours)

  Implemented some extra features to improve playability. The menu required a function to stop and start the periodic tasks and it's own task to handle the game state. For difficulty and options, turning some of the defines into variables allowed for their values to be changed.

In Scope (Not final order of completion)

- Physics engine (Estimate: 3 Hours)
- Player Movement (Estimate: 1.5 hours)
- HM System (Estimate: 2 Hours)
- Laser System (Estimate: 1 Hour)
- Shield System (Estimate: 1 Hour)
- LEDs (Estimate: 15 Minutes)
- LCD System & Design (Estimate: 5 Hours)
- Menu
- Difficulty settings
- Multiple HM's