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ECEN 3753 Real-Time Operating Systems

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Week 5 Report: Unit Testing Continued + Overall Progress

Week 4 Tasks & Time Estimates:

* Continue to work towards end goal in code: 20 hours
* Add separate tasks for tasks like CapSense reading: 5 hours

1. ­**Unit Testing**

This week’s work does not have any additional unit tests to implement.

1. **Statement of Project Current Standing**
   1. This week includes the addition of the laser blast function mated to the left button and the booster function mated to the right button.
   2. Both functions display what they should but need the following:
      1. Laser blast function needs a cool down period and a screen reset to ready up the next enemy after the current enemy finishes dematerializing.
      2. Boost function needs a cool down period as well as the press and hold window functionality.
      3. Boost function physics need to be tweaked to decrease the amount of boost, making the game harder.
   3. The reading of the CapSense hardware is now it’s own task in order to fine tune performance and smooth out functionality.
   4. More than 20% of this week’s work has been completed.
2. **In-Scope Work Items**
   1. ***COMPLETE*** Complete flowchart: 1.5 hrs
   2. ***COMPLETE*** Configure GitHub desktop for project folder: 0.5 hrs
   3. ***COMPLETE*** Risk Register: 1.5 hrs
   4. ***COMPLETE*** Reassess unit test plan: 3.5 hrs
   5. ***COMPLETE*** Complete redo of task diagram: 4 hrs
   6. ***COMPLETE*** Layout code for unit test implementation: 2 hrs
   7. ***COMPLETE*** Layout structure for physics functions: 2 hrs
   8. Configure inputs (code): 5 hrs
      1. ***COMPLETE*** Buttons with interrupts
         1. Physics data mutex.
      2. Slider on an OS Timer
         1. Laser blast semaphore.
   9. Create tasks (code): 46 hrs
      1. Physics: 35 hrs
         1. ***COMPLETE*** Make gravity for y direction.
         2. ***COMPLETE*** X direction physics.
         3. ***COMPLETE*** Configure boost from button input.
         4. ***COMPLETE*** Make physics modular for custom inputs.
         5. Configure timer updates.
         6. Physics data mutex.
         7. Laser blast semaphore.
         8. If speed is too slow, enemy goes through platform shield.
         9. Make canyon and platform size modular and easily configurable.
      2. Display (code): 10 hrs
         1. Make custom UI
            1. Remaining enemies & laser blasts, boost cool-down.
         2. Configure timer updates.
         3. ***COMPLETE*** Laser blast semaphore.
         4. Make cool animations
      3. Platform(code): 12 hrs
         1. ***COMPLETE*** Calculate force from slider input
         2. Calculate trajectory somehow to light up LED to signal force needed from platform.
         3. ***COMPLETE*** Determine if enemy made it past the platform shield
      4. LED Out (code): 4 hrs
         1. Calculate PWM from force percentages to control brightness’s.