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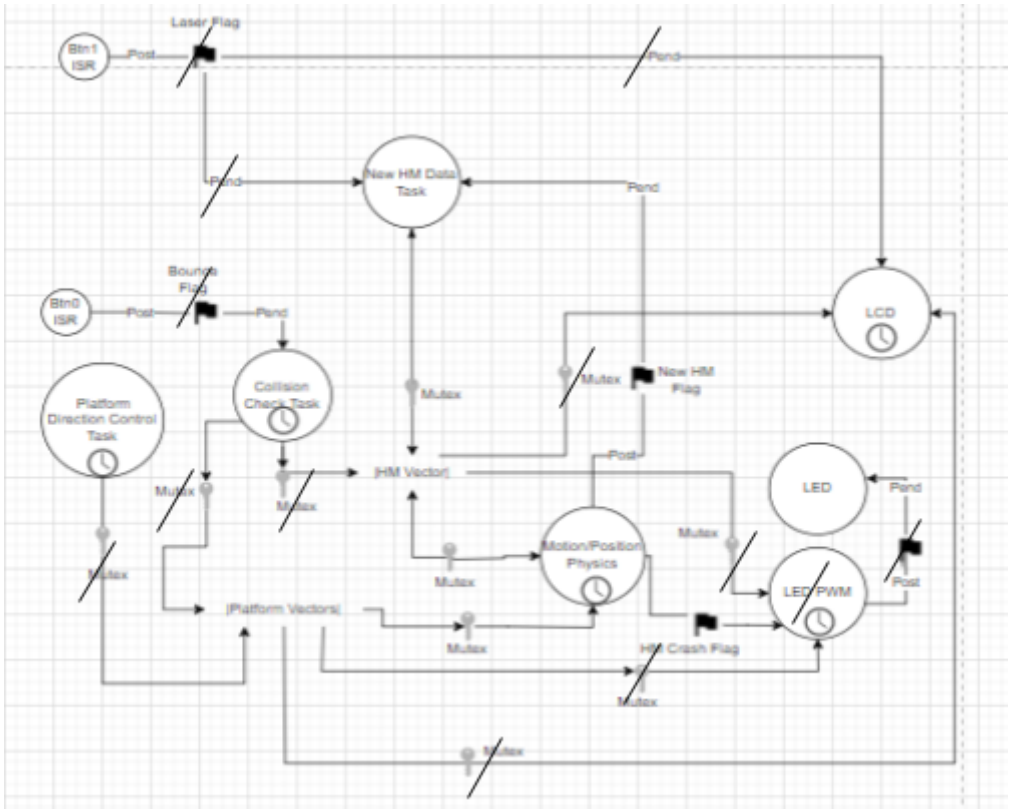
3/18/22
ECEN 3753

Project HarkonnenPong Week 2

Unit Testing Plan




Platform Motion

- Test if platform doesn't move when no force is applied and velocity is 0 (Not Run)
- Test if platform maintains nonzero velocity when no force is applied (Not Run)
- Test if platform increases velocity when force is applied in the same direction of the velocity (Not Run)
- Test if platform decreases velocity when force is applied in the opposite direction of the velocity (Not Run)
- Test if low and high force has difference on accelerations (Not Run)

HM Motion

- Test LED flag set when HM crashes (Not Run)
- Test maintained x velocity of HM (Not Run)
- Test constant downward acceleration of HM (Not Run)

HM Replacement

- Test if HM is replaced when HM exits range (Not Run)
- Test if HM is replaced for a number of times based on a variable (Not Run)

Functionality Deliverables and Usability Summary

This week I learned how to print basic shapes on the LCD and designed a prototype of an HM falling straight down which turns on and off the right LED at 1 Hz cycle. I also got started on modeling PWM changes from different slider positions.

Summary effort & estimate numbers

I have completed **7.9%** of my currently-scoped, estimated work time (9.5 actually spent /120hr total estimate) with **25.8%** of the initially-estimated work. (31 estimated for the items I have completed, of 120hr total estimate). For the work that has been completed, I took **0.31x** (9.5/31) as much time as I estimated.

No scope changes have been made this week, My latest scope is still my original scope (120 hrs).

In-scope work items

Completed before this week:

- Project Reading and Task Diagram First Draft creation (est 10 hrs) (actually 8 hrs)

Completed this week:

- Learn How to Manipulate LCD basic drawings (est 20 hrs) (actually 1 hr)

I attacked this first thinking this would cause the most problems if not solved. I created the estimate thinking I would have a lot of trial and error and experimentation to figure everything out given my struggles during Lab 7. I got help from a TA to get the setup functions properly implemented and it was smooth sailing from there with minor tinkering to figure out the mechanics. Afterwards, I realized that I vastly overestimated my struggle for this portion of the project.

- Lose Condition LED Control (est 1 hr) (actually 0.5 hr)

With the LCD screen working, I quickly added a filled, black circle to act as a prototype HM and had it fall downward at a constant velocity. After that I added a check for when the HM fell below a point, it turned on and off the right LED at a 1Hz cycle but not in a flag.

Not Completed yet:

- Create Tasks and Test on Segger (est 2 hrs)
- Task Diagram Revision for clarification and necessary optimization (est 3 hrs)
- HM Physics Unit (est 10 hrs)(0.5 hrs so far)
- Configure slider to control LED PWM (est 2 hrs)(2 hrs so far)
- Platform Motion (est 1 hr)
- Basic Platform/HM collision (est 2 hrs)
- Platform/HM collision with bounce (est 5 hrs)

- Motion/Position Physics Task (est 10hrs)
- Laser Implementing (est 1 hr)
- Platform Bounce (est 2 hrs)
- Task Unit Testing (est 10 hrs)
- Task Integration Testing (est 10 hrs)
- Qualification Check/Debugging (est 15 hrs)
- Slider Testing (est 6 hrs)
- Platform Interception Prediction LED implementation (est 5 hrs)
- Commenting and Code Cleanup (est 5 hrs)