Project Week 2

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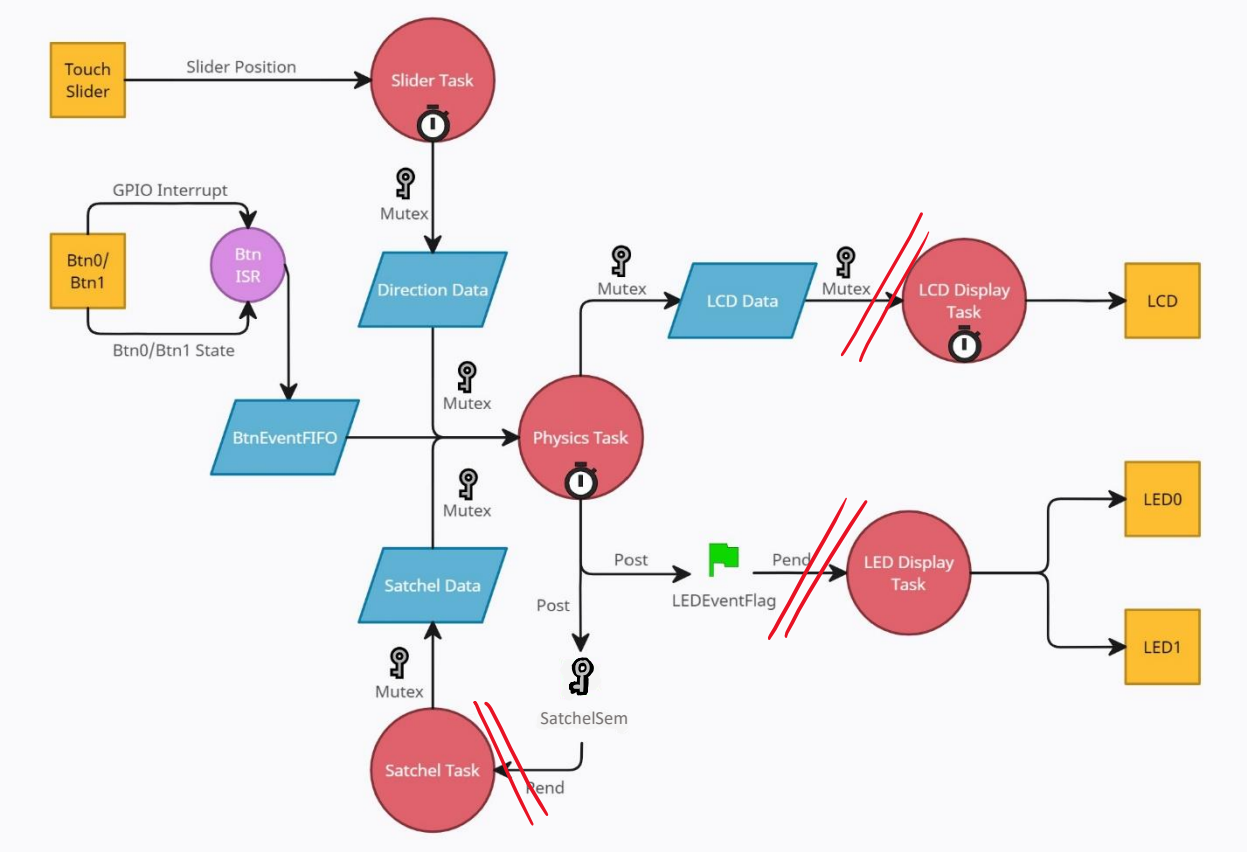
Unit Testing Plan:



I have identified 3 cutting points in my diagram. The first cutting point is between the Satchel Task and the Physics Task, as these are two tasks that I haven't already done in previous labs, so they will likely require more testing. The Physics Task is also responsible for waking up the Satchel Task when there are no more satchels in the air, so it would be good to test these tasks separately before integrating this loop.

Another good cutting point is between the Physics Task and the LCD Display Task. Before figuring out how to display all relevant information on the LCD it is important to test that

all the information sent from the Physics Task is accurate. This will also allow me to test the LCD Display Task before implementing the physics model.

Third, there will be a cut between the physics task and the LED Display Task. This way I can test the PWM and flashing of the LEDs by themselves. This last cut also allows me to test the physics test without any output tasks, so I can test if the data output from the physics test is correct before worrying about communication between the output tasks.

Summary:

This week I planned my unit tests. For the first cut between the satchel and physics tasks I will test that the satchel task adds random landing locations to the satchel data structure when called. I will also test that the physics task calls the satchel task whenever the previous satchel lands. For the next cut, I will test that the physics task appropriately updates the LCD Data data structure when given certain inputs. I will also use this cut to learn how to build the environment on the LCD screen without the physics task changing values. The next cut allows me to test that the physics tasks flag the correct LEDs as they are called. Then, finally I will test the LED display task for each combination of LED flags.

I also began my implementation of the project. This week's work was mostly just setting up all the framework and tasks done in earlier labs. This included the pushbutton ISRs, all the data structures, the slider task, and getting started on the rest of the tasks.

I have completed **25.7%** of my estimated work (**9** hr estimated for work completed out of 35 hr total estimate) in **22.2%** of the budgeted total project time. (**8** hrs spent out of 36 hr total estimate). For the work that has been completed, I took **0.88x** (8hr/9hr) as much time as I estimated.

List of Work Items:

Item	Status	Estimate	Actual (so far if inc.)
Task Diagram	Complete	1 hour	1 hour 30 min
Unit Testing	Incomplete	5 hours	1 hour 45 min
Risk Register	Incomplete	4 hours	30 min
Config Data Structs	Complete	2 hours	2 hours
Button Input & FIFO	Complete	1 hour 30 min	1 hour
Slider Input	Complete	1 hour 30 min	1 hour
Physics Model	Incomplete	6 hours	30 min
Satchel Throwing	Complete	3 hours	2 hours 30 min
LED Display	Incomplete	2 hours	15 min
LCD Display	Incomplete	6 hours	-
Summary/List Work	Incomplete	3 hours	1 hour
Total:	5/11	35 hours	12 hours

Completed this week:

- Config Data Structs

  This item took as long as I expected it to because I knew it also included implementing the mutexes and deciding which information was needed in each structure. I completed this item first because most of the tasks interact with these data structures, so it is important that this work is done before trying to complete any of the tasks.

- Button Input & FIFO

  This item didn’t take too long because I already had these functions from previous labs. The part that took the longest was deciding what I needed to alter to work with this new project.

- Slider Input

  This item was much like the button input in that I had most of it done from previous labs. Similarly, the bulk of the time spent on this came from making smaller tweaks to suit this project.

- Satchel Throwing

  This item took longer than the previous ones as I had no prior labs to pull from and I had to start on the physics model to complete it. I started with the “AlwaysOne” method, but I may try to add a more difficult method if I have time later. I will also test this task next week to confirm it is working properly.