Project Week 3

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Unit Tests:

1. Satchel Task resets satchel data struct and assigns random number for landing destination. Pass
2. Physics Task sends semaphore to Satchel Task when satchel location is equal to its landing destination. Pass
3. Physics Task properly updates the satchel location according to the physics model and assigns the new location in the LCD data struct. Fail
4. Physics Task properly updates the cannon projectile location according to the physics model and assigns the new location in the LCD data struct. Fail
5. Physics Task sends semaphore to LED Task when LED0 is pressed or when FoundationHitsRequired equals FoundationHits or castle is hit once. Fail
6. LCD Task correctly builds starting environment with all data structures at their default values. Fail
7. LCD Task correctly updates the position of projectiles when given position values. Fail
8. When LED_1_flag is set, LED Task blinks LED1. Pass
9. When LED_0_flag is set, LED Task blinks LED0. Pass
10. When both LED flags are set, both LEDs blink. Fail

Functional Tests:

1. Holding Button0 results in LED0 lighting as a PWM representing total force. Pass

2. Pressing Button1 while a satchel is near the sled and enough energy is available results in the satchel being destroyed. Fail
3. When FoundationHitsRequired equals FoundationHits or castle is hit once, LED1 blinks with a 50% duty cycle at 1Hz. Pass
4. When a satchel lands, another is immediately thrown from the castle after. Fail
5. Touching far left end of slider results in the platform moving quickly to the left. Fail
6. Touching middle left part of slider results in the platform moving slowly to the left. Fail
7. Touching far right end of slider results in the platform moving quickly to the right. Fail
8. Touching middle right part of slider results in the platform moving slowly to the right. Fail
9. Moving the platform against either side of the display (the cliff) results in bouncing off or being destroyed, depending on speed. Fail
10. When a satchel touches the platform, it is destroyed. Fail

Summary:

This week I mentally tested each of my unit and functional test. I had a 50% pass/fail ratio for the unit tests, as I have already completed some of the individual tasks. My pass/fail ratio for the functional tests is 20%, which is expected as the project is not functional yet. I also completed my physics task, which will be a huge help going forward.

I have completed **48.6%** of my estimated work (**17** hr estimated for work completed out of 35 hr total estimate) in **50%** of the budgeted total project time. (**17.5** hrs spent out of 36 hr total estimate). For the work that has been completed, I took **1.03x** (17.5hrs/17hrs) 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	2 hours 30 min
Risk Register	Incomplete	4 hours	45 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	Complete	6 hours	7 hours
Satchel Throwing	Complete	3 hours	2 hours 30 min
LED Display	Complete	2 hours	2 hours 30 min
LCD Display	Incomplete	6 hours	1 hour
Summary/List Work	Incomplete	3 hours	1 hour
Total:	7/11	35 hours	21 hours 45 minutes

Completed this week:

- LED Display

  The bulk of the time spent on this item was figuring out how to do the PWM for LED0 while relaying the shot energy back to the Physics task, which I did not anticipate in my original diagram.

- Physics Task

  This has been both my longest and hardest item yet, which I anticipated. Despite my high estimate I still managed to go over it by an hour. Getting started on this task was the hardest part, but once I started to understand it became a bit easier. I made an emphasis on getting the physics task over with so I would have an easier time working on the other aspects of the project.