**RTOS Final Project – Week 3**

**Development Time**

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| --- | --- | --- |
| **Task** | **Estimated Time** | **Actual Time** |
| Physics Task Implementation | 360min | 240min |
| Functional Test Plan | 60min | 40min |
| Project Status Update | 5min | 5min |
| Summary Effort & Estimate Numbers | 5min | 5min |
| List of In-Scope Work Items | 10min | 15min |
| Risk Register Update | 10min | 5min |
| **Total** | **7hr 30min** | **6hr 10min** |

**Unit Testing Plan**

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| --- | --- | --- | --- |
| **Test Number** | **Unit Under Test** | **Description** | **Status** |
| 1 | Fuel Control Task  (Btn 1 pressed) | * Verify proper fuel burn rate update upon button 1 press | Pass |
| 2 | Fuel Control Task  (Btn 0 pressed) | * Verify proper fuel burn rate update upon button 0 press | Pass |
| 3 | Fuel Control Task  (Multiple pressed) | * Verify proper fuel burn rate update after multiple button presses | Pass |
| 4 | Angle Task  (Far left position) | * Verify proper angle update upon far left position press for X amount of time | Pass |
| 5 | Angle Task  (Left position) | * Verify proper angle update upon left position press for X amount of time | Pass |
| 6 | Angle Task  (Right position) | * Verify proper angle update upon right position press for X amount of time | Pass |
| 7 | Angle Task  (Far right position) | * Verify proper angle update upon far right position press for X amount of time | Pass |
| 8 | Angle Task  (No Press) | * Verify that no update occurs when no position is pressed | Pass |
| 9 | LED Task  (LED0 & LED1 healthy) | * Verify LED0 duty cycle is equal to current thrust as a percentage of max thrust * Verify that LED1 duty cycle is equal to the current acceleration as a percentage of blackout acceleration | Pass |
| 10 | LED Task  (LED0 & LED1 blackout) | * Verify LED0 duty cycle is equal to current thrust as a percentage of max thrust * Verify that LED1 duty cycle is equal to 50% and has a frequency of 3Hz during blackout | Pass |
| 11 | LED Task  (LED0 & LED1 crashed) | * Verify LED0 duty cycle is equal to current thrust as a percentage of max thrust * Verify that LED1 duty cycle is equal to 50% and has a frequency of 1Hz after crashing | Pass |

**Functional Testing Plan**

|  |  |  |  |
| --- | --- | --- | --- |
| **Test Number** | **Function Under Test** | **Description** | **Status** |
| 1 | Btn0 Operation | * Verify proper change in velocity upon Btn0 press | Not Run |
| 2 | Btn1 Operation | * Verify proper change in velocity upon Btn1 press | Not Run |
| 3 | LED0 Operation | * Verify LED0 blinks at duty cycle equal to current thrust as a percentage of max thrust | Not Run |
| 4 | LED1 Operation #1 | * Verify LED1 blinks at duty cycle equal to current acceleration as a percentage of blackout acceleration in healthy flight conditions | Not Run |
| 5 | LED1 Operation #2 | * Verify that LED1 blinks at duty cycle equal to 50% and frequency of 3Hz during blackout | Not Run |
| 6 | LED1 Operation #3 | * Verify that LED1 blinks at duty cycle equal to 50% and frequency of 1Hz during blackout | Not Run |
| 7 | Capsense Operation | * Verify proper change in angle upon capsense press | Not Run |
| 8 | LCD Operation #1 | * Verify proper LCD display during a safe landing condition | Not Run |
| 9 | LCD Operation #2 | * Verify proper LCD display during a blackout condition | Not Run |
| 10 | LCD Operation #3 | * Verify proper LCD display during a crash condition | Not Run |

**Project Status**

Planned out ten functional tests to implement upon completion of coding the embedded software. Also completed implementation of about 50% of the physics task. Physics task progress made this week includes, defining the physics configuration data structure, creating necessary resource sharing methods, implementing periodic wake-up, and defining a structure for the current flight state necessary to update the LCD.

**Summary of Effort & Progress Estimates**

I have completed 17% of my currently-scoped, estimated work (5/28.5hr) in 80% of the initially-estimated time (6/7.5hr). My best guess of my say/do ratio is 94%, so to unbias my estimates after this class, I may want to multiply my estimates by 1.06 (100%/94%).

My Latest scope is 100% of my original scope (35hrs, vs. 35hrs).

**List of In-Scope Work Items**

* Completed this week
  + None (only partial completion of physics task and functional test development)
* Incomplete
  + Physics Task Implementation (6hr)
  + Graphics Task Implementation (6hr)
  + LED Task Implementation (5hr)
  + Unit Test Development (4hr)
  + Unit Testing (0.5hr)
  + Functional Test Development (5hr)
  + Functional Testing (2hr)
* Complete
  + Design Planning (2.5hr)
  + Angle Task Implementation (2hr)
  + Fuel Control Task Implementation (2hr)

**Updated Risk Register**

Graphical user interface, PowerPoint

Description automatically generated