**Unit Testing Plan**

| **Test** | **Description** | **Cutting Point** | **Status** |
| --- | --- | --- | --- |
| **Unit Test #1:** Angle Change | Test that the functions to increment and decrement angle setpoint modify variable successfully. | Angle task functions (after sem post) | Pass |
| **Unit Test #2:** Throttle Change | Test that the functions to increment and decrement throttle setpoint modify variable successfully. | Isolates throttle task functions (cuts out physics) | Pass |
| **Unit Test #3:** Rocket Translation | Test that vertices of the rocket polygon update to correct location after translation (coordinate movement). | Isolates moving rocket | Pass |
| **Unit Test #4:** Rocket Rotation | Test that vertices of the rocket polygon update to correct location after rotations. | Isolates rotation change of displayed rocket | Pass |
| **Unit Test #5:** LCD Display | Test that display is working and all include dependencies working for graphics. | LCD and inclusions | Pass |
| **Unit Test #6:** Config Input | Confirm that the configuration parameters are read and stored correctly. | Configuration input | Fail |
| **Unit Test #7:** PWM Frequency | Confirm that a timer is set up correctly for the given frequency to make a PWM. | PWM frequency | Fail |
| **Unit Test #8:** Physics to Rocket | Test that the physics task modifies the rocket struct as expected. | Isolates physics task and mutex to rocket | Fail |
| **Unit Test #9:** Physics Thrust | Assert that the physics task calculates thrust correctly. | Isolates thrust calculation | Fail |
| **Unit Test #10:** Physics Blackout | Confirm that blackout is sensed correctly for the given configuration. | Isolates blackout determination | Fail |

**Functional Testing Plan**

| **Test** | **Description** | **Status** |
| --- | --- | --- |
| **Functional Test #1:** Game Start | Confirm the game starts and LCD displays welcome screen. | Not Run |
| **Functional Test #2:** Button 0 | Confirm pressing Button 0 causes the rocket to rotate counter clockwise. | Not Run |
| **Functional Test #3:** Button 1 | Confirm pressing Button 1 causes the rocket to rotate clockwise. | Not Run |
| **Functional Test #4:** Slider Throttle | Test that the position on the slider changes the fuel burn rate (also consider position slider not pressed). | Not Run |
| **Functional Test #5:** LED0 | Test that LED0 shows current thrust as a % of the maximum via pulse width modulated lighting. | Not Run |
| **Functional Test #6:** LED 1 Normal | Test that LED1 shows current acceleration as a % of the maximum. | Not Run |
| **Functional Test #6:** Win | Confirm the game can be won (may take several tries). | Not Run |
| **Functional Test #7:** Loss | Confirm the game can be lost. | Not Run |
| **Functional Test #8:** Restart | Check that after a win or a loss the game can be played again. | Not Run |
| **Functional Test #9:** Blackout | Assert causing too much acceleration leads to blackout and LED1 blinks with 50% duty cycle. | Not Run |
| **Functional Test #10:** Configurable | Confirm that the game data is configurable. | Not Run |

**Summary**

Angle Change:

The angle setpoint is successfully updated. It is read, modified, and read again and change is seen as expected.

Throttle Change:

The throttle setpoint is successfully updated. It is read, modified, and read again and change is seen as expected.

Rocket Translation:

The vertices are set for a rocket, the function to move the rocket is called, and the rocket vertices are read back. The test is passing meaning the vertices are updating to the expected values and the display task functions are working successfully.

Rocket Rotation:

The vertices are set for a rocket, the function to rotate the rocket is called, and the rocket vertices are read back. The test is passing meaning the vertices are updating to the expected values and the display task functions are working successfully. This is also confirmed in the lcd task because it displays an animation of the rocket rotating completely around twice. This is an important test to pass because rotating the rocket is something that worried me a lot going into the development phase.

**Previously Passed:**

LCD Display-Week 2