

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