WEEKLY WRITE UP RTOS

Week 1:Diagram: See Diagram.

Test Plan and Results:

Week 1: Unit test Description

1. Button ISR-Test the ISR functionality

Status: Not Run

1. Slider-Test the slider functionality

Status: Not Run

1. Button FIFO-Test the functionality of the button FIFO

Status: Not Run

1. Gain Task-Test the functionality of the gain task specifically the pwm generation

Status: Not Run

1. SysTick ISR-Test the functionality of the SysTick ISR

Status: Not Run

1. Movement Task-Test the functionality of the movement task specifically that the base

of the pendulum moving and xmin and xmax.

Status: Not Run

1. Physics Task-Test the functionality of the physics task, specifically the physics

calculations and the updating of the physics data structure.

Status: Not Run

1. LCD Display Task-Test the functionality of the LCD display task. Specifically that it

displays the correct output clears and updates ion a reasonable amount of time

Status: Not Run

1. LED Output Task-Test the functionality of the leds, specifically that they turn on and

and off when they are supposed to.

Status: Not Run

1. Final Test-Test each task run and output what is expected based on the inputs, as well as working together with each other, and test responsiveness.

Status: Not Run

Week 2: Unit test Description

1. Fifo:

3 tests for push and pop variations

Finished and passed all

1. Gain:

3 tests for incrementing/ decrementing gain

Finished and passed all

1. Movement:

5 tests for each slider position and not touching the slider

Finished and passed all

1. Physics:

7 tests for checking physics computations are correct

Finished the tests but do not have physics functions written so has not passed them.

Total Pass = 11

Total Fail = 7

Week 3: Unit test Description

1. Fifo:

3 tests for push and pop variations

Finished and passed all

1. Gain:

3 tests for incrementing/ decrementing gain

Finished and passed all

1. Movement:

5 tests for each slider position and not touching the slider

Finished and passed all

1. Physics:

7 tests for checking physics computations are correct

Tests and physics function have changed and are being revised so some tests are commented out and some tests pass incidentally, will finish the physics function and have all tests revised and passed by next week.

Total Pass = 11

Total Fail = 7

Week 4: Unit test Description

1. Fifo:

3 tests for push and pop variations

Finished and passed all

1. Gain:

3 tests for incrementing/ decrementing gain

Finished and passed all

1. Movement:

5 tests for each slider position and not touching the slider

Finished and passed all

1. Physics:

7 tests for checking physics computations are correct

Finished and passed all

Total Pass = 18

Total Fail = 0

Week 3: Functional Test Description

1. PWM increases when gain increased.

Passed

1. PWM decreases when gain decreased.

Passed

1. Button0 increases gain and therefore PWM

Passed

1. Button1 decreases gain and therefore PWM

Passed

1. Slider left moves object left on LCD

Not Tested

1. Slider right moves object left on LCD

Not Tested

1. LCD updates image with new movement.

Not Tested

1. Physics Engine updates LCD correctly

Not Tested

1. Game ends as Expected

Not Tested

1. Image is static on LCD at beginning of game

Not Tested

Week 4: Functional Test Description

1. PWM increases when gain increased.

Passed

1. PWM decreases when gain decreased.

Passed

1. Button0 increases gain and therefore PWM

Passed

1. Button1 decreases gain and therefore PWM

Passed

1. Slider left moves object left on LCD

Not Tested

1. Slider right moves object right on LCD

Not Tested

1. LCD updates image with new movement.

Not Tested

1. Physics Engine updates LCD correctly

Not Tested

1. Game ends as Expected

Not Tested

1. Image is static on LCD at beginning of game

Passed

Statement of Where Project Stands:

Week 1:

This week I completed the project diagram, as well as the initial planning for unit tests and estimates on how long each part will take along with risk analysis.

Week 2:

This week I wrote all the unit tests and the fifo, movement and gain functions. I also began to think about physics implementation. I also set up all the tasks, mutexes, semaphores, and flags.

Week 3:

This week I wrote the basis for the physics engine and update unit tests accordingly. The Physics engine is more complex than anticipated and I was not able to complete all of it this week, and will also need to revise unit tests when it is completed.

Week 4:

This week I finished the physics engine, the physics engine unit tests and began work on the LCD implementation. I got the LCD to show the starting screen for the game and passed that functional test but I do not yet have the LCD reacting to the game controls and updating on the physics engine, but that is the last thing I need to complete for the project.

Summary effort and estimate numbers:

Total estimated hours: 40hrs

Week 1:

I estimate I have completed 5% of my scope, estimated work (3hrs/40hrs) which is 7.5% of the initial estimated time. My best guess of my say/do ratio is 5/7.5 = 66.7%, so to unbias my estimates after this class I may want to multiply my estimates by 1.5 (100/66.7).

Given the scope changes I’ve made my original scope is 100% of my latest scope (40 hrs vs. 40 hrs)

Week 2:

I estimate I have completed 25% of my scope, estimated work (11hrs/40hrs) which is 27.5% of the initial estimated time. My best guess of my say/do ratio is 25/27.5 = 90.9%, so to unbias my estimates after this class I may want to multiply my estimates by 1.1(100/90.9).

Given the scope changes I’ve made my original scope is 88.88% of my latest scope (40 hrs vs. 50 hrs)

Week 3:

I estimate I have completed 40% of my scope, estimated work (20hrs/45hrs) which is 44% of the initial estimated time. My best guess of my say/do ratio is 40/44 = 90%, so to unbias my estimates after this class I may want to multiply my estimates by 1.1(100/90).

Given the scope changes I’ve made my original scope is 80% of my latest scope (40 hrs vs. 50 hrs)

Week 4:

I estimate I have completed 80% of my scope, estimated work (35hrs/50hrs) which is 70% of the initial estimated time. My best guess of my say/do ratio is 80/70 = 114%, so to unbias my estimates after this class I may want to multiply my estimates by 0.88(100/114).

Given the scope changes I’ve made my original scope is 80% of my latest scope (40 hrs vs. 50 hrs)

List of in-scope work Items:

Week1:

* Diagram

Completed

I’m glad my diagram is detailed because it will make the rest of the project easier and give me a good idea of the project overall as a whole.

* Btn ISR/Unit Test
* Btn FIFO/Unit Test
* SysTick ISR/Unit Test
* Touch Slider/Unit Test
* Movement Task/Unit Test
* Gain Task/Unit Test
* Physics Task/Unit Test
* LCD Task/Unit Test
* LED Task/Unit Test

List of in-scope work Items:

Week2:

* Diagram

Completed

I’m glad my diagram is detailed because it will make the rest of the project easier and give me a good idea of the project overall as a whole.

* Btn ISR
* Btn FIFO/Unit Test

Completed

I’m glad the fifo works well and passed all the unit tests

* SysTick ISR

Completed

I am glad that we got the systick interrupt working and it also drives our PWM

* Movement Unit Test

Completed

Checked the movement function in the movement task is working correctly and it was

* Movement Task

Completed

Completed the movement task based on lab 7

* Gain Unit Test

Completed

Checked to see that the gain function inside of the gain task is working correctly and it was

* Gain Task

Completed

Completed the gain task based on lab 7

* Physics Unit Test

Completed

Completed the Unit tests, but will need modifications as the physics function and tasks are not complete yet.

* Physics Task
* LCD Task
* LED Task

List of in-scope work Items:

Week3:

* Diagram

Completed

I’m glad my diagram is detailed because it will make the rest of the project easier and give me a good idea of the project overall as a whole.

* Btn ISR

Completed

The Btn works well and was very similar to lab 7

* Btn FIFO/Unit Test

Completed

I’m glad the fifo works well and passed all the unit tests

* SysTick ISR

Completed

I am glad that we got the systick interrupt working and it also drives our PWM

* Movement Unit Test

Completed

Checked the movement function in the movement task is working correctly and it was

* Movement Task

Completed

Completed the movement task based on lab 7

* Gain Unit Test

Completed

Checked to see that the gain function inside of the gain task is working correctly and it was

* Gain Task

Completed

Completed the gain task based on lab 7

* Physics Unit Test

In Progress

Need to modify the Tests because the Physics function turned out differently than anticipated.

* Physics Task

In progress

This is harder than I thought and I am still working on it.

* LCD Task
* LED Task

List of in-scope work Items:

Week4:

* Diagram

Completed

I’m glad my diagram is detailed because it will make the rest of the project easier and give me a good idea of the project overall as a whole.

* Btn ISR

Completed

The Btn works well and was very similar to lab 7

* Btn FIFO/Unit Test

Completed

I’m glad the fifo works well and passed all the unit tests

* SysTick ISR

Completed

I am glad that we got the systick interrupt working and it also drives our PWM

* Movement Unit Test

Completed

Checked the movement function in the movement task is working correctly and it was

* Movement Task

Completed

Completed the movement task based on lab 7

* Gain Unit Test

Completed

Checked to see that the gain function inside of the gain task is working correctly and it was

* Gain Task

Completed

Completed the gain task based on lab 7

* Physics Unit Test

Completed

Finished the Unit tests for the physics task.

* Physics Task

Completed

Finished the Physics task.

* LCD Task

In Progress

Risk Register:

Week 1:

See XCEL spreadsheet

Week 2:

See XCEL spreadsheet

Week 3:

See XCEL spreadsheet

Week 4:

See XCEL spreadsheet