

## Project Description

### **Semaphores:**

- gpio\_pressed
- read\_capsense

### **Flags:**

- bt1\_discharged
- bt0\_started\_charging
- bt0\_stopped\_charging\_led
- shot\_ready (same event as bt0\_stopped\_charging\_led)
- direction\_updated
- game\_over\_led
- game\_over\_lcd

### **FIFO**

- btn0\_fifo (size: 10)
- button\_handling\_fifo (size: 1)
- platform\_direction\_fifo (size: 1)
- Game\_data (size: 1)

### **Tasks:**

#### Button Handling:

- Will calculate how long btn0 is held and send shot\_ready events to the LED and Physics task. This will read from the btn0\_fifo in order to calculate the difference between how long it was held down. It will write how long bt0 was held down to the button\_handling\_fifo.

#### Platform Direction:

- Sends a flag to the physics task if there was a change in platform direction. Writes direction information to platform\_direction\_fifo if the information is updated.

#### Physics:

- Takes in all information to calculate where the platform is, how much energy is in the capacitors, the trajectory of the cannonball, and if the projectile hit the castle
- Every time it receives data, it posts it to the game-data queue with updates the state of the game (ie cart location, canon ball location, game over)

#### LED

- Gradually lights led0 up while btn0 is held down. Flashes led1 When a person won the game

## LCD

- Updates screen on a timer basis

## TESTING THIS WEEK

- I want to test that inputs are being received correctly. Mainly the timing of how long btn0 is held down.
- Set up all tasks for the project
- Took me 5 hours to complete which took 2.5 times longer than expected. I had to restart a few times in order to make sure the project was not cluttered

## TO DO:

- Get physics task working with cart movement
- Get physics task working with projectile launch
- Implement capacitor charge-up functionality.
- Implement castle-dropping bombs occasionally
- Implement game\_over event

## SUMMARY:

- 1) Get physics task working with cart movement
- 2) Get physics task working with projectile launch
- 3) Implement capacitor charge-up functionality.
- 4) Implement castle-dropping bombs occasionally
- 5) Implement game\_over event

Task	Estimated Time to Finish	Actual Time to finish	% completed	
1	5 hours		0	
2	5 hours		0	
3	1-2 hours		0	
4	3 hours		0	
5	1-4 hours		0	

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