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ENSE 452 - Embedded and Real-Time Software Systems

Project Milestone Submission

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## **Application**

I am proposing to create an elevator system using the FreeRTOS v1, with the Nucleo-F103RB board. In order to meet the requirements, I will be using the onboard LED, and Button on the F103RB board. My 2 asynchronous inputs will be the CLI, and the Blue Button on the nucleo-f103rb. If time permits, I will implement external buttons and connect them to the board, along with LED's.

## **Elevator Control System**

An Elevator Control System consists of:

1. Up and down commands in the CLI, along with enter and exit states, you cannot enter if you are already in the elevator, and you cannot exit if you are already out of the elevator.
2. There will be an emergency button (blue button on the nucleo board) which will halt all operation of the elevator, and will allow for "maintenance" to be done.
3. A status window that would include which floor the elevator is on.

## **Current Progression**

As of November 23, 2024, I have completed a majority of the software portion, which includes, enter and exit states for the actor. When entered into the elevator, the actor will have the option to choose which floor to go to. An actor cannot change floors if they are not in the elevator.

## **Future Implementations**

As for my final goal, I plan on having the blue button on the nucleo board along with the built in LED to also be working. The blue button will symbolize maintenance mode, which will allow the elevator to halt all operations and will proceed to have "maintenance" done on it (in this case it will just halt all operations meaning you cannot navigate to other floors).

### **Optional Future Implementations**

If time permits, I will aim to implement external LEDs for each floor, everytime we reach a new floor, the LED associated with that floor will turn on. Along with buttons to navigate to each floor, the buttons will symbolize the elevator floor buttons to move to another designated floor.

Github: <https://github.com/mtzamanpk/ENSE452-MuhammadZaman>

Project Demonstration Video: <https://youtu.be/ONlgZJEaBoc>