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Project Requirement

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Project Description for Elevator Control System

Project Description:

Project is intended to be a simulation of elevator control and serial connection with a computer. The project is meant to simulate the behavior of the elevator with user input using RTOS and interrupts. The projects scope is to simulate 3 floors as per the time constraint

Hardware needed to simulate 5 floors:

- A STM32F103RB microcontroller board to handle the logic
- A USB A to USB B mini to connect the computer
- Inside elevator panel 8 buttons (5 floors + open + close + emergency)
- Outside elevator panel 11 buttons (((up + down)*5) + maintenance)
- Current floor indicator (LCD or putty session)
- Wires (both female, male or combination)
- A breadboard for easier connectivity
- LEDs for easier to read

Software needed to simulate 5 floors:

- Keil U-Vision 5 to execute, build and flash logic
- Putty for session
- Github for version control

Interrupts:

- USART2 interrupt will be handling the CLI input instead of polling
- External interrupt will be handling the emergency button to stop the elevator where it is as a safety mechanism

Tasks:

- A user presses a button on the specific floor and the elevator travels to the floor and opens the door, once the door opens user can enter in and either close the door manually or after delay the door closes. User selects the floor it wants to go to. User can open the door if the specific time has not been passed. If passed user can't open the door and the door will be opened at the floor desired.
- On the main floor if the maintenance button is pressed the elevator should set this task as a priority and forgetting all the tasks to come to the main floor and open the floor. As long as the button is not pressed again, it should stay on the main floor deactivating all the buttons and user input. Once the maintenance is done, it should work as intended and carry on the required tasks.

State Diagram: