Project Documentation
Elevator Control System

Physical buttons
- Up, inside elevator
- Down, inside elevator
- Open doors, inside elevator
- Close doors, inside elevator
- Emergency stop, inside elevator
- Maintenance mode, inside elevator
- Call elevator, at each floor

Display window
- Displays what floor the elevator is currently on
- Shows all the floors in the system
- Show the destination floor
- Show the direction of movement
- Shows the state of the system (emergency, maintenance, regular)

CLI
- Simulate button presses
- Enter and exit different states

Interrupts
- USART2 for the CLI
- External Interrupt, Emergency Stop
- Timer, to delay changing floors

The "Up" task is responsible for moving the state between floors. It cannot run if the top floor is the current floor. The "Down" task is responsible for moving the state down the floors. It cannot run if the bottom floor is the current floor.

Each floor state doesn't perform any tasks. The elevator is not moving in any floor state, allowing the maintenance mode to be entered.

Maintenance mode locks the system until it is exited, where it then goes back to the floor state.

The emergency stop will trigger an interrupt that will cause the system to pause and wait for the emergency state to be cleared. It can be entered from any state, and it will resume operation once it exits.