Elevator Finite State Machine Initial Draft

States: (5 States total: Each floor is its own state, compressed for simplification)

Current Floor [Input]: Elevator is stationary, doors closed.

Moving Up: Elevator is moving up.

Moving Down: Elevator is moving down.

Inputs:

Go to Floor 1 (0x05): Command to move to Floor 1.

Go to Floor 2 (0x06): Command to move to Floor 2.

Go to Floor 3 (0x07): Command to move to Floor 3.

Move Up Button Pressed (GUI): Command to move up one floor.

Move Down Button Pressed (GUI): Command to move down one floor.

Outputs:

Move To Floor [Input]: The motor controller moves the car to the requested floor.

Transitions:

Current Floor to Moving Up: (Conditions Listed Below)

If the Move Up button is pressed and the Current Floor is not the top floor.

If the Current Floor is less than the desired floor, then (Go to Floor Input: 0x06 or 0x07).

Current Floor to Moving Down: (Conditions Listed Below)

If the Move Down button is pressed and the Current Floor is not at the bottom.

If the Current Floor is greater than desired floor, then (Go to Floor Input: 0x05 or 0x06).

Note   If Go To Floor [Input] is selected, no handlings are necessary, as the hexadecimal value for the requested floor number will be sent to the motor controller.

State Flow I/O Logic:

Input: Go to Floor 1 [0x05] -> Transition to Moving Down (if Current Floor > 0x05)

Output: Move To Floor [0x05]

Resulting State: Current Floor 1 [0x05]

Input: Go to Floor 2 [0x06] -> Transition to either Moving Up or Moving Down…

Moving Up (if current floor < 2) or Moving Down (if current floor > 2)

Output: Move To Floor [0x06]

Resulting State: Current Floor 2 [0x06]

Input: Go to Floor 3 [0x07] -> Transition to Moving Up (if current floor < 0x07)

Output: Move To Floor [0x07]

Resulting State: Current Floor 3 [0x07]

Input: Move Up Button Pressed -> Transition to Moving Up (if Current Floor < 0x07)

Output: Move To Floor [Current Floor + 1]

Resulting State: Current Floor + 1

Input: Move Up Button Pressed -> if Current Floor = 0x07

Resulting State: Current Floor

Input: Move Down Button Pressed -> Transition to Moving Down (if Current Floor > 0x05)

Output: Move To Floor [Current Floor - 1]

Resulting State: Current Floor – 1

Input: Move Down Button Pressed -> if Current Floor = 0x05

Resulting State: Current Floor