Anas Shahzad
anas.shahzad.8349@student.uu.se

Assignment 2b

Problem 3: Elevator Controller

States:

The controller is designed using 4 states:

Idle: In Idle, the controller closes the door and comes here to get next stop info from the queue.

Moving: This state sets the output speed.

Stop: Transition to this state when the desired floor is reached. Here, turn on the lamp, turn off the floor light. **During** the state turn close the door and set speed to 0. **Exit** from this state after 5 secs and turn.

Emergency: Emergency state is **entered** when the Emergency event takes place. On transition, emergency lamp is turned on, speed is said to zero. On **exit** upon start event the emergency lamp is turned off.

Multi-input events:

At each new event, the **queue** function checks if the element is already present (we don't want to go to same floor twice) and then inserts It at the end of the queue.

Pop function is used for getting the data at the start of queue. The function movies the elements from 2 till end to the first index to maintain FIFO.

Speed Control:

Speed is computed using **computerSpeed** function which takes current position and target position as the input. Upon reaching desired position.

Simulink Model

The movement of elevator in Simulink is emulated using a memory element or integrator. Which accumulates the values and feeds the current value to the controller.