EE 337: Microprocessors Laboratory (Spring 2021)
Indian Institute of Technology Bombay

Project: 20 points Date: March 1, 2021

Elevator Simulator on Pt-51

1. [20 points] In this project, you will be writing a program to simulate the behavior of a pair of elevators in a building with 16 floors (labelled 0 to 15).

   - The LCD must show the floor location of the elevators as a pair of numbers which are displayed side-by-side.
   - Initially, the elevators are both located on the ground floor. So the LCD should show a pair of zeros.
   - A user wanting to use the elevator can appear on any of the floors. The location of the user will be taken from the switches. The four switches represent a nibble which can take any value from 0 to 15.
   - One of the elevators has to move to the user location. This should be simulated by changing the number on the LCD corresponding to one of the elevators.
     - The number should increment or decrement with a one second delay to simulate elevator movement.
   - Once the elevator has reached the user location, the user inputs the destination floor using the switches.
   - The corresponding number on the LCD should now change with one second delays to simulate elevator movement from the user's floor to the destination floor.
   - A sequence of users will be using the elevators. Each one will first enter their current floor location and then enter their destination floor.
   - If there are no users wanting to use the elevators, the elevators should remain in their current floor locations.
   - If the elevators are on different floors at some point in the simulation, the elevator closer to the user's floor should move to provide service.