

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 10 floors (labelled 0 to 9). The two elevators are labeled A and B.
 - 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 indicated by pressing one of the number keys 0, 1, 2, ..., 9 on a computer keyboard connected to Pt-51 using UART.
 - 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.
 - 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.
 - Once the elevator has reached the user location, the LCD should display either the string **A dest?** or **B dest?** depending on which elevator has reached the user's floor.
 - The user inputs the destination floor using the keyboard.
 - If the destination floor is the same as the user's current floor, the string **A dest?** or **B dest?** should continue to be displayed.
 - If the destination floor is different from the user's current floor, then 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.
 - You can assume that only one user is using the elevators at a time, i.e. while one of the elevators is travelling there will be no key presses.
 - If there are no users wanting to use the elevators, the elevators should remain in their current floor locations.