ENMT211 Elevator Project Scheduler

Term 2 2023

In previous weeks, you have demonstrated control of the elevator motor and doors as well as motion control of the elevator carriage. The final major requirement for a realistic elevator is the scheduler. This is the algorithm which decides which floors the elevator should go to, and in which order.

1 Scheduler design

- You need to use an appropriate algorithm, which will attend to requests in the shortest possible time, and never leave anyone waiting forever (look up *request starvation* and the *elevator algorithm*).
- The algorithm must be implemented in a finite state machine. (you may use more finite state machines for different parts of your system).
- If you like, you can implement this part of the assignment in structured text.

2 Scheduler hints

- Design a suitable finite machine; this essentially means determining how many states you will have, what each of the states represents, and what the transitions between the states will be.
- You will need to explain the design of your state machine to the TAs, and also include it in the report. So prepare appropriate diagrams etc. to do this.
- Initially, it is probably easiest if you don't have the scheduler connected up the motion controller, so that you can test the scheduler in isolation. Once your state machine seems to be operating properly, then you can connect it up to your motion controller, so that the scheduler actually controls where the elevator moves to.

Note that for the **final demonstration**, your elevator needs to operate as close to a real elevator. This may require further tuning your motion control, making sure your scheduler behaves optimally for various possible input combinations, and getting all the call buttons and lights working properly.