

### Exercises for “Formal Specification and Verification” Exercise sheet 7

#### Exercise 7.1:

Consider an autonomous elevator with the following behavior:

- The elevator operates between two floors, ground floor and first floor.
- Initially, the elevator is at the ground floor with its door open.
- Upon arrival at a certain floor, its door automatically opens. It takes at least 2 seconds from its arrival before the door opens but the door must definitely open within 5 seconds.
- Whenever the door is open, passengers can enter. They enter one by one, and we assume that the elevator has a sufficient capacity to accommodate any number of passengers.
- The door can close only 4 seconds after the last passenger entered.
- After the door closes, the elevator waits at least 2 seconds and then travels up or down to the other floor.

Design a timed automaton model of the elevator. Use the actions up and down to model the movement of the elevator, open and close to describe the door operation and the action enter which means that a passenger is entering the elevator.

Please submit your solution until Sunday, December 9, 2018 at 17:00. Please do not forget to write your name on your solution.

Submission possibilities:

- By e-mail to [sofronie@uni-koblenz.de](mailto:sofronie@uni-koblenz.de) with the keyword “Homework FSV” in the subject.
- Hand it in to me (Room B225) or drop it in the box in front of Room B224.