

In this assignment, you will specify, synthesize and analyze an asynchronous control circuit in two different synthesis styles: (i) Petri net-based method, and (ii) Burst-Mode machine method. For the former, you will use the *petrify* CAD tool, and for the latter, you will use the *MINIMALIST* CAD package.

You are to design the control circuit for an elevator. Assume the following:

- The elevator services only two floors.
- Each floor either has an “up” button, or a “down” button on the panel next to the elevator door. The elevator itself has both the “up” and “down” buttons on its inside panel.
- The events (pressing and releasing of the buttons) are available as inputs to the elevator control you are designing.
- You may assume any reasonable set of output signals generated by the control circuit, but they should be level signals, not transition signals (since they must drive level-sensitive switches, motors etc.). For example, the control circuit could produce the following outputs: “go up”, “go down”, “open door” and “close door” (and perhaps others). At any time, the outputs generated should be consistent and unambiguous (*i.e.*, “go up” and “go down” should not be simultaneously asserted, for example.)
- Make any additional reasonable assumptions you deem necessary. However, each assumption should be clearly stated and justified.

#### TASKS:

1. Write the specification for the elevator control circuit as (i) a Petri net, and (ii) a Burst-Mode specification. You may use certain “advanced” features of these specification styles if you would like, but beware that certain features cannot be synthesized using the existing tools (*e.g.*, extended burst-mode), even though they may be valid for simulation etc.
2. Use Petrify and MINIMALIST to synthesize the control circuits. The instructions on how to use these tools will be given in class, and available on the website.
3. Present an analysis and discussion of the results, including a detailed comparison of the two different synthesis styles.

DELIVERABLE: A short report (5–7 pages).