

Development of Safety-Critical Embedded Systems WS 2012/2013

Exercise Sheet 3

Please hand in the solutions to the theoretical exercises until the beginning of the next lecture, Fri. 2012-11-16, 10:00. Please write your name as well as the number of your tutorial group and/or the date/time slot on the first sheet of your solution.

Exercise 3.1: SyncCharts vs Mealy Automata (Points: 4)

Construct a Mealy machine whose states correspond to configurations of and behaves equivalent to the SyncChart of Figure 1. You can assume the signals `timer` and `input` to be global, all others local. Furthermore, assume

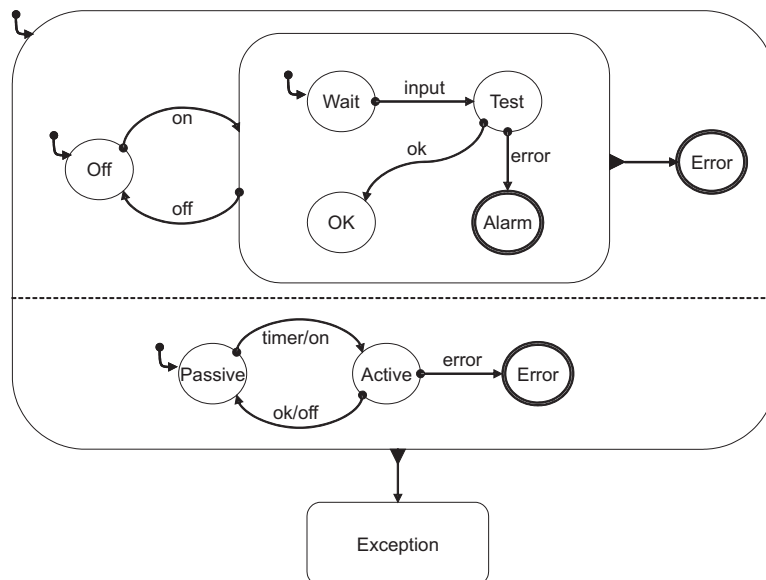


Figure 1: SyncChart Diagram to Exercise 2.1.

signals `ok` and `error` to be emitted within state `Test`.

Exercise 3.2: SyncCharts (Points: 4+3+6)

Consider the SyncChart diagram of Figure 2. The signals `timer` and `input` are global signals, all other signals are local.

- Give all legal configurations for the given SyncChart model.
- Which of these legal configurations are stable?
- Compute the reaction for the configuration $\{CHKM, CHKS, Off, Passive\}$ for the event `timer+`. Use the algorithm presented in the lecture and give all substeps.

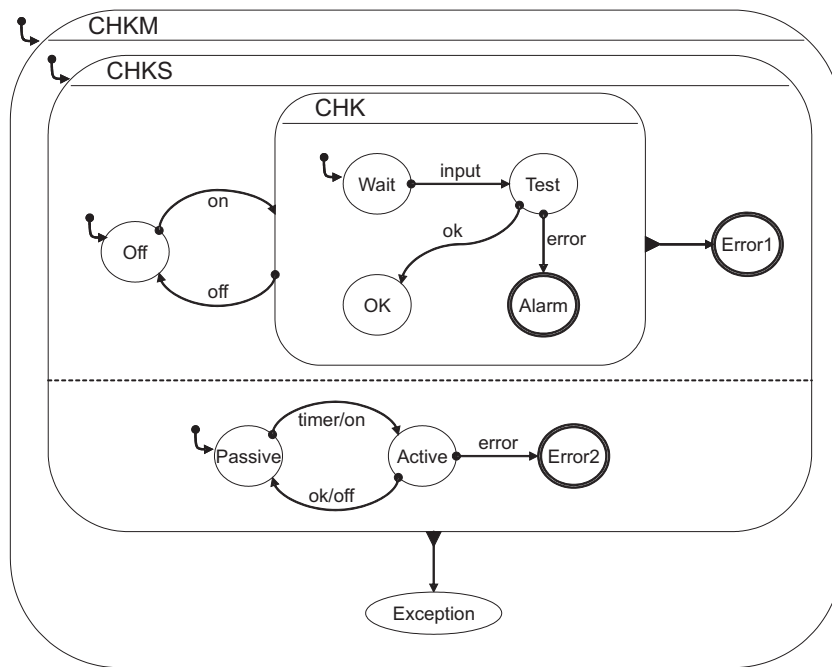


Figure 2: SyncChart Diagram to Exercise 2.2.