

Theoretical Foundations of the UML SS 2016

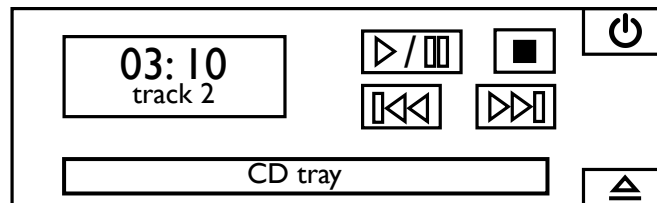
— Series 10 —

Hand in until 21th July before the exercise class

Exercise 1 (Statechart of a CD player)

(3 Points)

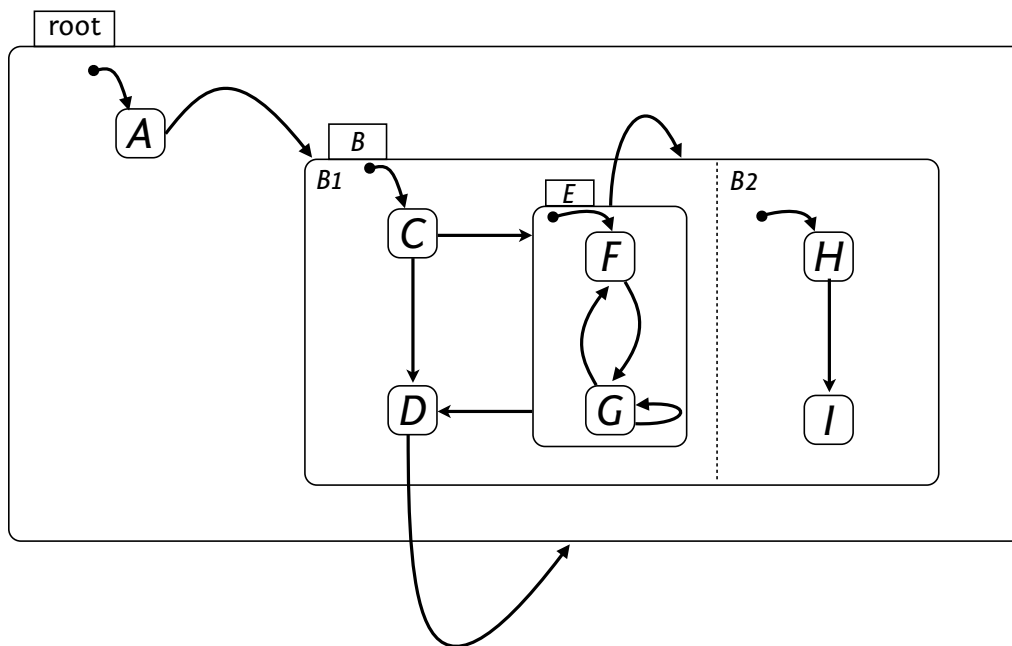
Following figure shows a CD player. The CD play can be powered on/off at any time by pressing the button at the right uppermost corner. Only if the power is on, the other buttons and the display are functional. The right bottommost button is used to close/open the CD tray in order to put/fetch the CD into/out of the CD player. After a valid CD is putted into the CD player, the buttons (4 center buttons) can be used to play/pause/stop/navigate the tracks.



Please draw a statechart for the CD player described above.

Exercise 2 (Definitions in Statechart)

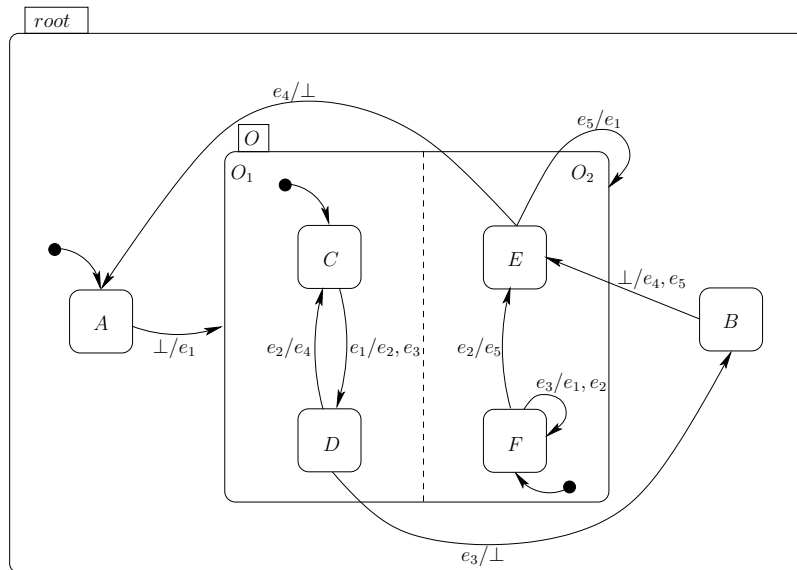
(3 Points)



- Give the $(N, E, Edges)$ of the statechart.
- Give the tree of the node hierarchy and determine the types of nodes of the statechart.
- Determine all the pairs of nodes which are orthogonal.
- Determine the priority relation of the edges from node G .

Exercise 3 (Mealy Machine of Statechart)

(3 Points)



- Give the tree of the node hierarchy and determine the types of nodes of the statechart.
- Determine the formal semantics for the statechart (i.e., construct the related Mealy machine) by successively calculating locations and steps (starting from the initial location). In both cases write down all your calculations before constructing the corresponding automaton.