

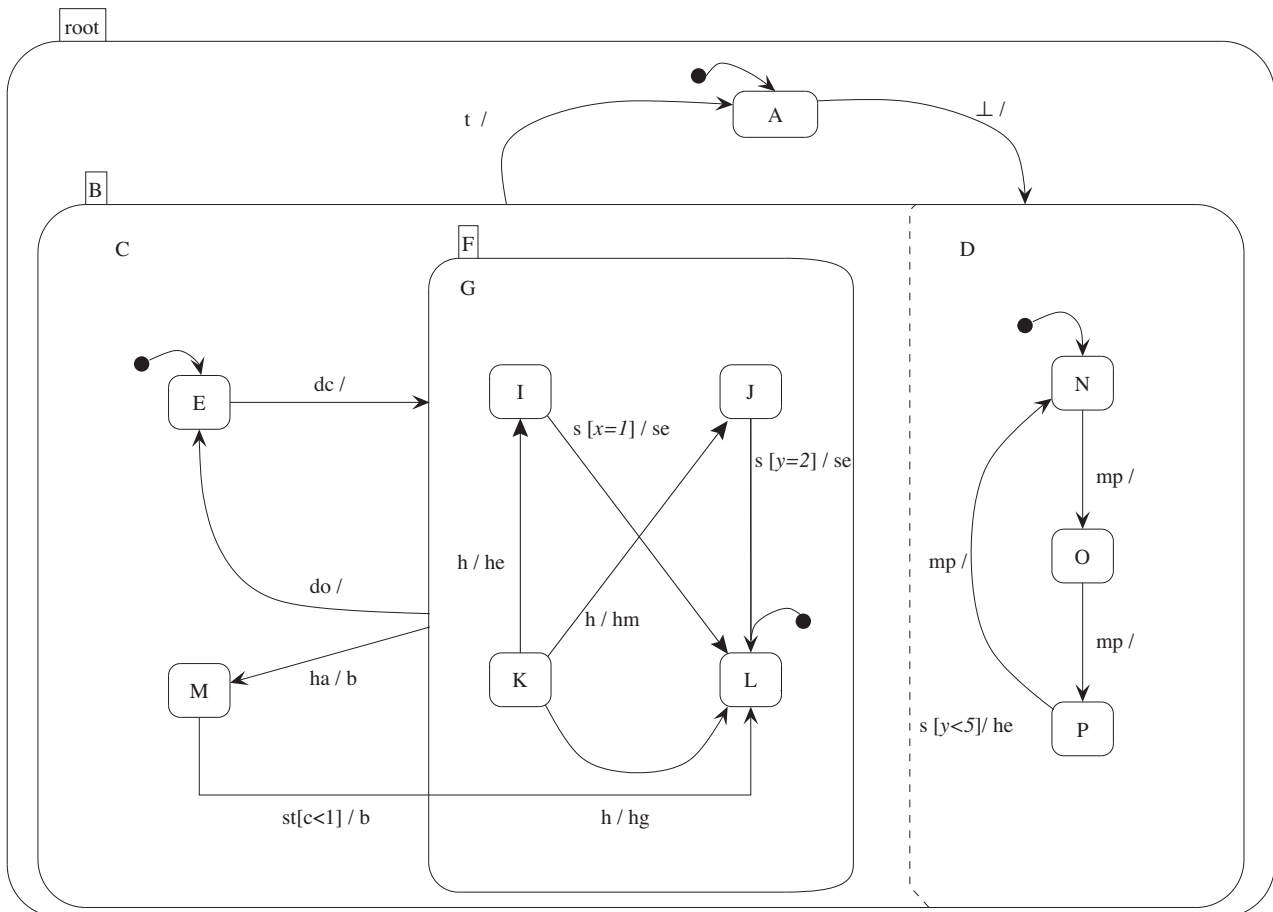
– Assignment 10 –

Note: In this assignment an edge label of the form e/e' of Statechart Sc means that Sc is consuming event e and executing an action that is sending the event e' to Sc (i.e., to itself).

Exercise 1

(3 points)

Let the following Statechart $Sc = (N, E, Edges)$ be given:



1. Describe Statechart Sc formally, i.e., give the components $(N, E, Edges)$.
2. Construct the tree that represents the node hierarchy of Statechart Sc .
3. Determine the types of the nodes of Statechart Sc .

Exercise 2

(3 points)

A specification of an ATM machine is given as follows:

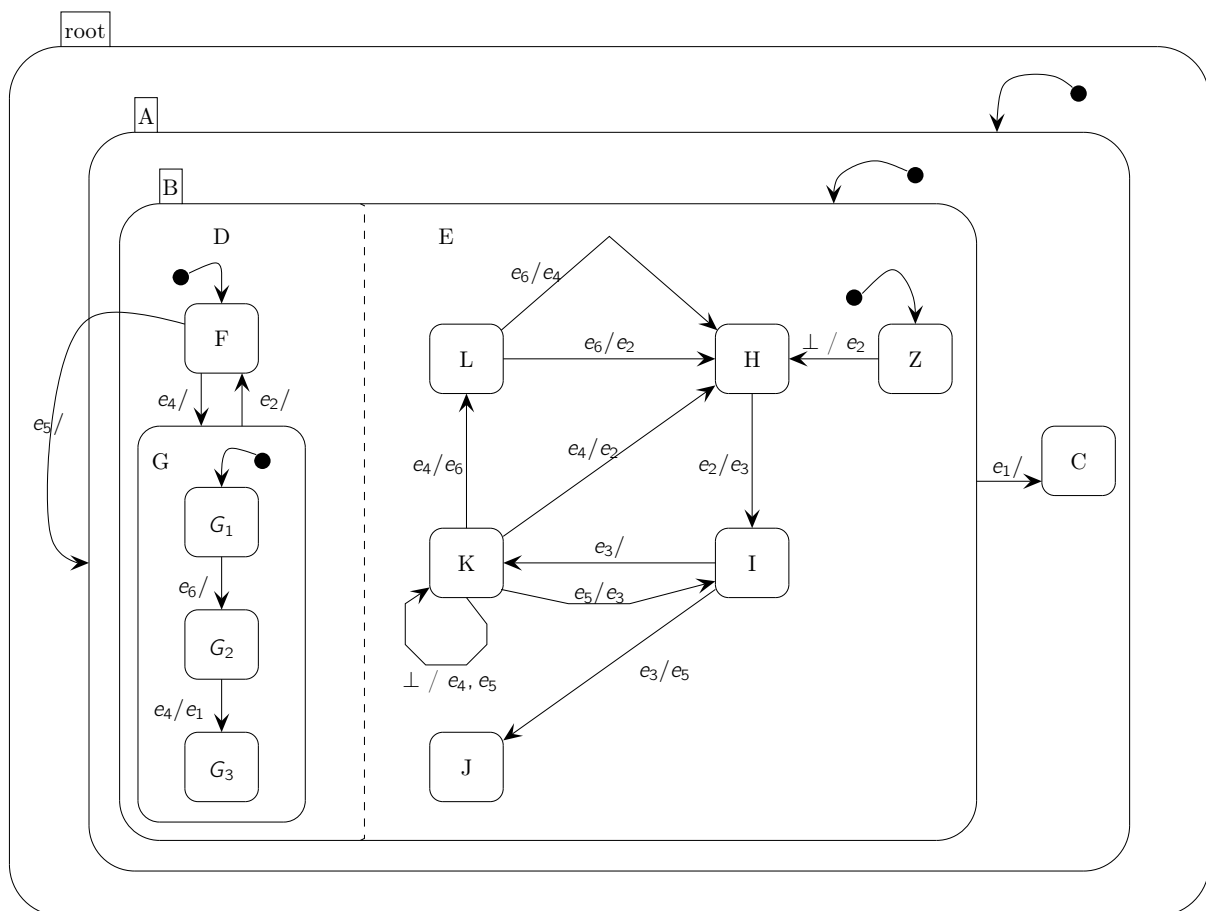
1. The ATM is waiting for inserting a bank card from the customer and validates the the card if the card is inserted.
2. If the card is validated, the customer can input the password and the ATM will communicate with the bank server to examine the password.
3. If the password is true, the customer is allowed to inter the amount, and the ATM will communicate with the bank server again to check the deposit of customer.
4. The customer gets either the card back with a notification or cash and card back depending on the customer's deposit.

Give a Statechart model of the ATM machine which reflects the concurrency and hierarchy of the system.

Exercise 3

(4 points)

Let the following Statechart Sc be given:



1. Determine the formal semantics for the Statechart Sc (i.e., construct the related Mealy machine for each Statechart) by successively calculating locations and steps (starting from the initial location). In both cases write down all your calculations before constructing the corresponding automaton.
2. Determine the priority between moving from F to G and moving from F to A if both edges are enabled.