

Theoretical Foundations of the UML SS 2016

— Series 4 —

Hand in until 2nd June before the exercise class

Exercise 1 (Event in CMSG)

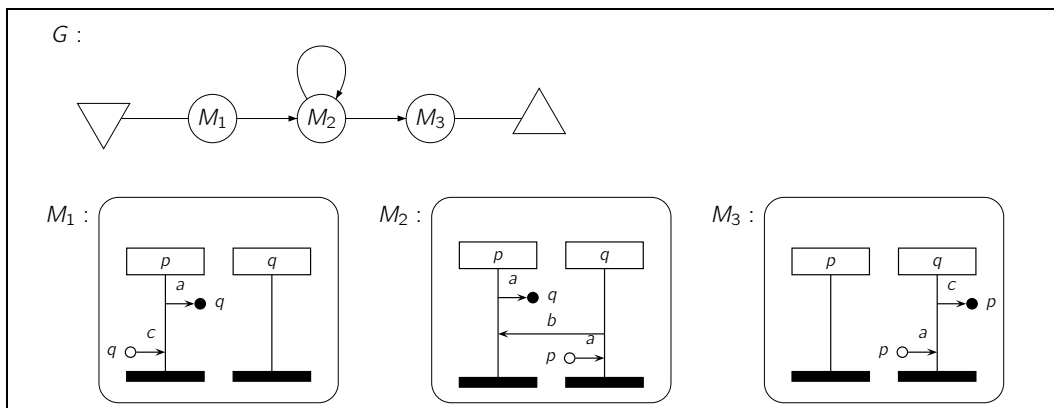
(3 Points)

Prove or disprove the decision problem "in a CMSG, whether a particular message can be received in at least one accepting path." is decidable.

Exercise 2 (Safe CMSG)

(3 Points)

Given a CMSG G as follows:

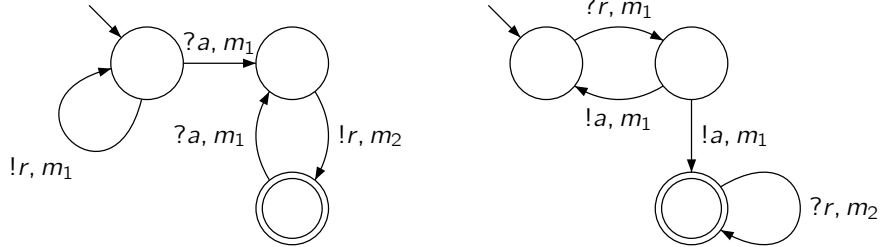


1. Construct the pushdown automat corresponding to G .
2. Determine whether all accepting paths of G are safe.

Exercise 3 (Safe CFM)

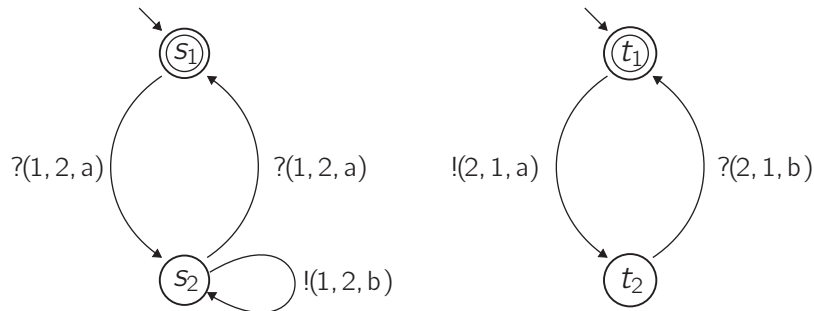
(2+2 Points)

- Given the following CFM A_1 :



Show that A_2 is *not deadlock-free*. Justify your answer by indicating the sequence of configurations leading from the initial configuration γ_0 to the deadlock configuration γ_d and arguing why a final configuration is not reachable from γ_d .

- Consider the following CFM CFM A_2



Is A_2 safe? Justify your answer.