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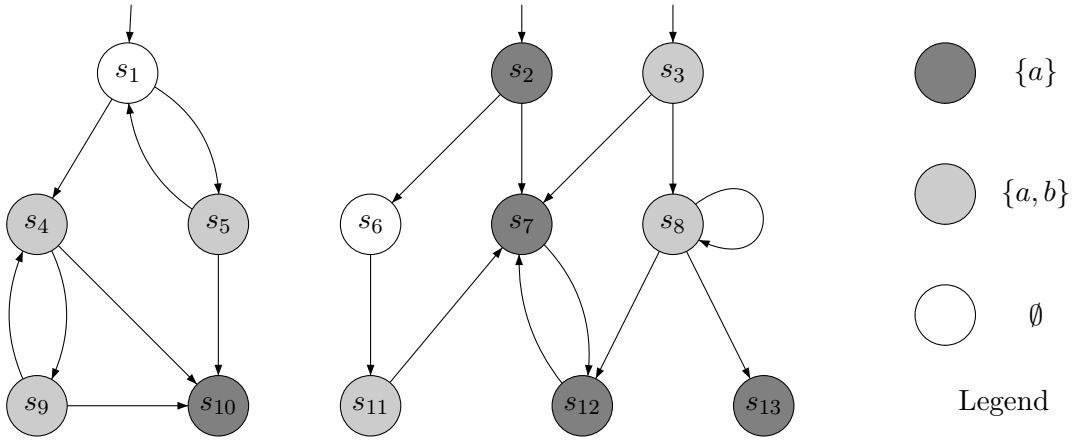
Exercises to the lecture *"Advanced Model Checking"*, winter term 2006

– Assignment 3 –

The solutions are collected on Nov. 10th at the beginning of the exercise class.
Justify your answers!

Exercise 1 (8 points)

Consider the transition system TS over $AP = \{a, b\}$ shown in the figure below:



Questions:

Determine the bisimulation quotient system $TS/\sim$ by using

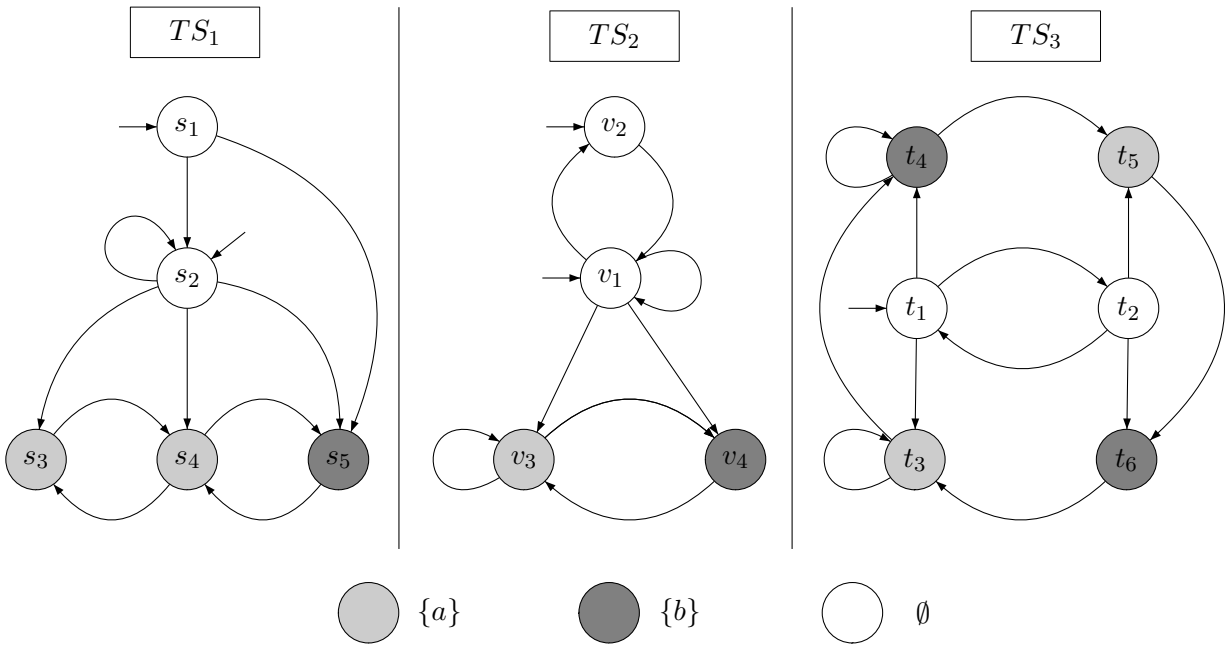
(a) the inefficient quotienting algorithm

(b) the efficient quotienting algorithm

Sketch the first four (outer) iteration steps respectively, if they exist.

Exercise 2 **(8 points)**

Consider the transition systems TS_1 , TS_2, TS_3 over $AP = \{a, b\}$ shown in the following figure:



Questions:

(a) for each $i, j \in \{1 \dots 3\} \times \{1 \dots 3\}$, $i \neq j$, determine whether $TS_i \preceq TS_j$

(b) for each case $TS_i \not\preceq TS_j$, give a $\forall CTL$ - formula that distinguishes TS_i and TS_j.