

Software Validation and Verification

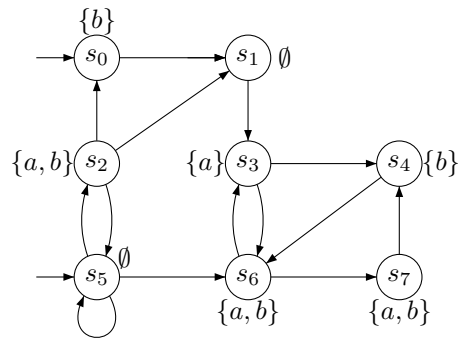
Seventh Exercise Sheet – On CTL*

Exercise 1

Consider the CTL*-formula (over $AP = \{a, b\}$)

$$\Phi = \forall \diamond \square \exists \bigcirc (a \cup \exists \square b)$$

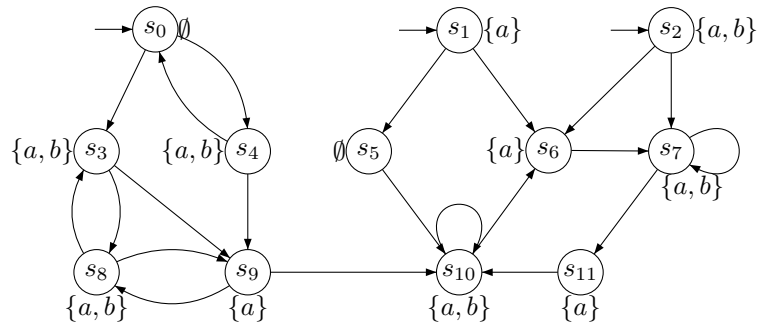
and the transition system TS outlined below:



Apply the CTL* Model Checking Algorithm to compute $Sat(\Phi)$ and decide whether $TS \models \Phi$.
Hint: You may infer the satisfaction sets for LTL formulas directly.

Exercise 2

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



1. Determine the bisimulation equivalence \sim_{TS} and depict the bisimulation quotient system TS/\sim .
2. For each bisimulation equivalence class C , provide a CTL formula Φ_C that holds only in the states in C .