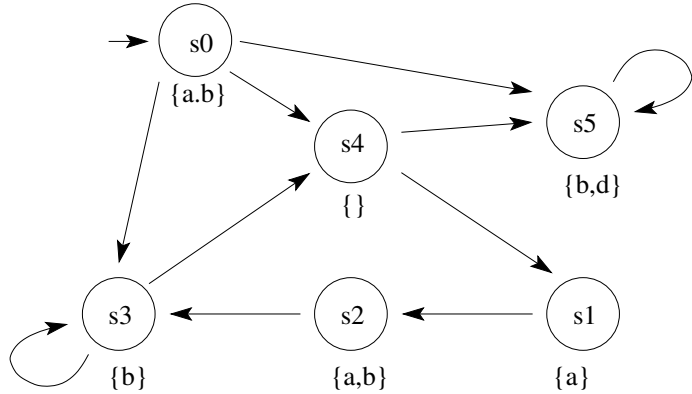


15817 Homework 5

Instructions: Indicate whether the CTL and LTL formulas are true for the corresponding Kripke structures. First try this by hand, and then use SMV to check your answers.

Exercise 1.

- a. $A(a \text{ U } b)$
- b. $AXE(a \text{ U } b)$
- c. $AXEXA(a \text{ U } b)$
- d. $AGAF A(a \text{ U } b)$
- e. $AG(d \Rightarrow AG \neg a)$



Exercise 2. Microwave example.

- a. $AG(Close \Rightarrow AX(\neg Start \Rightarrow \neg Error))$
- b. $AG(Heat \Rightarrow AX(\neg Close \Rightarrow Error))$
- c. $AG(Error \Rightarrow A(Error \text{ U } \neg Start))$
- d. $AGEF Heat$
- e. $EGAF Heat$
- f. $AG(A(\neg Heat \text{ W } Start))$
- g. $G(G(Error) \Rightarrow G(Close \oplus X Close))$
- h. $G(G(Close) \Rightarrow FG(Heat))$

