

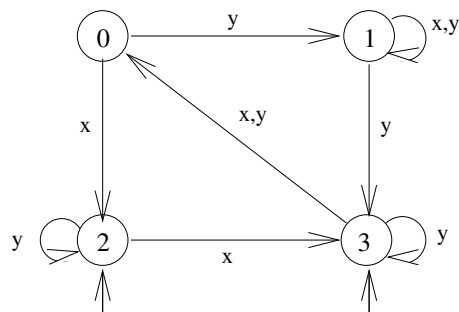
# Formal Models SS 2016: Assignment 8

Institute for Formal Models and Verification, JKU Linz

Due 19.05.2016

## Exercise 29

Given the LTS  $L$  shown in the figure below and let  $K$  be the Kripke structure corresponding to  $L$ . Draw  $K$ .

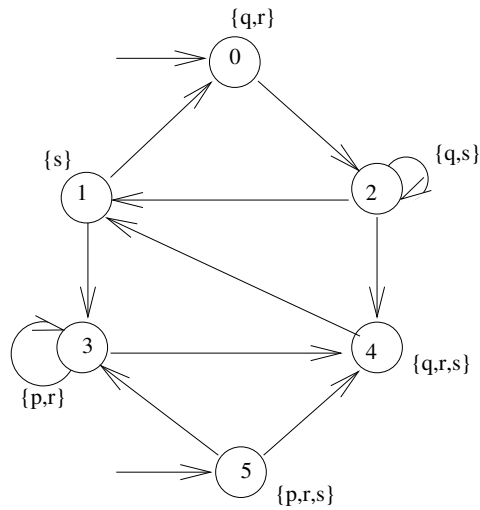


Further, give a trace of length 5 first for  $L$  and then a corresponding trace for  $K$ .

## Exercise 30

Give a formal proof for the proposition on slide 60 (hint: use induction).

### Exercise 31



Which of the following CTL expressions holds for  $K$ ?

- $\mathbf{EG}(q \vee s)$
- $\mathbf{A}(q \mathbf{U} p)$
- $\mathbf{AGEFEG}q$
- $\mathbf{AX}(q \rightarrow s)$
- $\mathbf{EFAX}_s$

### Exercise 32

Check for all states which of the following CTL formulas hold.

- a)  $\mathbf{AG}(q \rightarrow r)$
- b)  $\mathbf{E}(r \mathbf{U} s)$
- c)  $\mathbf{AG}((p \wedge r) \rightarrow \mathbf{EG} p)$
- d)  $\mathbf{AG}((p \wedge r) \rightarrow \mathbf{EG} s)$

