Formal Models SS 2017: Assignment 8
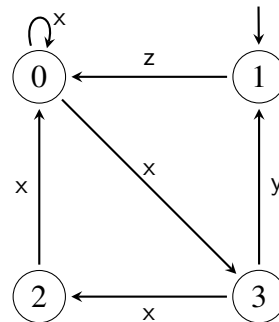
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Due 01.06.2017

To indicate that you solved an exercise and that you can present it in the exercise group, tick it off in our MOODLE course until **11am on the day of the exercise**.

Exercise 29 Given LTS L and CTL/HML formulae 1 to 6 as shown below. For each state s of L, determine which of formulae 1 to 6 hold in s.

1. $\mathbf{AX}(\langle x \rangle 1)$
2. $\mathbf{EX}([y] 0)$
3. $\mathbf{AG}(\langle z \rangle 1 \leftrightarrow \langle y \rangle 1)$
4. $\mathbf{E}[\langle x \rangle 1 \mathbf{U} \langle z \rangle 1]$
5. $\mathbf{EG}(\langle z \rangle 1)$
6. $\mathbf{EF}(\mathbf{EG} \langle x \rangle 1)$

Exercise 30

Use the sematnics of CTL/HML to show that $s \models \neg\mathbf{EX} f$ is true iff $s \models \mathbf{AX}\neg f$ is true.

Exercise 31

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

Exercise 32

Draw the Kripke structure for the LTS as shown below.