Exercise 1. Compare the following properties expressed in LTL and CTL or CTL* of a system $s$. If an arrow does not hold, give an counterexample.

1. $s \models □◊p \iff s \models AGFp$
2. $s \models □◊p \iff s \models AGAFp$
3. $s \models □◊p \iff s \models AGEFp$

![Figure 1: The parallel system consists of two components.](image)

Exercise 2a. Draw the model for the parallel system in Figure 1.

Exercise 2b. Using the CTL model checking algorithm evaluate the CTL formula: $AFEF c_1$ for the model from Exercise 2a.

Exercise 3. Using the LTL model checking algorithm evaluate the LTL formula $\phi = \neg\Box c_1$ for the model from Exercise 2a.