Institute for Information Systems Research
University of Koblenz-Landau
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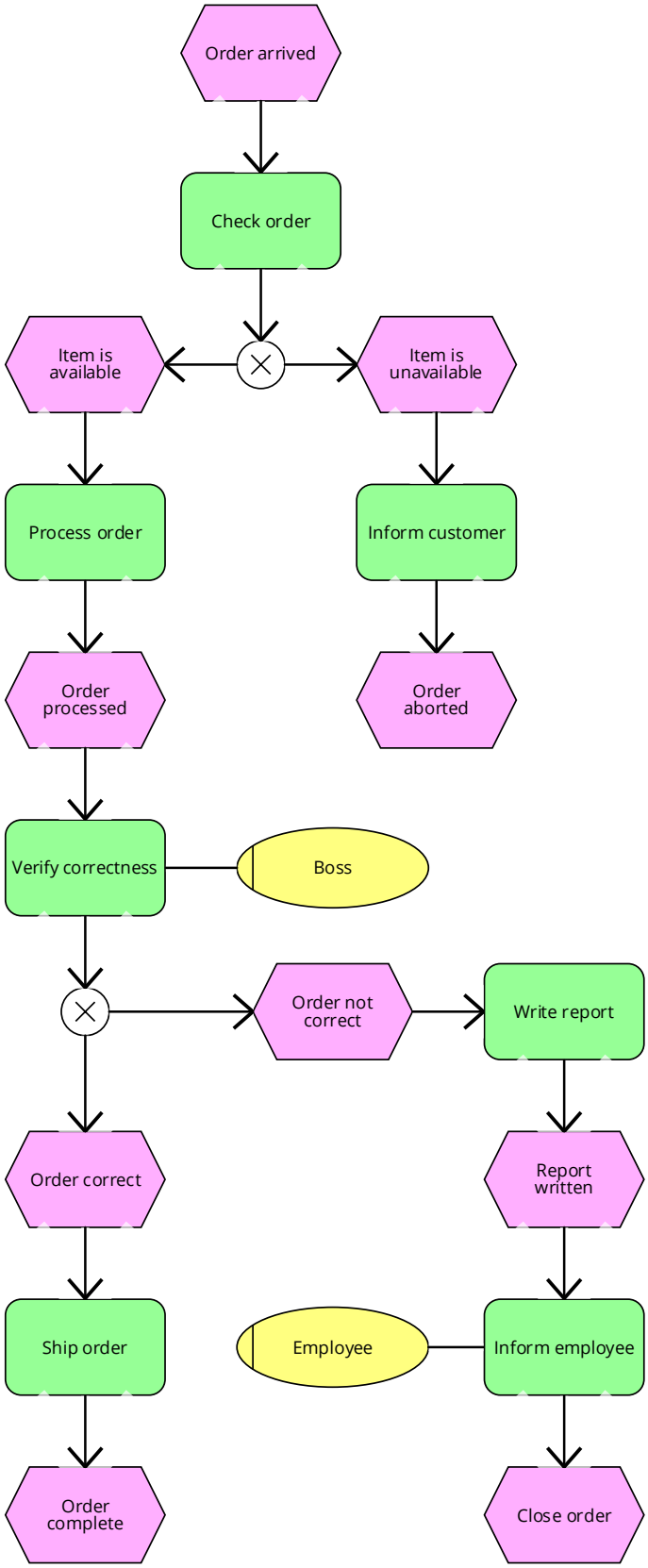
Business Process Management
SS 2021
Exercise 4

Formalities for submitting your solution:

- Please submit your solution in OLAT
- The solution is due on **09.06.21 at 23:59 (UTC+2)**
- Please provide one single PDF file per group
- Please include the names of all group members into your solution
- You can reach up to 10 points in this exercise sheet

Task 1 (6 points)

Depicted is an excerpt of a business process for an online shop. There are certain business rules within the company. Assume the company wants to verify that their process is compliant with their rules by means of CTL.



Transform the process into a transition system (you may re-label the individual nodes if necessary).

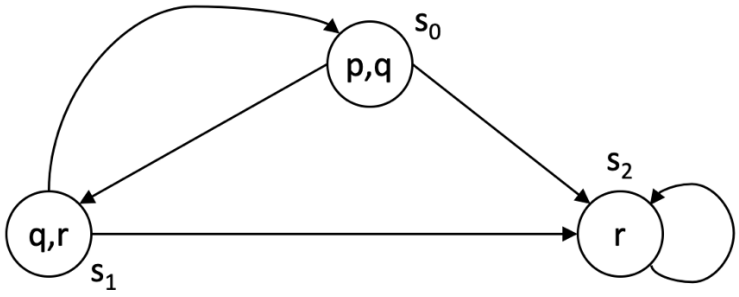
Then, create CTL formulas that represent the following business rules:

- The order has to be verified, before it can be shipped.
- The order has to be verified by the boss.
- If the order is not correct, an employee has to be informed about this.
- If the customer is informed that the product is unavailable, the order needn't be verified by the boss (to save time).

Task 2 (2 points)

Depicted is a transition system M = (S, R, L).
Please explain, if the following CTL formulas satisfy M in regard to the respective s ∈ S:
(If yes, you can simply make a checkmark. If no, please explain why not.)

- M, s1 |= EX(¬p)
- M, s1 |= AX(¬p)
- M, s1 |= AG(q V r)
- M, s0 |= A[q U r]



Task 3 (2 points)

In the lecture, a transition system M was defined as a tuple M = (S,R,L). S is the set of states and R is the set of relations. L is a labeling function. More specific, this labeling is defined as a function L: S → 2^{AP} . Briefly explain this function L in your own words. What does it do and why does it say 2^{AP}? For your solution, you can assume the atomic propositions are a set AP = {A,B,C}.