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Exercise Sheet 3 (Theory)

(11 Points)

Please note: Solutions must be submitted (individually or in pairs) until 25.10.2019 at 10:00 AM (mailbox in OH16, ground floor, in front of room E16). Submitting solutions via mail is *not* possible. Discussion: 04.-08.11.2019.

1 Condition/Event Nets (4 Points)

Professor Smart needs to transport a student, a cup of coffee and a laptop from his institute to the lecture hall. Unfortunately, he can transport only one of them at the same time. If he leaves the student alone with his coffee, the student will drink it. If, however, he leaves the coffee with the laptop, someone will spill it over the laptop.

Model this problem as a Condition/Event Net!

2 Place/Transition Nets (4 Points)
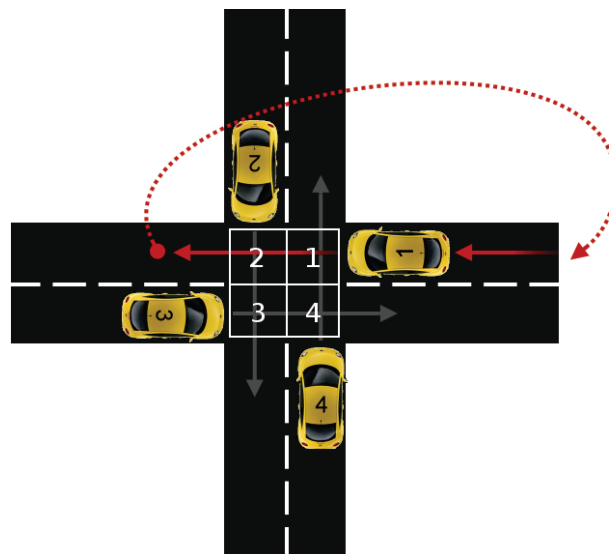
We assume two crossing streets on which no traffic lights are available. Cars coming from the right side always have the right of way. Moreover, cars are not allowed to turn, but can only drive straight ahead. For simplification, the crossroads are divided into four quadrants. In the beginning, each car is in the state *approaching*. Afterwards it can switch to the state *waiting* in which it occupies the quadrant in front of it. Please note that the driver has to check if a car is approaching from the right side, i.e., if its right neighbor's quadrant is empty. If this is the case, the road can be crossed (in the state *driving*). After the car has crossed the road, both quadrants are empty again. Thereon, the car returns to the crossroads.

Model this problem as a Place/Transition Net!

3 Predicate/Transition Nets (3 Points)

Model the dining philosophers problem as a Predicate/Transition Net!