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Serie 10 - Petri Net

Exercise 1

Answer the following questions:

1. How can nets model concurrency and synchronization?
2. What is the reachability set of a net? How can you compute this set?
3. What kinds of Petri nets can be modeled by finite state processes?
4. What are some simple conditions for guaranteeing that a net is bounded?
5. What could you add to Petri nets to make them Turing-complete?

Exercise 2

Provide the definition of the petri net in figure 1 and 2.

Exercise 3

Is the Petri net in Figure 3 bounded? Safe? Conservative? Are all the transitions live?

Exercise 4

Margarita invites Dominick for lunch. Unfortunately Margarita did not come around to do the dishwashing. Margarita cooked soup. There is only one spoon, and hence only one person can eat at any time. However, Margarita and Dominick are more interested in each other rather than in the food and are in no hurry. Therefore, whenever one of them has eaten some soup, the spoon is put back onto the table, and Margarita and Dominick have a little chat. At some later time, someone picks up the spoon again and eats some more. And so on.

Model the situation using the petri net editor in the web site of the Concurrent Programming Course. Hand made petri net diagram are accepted but make it readable please.

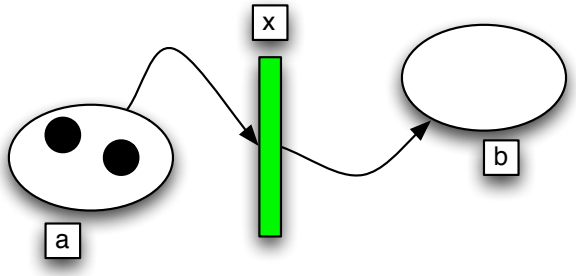

Figure 1: Net 1

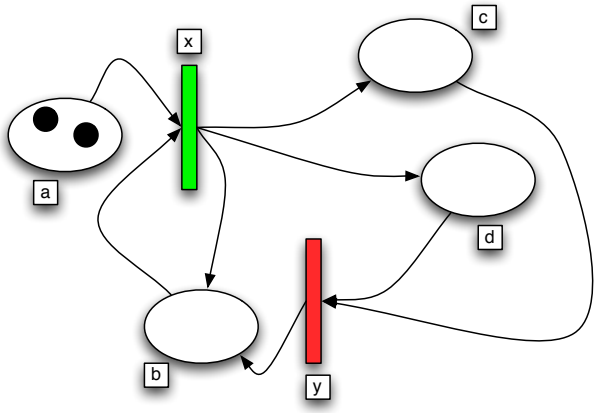

Figure 2: Net 2.

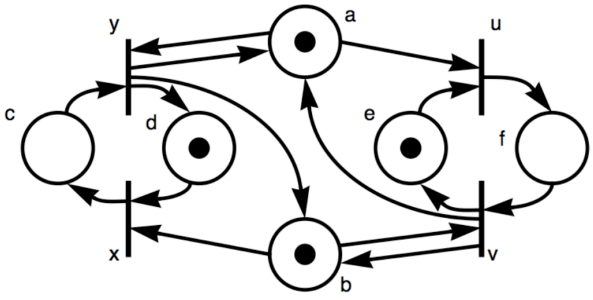

Figure 3: Net 3.