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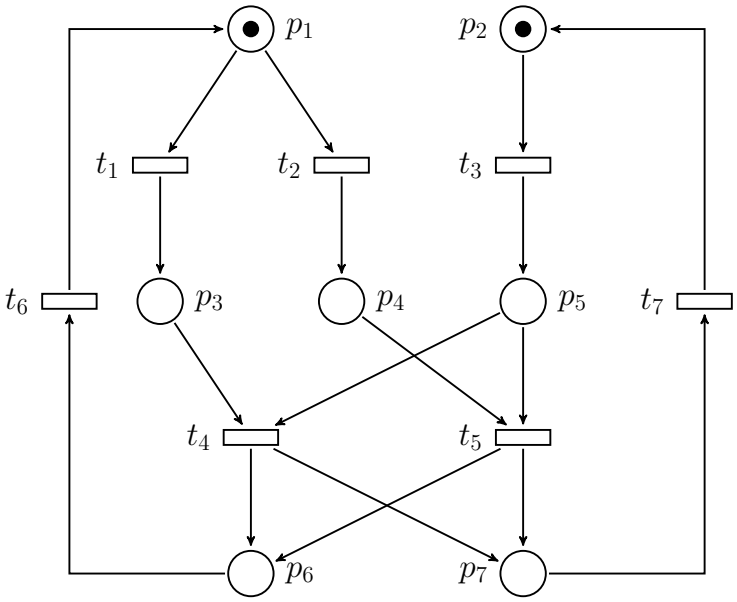
Concurrency Theory WS 2017/2018

— Series 10 —

Hand in until January 19th before the exercise class.

Exercise 1 (Marking Graph and Distributed Runs) (3 Points)

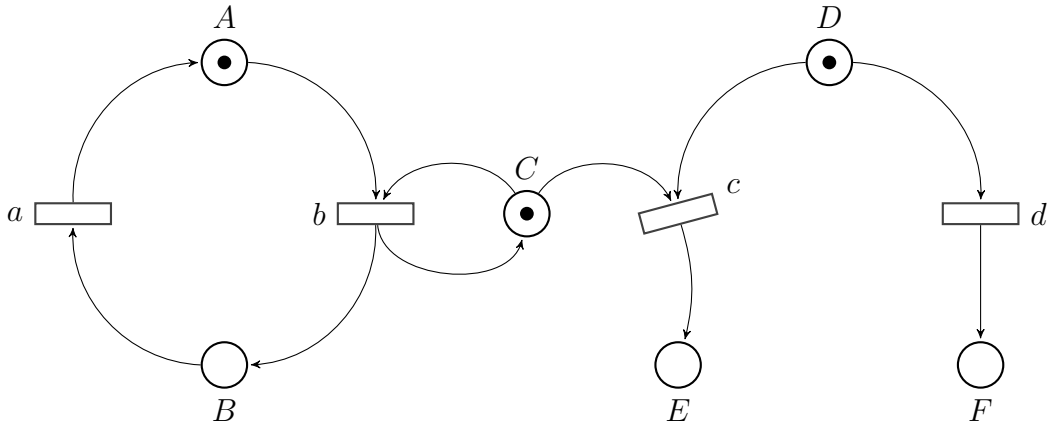


1) Give the marking graph of the Petri net shown above.

2) Give at least three distributed runs which cover at least four transition of this Petri net. If the Petri net admits an infinite distributed run, please provide it.

Exercise 2 (Distributed Runs) (1+1+1+1+1+1+1 = 7 Points)

Consider the following Petri net P:



(a) Determine the number of sequential runs and the number of distributed runs of P!

(b) Give a distributed run of P in which the transitions a, b and d occur exactly once!

(c) Does there exist a distributed run of P in which all transitions occur exactly once? Justify your answer!

(d) Is the distributed run you obtained in **(b)** a complete distributed run? If yes, justify your answer! If no, can you complete it?

(e) Give a finite completed distributed run of P. Now give a completed distributed run of the distributed run you have just obtained! What do you observe?

(f) Give a branching process of P in which the transitions b, c and d occur exactly once!

(g) Compute the McMillan prefix of P!