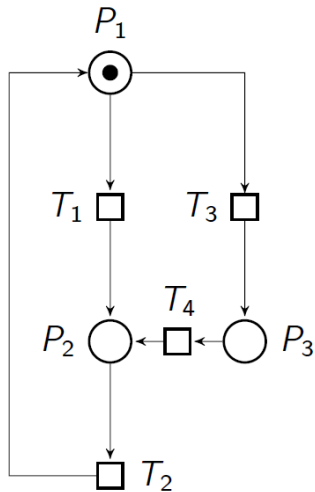


Petri Nets: exercice 1



- 1 Give the Pre, Post and the incidence matrices of this Petri net.
- 2 Which are the fireable transitions from the initial marking?

Question 1.1) The PRE matrixe

	T1	T2	T3	T4
P1	1	0	1	0
P2	0	1	0	0
P3	0	0	0	1

The PRE matrix defines the arcs that Goes = Places to the transistions

Question 1.2) The POST matrixe

	T1	T2	T3	T4
P1	0	1	0	0
P2	1	0	0	1
P3	0	0	1	0

The POST matrix defines the arcs taht Goes = Transitions to the Places

Question 1.3) The incidence matrix C

	T1	T2	T3	T4
P1	-1	1	-1	0
P2	1	-1	0	1
P3	0	0	1	-1

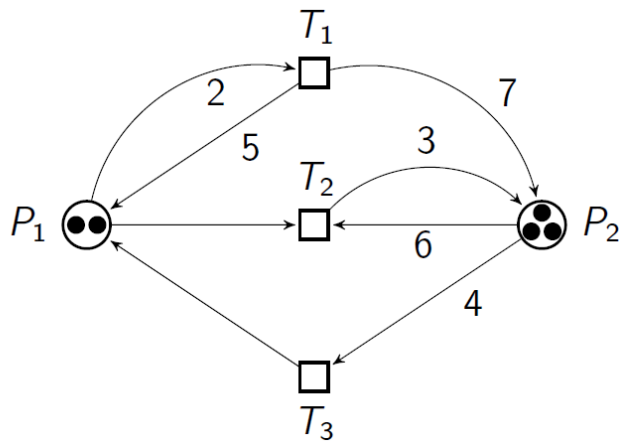
The Incidence matrix is defined by $C = POST - PRE$

$[-1]$ → Pn vers Tn (sortante); $[1]$ → Tn vers Pn (entrante);

Question 2) Which are the fireable transitions from the initial marking ?

T1 and T3 are the two fireable transitions from the initial marking because $m(P1) = 1$.

Petri Nets: exercice 2



- 1 Is T_1 fireable from the initial marking? If yes, which is the reachable marking?
- 2 Give the incidence matrix of this Petri net.
- 3 Check formally the fireability of the transition T_1 . If T_1 is fireable, then compute the reachable marking formally.

Question 1) Is T_1 fireable from the initial marking ?

Yes, T_1 is fireable: $P_1 \rightarrow T_1$ can be fired because $m(P_1) = 2$ and $PRE.t_1(P_1, T_1)$ require 2.

Reachable marking = M_1 , when T_1 fired.

$M_0 = \{ 2, 3 \}$ // Order: $M_n = \{ P_1\text{-tokens}, P_2\text{-tokens} \}$

$M_1 = \{ 5, 10 \}$

Question 2) Give the incidence matrix C

PRE

	T1	T2	T3
P1	2	1	0
P2	0	6	4

POST

	T1	T2	T3
P1	5	0	1
P2	7	3	0

Incidence matrix C

	T1	T2	T3
P1	3	-1	1
P2	7	-3	-4

The Incidence matrix C is defined by $C = POST - PRE$

$$C(P1, T1) = POST(P1, T1) - PRE(P1, T1) = 5 - 2 = 3$$

$$C(P2, T2) = POST(P2, T2) - PRE(P2, T2) = 3 - 6 = -3$$

Question 3) Check formally the fireability of the transition T1. If T1 is fireable, then compute the reachable marking formally.