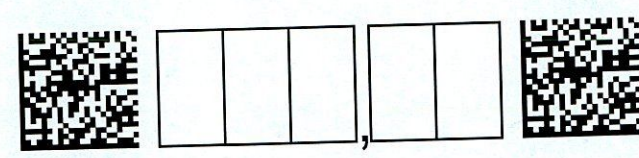


NOM POUPA
 Prénom Adrien
 Promo M1 2018
 Date 11/04/17

M1 - 2016



POUPA Adrien
M1 - 2016

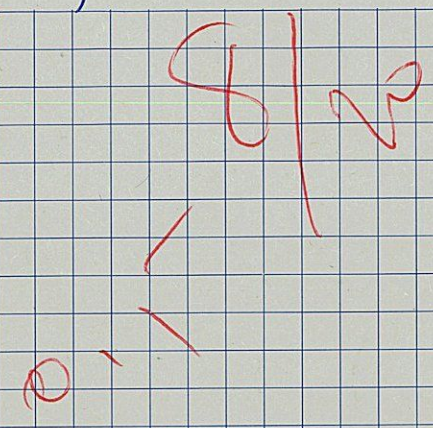
MATIÈRE Specification, Design, Validation

Petri Nets

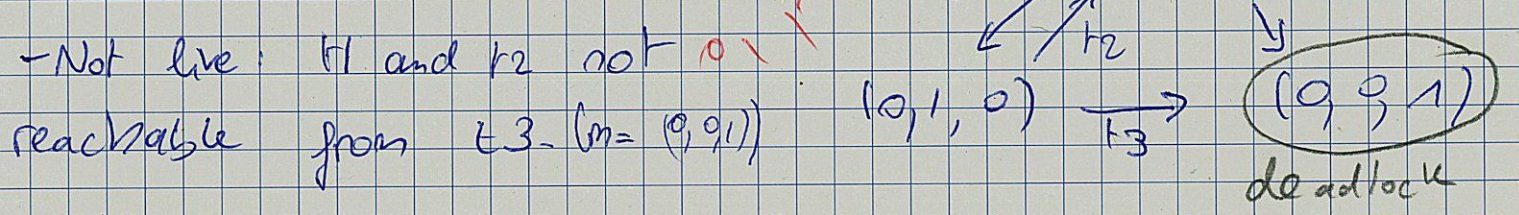
1. a) Pre:
$$\begin{pmatrix} 1 & 0 & 1 \\ 0 & 0 & 0 \\ 0 & 0 & 0 \end{pmatrix}$$

Post:
$$\begin{pmatrix} 0 & 1 & 0 \\ 1 & 1 & 1 \\ 0 & 0 & 1 \end{pmatrix}$$

$$C = \text{Post} - \text{Pre} = \begin{pmatrix} -1 & 1 & -1 \\ 1 & 1 & 1 \\ 0 & 0 & 1 \end{pmatrix}$$



b) Model 1 reachability graph:



- Not quasi live: all transitions are not fireable at least once.

- Bounded: no w in the graph.

- Not deadlock-free: marking $m = (0, 0, 1)$ is a deadlock.

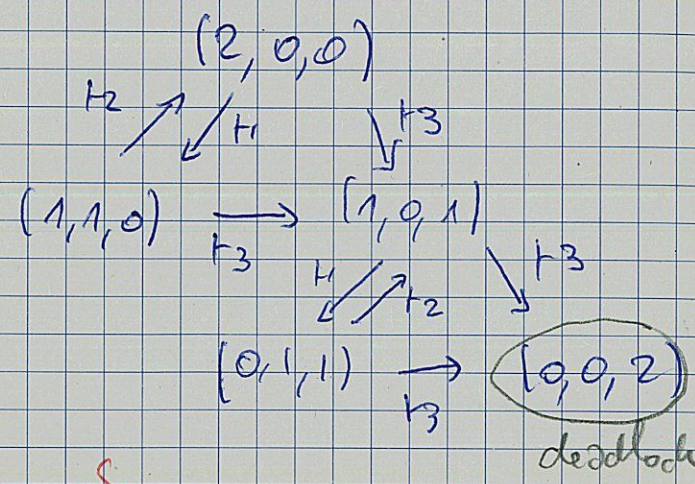
Model 2 reachability graph:

- Not live: t_1 and t_2 not reachable from t_3 ($m = (0, 0, 2)$)

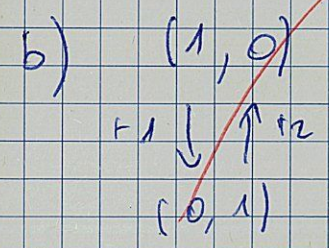
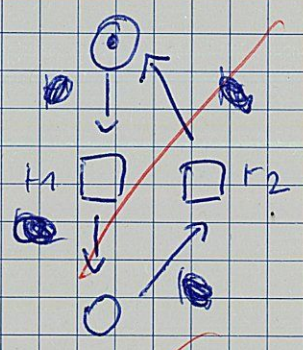
- Quasi live: all transitions are fireable at least once

- Bounded: no w in the graph

- Not deadlock-free: marking $m = (0, 0, 2)$ is a deadlock



2. a)



c) IT is deadlock free.

LTL

I use dots here because the corrections on Moodle had the same

a) Equivalent ✓

b) Not equivalent

Counter example: $(p \rightarrow q)^w$ satisfies the second formula but not the first

c) Not Equivalent

p^w satisfies the second formula but not the first

d) Equivalent ✓

e) Not equivalent ✓

p^w satisfies the second formula but not the first

f) Not equivalent

p^w satisfies the second formula but not the first

g) Equivalent ✓

h) Equivalent

i) Not equivalent

$(p \rightarrow q)$ satisfies the second formula but not the first

j) Not equivalent

$(p \wedge q)$ satisfies the second formula but not the first

2. a) Satisfied.

seq $(\bar{P}_1 \circ \bar{P}_2) \cdot (P_1 \bar{P}_2)$ satisfies the proposition

b) Satisfied

seq $(\bar{P}_1 \circ P_2) \cdot (P_1 \circ \bar{P}_2)$ satisfies the proposition

c) Not satisfied ✓

seq $(P_1 \circ \bar{P}_2)$ is never followed by a P_2 .

d) I don't understand the "E". ✓

e) ~~Not~~ satisfied

The sequence $(P_1 \circ \bar{P}_2) \cdot (\bar{P}_1 \circ \bar{P}_2) \cdot (\bar{P}_1 \circ P_2)$
shows that we don't have P_1 until P_2 .