Sieci Petriego

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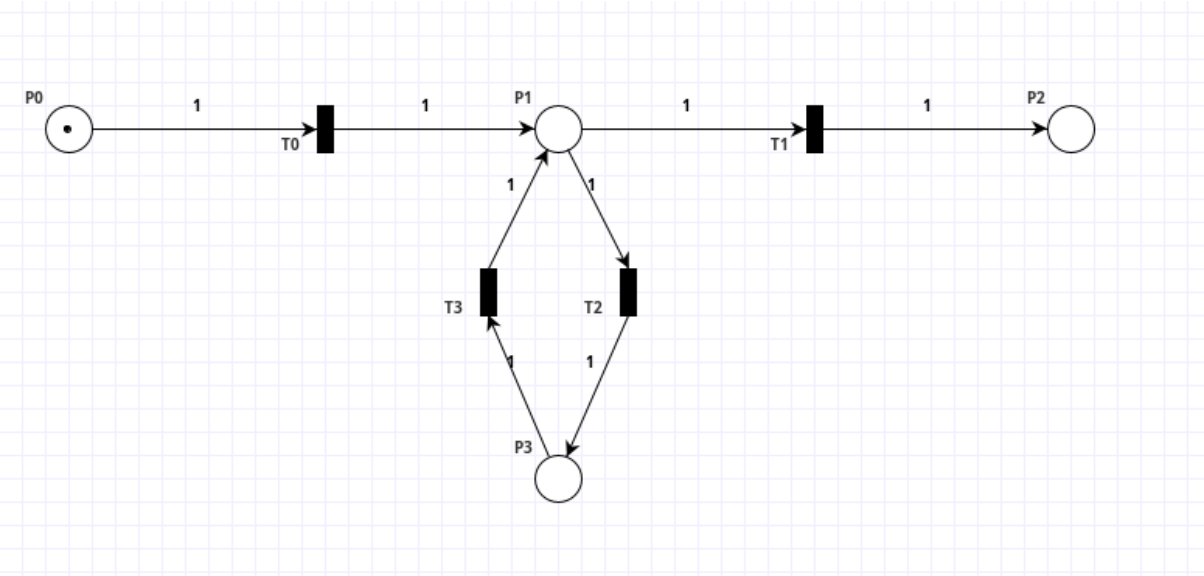
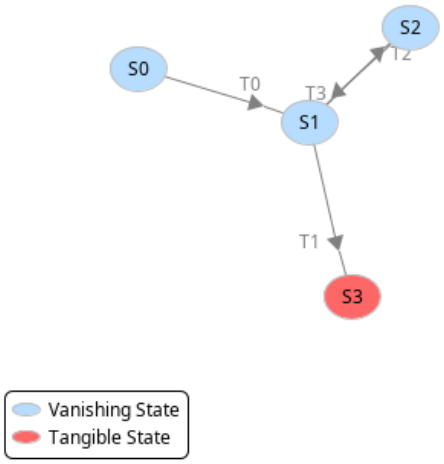
1 Zadanie 1



Petri net simulation results

Place	Average number of tokens	95% confidence interval (+/-)
P0	0	0
P1	0.4	0.07972
P2	0.2	0.15944
P3	0.2	0.23916



Petri net invariant analysis results

T-Invariants

T0	T1	T2	T3
0	0	1	1

The net is not covered by positive T-Invariants, therefore we do not know if it is bounded and live.

P-Invariants

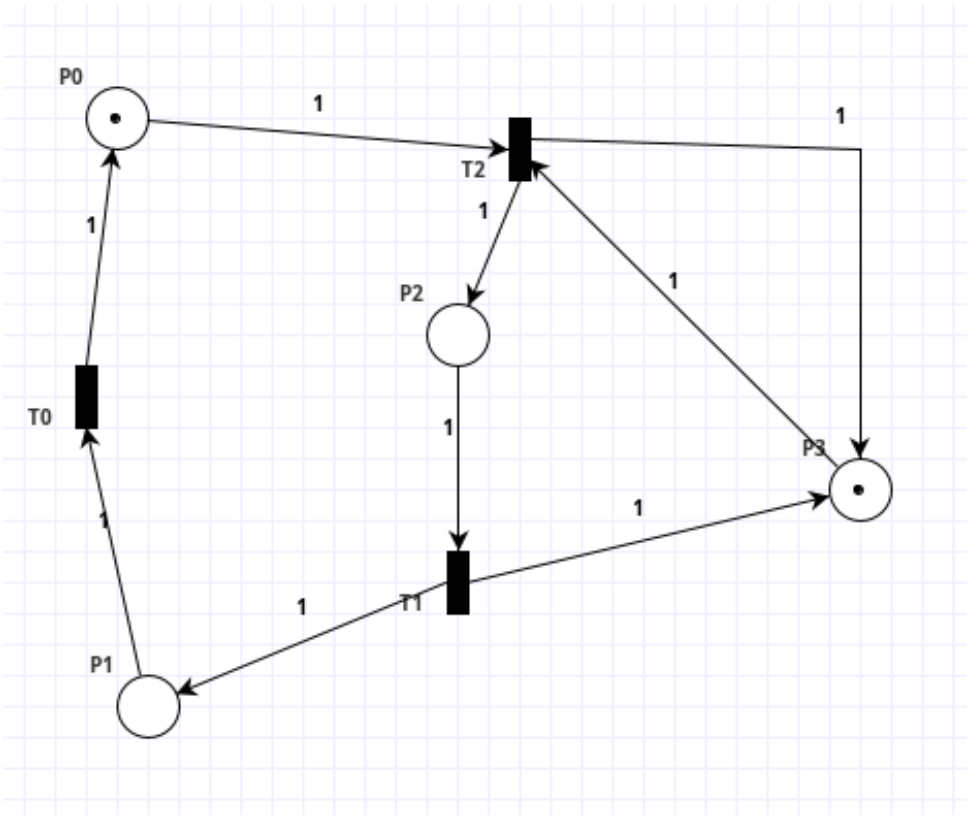
P0	P1	P2	P3
1	1	1	1

The net is covered by positive P-Invariants, therefore it is bounded.

P-Invariant equations

M(P0) + M(P1) + M(P2) + M(P3) = 1

2 Zadanie 2



Petri net invariant analysis results

T-Invariants

T0	T1	T2

The net is not covered by positive T-Invariants, therefore we do not know if it is bounded and live.

P-Invariants

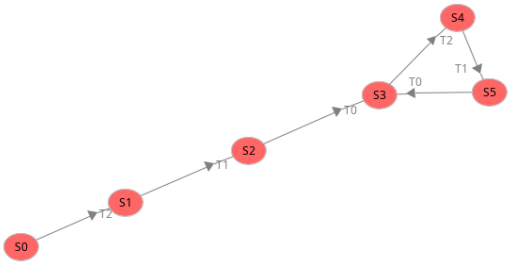
P0	P1	P2	P3
1	1	1	0

The net is not covered by positive P-Invariants, therefore we do not know if it is bounded.

P-Invariant equations

M(P0) + M(P1) + M(P2) = 1

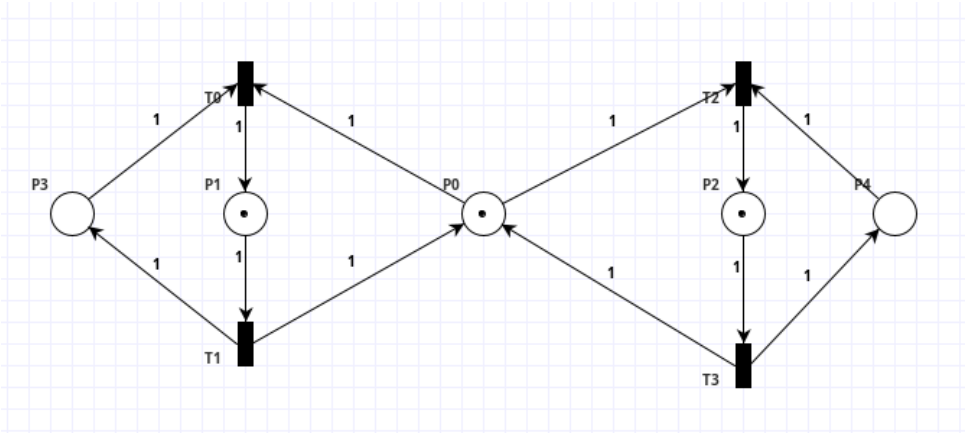
Sieć nie jest pokryta niezmiennikami, więc nie jest odwracalna.



Sieć jest żywa. Sieć cały czas przechodzi przez cykl T_0, T_1, T_2, używając po koleji każdego z przejść.

Sieć nie jest ograniczona, ponieważ w miejscu P_3 może się nagromadzić dowolna liczba znaczników.

3 Zadanie 3



Petri net invariant analysis results

T-Invariants

T0	T1	T2	T3
1	1	0	0
0	0	1	1

The net is covered by positive T-Invariants, therefore it might be bounded and live.

P-Invariants

P0	P1	P2	P3	P4
1	1	1	0	0
0	1	0	1	0
0	0	1	0	1

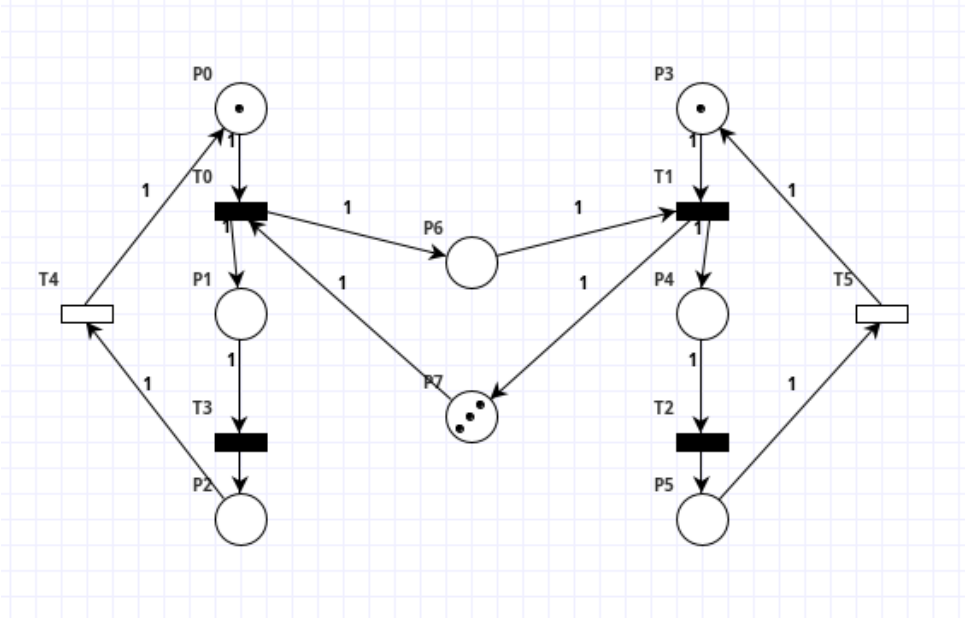
The net is covered by positive P-Invariants, therefore it is bounded.

P-Invariant equations

M(P0) + M(P1) + M(P2) = 1
M(P1) + M(P3) = 1
M(P2) + M(P4) = 1

Równania niezmnieników miejc pokazują ile znaczników zawsze bedzię w jakiejś grupie miejsc. Równanie $M(P_0) + M(P_1) + M(P_2) = 1$ to równanie sekcji krytycznej.

4 Zadanie 4



Petri net invariant analysis results

T-Invariants

T0	T1	T2	T3	T4	T5
1	1	1	1	1	1

The net is covered by positive T-Invariants, therefore it might be bounded and live.

P-Invariants

P0	P1	P2	P3	P4	P5	P6	P7
1	1	1	0	0	0	0	0
0	0	0	1	1	1	0	0
0	0	0	0	0	0	1	1

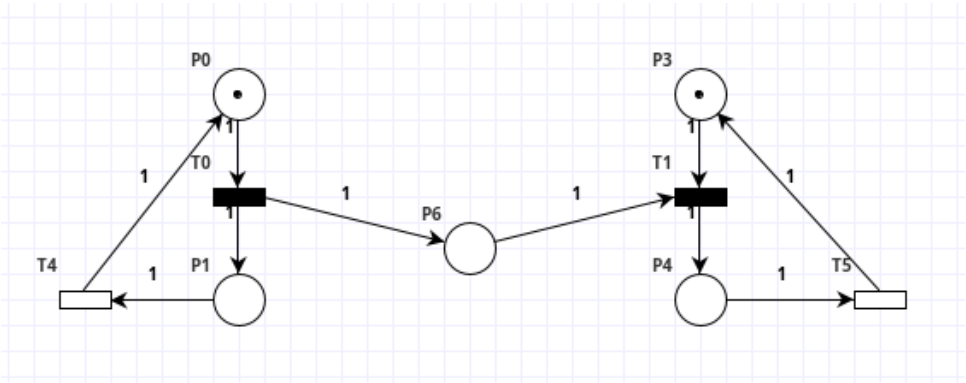
The net is covered by positive P-Invariants, therefore it is bounded.

P-Invariant equations

M(P0) + M(P1) + M(P2) = 1
M(P3) + M(P4) + M(P5) = 1
M(P6) + M(P7) = 3

Sieć jest zachowawcza, widać to po 3 równaniach niezmienników miejsc, każde z tych równań ma rozłączne składniki. Równanie $M(P_6) + M(P_7) = 3$ mówi nam o rozmiarze bufora.

5 Zadanie 5



Petri net invariant analysis results

T-Invariants

T0	T1	T4	T5
1	1	1	1

The net is covered by positive T-Invariants, therefore it might be bounded and live.

P-Invariants

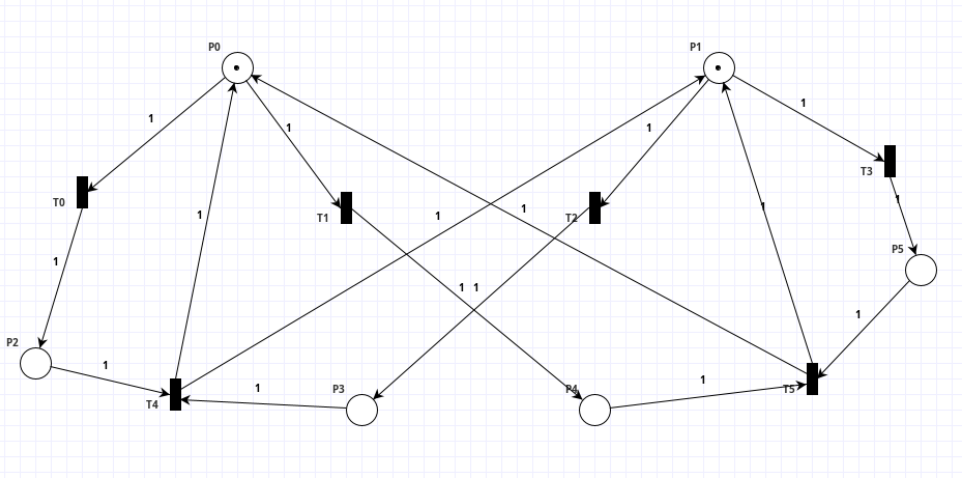
P0	P1	P3	P4	P6
1	1	0	0	0
0	0	1	1	0

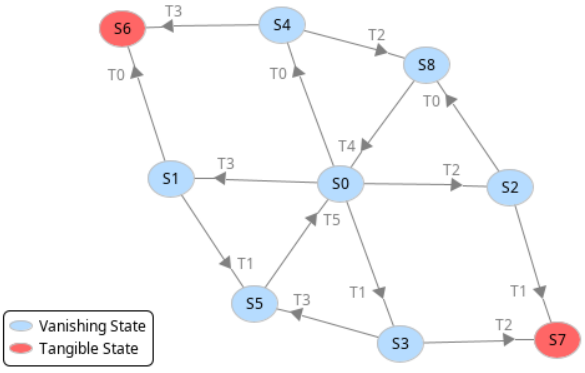
The net is not covered by positive P-Invariants, therefore we do not know if it is bounded.

P-Invariant equations

M(P0) + M(P1) = 1
M(P3) + M(P4) = 1

6 Zadanie 6



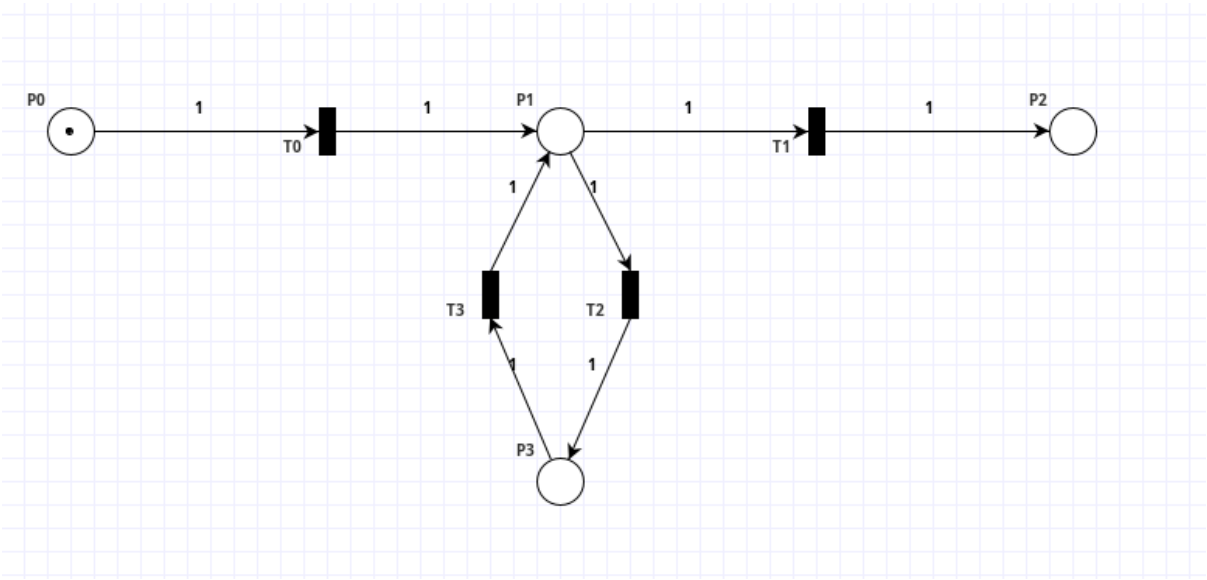


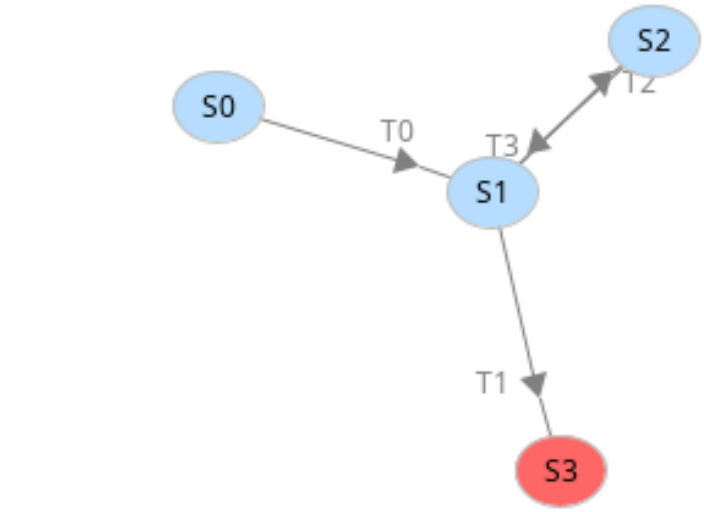
Petri net state space analysis results

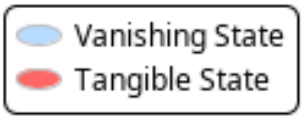
Bounded	true
Safe	true
Deadlock	true

Shortest path to deadlock: T0 T3

7 Zadanie 7





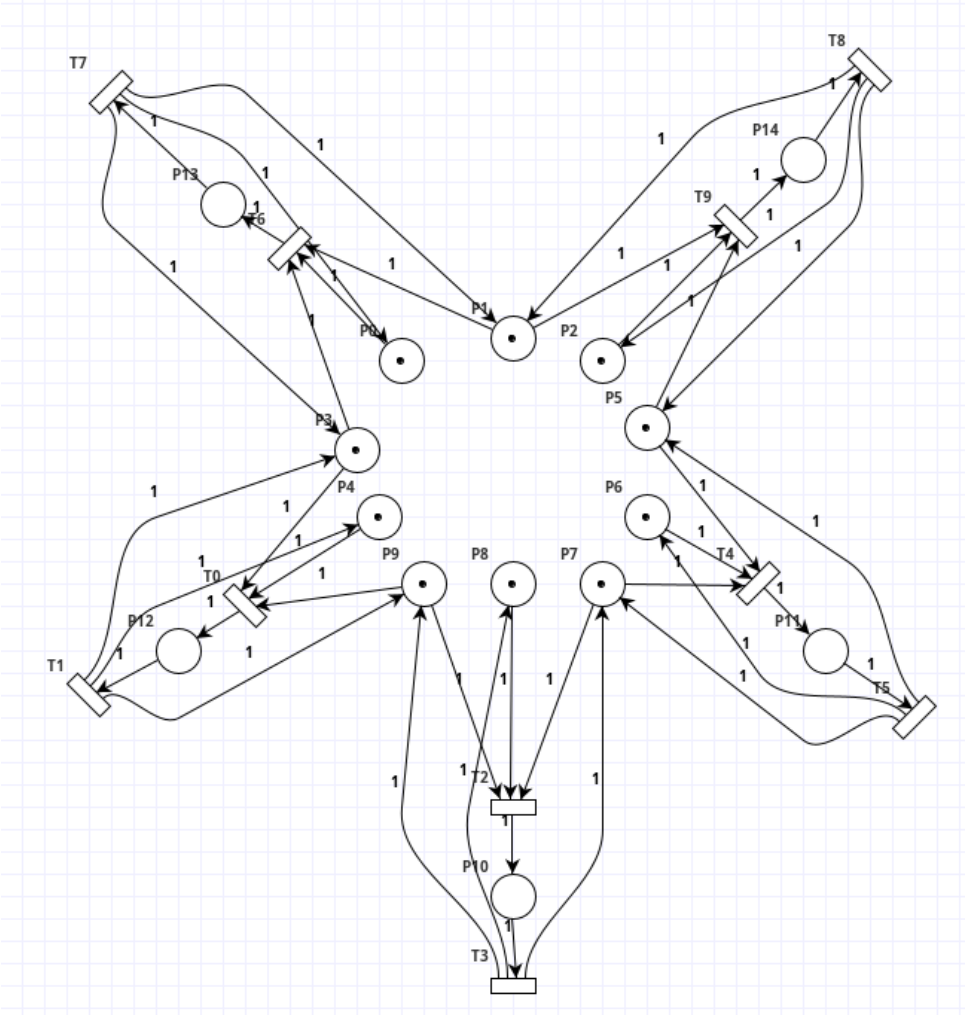


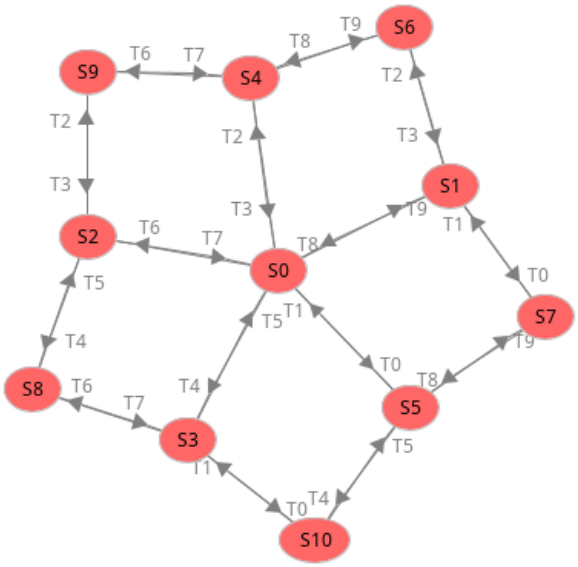
Petri net state space analysis results

Bounded	true
Safe	true
Deadlock	true

Shortest path to deadlock: T0 T1

8 Zadanie 8


T7
T8
P14
P13
T9
P0
P1
P2
P5
P3
P4
P6
P9
P8
P7
T4
T0
P12
P11
T1
T5
T2
P10
T3


S6
S9
S4
S1
S2
S0
S7
S8
S5
S3
S10

Petri net invariant analysis results

T-Invariants

T0	T1	T2	T3	T4	T5	T6	T7	T8	T9
1	1	0	0	0	0	0	0	0	0
0	0	1	1	0	0	0	0	0	0
0	0	0	0	1	1	0	0	0	0
0	0	0	0	0	0	1	1	0	0
0	0	0	0	0	0	0	0	1	1

The net is covered by positive T-Invariants, therefore it might be bounded and live.

P-Invariants

P0	P1	P10	P11	P12	P13	P14	P2	P3	P4	P5	P6	P7	P8	P9
1	0	0	0	0	1	0	0	0	0	0	0	0	0	0
0	1	0	0	0	1	1	0	0	0	0	0	0	0	0
0	0	0	0	0	0	1	1	0	0	0	0	0	0	0
0	0	0	0	1	1	0	0	1	0	0	0	0	0	0
0	0	0	0	1	0	0	0	0	1	0	0	0	0	0
0	0	0	1	0	0	1	0	0	0	1	0	0	0	0
0	0	0	1	0	0	0	0	0	0	0	1	0	0	0
0	0	1	1	0	0	0	0	0	0	0	0	1	0	0
0	0	1	0	0	0	0	0	0	0	0	0	0	1	0
0	0	1	0	1	0	0	0	0	0	0	0	0	0	1

The net is covered by positive P-Invariants, therefore it is bounded.

P-Invariant equations

M(P0) + M(P13) = 1
M(P1) + M(P13) + M(P14) = 1
M(P14) + M(P2) = 1
M(P12) + M(P13) + M(P3) = 1
M(P12) + M(P4) = 1
M(P11) + M(P14) + M(P5) = 1
M(P11) + M(P6) = 1
M(P10) + M(P11) + M(P7) = 1
M(P10) + M(P8) = 1
M(P10) + M(P12) + M(P9) = 1