

392013 Exercises Algorithmic Cheminformatics

Exercise 07.

June 12, 2025

(no mandatory exercises)

1 Petri Nets - Invariants

Given the following Petri Net:

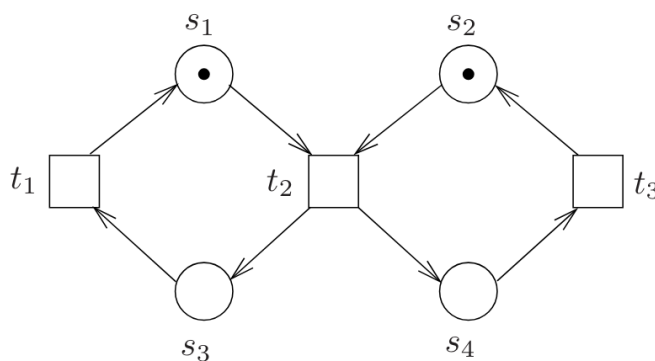


Figure 1

- Determine the incidence matrix.
- Determine all transition invariants of the Petri net (first without, then with Farkas / Fourier-Motzkin algorithm)
- Determine all place invariants of the Petri net (first without, then with Farkas Fourier-Motzkin algorithm).

2 Petri Nets - Invariants

Given the following Petri Net:

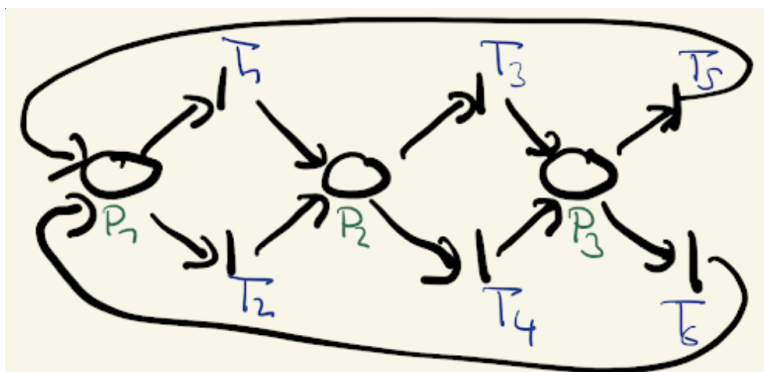


Figure 2

- Determine the incidence matrix.
- Determine all transition invariants of the Petri net (first without, then with Farkas / Fourier-Motzkin algorithm)
- Determine all place invariants of the Petri net (first without, then with Farkas Fourier-Motzkin algorithm).

3 Reachability / Coverability Graph

Given the following Petri Net:

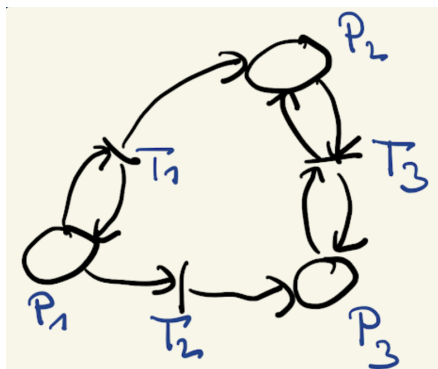


Figure 3

- Is the Petri-net k -safe for a certain value of k ?
- Determine the reachability or coverability graph.