

Advanced Process Mining

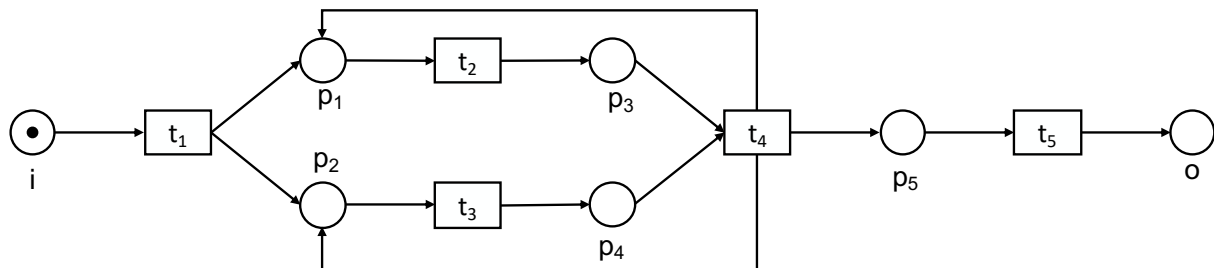
Summer term 2020

Exercise sheet 1

Recap

Exercise 1: Soundness

Is the following Petri net sound?



Exercise 2: Liveness and Reversibility

Create a Petri net with the following properties:

- The Petri net is not live
- The Petri net is reversible
- The initial marking has exactly one token
- Deadlock free
- Petri net is not bounded

Exercise 3: Workflow Nets

- a) Model the following scenario as a workflow net:

When a package is received there are two different ways the package is processed depending on its weight. Heavy packages will be transported with a forklift to the warehouse. For light packages a trolley is used. If the package is damaged during transport the package has to be redirected to the quality control department. Otherwise it will be handed over to the warehouse. The process ends once the package has been handed over.

- b) Is it possible for a workflow net to have more than one source place or sink place? Justify your answer.
- c) How can a mix-up between tokens from different cases be prevented in a model?

Exercise 4: Case vs. Trace

A	B	C	D	E
1	1336	2020-03-02 04:12:30	receive specimen	Kenzo
	1349	2020-03-03 04:07:56	quality control	Helena
	1365	2020-03-04 20:14:51	pack specimen	Hans
	1376	2020-03-05 03:24:29	forward to shipping	Hans
2	1374	2020-03-05 19:03:53	receive specimen	Paloma
	1378	2020-03-06 00:52:49	quality control	Helena
	1394	2020-03-06 13:55:45	discard specimen	Helena
3	1370	2020-03-09 23:19:48	receive specimen	Kenzo
	1352	2020-03-10 18:53:53	quality control	Helena
	1367	2020-03-11 06:18:06	pack specimen	Hans
	1368	2020-03-12 01:34:52	forward to shipping	Hans
4	1337	2020-03-12 11:47:09	recieve specimen	Kenzo
	1334	2020-03-12 23:35:01	quality control	Helena
	1353	2020-03-16 00:56:33	pack specimen	Sabrina
	1355	2020-03-16 17:49:18	forward to shipping	Sabrina

- a) Inspect the table above and replace the placeholder names of the columns with the correct terms. Give a short description of the term.
- b) Explain the relationship between the following terms and give an example for each: *case*, *trace*, *event* and *activity*.