CSCI910 – Software Requirements, Specifications and Formal Methods

Tutorial 7

Objectives

- Get familiar with Petri Nets

Information about the CPN IDE:

- Official Website of CPN IDE: https://cpnide.org/
- CPN Tools online Tutorials:
  https://www.youtube.com/watch?v=38g1jMvNi6Q&list=PL24010632B8286DBC&index=4

NOTE: CPN IDE is only for Windows, but you can use it in a virtual environment if you use Mac or Linux. Here is the link to the free version of VirtualBox (https://www.virtualbox.org/).

Exercise 1:

Given the following Petri net structure, draw the Petri net graph.

$P=\{p1, p2, p3, p4\}$
$T=\{t1, t2, t3, t4\}$

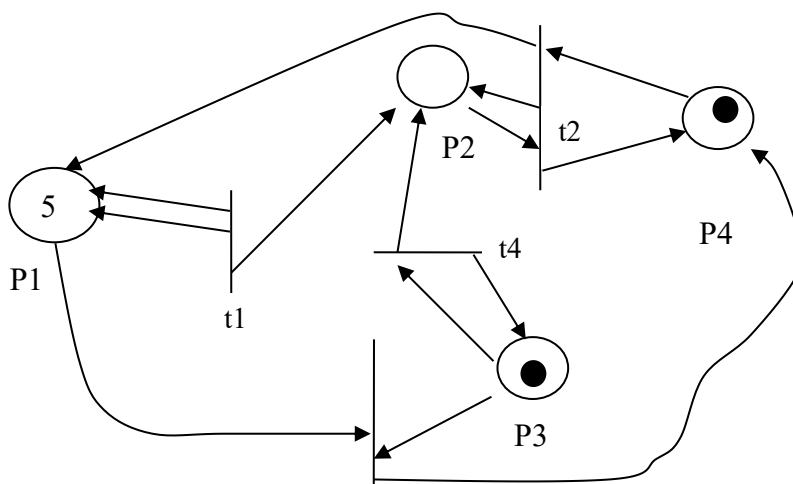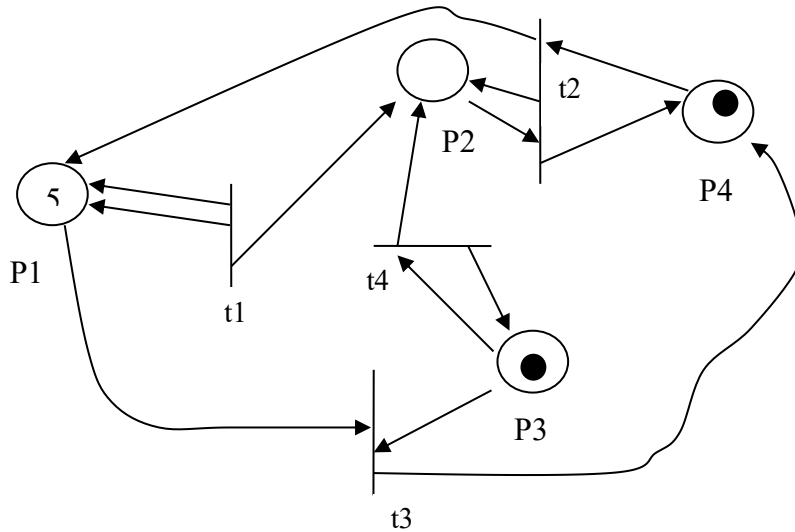|	
$I(t1) = \{\ \}$	$O(t1) = \{p1, p1, p2\}$
$I(t2) = \{p2, p4\}$	$O(t2) = \{p2, p4, p1\}$
$I(t3) = \{p1, p3\}$	$O(t3) = \{\ p4\}$
$I(t4)=\{p3\}$	$O(t4) = \{p2, p3\}$

Exercise 2:

Assume that the initial marking of Petri net as follows. Evaluate which transition/transitions can be enabled.

Exercise 3:

Suppose transition *t3* is fired first. What is the marking result after finishing transition *t3*.

Exercise 4:

Construct a CN to model two traffic lights in an intersection. Two traffic lights can't be in the green same time and must turn green alternatively.