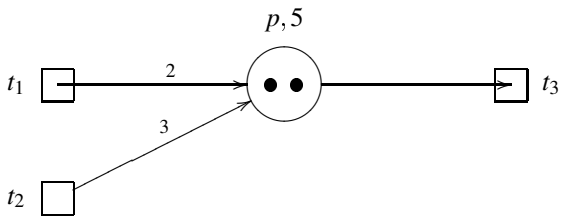
Department of Computer Science
Laboratory for Theoretical Computer Science
T-79.231 Parallel and Distributed Digital Systems

Tutorial 2
Sep 30th 2002

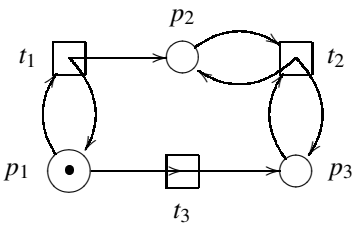
1. Model the problem, presented in the lecture, of ferrying a goat, a cabbage and a wolf across a river with place/transition net. There is one boat, which can carry a ferry-man and either the goat, the cabbage or the wolf. If left unattended, the goat will eat the cabbage and the wolf will eat the goat. The boat can return empty, that is, with only the ferry-man riding the boat. The desired solution is the one where all the three passengers have gotten ashore to the other bank of the river.

   How can we find the unwanted states from the model?

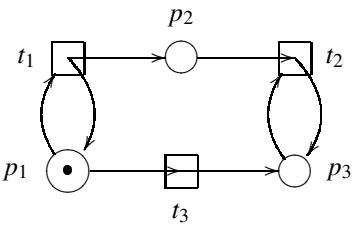
2. Do the complement construction for the following net:



3. Generate the coverability graph for the following nets. All places have unbounded capacities.



N_1



N_2

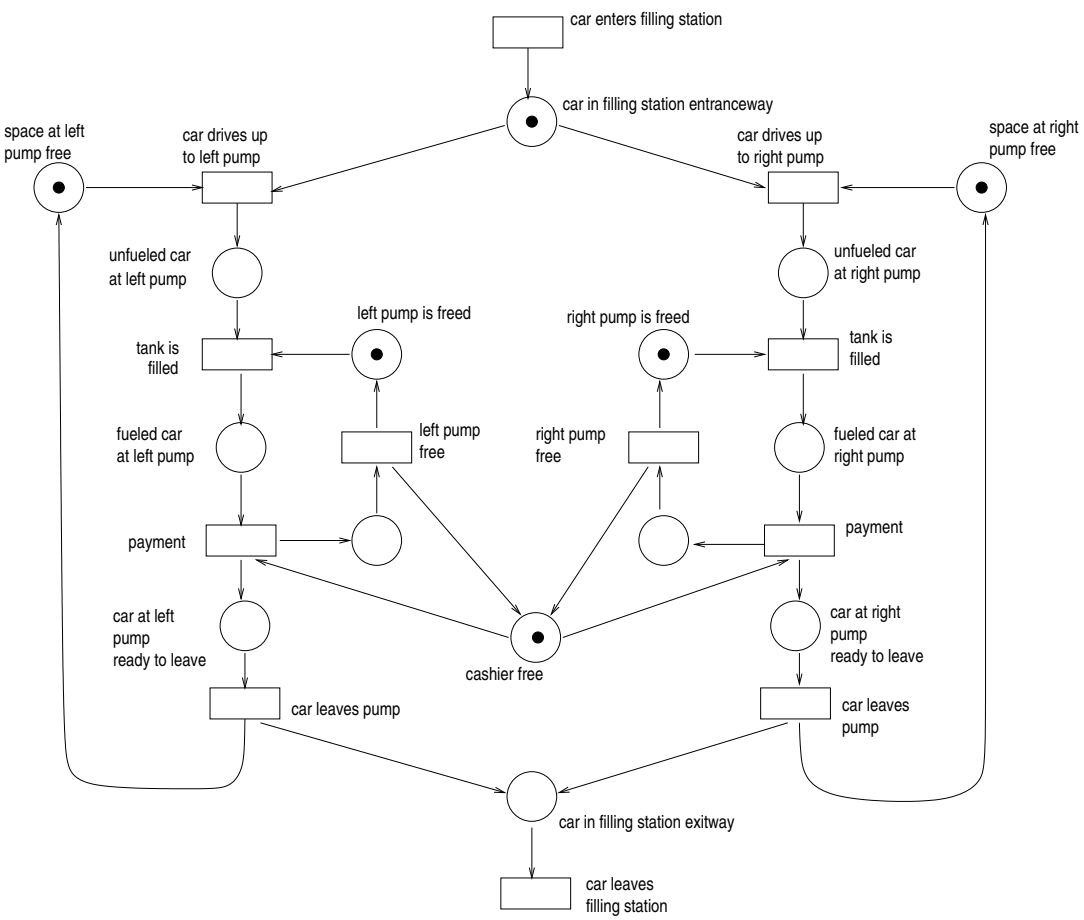
4. Let us consider the following P/T net modeling a self service fueling station:

   Let us assume that we are only interested in the *quantitative* aspects of the fueling station.

   Your task is to:

   (a) Simplify the net so that it is no longer possible to observe if the left or right pump is being used.

   (b) Add another cashier and two waiting slots to the system.


car enters filling station
car in filling station entranceway
space at left
pump free
car drives up
to left pump
car drives up
to right pump
space at right
pump free
unfueled car
at left pump
unfueled car
at right pump
left pump is freed
right pump is freed
tank is
filled
tank is
filled
fueled car
at left pump
left pump
free
right pump
free
fueled car at
right pump
payment
payment
car at left
pump
ready to leave
car at right
pump
ready to leave
cashier free
car leaves pump
car leaves
pump
car in filling station exitway
car leaves
filling station