conflict-free if all transitions enabled at M can fire simultaneously for any marking M reachable from M_0

The three instructions, I(n), D(n) and J(n)[s] can be simulated by decision-free firing Petri nets: the first two by the same nets shown in Fig. 2.14, and J(n)[s] by the net shown in Fig.2.15.

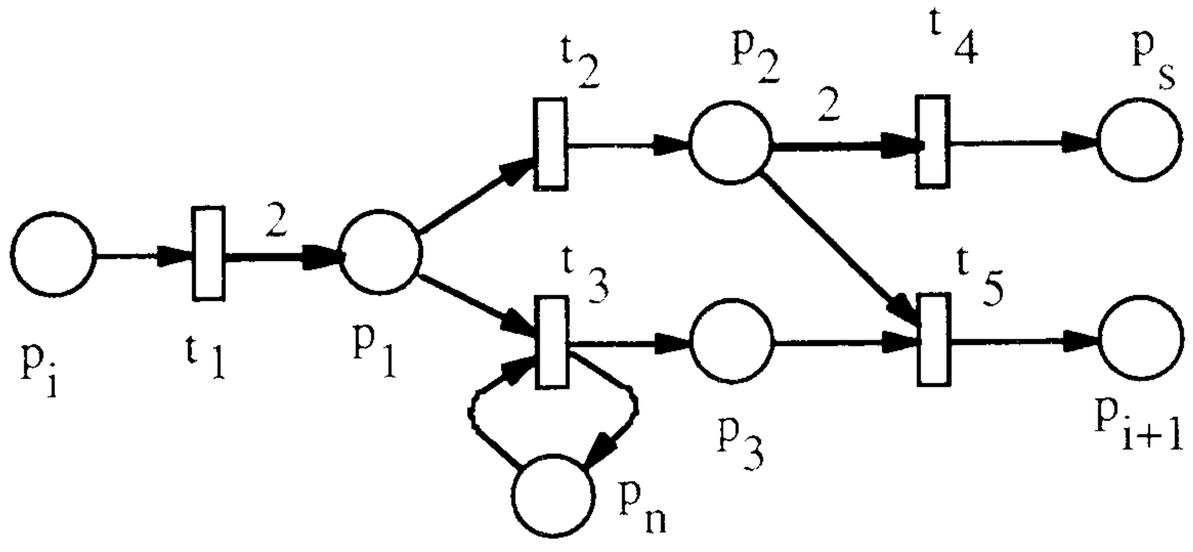

Fig. 2.15 A jump instruction

C) Merlin's Time Petri Nets

Def. A *Merlin's time Petri net* is a net where each transition t is associated with a time interval, $[\ t_{min}\ ,\ t_{max}\ ]$ indicating that the firing t is allowed to take place only sometime between $t_0 + t_{min}$ and $t_0 + t_{max}$, assuming it is enabled at time t_0. This means that t cannot fire before the time $t_0 + t_{min}$ nor after $t_0 + t_{max}$. Some authors regard the time delay t_{min} as the minimum enabling time, and the time from $t_0 + t_{min}$ to the actual time of firing as the firing delay.

Thus, a Petri net is a special case of the Merlin's time Petri net where each transition is associated with the interval, $[0\ ,\ \infty]$.

Prob.2.9. Show that a Merlin's time net has the zero testing ability, and thus can simulate the instruction J(n)[s].