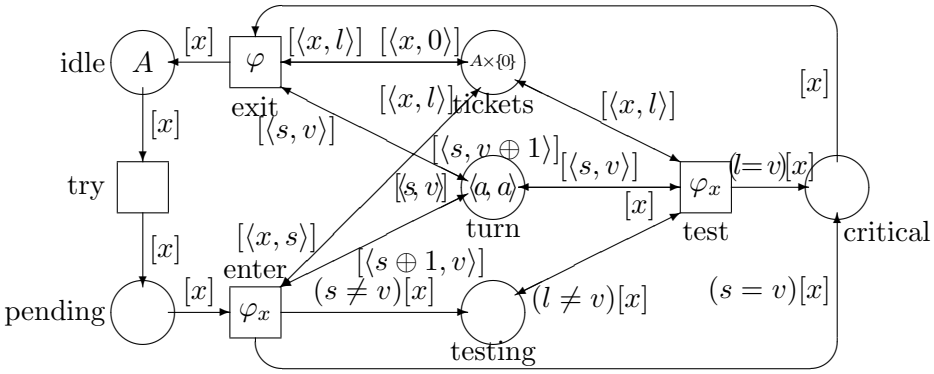
Examine the algorithm presented in the 5th lecture (pp. 5-21–5-22).

> **TicketME algorithm (informal):** A shared variable holds a pair $\langle next, granted \rangle$ of values in $\{1, \ldots, n\}$, initially $\langle 1, 1 \rangle$. The *next* component represents the next "ticket" into the critical section, while the *granted* component represents the last "ticket" that has been granted permission to enter the critical section. When a process enters the trying section, it "takes a ticket," that is, it copies and increments the *next* component modulo n. When the ticket of a process is equal to the *granted* component, it goes to the critical region. When process exits the critical section, it increments the *granted* component modulo n.
>
> Nancy A. Lynch: Distributed Algorithms, 1996, ISBN 1-55860-348-4



Fetch the Maria description of the net from `http://www.tcs.hut.fi/Studies/T-79.231/ticket.pn`

Model check the following properties with Maria:

1. Two processes will never be in the critical section at the same time
2. Process 1 never gets to enter the critical section
3. Process 1 is able enter the critical section
4. Process 2 can exit the critical section

In what different ways can the properties 1 and 2 be checked? Try at least two different ways.

Examine the counterexamples that you get. Were the algorithm used as a part of a real system, would the situations that the counterexamples represent be sensible?

Use the fairness assumptions in the model (switch `-DFAIR`) and check the properties 3 and 4 again.