

The following specification (nondet Buchi) has a single output letter (not shown) and two Boolean input signals:  $x$  and  $y$ .

It is realisable for the following reason. The self-loop in 0 and the transition  $0 \rightarrow 2$  with  $!x$  ensures that passing  $!x$  at any moment means the system wins on that play. Hence the environment has to always provide  $x$  (along with  $!y$  or  $y$ ). Now:

- if the environment provides  $y$ , we move the automaton into 3, and from 3 we move to 2 with input  $x$ .
- if the environment provides  $!y$ , we move into 1, and then  $1 \rightarrow 2$  with input  $x$ .

In either case, the play is won by system.

Hence on all plays the system wins, and it realizes the spec.

