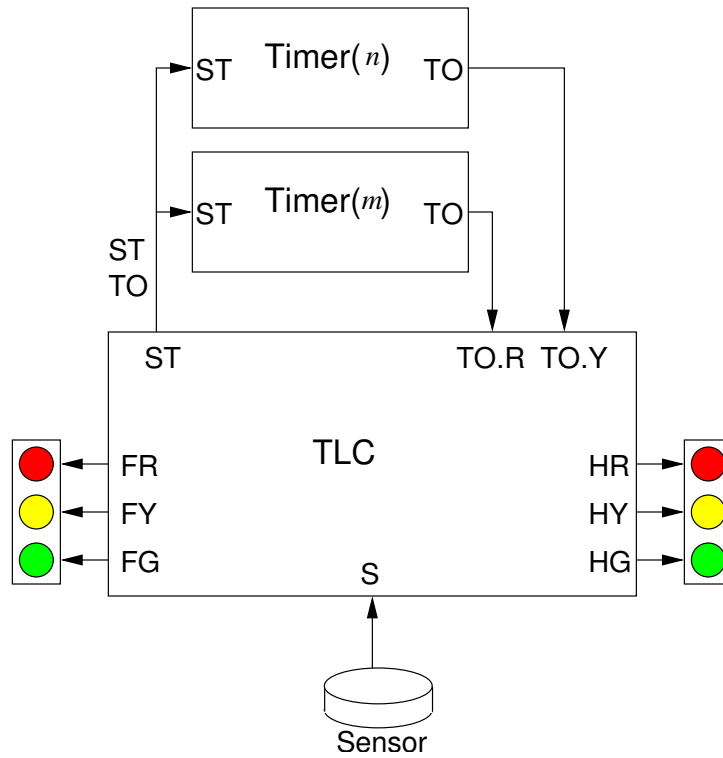


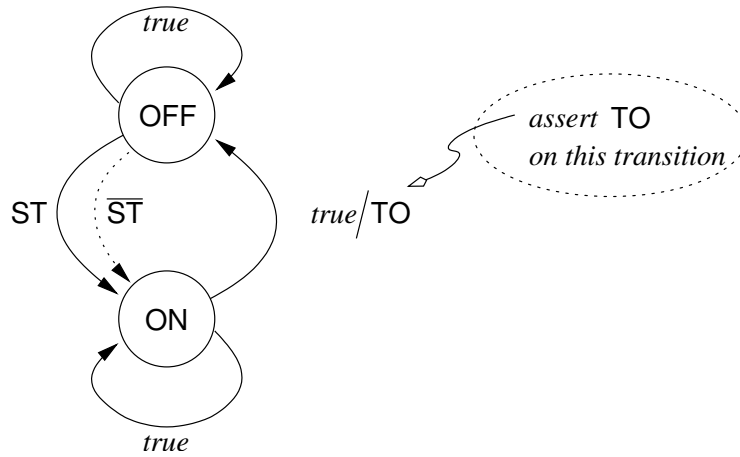
Traffic Light Controller

We want to design a controller for a traffic light at the intersection of a side-road, and a more heavily used “highway”. There is a sensor on the side road to detect the presence of a vehicle, and there are two signals to control flow.

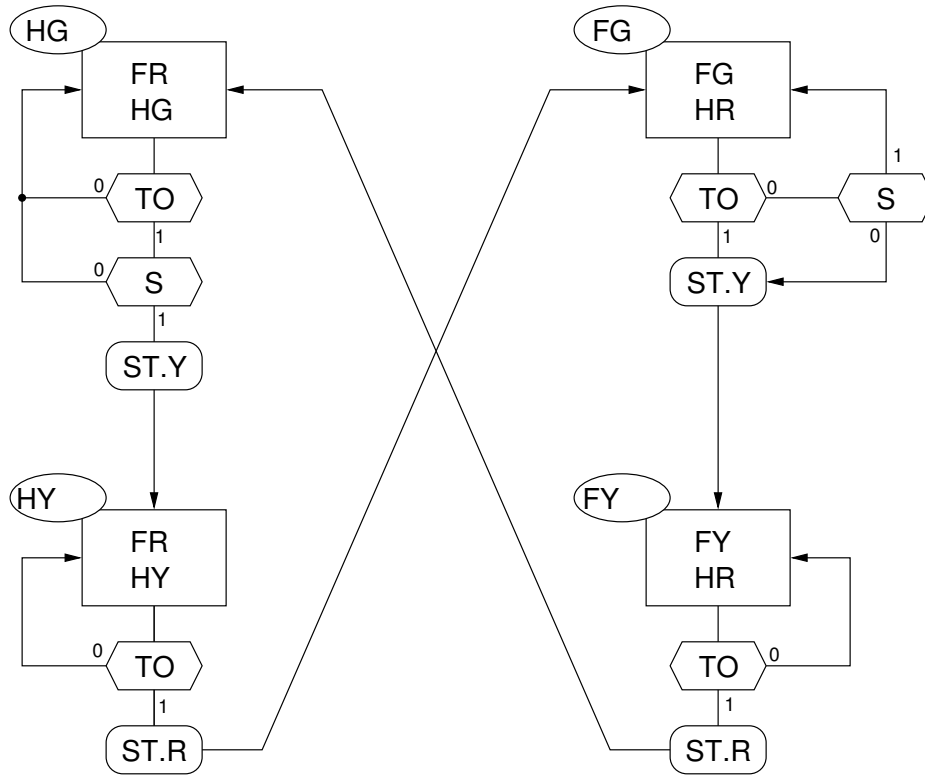


Since we don't need to know the actual duration of the two timers, we will just use one timer process, modeled to time out nondeterministically:

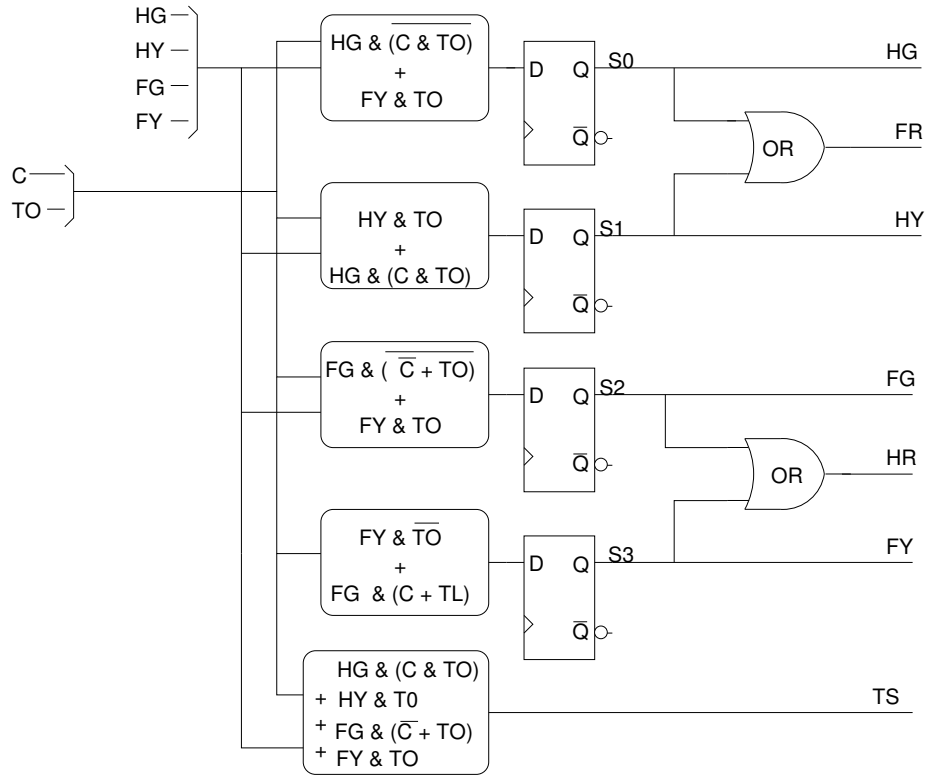
The architecture of the design includes the sensor input and signal outputs, and a pair of timers is used to determine the period when a light is on. All we need to know about a timer is that, if the controller asserts a *start* signal (*ST*), then after a certain period of time, *t*, the *time-out* alarm (*TO*) is asserted by the timer.

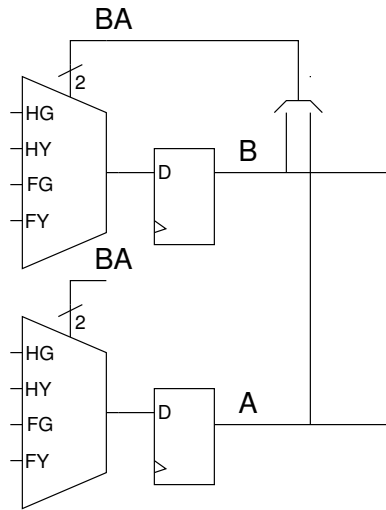


Here is a description of the controller (TLC) given as a finite state machine:



Here is a circuit implementing the controller:





$A': AB$

TO,S	00	01	11	10
00			1	1
01			1	1
11		1		1
10		1		1

$B': AB$

TO,S	00	01	11	10
00		1	1	1
01		1	1	
11	1			1
10				1