## 3/4 - Spin

Recal traffic lights in Forge:

- We can't actually write a property that says "always eventually green"
  - Can work hard to look for cycles that's too much work though
- Because Forge is a bounded model checker; good at short traces with very rich states

What if we want to do model checking with a simpler state, but up to unbounded length traces? Now introducing: **Spin** 

- All about processes happening concurrently, and interleaving with each other
- Every tick, the scheduler picks from the set of lights that get to change
- atomic prevents the scheduler to preempting actions -- all lines must run before any others can
- Running with spin -run takes the file and converts it into a C program that performs an exhaustive depth-first search of all traces of the program; finds a path in which the assertion is violated
- This is an *explicit-state model checker* 
  - (as opposed to *symbolic model checker*)

Linear Temporal Logic

- Logic
- We can talk about what happens over time (always, eventually)
- Interpreted over traces of infinite length