

Traffic lights

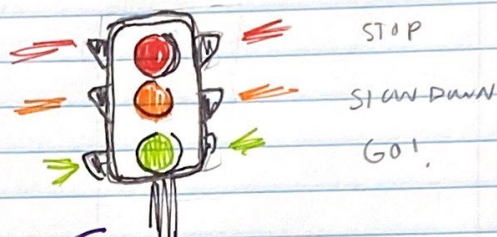
- Traffic lights are a type of finite State Machine / FSM / FA
 - ↳ Specifically a Deterministic Finite Automata (DFA)
- FA's are good models for computers with limited memory
 - ↳ i.e. traffic lights!

why traffic lights?

Traffic lights have 3 states:

- 1) Green
- 2) Yellow
- 3) Red

Top view of a Traffic Light

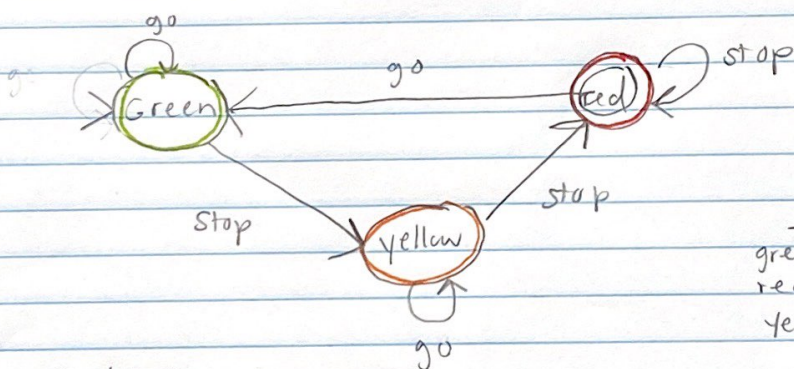


4. 2 transitions:

- 1) GO
- 2) STOP

In this case, we can consider
Stop = slowdown

State diagram



- each state has
all possible transitions...
so, DFA? Yes!

δ	go	stop
green	green	yellow
red	green	red
yellow	yellow	red

Formal definition

1. Q set of states
2. Σ set of alphabets
3. δ transition table
4. q_0 start state
5. F set of accepting states

$\{ \text{green, yellow, red} \}$
 $\{ \text{go, stop} \}$
next
green
 $\{ \text{red} \}$