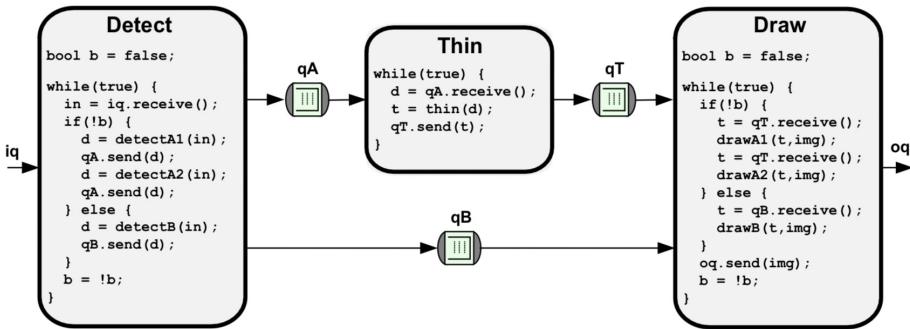
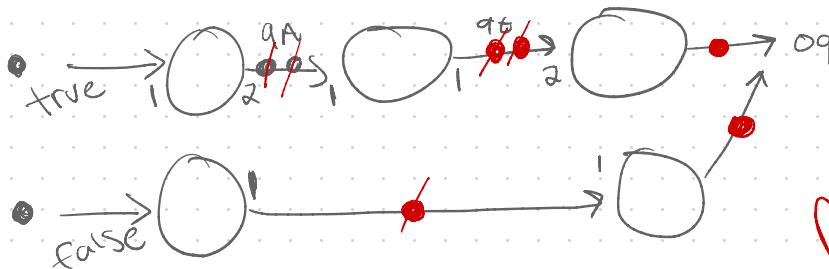
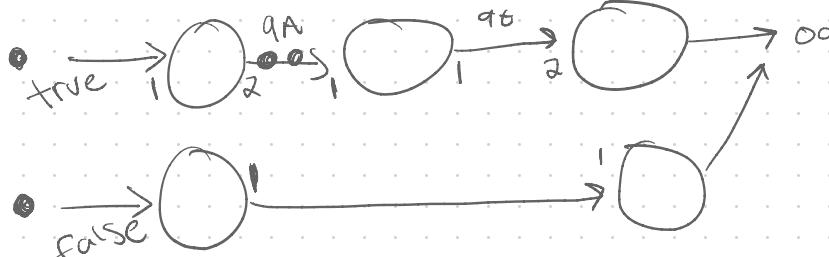
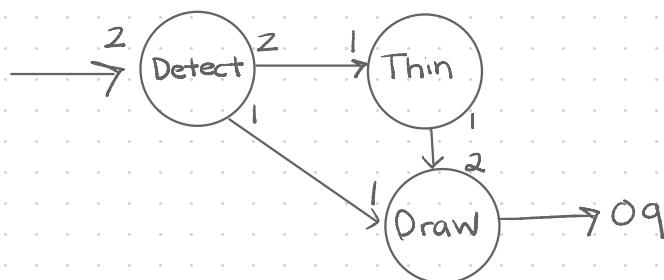


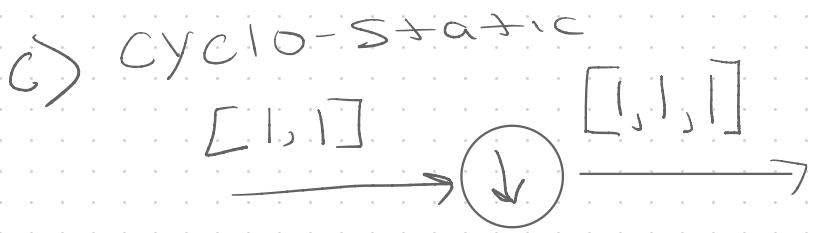
1.1



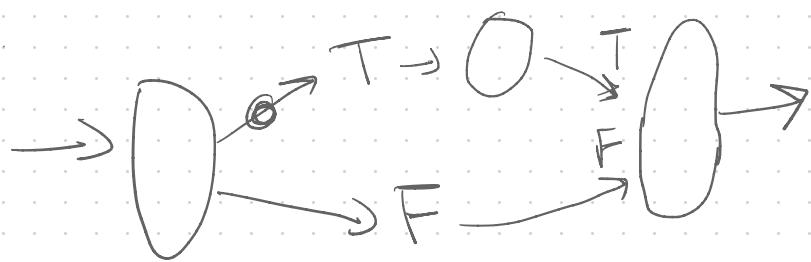
a) yes



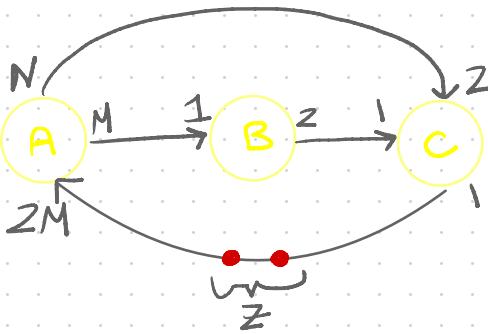
Needs at least a size
of 2x2



Boolean Dataflow



1.2



a)

Balance equations

$$Ma = b$$

$$2b = c$$

$$Na = 2c$$

$$2Ma = c$$

$$\downarrow$$

$$a = b$$

$$2b = c$$

$$4a = 2c$$

$$2a = c$$

$$2Ma = c$$

$$\frac{Na}{2} = c$$

$$2Ma = \frac{N\alpha}{2}$$

$$2M = \frac{N}{2}$$

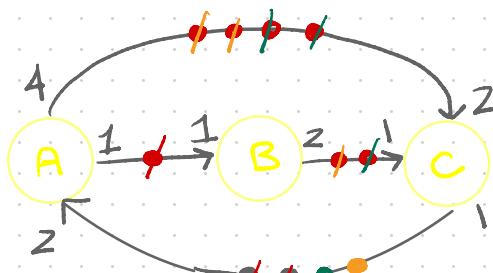
$$M = 1; N = 4$$

b)

$$2b = 2a = c$$

$$b = 1 \quad a = 1 \quad c = 2$$

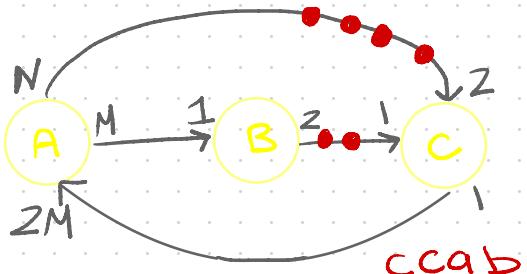
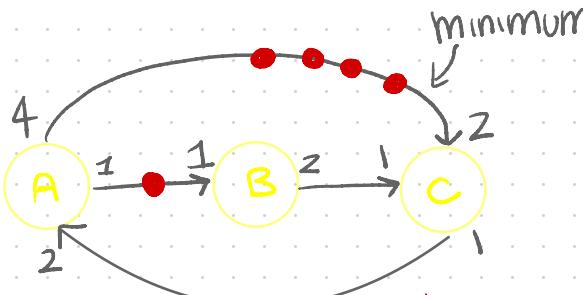
$$z = 2$$



$$abcc \\ = ab(2c)$$

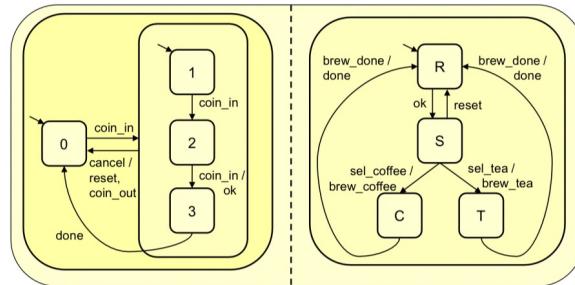
c) $Z=0$

yes, there
is other assignment
of initial tokens to
other channels
that makes this
graph schedulable

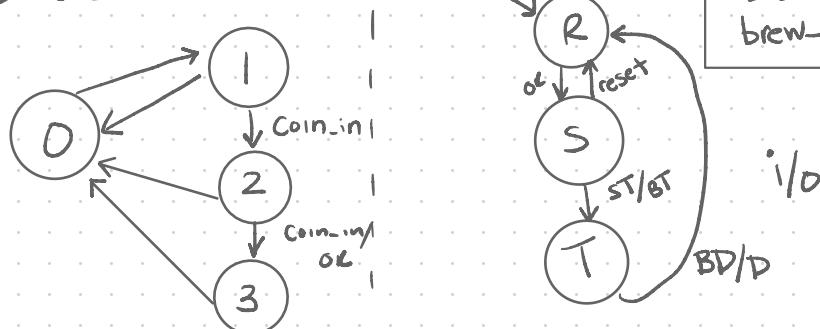


1.3

HCFSM (Vending machine)

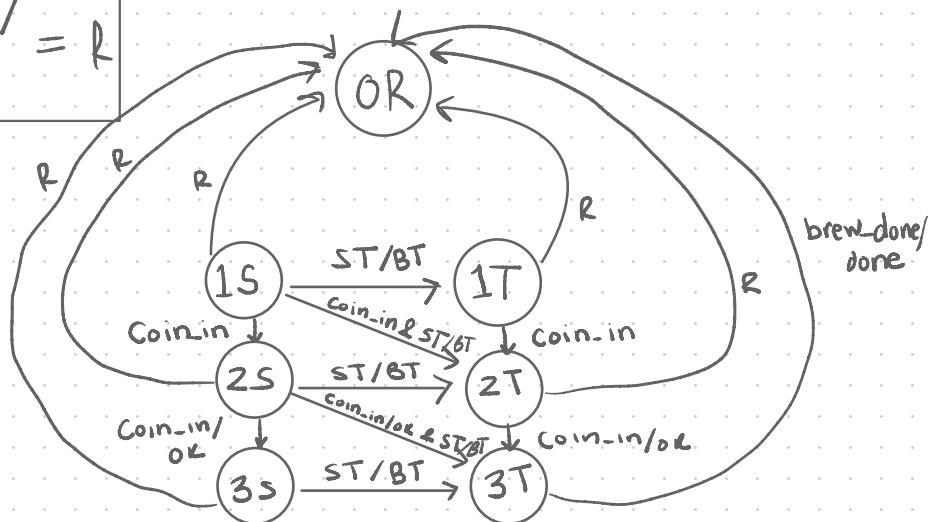


a) Order tea

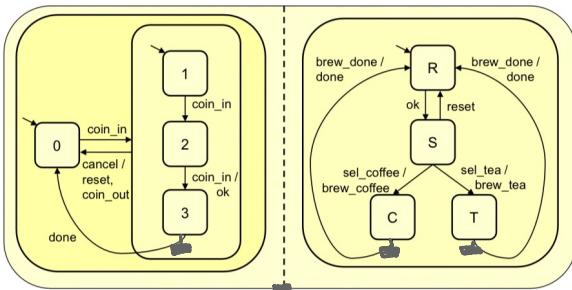


$\text{Sel_tea} = \text{ST}$
 $\text{brew_tea} = \text{BT}$
 $\text{brew_done} = \text{BD}$

Cancel /
 reset, coin-out = R



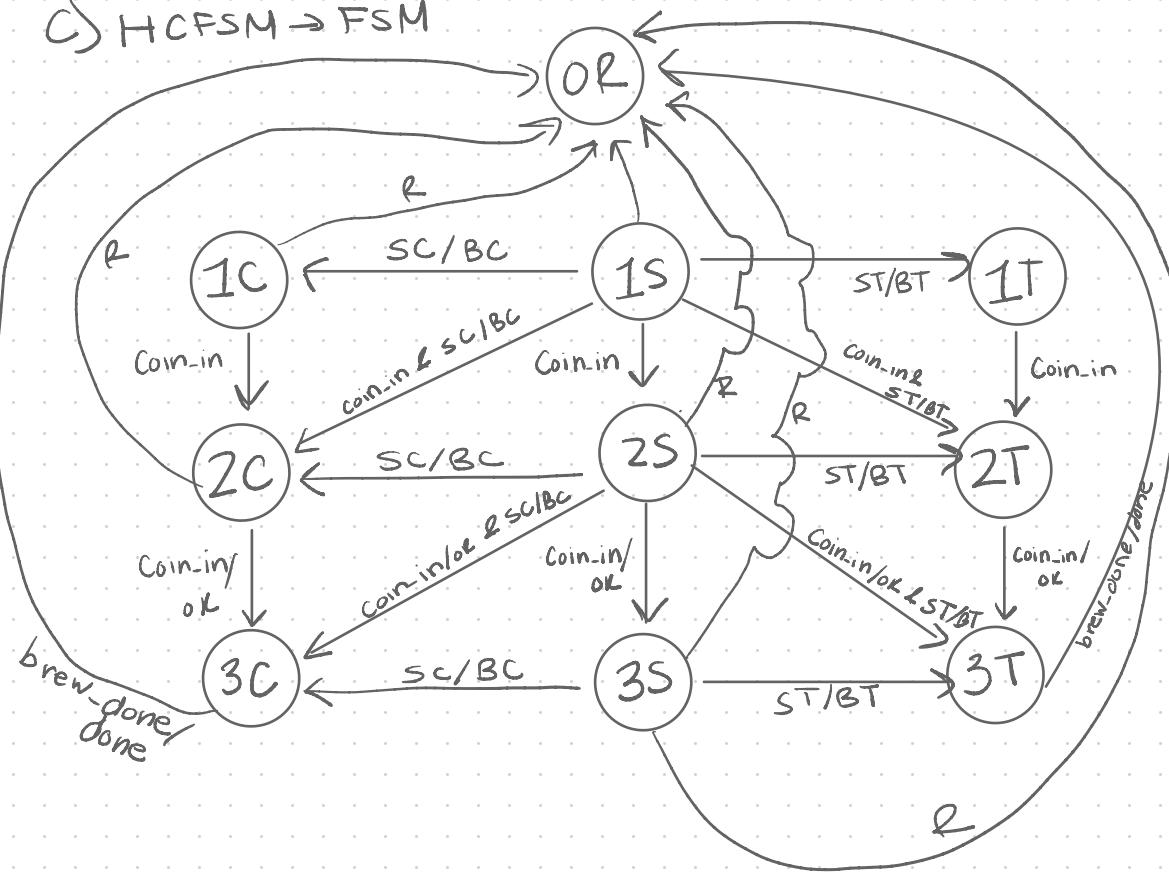
b)



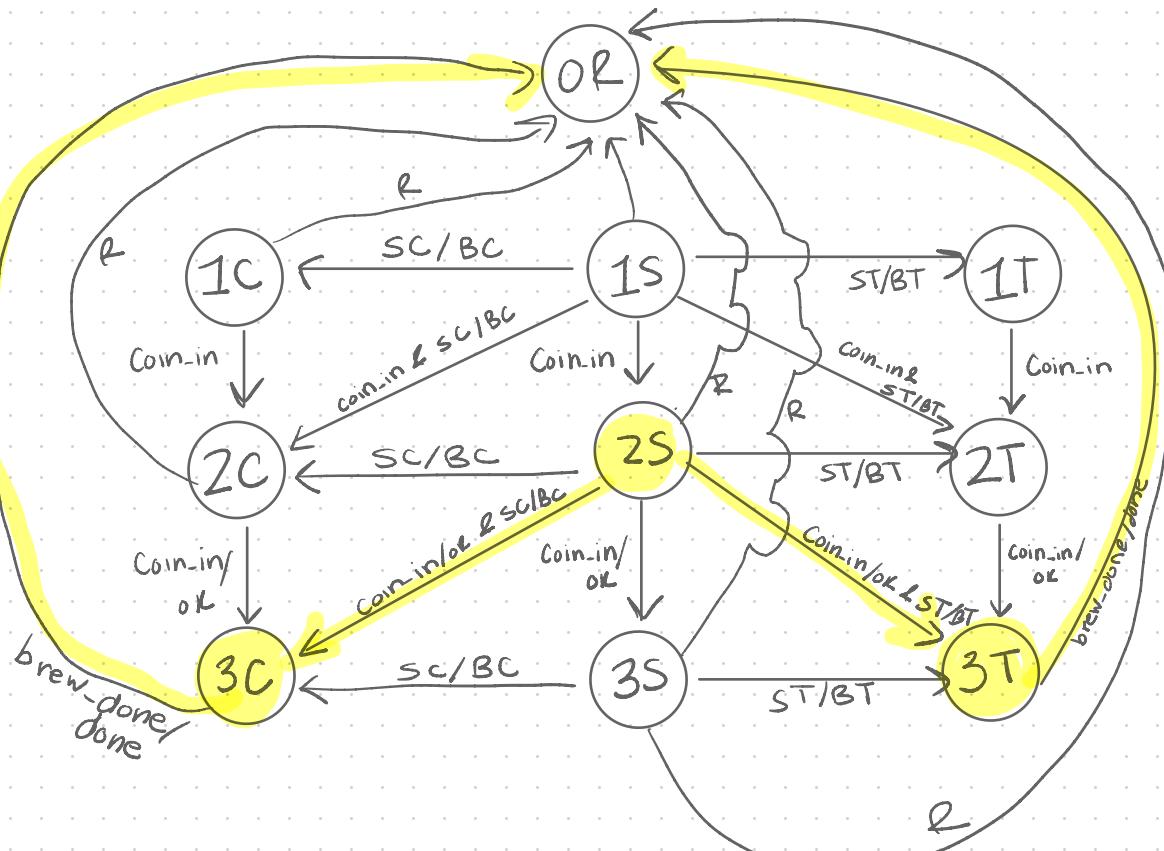
$\text{Sel_tea} = \text{ST}$
 $\text{brew_tea} = \text{BT}$
 $\text{brew_done} = \text{BD}$
 $\text{Sel_coffee} = \text{SC}$
 $\text{brew_coffee} = \text{BC}$

add a transition on completion (ToC)

c) HCFSM \rightarrow FSM



d) how can user cheat



User can remove coin once tea and coffee is brewing