N, S, E, W = {R|Y|G}

Safety
Not more than 1 signal should be G at any time

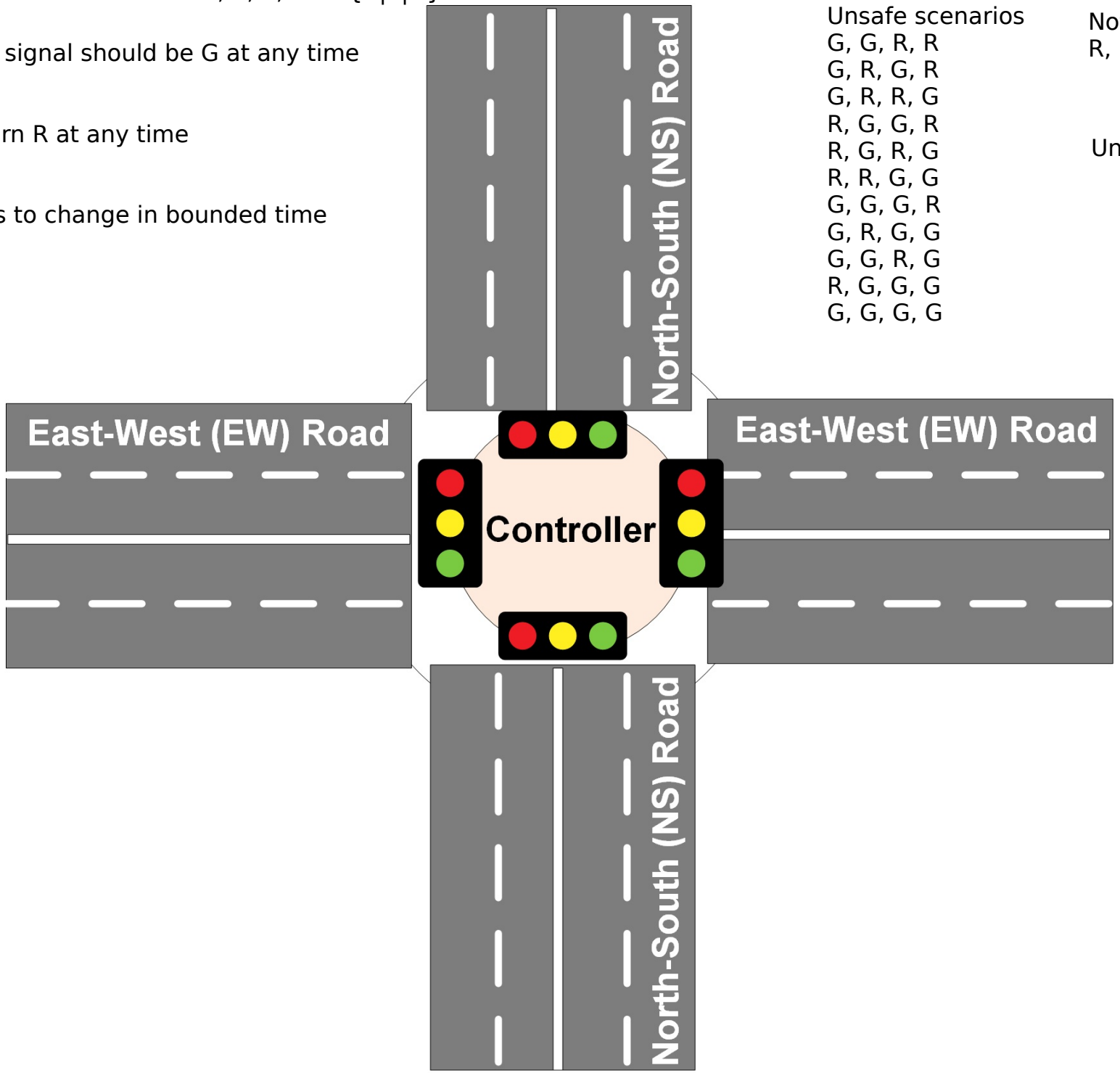
Liveness
Not all signals turn R at any time

Fairness
Every signal gets to change in bounded time

Unsafe scenarios
G, G, R, R
G, R, G, R
G, R, R, G
R, G, G, R
R, G, R, G
R, R, G, G
G, G, G, R
G, R, G, G
G, G, R, G
R, G, G, G
G, G, G, G

Not-live
R, R, R, R

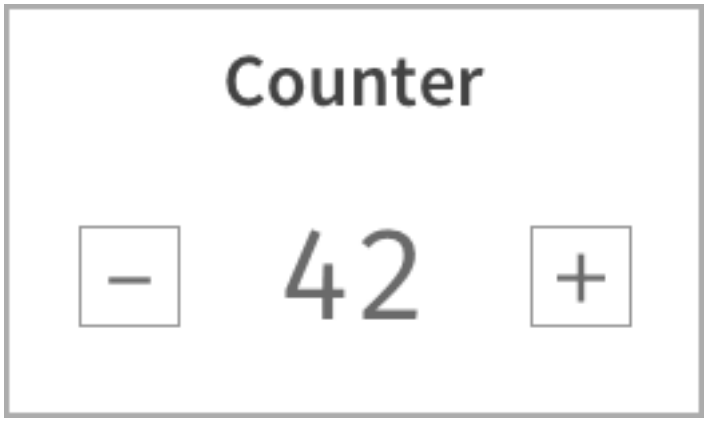
Unfair



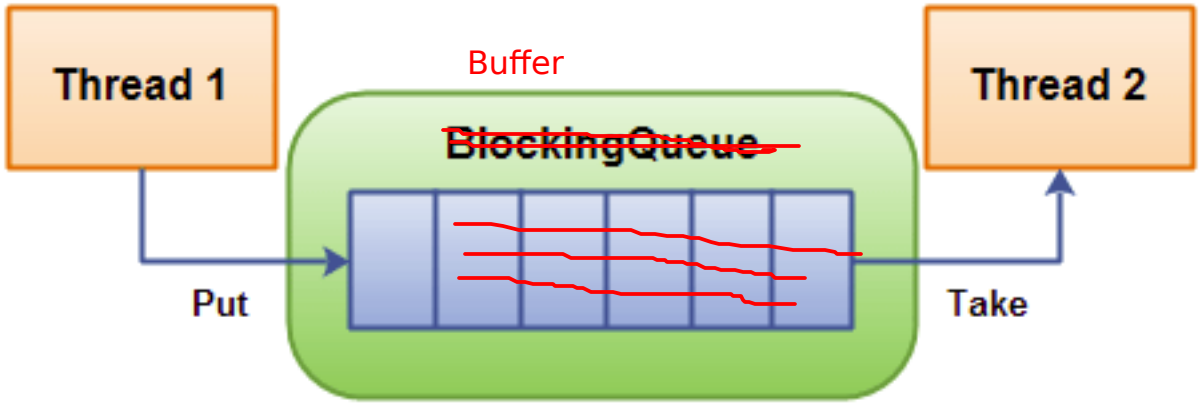
Safety
One button is pressed at any time

Liveness
None

Fairness
None



Safety
Thread 1 overwriting the buffer without Thread 2 reading it.
Thread 2 reading the old value without Thread 1 writing new value.

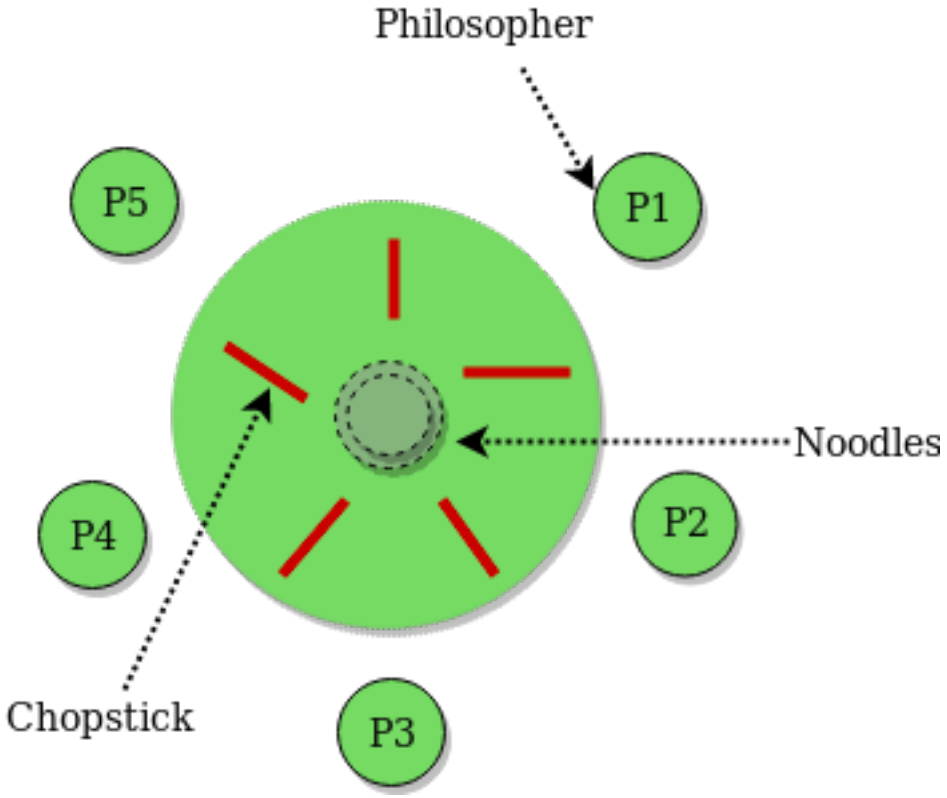


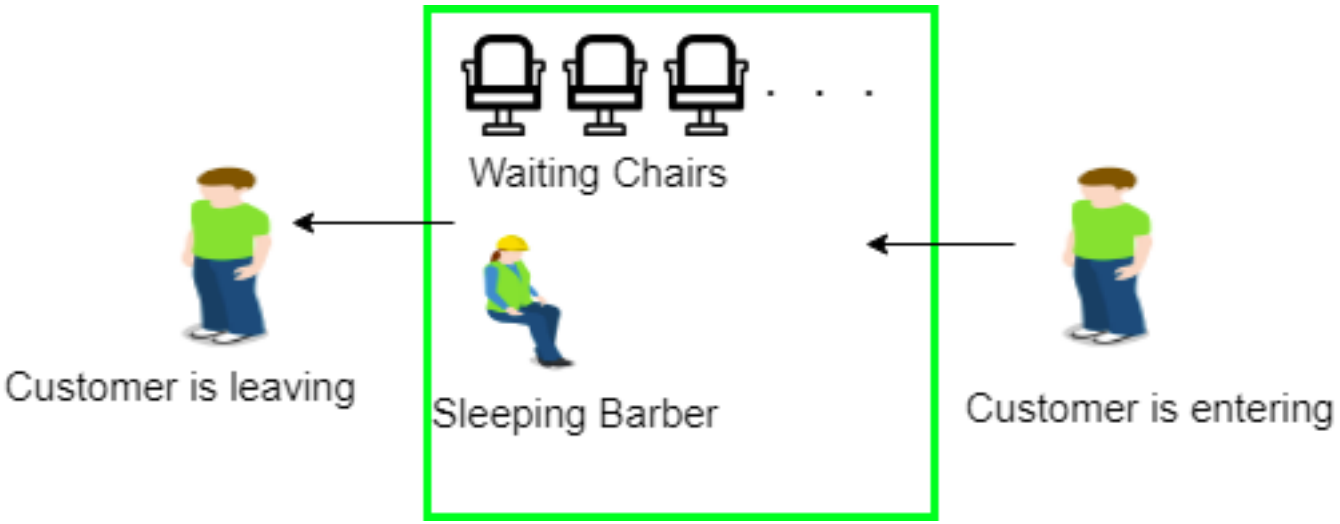
Pi = {T, H, E} Cj = {P, F}

Safety
2 adj phil not in E state

Liveness
All Phils are H and have 1 C

Fairness
If Pi is H, he/she has to get to E
in bounded time




Waiting Chairs
Customer is leaving
Sleeping Barber
Customer is entering