non-Markov Chain

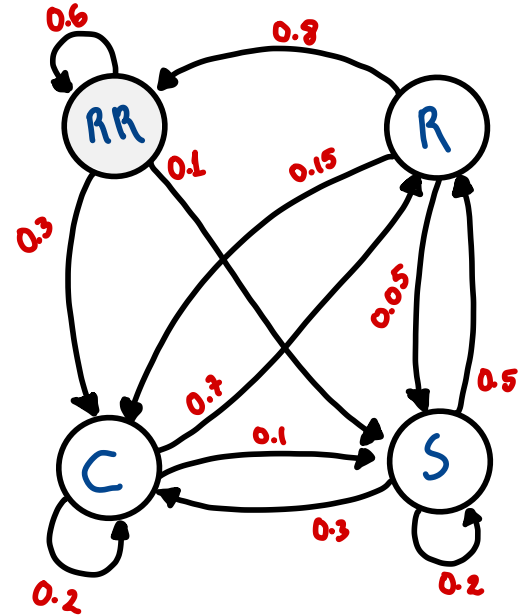$$P[C_{m+1} \mid R_m, R_{m-1}] = ?$$

$$P[C \mid RR]$$
Markov chain

to complete the Markov, we need to add more states (K=2): RR, RC, RS, CR, CC, CS, SR, SC, SS