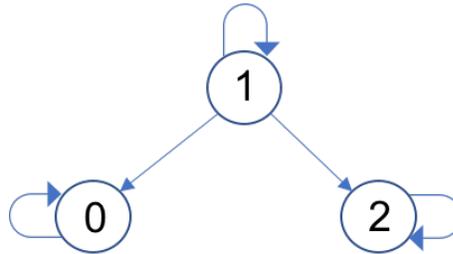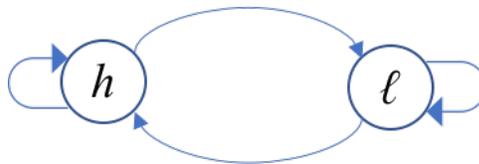## Markov Chains

1. Let X be the number of copies of an allele A in a population of size $N = 1$ (so two chromosomes total). Label each edge of the Markov chain below.

2. Assume a simplified model of sleep where the amount of sleep on one night only depends on the amount of sleep the previous night. Let S be the amount of sleep, and it can take on values h ("high") or ℓ ("low").

   (a) Fill in the probabilities however you like (or you can follow my example on the board).

   (b) Compute the stationary distribution for this Markov chain.

3. *Extra practice*: compute the stationary distribution for the first example. Does the result make sense?