



Chomp Game Analysis

Impartial game: Finite # of moves before a win, no ties, e.g. Chomp.

“Good” states: Player to move can guarantee a win, with the right moves

“Bad” states: Player to move can’t ensure a win.

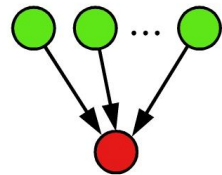
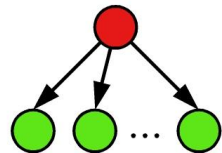
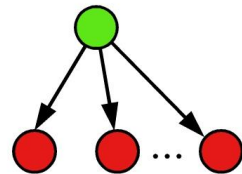
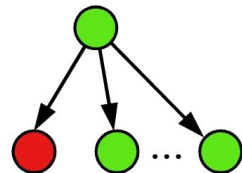
Good states lead to at least one bad state – a winning strategy cannot allow the other player to guarantee a win.

We always want to move to a bad state, because this means the next player cannot guarantee a win.

Every state a bad states leads to is good – no matter what the player does, the other player can still win.

Only good states lead to bad states – bad states cannot lead to bad states.

● Bad state
● Good state





Chomp Game Analysis



If there is a move to from a state A to a state B where all moves from B lead to states that could have come from A, we know that state A is a good state.

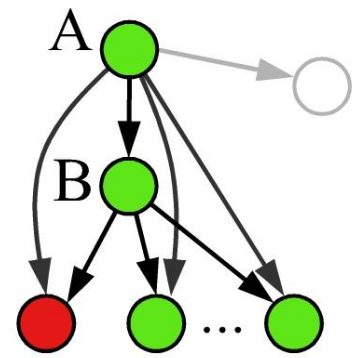
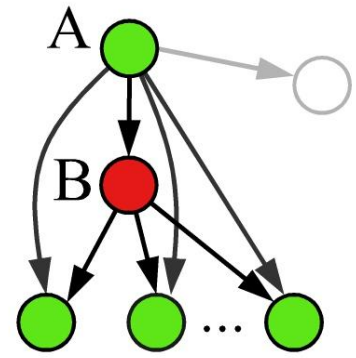
If state B is a good state, then some state from B is a bad state, and we can move from A to that bad state.

Otherwise, B is a bad state, so we can just move from A to B.

This technique is called “strategy-stealing”.

We can ensure a win from state A, so A is a good state.

- Bad state
- Good state





Chomp Game Analysis

In Chomp, the starting state is a winning position. The first player can eat the top-right square, and any move the next player makes can have been moved by the first player.

Therefore, we have proven that there is a winning strategy for the first player, but we don't know what it is.

