

# Playing the Game - Checkers Is Solved

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# Checkers Is Solved

- We have discussed that the solution for games of perfect information can be found using backward induction
- Actually, any finite-step game of perfect information can be solved with backward induction
  - Example of such includes chess and checkers
- However, knowing a best strategy exists and the way to find it does not necessarily mean you can actually find it!
  - There are  $10^{43}$  possible situations in chess, which is far too many to be examined even by the most powerful computers

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- It is important to distinguish between a software program that *plays* chess and one that *solves* chess in terms of optimal strategy
  - IBM's Deep Blue beat Garry Kasparov in a game in 1996, it is just a software that plays the game well, but still no software can solve the game
- What about checkers?
  - It has only  $10^{20}$  possible situations, which is roughly 500 billion billion different collections of pieces and locations
  - Some researchers began pursuing this question in 1989 and had dozens of computers running almost continuously until 2007, when they solved the checkers
  - So, who has the advantage, the first-mover or the second one? Neither! Perfect play ends at a draw

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- Fortunately, humans are not perfect, which leaves some intrigue when it comes to playing checkers
  - It is universally recognized that in the world of checkers the person closest to being an omnipotent player was Marion Tinsley, who was the World Champion since 1955 to 1958 and since 1975 to 1991; he didn't compete between 1958 and 1975 because he was tired of not having any serious competition (!)
  - Tinsley never missed a World Champion and only lost 7 times during his 45-year career. Two of the 7 losses were to the Chinook, a software to solved the checkers
  - But he only lost 2 of the many competitions with Chinook. When asked the secret of his success against Chinook, Tinsley replied: "It's just that I have a better programmer than Chinook. God gave me a logical mind"