

Monte Carlo Search Tree and Its Applications

Max Magnuson

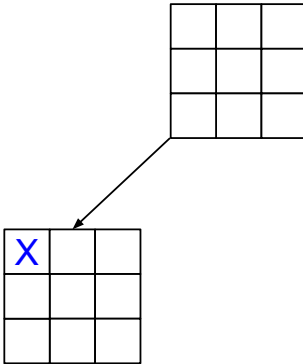
Division of Science and Mathematics
University of Minnesota, Morris
Morris, Minnesota, USA

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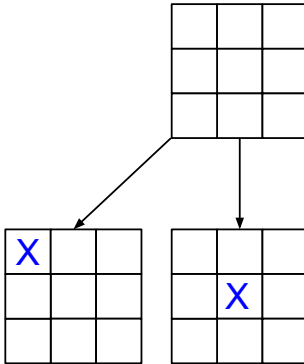
Monte Carlo Tree Search (MCTS)

- ▶ AI algorithm
- ▶ Populates tree by randomly sampling simulations
- ▶ Probabilistic not deterministic
- ▶ Useful for problems with large search spaces
 - ▶ Possible games of Chess: 10^{120}
 - ▶ Game board for Chess: 8x8
 - ▶ Possible games of Go: 10^{761}
 - ▶ Game board for Go: 19x19

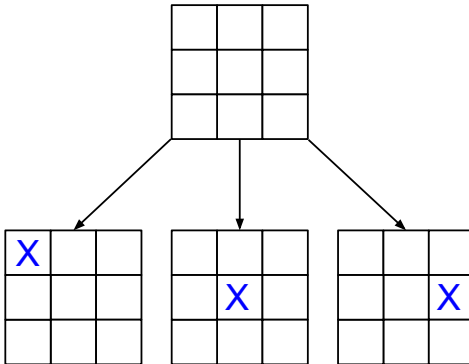
TicTacToe Diagram



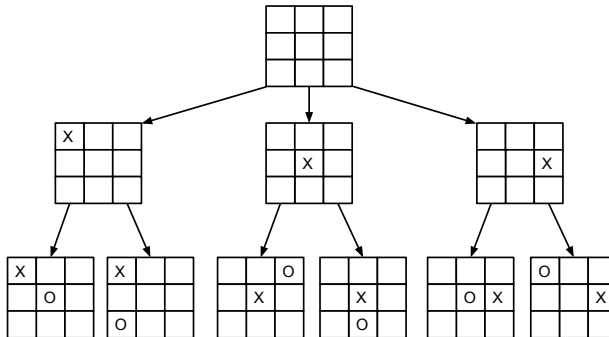
TicTacToe Diagram



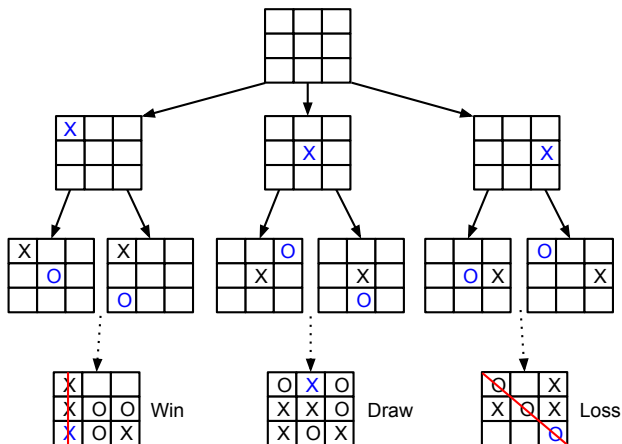
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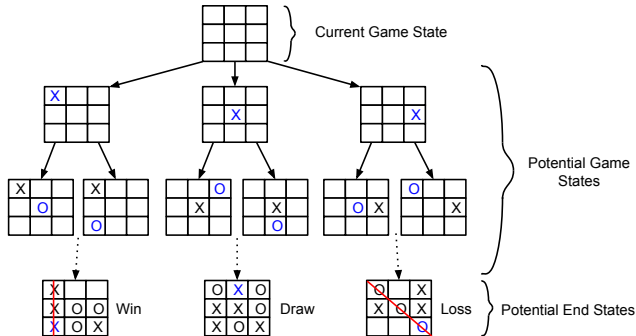
TicTacToe Diagram More Levels



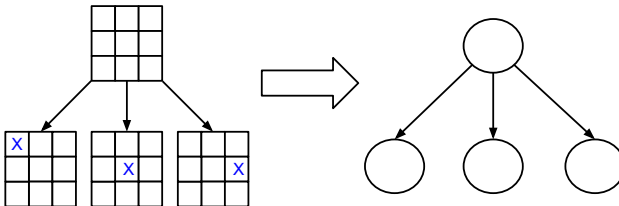
TicTacToeDiagram



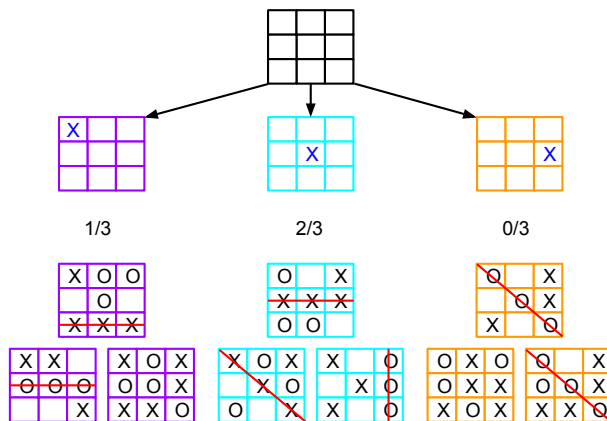
TicTacToeDiagram



Tree Structure



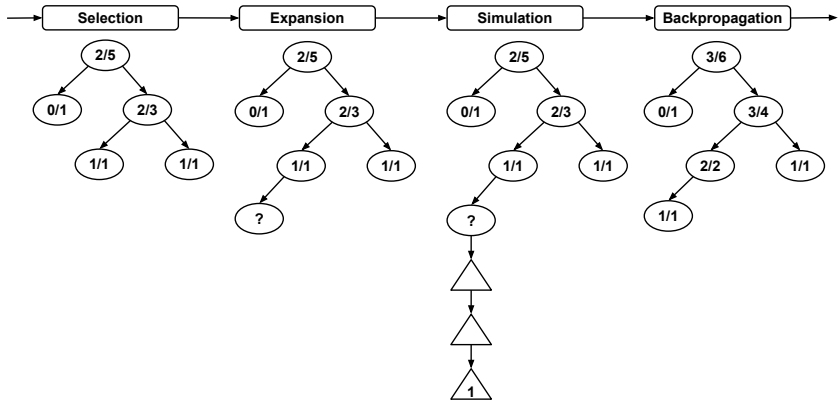
Sampling



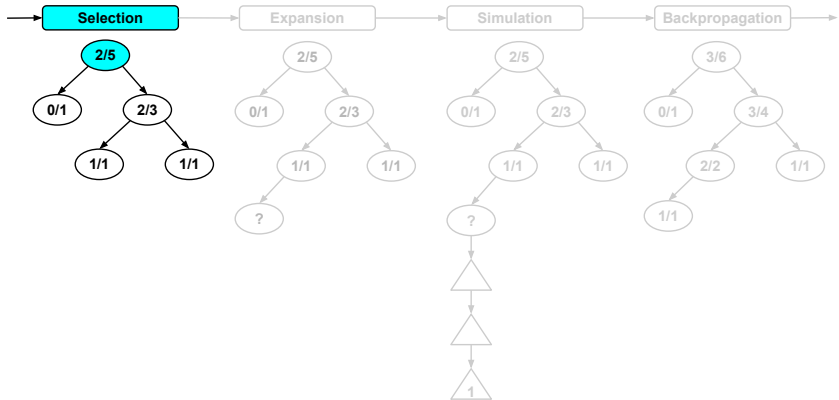
MCTS Four Steps

Stuff about the four steps

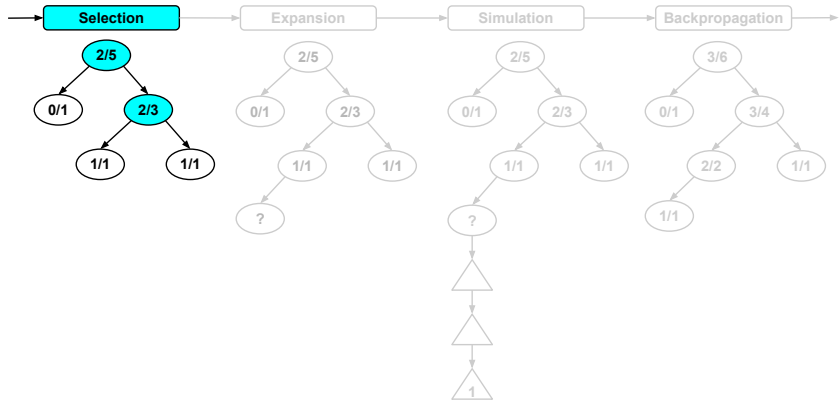
Four Steps Diagram



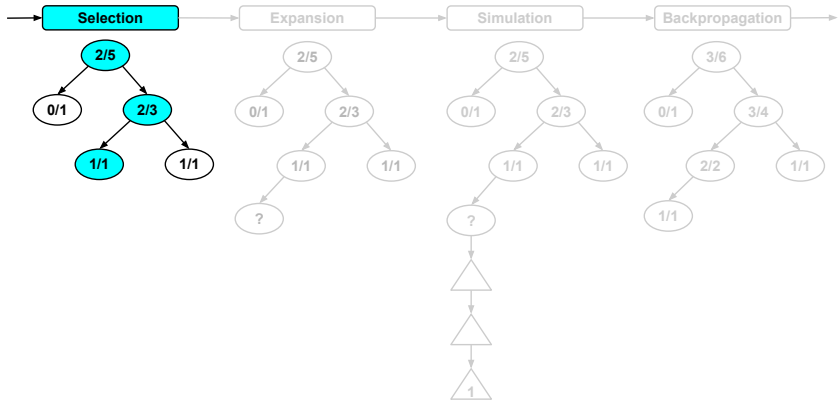
Four Steps Diagram



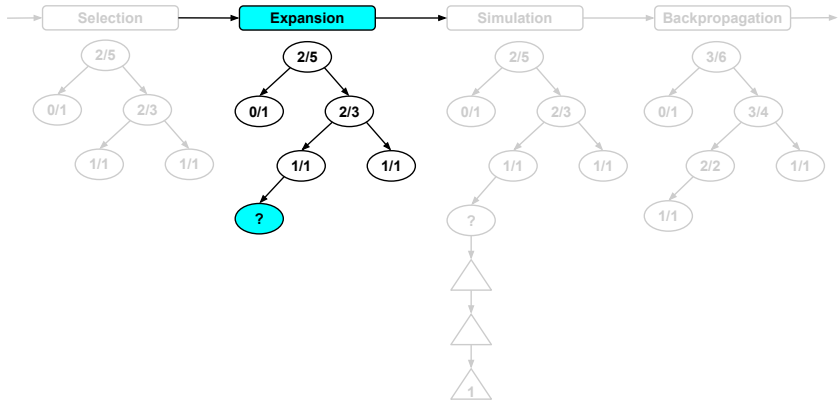
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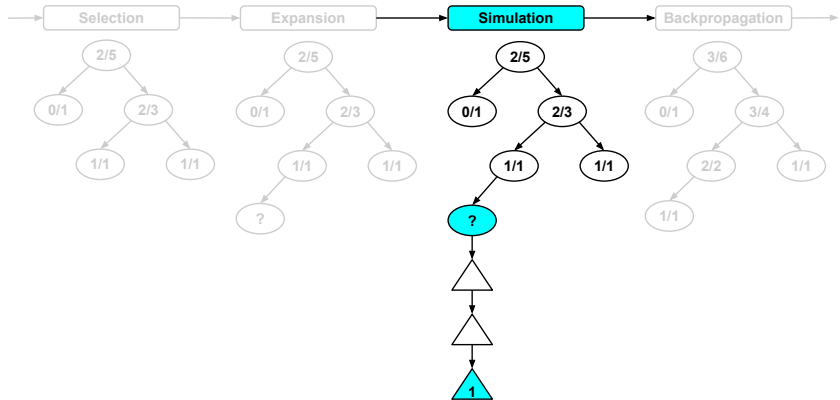
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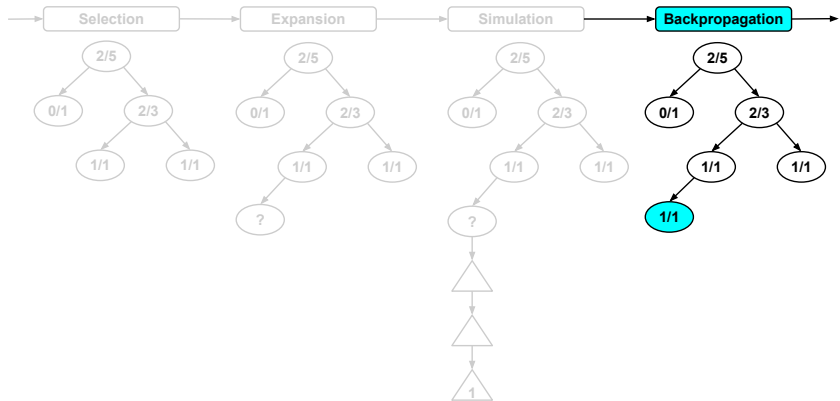
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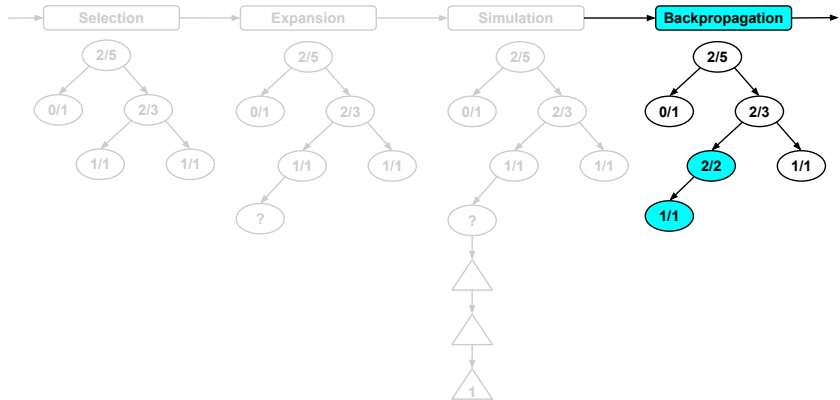
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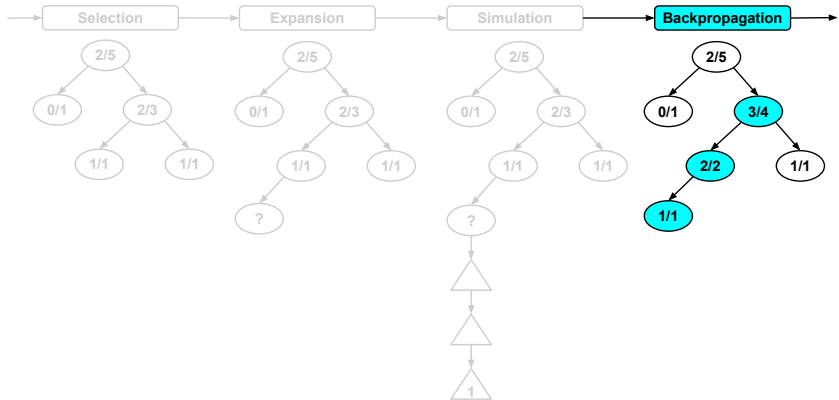
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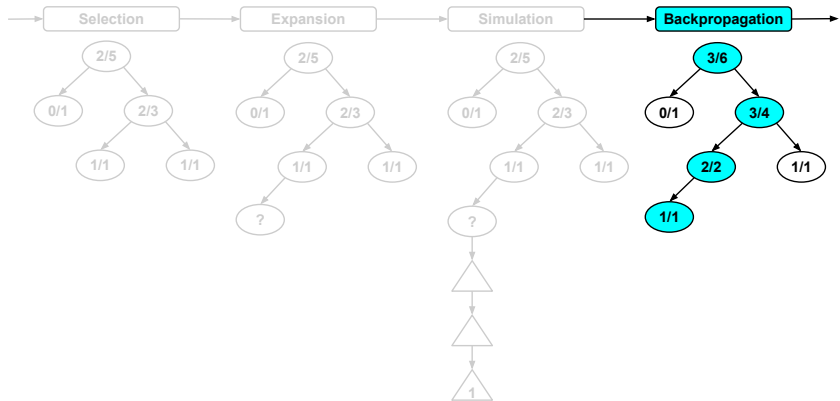
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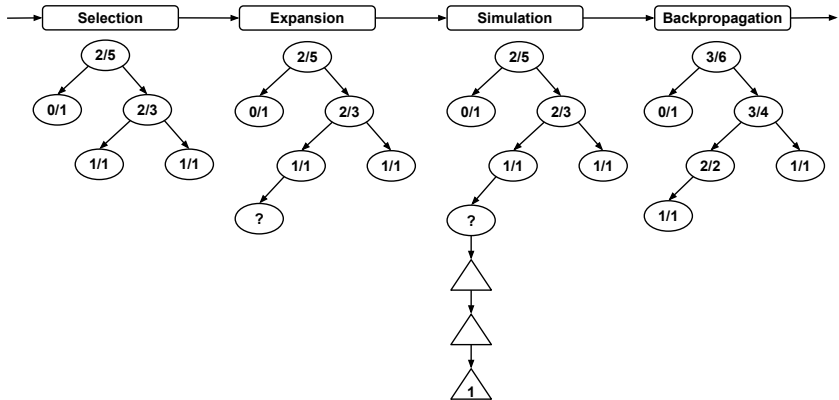
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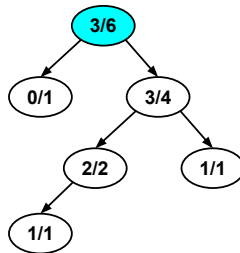
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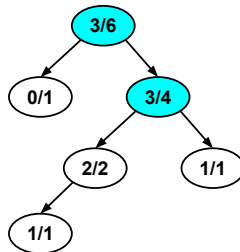
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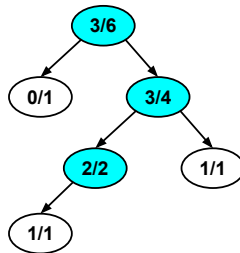
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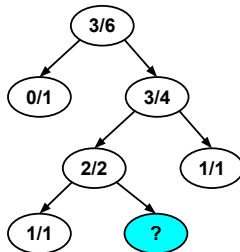
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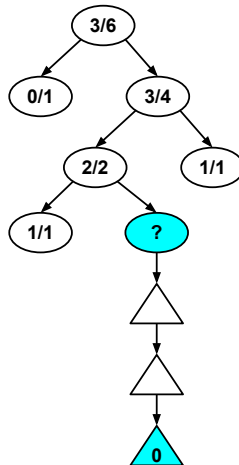
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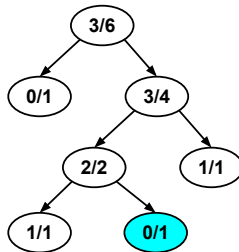
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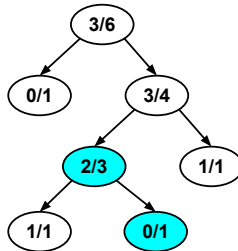
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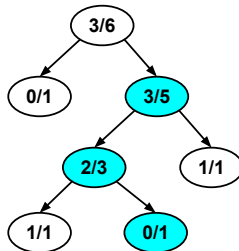
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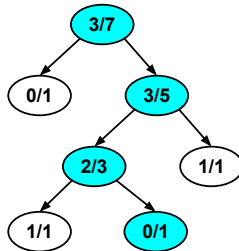
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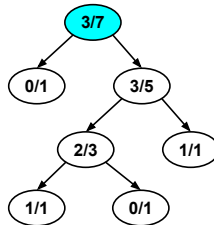
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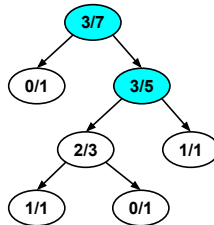
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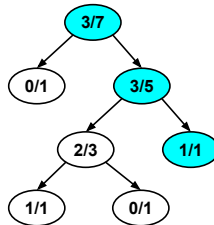
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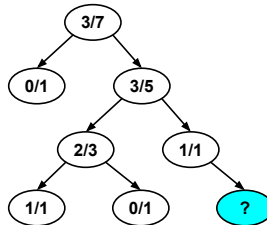
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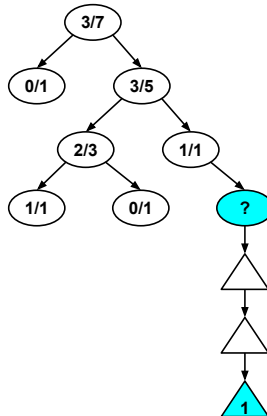
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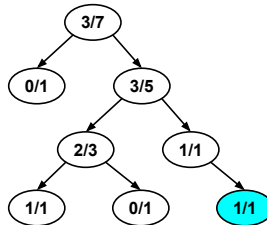
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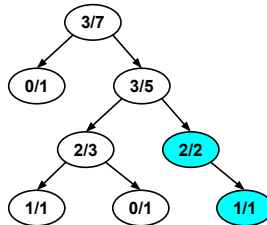
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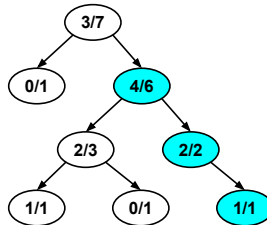
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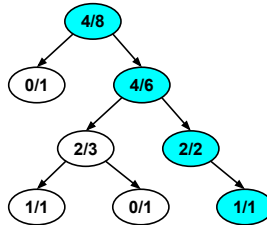
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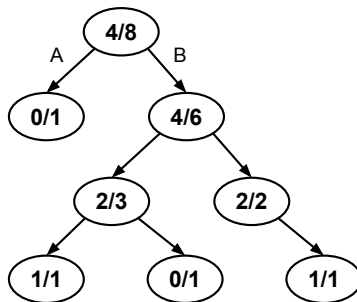
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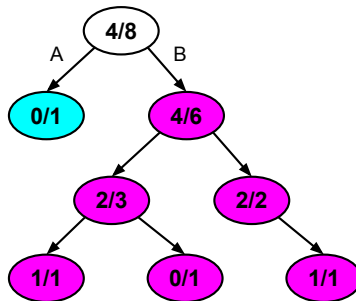
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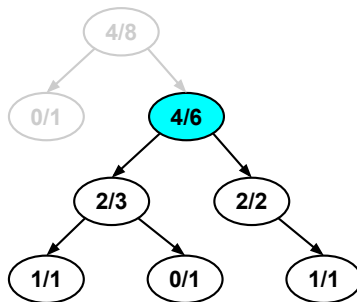
Choosing a Move



Choosing a Move



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Choosing a Move

