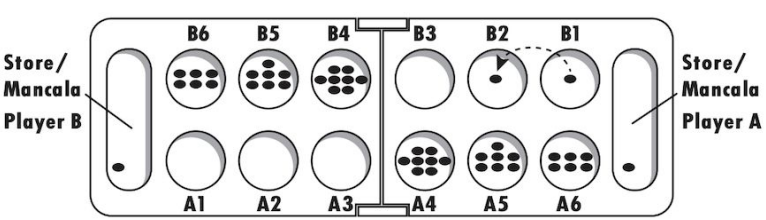
Mancala

Cyrus Traeh Baybay, Serop Kelkelian
Sydney Sukhabut, Gautham Vegeraju

What is Mancala?



- 2-player board game
- Stones spread evenly into “small cups”
- Objective is to collect as many stones in your “big cup” as possible
- Take turn picking up all the stones in one of their small cups and distributing them counterclockwise, placing one stone in each pit
- Game ends when one player has no more stones on their side of the board
- Player with the most stones in their big cup wins

Task Environments

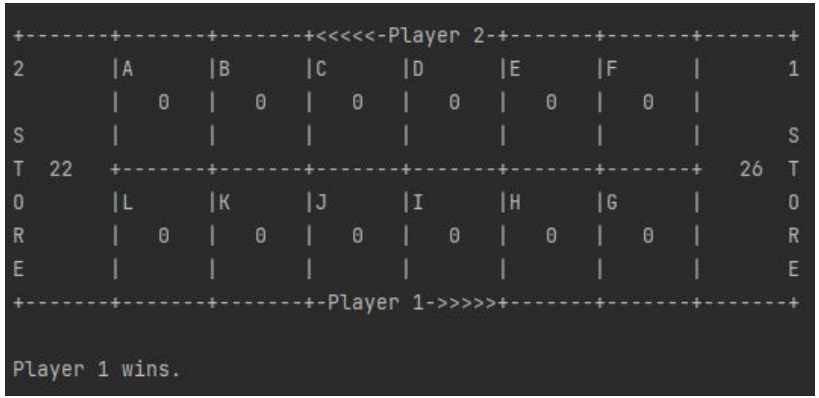
- **Fully observable** vs. Partially observable
- Single agent vs. **Multiple agent**
- **Deterministic** vs. Stochastic
- Episodic vs. **Sequential**
- **Static** vs. Dynamic
- **Discrete** vs Continuous
- **Known** vs. Unknown

Problem

- Use an AI search algorithm in game of Mancala
- Started off with text-based version of Mancala
- Implemented Alpha-Beta Pruning algorithm
  - Reduces number of nodes evaluated in a game tree search
  - Maintained two values: alpha and beta
    - Alpha represents minimum score the maximizing player is guaranteed
    - Beta represents maximum score the minimizing player is guaranteed

Alpha Beta Implementation

- Why Alpha-Beta Pruning?
  - Quickly eliminate branches of the search tree that are “bad moves”
  - Leads to more efficient/faster game-playing algorithm.



Thank you!