Assignment2 - Cindy Lin

**#2. Proposed metric to evaluate states:**

Comparing State A to State B, the better state has the

greater of heuristic 1 value

if equal, greater of heuristic 2 value

if equal, greater of -(heuristic 3 value)

\*\*heuristics are described below in #5

**#3. Potential Heuristics**

* Heuristic 1
* Difference between number of agent pieces and number of adversary pieces
  + Benefits:
  + Measures if the agent is winning or losing base on its number of pieces compared to number of adversary pieces.
* Heuristic 2
* Agent piece is adjacent to an adversary piece it loses to. -100
* Agent piece is adjacent to an adversary piece it wins to. +100
* Agent piece is adjacent to the same piece. -50
* Agent piece is adjacent to a pit. -25
  + Benefits:
  + Measures how advantageous a piece placement is.
* Heuristic 3
* Sum of distance of agent pieces to adversary pieces that agent wins against.
* A lower distance is a better state.
  + Benefits:
  + To win, agent pieces have to kill adversary pieces
  + Agent pieces wants to move closer to adversary pieces that it can kill so a lower distance is a better state.
* Heuristic 4
* +1 for every Agent piece1 is adjacent to agent piece2 such that if agent piece1 gets killed by an adversary piece, agent piece2 can kill that adversary piece.
  + Benefits:
  + Makes adversary reluctant to kill piece1 because it puts it in a position where it can be killed next round
  + If adversary does kill piece1, adversary also loses their piece, so it is an even trade
* Heuristic 5
* Sum of surrounding empty area around each piece.
  + Benefits:
  + Measures how many spaces there are to move to.
  + Beneficial if there are more spaces you can move to escape adversary pieces.
  + Lowers the amount of safe spaces than adversary pieces can move to.