Writeup
Assignment 3
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The game player for the Quoridor game was developed using the minimax game tree. The tree search was optimized using alpha beta pruning for increasing the search depth.

At each ply, the following moves were considered:
(i) Pawn moves: All possible valid moves of the pawn.
(ii) Wall moves: All possible valid walls moves (both horizontal and vertical orientation).

For keeping the branching factor down, walls were considered for placement only along the shortest path from the opponent pawn to it's nearest target. This optimization helps us to search till 4 ply deep.

For the evaluation function of a state S, we calculate it as follows:

$$eval(S) = d2(S) - d1(S) + 2*d2(S)*d2(S) - 3*d1(S)*d1(S) + walls1-walls2$$

Here,
d1(S) = Shortest distance for player 1 from it's target
d2(S) = Shortest distance for player 2 (opponent) from it's target
walls1(S) = Number of walls left for player 1
walls2(S) = Number of walls left for player 2 (opponent)

Consulted with: Bhavya Goyal, Ritesh Noothigattu