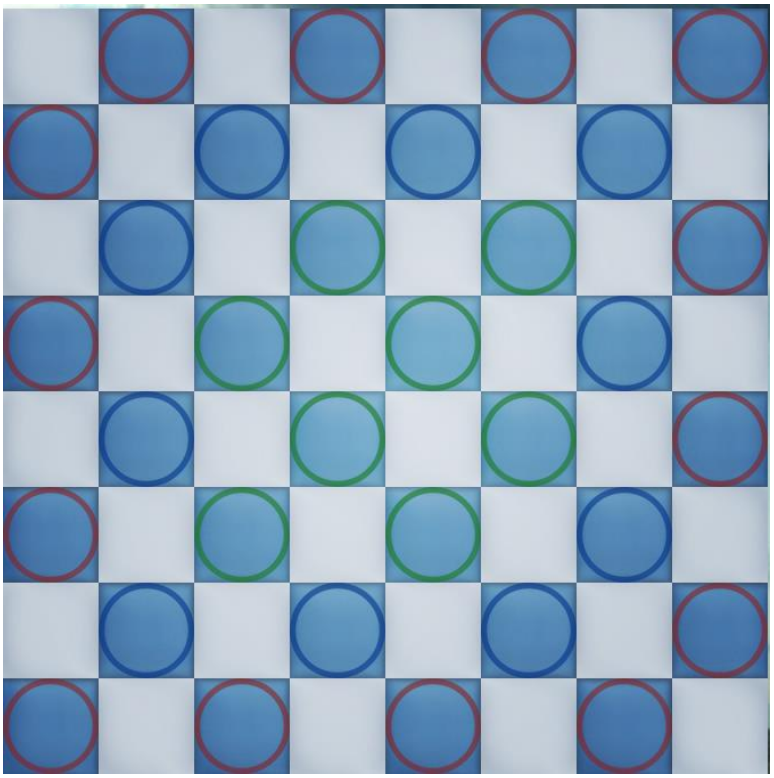
A2 Advanced Heuristic

Note: I also did node ordering and state caching with alpha-beta pruning

My advanced heuristic computes the sum of the weighted value of the red pieces and the sum of the weighted value of the black pieces and computes the difference of the two. i.e.

sum of the weighted value of the red pieces - sum of the weighted value of the black pieces

For regular pieces, the weighted value is 1*weight. For kings, the weighted value is 2*weight. The weights are represented in the diagram below. The squares on the edges, highlighted with a red circle have a weight of 1. The squares closer to the center but not directly in the center, highlighted with a blue circle have a weight of 2. The squares in the center, highlighted with a green circle have a weight of 3.



This heuristic was used because according to https://www.ultraboardgames.com/checkers/tips.php (linked in the assignment handout) the number 1 tip to winning in checkers is to take control of the center. Therefore, this heuristic assigns a higher value to the pieces that are closer to the center. This is obviously more advanced than the simple heuristic since it takes into account the position of the pieces and not just whether it is a king or not (which my heuristic also does).