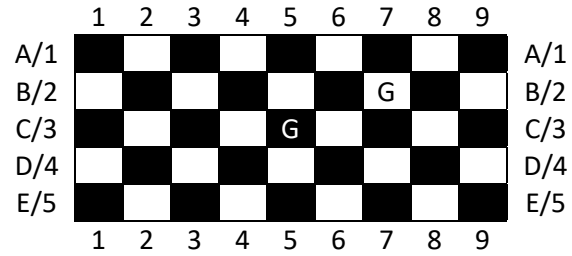
COMP 472/6721: Naive Heuristic for Demo 2

To show the functionality of your minimax, please use the heuristic *e* below during demo2. The heuristic is with respect to Green, so Green will try to maximize *e,* while Red will try to minimize *e.*

$$e(board) =$$
$$100 \times \left(\sum_{g=1}^{nbGreenTokensOnBoard} horizontalIndex_g\right)$$
$$+50 \times \left(\sum_{g=1}^{nbGreenTokensOnBoard} verticalIndex_g\right)$$
$$-100 \times \left(\sum_{r=1}^{nbRedTokensOnBoard} horizontalIndex_r\right)$$
$$-50 \times \left(\sum_{r=1}^{nbRedTokensOnBoard} verticalIndex_r\right)$$

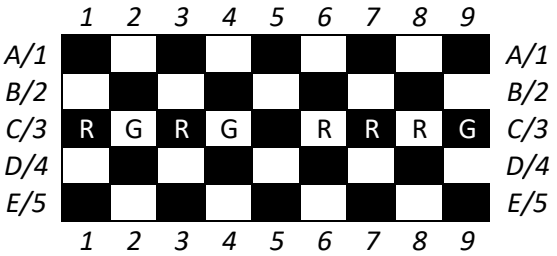
Examples: Assume the following boards:

Board 1: (green wins)



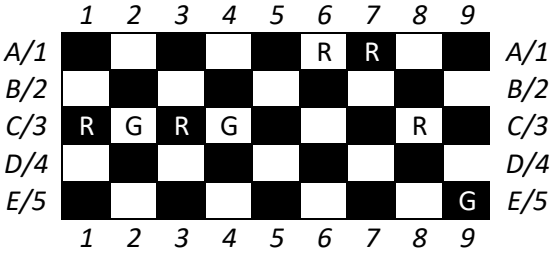
$e(board\ 1) = 100 \times \left(\sum_{g=1}^{2} horizontalIndex_g\right) + 50 \times \left(\sum_{g=1}^{2} verticalIndex_g\right) - 100 \times \left(\sum_{r=1}^{0} horizontalIndex_r\right) + 50 \times \left(\sum_{r=1}^{0} verticalIndex_r\right) = 100 \times (2+3) + 50 \times (7+5) - 0 - 0 = 500 + 600 - 0 - 0 = 1100$

Board 2:



$e(board\ 2) = 100 \times \left(\sum_{g=1}^{3} horizontalIndex_g\right) + 50 \times \left(\sum_{g=1}^{3} verticalIndex_g\right) - 100 \times \left(\sum_{r=1}^{5} horizontalIndex_r\right) + 50 \times \left(\sum_{r=1}^{5} verticalIndex_r\right) = 100 \times (3+3+3) + 50 \times (2+4+9) - 100 \times (3+3+3+3+3) - 50 \times (1+3+6+7+8) = 900 + 750 - 1500 - 1250 = -1100$

Board 3: (same tokens as board 2 but in different positions)



$e(board\ 3) = 100 \times \left(\sum_{g=1}^{3} horizontalIndex_g\right) + 50 \times \left(\sum_{g=1}^{3} verticalIndex_g\right) - 100 \times \left(\sum_{r=1}^{5} horizontalIndex_r\right) + 50 \times \left(\sum_{r=1}^{5} verticalIndex_r\right) = 100 \times (3+3+5) + 50 \times (2+4+9) - 100 \times (3+3+3+1+1) - 50 \times (1+3+8+6+7) = 1100 + 750 - 1100 - 2600 = -1850$