ASSIGNMENT 5: Connect (N, M, K) with UCT algorithm

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Algorithm used for choosing player strategy is UCT. A cut-off based on time limit is used to decide the number of simulations that should be run by the algorithm in order to choose the next move. Once this time limit reached it returns the best action it knows so far by comparing their values.

As the size of board increases, exploration should be limited as we will have lesser time. And with lesser value of K we should explore more as there might be some move which may block opponent's k- sequence but we were unable to explore it.

The moves at the center have a higher probability to form long sequences as compared to positions at the corners. Thus, we have starting checking successors for any particular state from the center columns and then moved to the sides.

We chose the value of ucb-constant that optimizes player's strategy. The potential score counts the number of the K-sequences (actual score) already for the player plus the number of open (K-1) sequences (i.e. K-1 sequence followed by an empty space, potential for K sequences in future) and similarly the number of open (K-2) sequences (K-2 sequence followed by 2 blanks or 1 blank and 1 desired character). These are given decreasing weightages respectively.