Part 3 Plan

* The Tray(Board) should be stored as a 2D array because it more easily checks for movements that cause overlapping. This is because if the tray is represented in a list form, overlap checking would be O(n^2) if n represents the number of blocks in the list.
* A 2D array representation best optimizes the operation of checking whether the goal has been reached because each block’s state in the goal can be checked for its correctness in the board. E.g. if the goal has a block (1 ,2, 3, 4,) the position (3, 4) in the board can be immediately checked for an equivalent block
* Block moves of more than one space should could be considered if and only if moving one space does not generate any new (unvisited) board configurations; however, the block must be moved one space to check for that condition. Thus block movements should only be of one space.
* The tree of possible move sequences should be processed breadth first because this allows the solver to find the shortest solution to the goal. However, a depth first implementation can be used if the solver does not brute force the solution.
* The ability to make and unmake moves only applies to a depth first search because such an implementation needs to be able to backtrack. A breadth first search on the other hand considers all the children at a given depth before moving on, thus negating the need for the undo method. This however is much slower than depth first.
* A good hash function for the configurations would be the sum of all the “values” in each space in the board. This means that for each space in the board, a integer is generated based on its coordinates and the block occupying the space, and at the end, these values are summed. The memory constraint can be accommodated for by a “smart” search. In the case of a breadth first search, the board configurations to be considered can be held in a priority queue, which returns the configuration with the highest “score” when remove() is called. A board’s score value can be determined by how far off the board configuration is from the goal configuration.