Goal: Implement A\* search and test different heuristics for the 8-puzzle using the goal state:

1 2 3

8 \_ 4

7 6 5

Input: a state is a board configuration in form of a list. The board configuration of the goal state would be represented as: `(1 2 3 8 B 4 7 6 5). Remember, that not all initial configurations can be transformed into this goal configuration, take care with your test examples to be solvable.

Output: A list of successive states, beginning with the start state and ending with the goal state, and including all states required to transform the start state into the goal state. For admissible heuristics this path should be optimal.

Description:

1. Implement a general search as described on the slides, with OPEN and CLOSED lists. Implement different OPEN list orderings (for best-first, depth-first, Best-First, and A\*

2. Implement a successor state generator for the 8-puzzle

3. Implement Hamming distance, Manhattan distance, Permutation Inversion heuristics for the 8-puzzle