Lab 7- Artificial Intelligence Fall 2021

4-Queen Problem

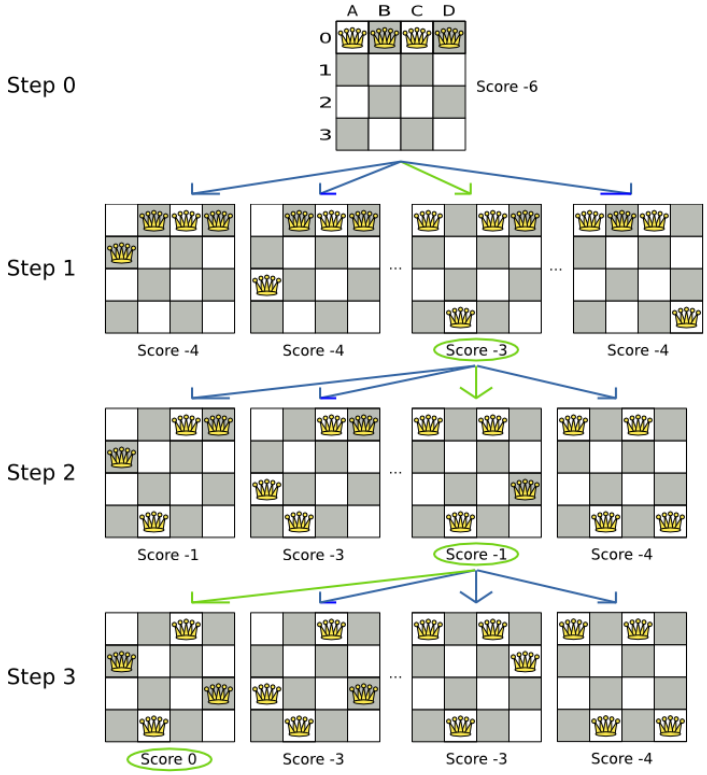
	1	2	3	4
1			q_1	
2	q_2			
3				q_3
4		q_4		

Local Search acts a lot like a human planner: it uses a single search path and moves facts around to find a good feasible solution. Therefore it's pretty natural to implement.

Local Search usually needs to start from an initialized solution, therefore it's usually required to configure a construction heuristic solver phase before it.

Task 1: Solve 4-Queen problem using Hill Climbing approach.

Start with a random position of board and get the current value of evaluation/objective function. (No. of attacking pairs). Generate all neighbors for the current board state and pick the one with the least function value. Keep on doing until the value of evaluation/objective function is zero.
[Ref: https://docs.optaplanner.org/6.3.0.Beta1/optaplanner-docs/html/ch10.html]



Output Format:

For output of task, you must share the queen final positions on board. For this purpose, you can use the following notation.

For 4-Queens: total rows and columns will be 3 (0-based index). Figure 1 shows solution for 4-Queens problem.

The output would be (2, 0, 3,1) which denotes that:

1. In column zero, queen lies in 2nd row
2. In column 1, queen lies in 0th row
3. In column 2 queen lies in row 3rd
4. In column 3 queen lies in row 1st

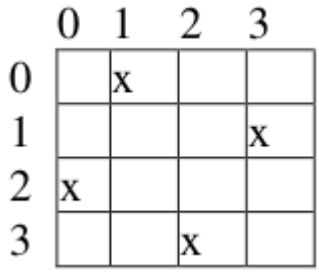


Figure 1