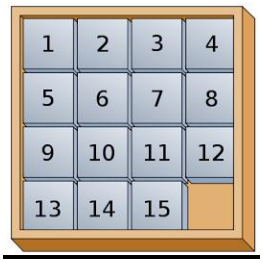
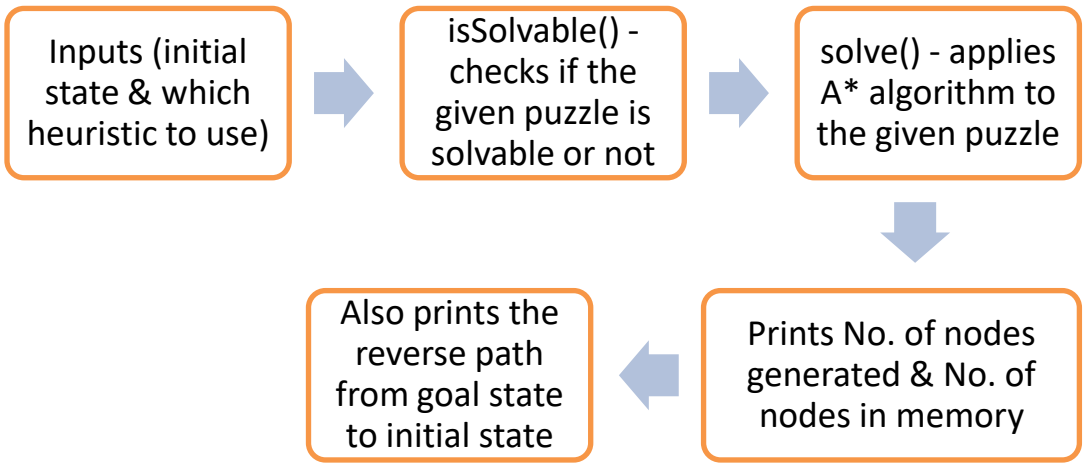
15-PUZZLE PROBLEM is a puzzle played on a 4-by-4 grid with 16 square blocks labeled 1 through 15 and a blank square. The goal is to rearrange the blocks so that they are in order. You are permitted to slide blocks horizontally or vertically into the blank square.



Goal State

- ✓ If we consider Hamming Distance as H_1 and Manhattan Distance as H_2, then, it can formally be proven that $\mathbf{H_1 \geq H_2}$.

FLOW OF CONTROL:



Example Testcase –

	Initial State	Goal State
	1 2 3 4 5 6 7 8 11 12 0 15 10 9 13 14	1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 0

(Heuristic 1)	**Time (No. of Nodes generated):** 1035
	Space (No. of Nodes in memory): 719
(Heuristic 2)	**Time (No. of Nodes generated):** 63
	Space (No. of Nodes in memory): 60
Depth of the Solution (No. of moves): 14	