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Experiment No. 8

Aim – To implement branch and bound algorithm

Details – The 15 puzzle problem consists of 15 numbered tiles on a square frame with a capacity of 16 tiles. An intitial arrangement of the tiles is given. The objective is to transform this arrangement into the goal arrangement as shown below through a series of legal moves.

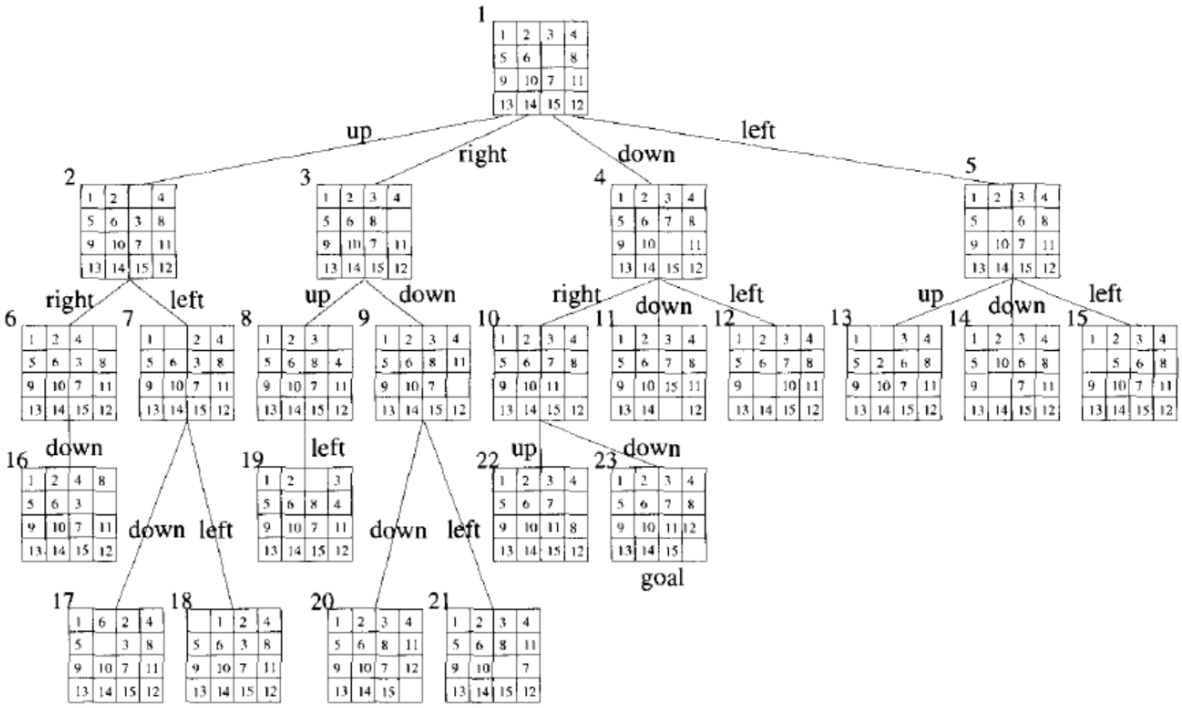
1	3	4	15
2		5	12
7	6	11	14
8	9	10	13

(a) An arrangement

1	2	3	4
5	6	7	8
9	10	11	12
13	14	15	

(b) Goal arrangement

We can carry out the search of path initial arrangement to final arrangement by exploring tree organization in branch and bound method. The children of each node x in the tree represents the states reachable from state x by one legal move. Following diagram shows the tree organization.



Important Links:

1. YouTube Video: 15 Puzzle Problem Video
2. Reading Resource: 15 Puzzle Problem Theory

Input – Initial state of 15 Puzzle problem
Output – The entire path of tree organization to reach to final/goal state.

Submission –

1) C/C++ source code of implementation
2) Verified output for the written source code with multiple inputs
3) One page report of Exp. 8