

**Experiment No. 6**

**Title:** Prolog program on 8-Puzzle

**Batch: Roll No.: Experiment No.: 6**

**Aim:** Write a program for implementation of Prolog program on 8-Puzzle .

**Resources needed:** PROLOG Suite

**Theory**

**Board**

In this puzzle you have 8 tiles and each tile is represented with a number from 1 to 8 and there is also an empty space.



**Rules**

* You can only move tiles horizontally or vertically where there is an empty space.
* You win when you reach the desired configuration of tiles
* Each move will have a cost of 1

**Procedure:**

* To solve an 8-puzzle you need to call the predicate solvepuzzle with the following parameters
  + First parameter is the initial state.
  + Second parameter is the goal state.
  + Third parameter is a variable called Cost that returns the total cost to reach the desired configuration.

Example

solvepuzzle([[1,3,4],[8,0,5],[7,2,6]], [[1,2,3],[8,0,4],[7,6,5]],Cost).

If the puzzle is solvable it returns the total cost with each step to solve it.

If the puzzle is not solvable it returns "No soution".

**Results: (Softcopy submission of Summary Document)**

**Outcomes:**

**Conclusion:**

**Grade: AA / AB / BB / BC / CC / CD /DD Signature of faculty in-charge with date**

**References:**

1. Stuart Russell and Peter Norvig, Artificial Intelligence: A Modern Approach, Second Edition, Pearson Publication
2. Luger, George F. Artificial Intelligence : Structures and strategies for complex problem solving , 2009 ,6th Edition, Pearson Education
3. Ivan Bratko, Prolog Programming for AI, 2011, 4th Edition, Pearson publication

