

# CS2310 Term Project Milestone#1

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## Title

8-Puzzle Problem in SIS Testbed

## Description

**Problem:** 8-Puzzle Problem is a game played on a 3-by-3 grid with 8 square blocks labeled 1 through 8 and a blank square (See Fig. 1). Your goal is to rearrange the blocks so that they are in order running around the perimeter of the board. You are permitted to slide blocks horizontally or vertically into the blank square. The following figure shows a sequence of legal moves from an initial configuration (left) to the goal configuration (right).

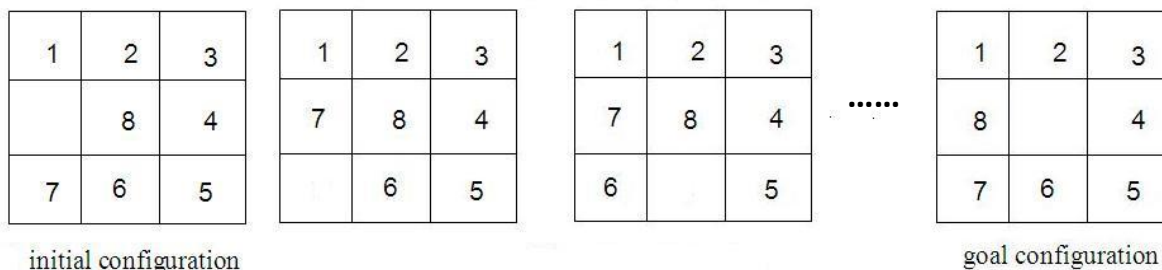


Fig. 1

## My Task:

- First, write the NextMove(X) program, which accepts input problem set (user can specify the initial configuration by file), to produce an output set Y within one step. The problem can be modeled as a simplified tree searching problem. Each element in X represents a root node of a tree from which we can explore all possible configurations within one step. Each time we move the blank to another position (create a new configuration) we create a new node. If the node we have is the same as goal state then we finish the search.
- Second, enhance the Developer's SIS Testbed such that it supports cycle switching based on the emptiness of the output set Y produced by NextMove(X) program.

## Deliverables

- A runnable Java program NextMove(X) for the 8-Puzzle Problem.
- A demo of the program under the Developer's SIS Testbed to select and fine-tune its algorithm.
- Project Report