CS2310 Term Project Demo

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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).
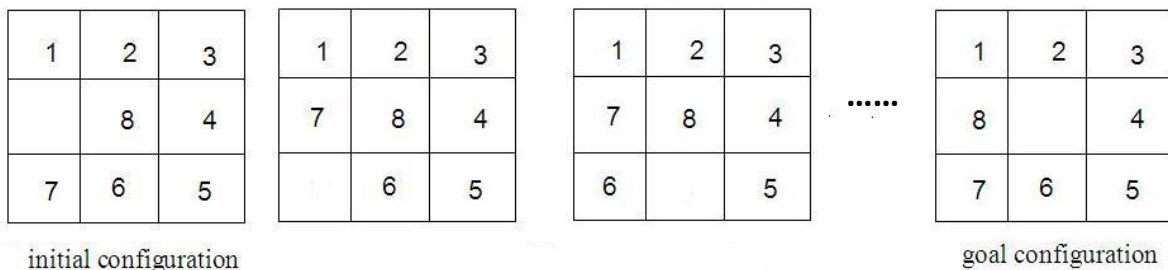

Fig. 1

Project Overview:

- First, write the NextMove(X) program, which accepts input problem set, to produce an output set Y within one step.
- Second, run the above program in the Testbed with following cycle switching rule:

    cycle0: P0 -enum< P1 < -enum < P2 < -enum P3…... < -enum < Pn-1 >elim- Pn

    When the final eliminate operator produces an empty output set Pn, then cycle0 is reran with Pn-1 as its initial problem set; otherwise cycle0 is terminated.

- Third, enhance the Testbed, making it automatically support the above cycle switching rule.

Example:

cycle0: P0 -enum< P1 >elim- P2

cycle0: P0 -enum< P1 -enum< P2 >elim- P3

(a screenshot of the experiment results)

Explanation of The Execution of Cycle0 (Red Cycle)

P1

P0

-enum<

>elim-   P2={}