Problem Specification File Documentation

The following will explain the contents and options of the Problem Specification File. Quotation marks are used to denote the text in the file. Quotes should not be found in the input file.

Line 1 – Problem

* “MCP” - Missionaries and Cannibals Puzzle
* “Pegs” - Pegs Logic game.

Line 2 – The Search Strategy

* “DFS” – Depth-First Search
* “BFS” – Breadth-First Search // Decide UCS after she emails back
* “A\*” – A\* Search
* “GBFS” – Greedy Best-First Search
* “IDS” – Iterative Deepening Search
* “DLS” – Depth Limited Search
* “IDA\*” – Iterative Deepening A\* Search

Note: An input file for Heuristic must also be input when running the program if any of the following options is selected: GBFS, A\*, IDA\*

Line 3 – Depth Cutoff

* “0” – Used when Strategy is not DLS
* “(integer > 0)” – Used when strategy is DLS

Line 4 – Problem Modifications

This is a problem specific option. Only one format will work for each problem. Formats are as follows.

* “(integer 1-6)” – Board shape for pegs logic
  + These board shapes are synonymous with the description of this game found on [Wikipedia](https://en.wikipedia.org/wiki/File:Peg_Solitaire_game_board_shapes.svg)
  + Also know that your initial and final state input files must match up exactly to the board game shape you pick.
* “(integer, integer)” – Values for Missionaries and Cannibals Puzzle
  + The first integer represents the number of Missionaries and Cannibal pairs.
    - Note: This value should be greater than or equal to 2.
  + The second number represents the capacity of the boat.
    - Note: This value should be either 2, 3, or 4.

Line 5 – The Exploration Cutoff

* “(integer > 0)” – represents the number of nodes to be expanded before the user is asked if they want the program to keep searching for the solution. If 0 is entered, no cutoff is used.
  + Note: some knowledge of the problem is recommended to choose an appropriate value.

Example files are listed below. Bold is used to denote the “standard” game state for each puzzle.

PegSpec1.txt

Pegs

BFS

**0**

**4**

**0**

MCPSpec1.txt

MCP

DFS

**0**

**3 2**

**0**

PegSpec2.txt

Pegs

DLS

32

4

0

MCPSpec1.txt

MCP

A\*

0

4 3

20