In this question you will use the domain described below to answer questions about a state-space search method:

Initial State: 1

Goal State: 3

|  |  |  |  |
| --- | --- | --- | --- |
| State | Action | Result State | Cost |
| 1 | L | 2 | 4 |
| 1 | R | 4 | 2 |
| 1 | U | 5 | 5 |
| 2 | R | 1 | 3 |
| 2 | L | 4 | 5 |
| 2 | U | 7 | 2 |
| 3 | L | 6 | 5 |
| 4 | L | 1 | 4 |
| 4 | R | 2 | 5 |
| 4 | U | 6 | 1 |
| 5 | D | 1 | 5 |
| 5 | L | 7 | 1 |
| 6 | R | 3 | 5 |
| 6 | D | 4 | 1 |
| 7 | D | 2 | 2 |
| 7 | R | 5 | 5 |

Using Breadth-First Search Graph algorithm from textbook, list in order the nodes expanded searching from start state to goal state.

Whenever a search algorithm iterates through the actions, always use the ordering: U, D, R, L.

Since all states are single digits, the answer should be an integer.  For example, if the nodes expanded were '1,2,3', then the answer would be '123'.

1) Nodes expanded by Breadth-First Search:

2) Solution found by Breadth-First Search:

3) Nodes expanded by Uniform Cost Search:

4) Solution found by Uniform Cost Search:

5) What is the final path cost of the solution found by Uniform Cost Search?

6) Nodes expanded Depth-First Search:

7) Solution found by Depth-First Search:

Answers:

1. 154276
2. RUR
3. 146257
4. RUR
5. 8
6. 12746
7. RUR