Homework #4: Pattern Databases

HW #4

23, 2018 at 11:59pm

For this assignment, undergrand the students must work individuate the assignment with other students in thinking about how to solve these problems, but all programming and other portions of the assignment must be entirely your own work. You may not show your code to other students. If you are working with another student, you need to designate this by forming a group in Carryas.

Task:

In this assignment you will implement two pattern databases for the 3x5 strong-tile puzzle I p

Pattern Databases:

You should build pattern data passes containing the following to: 163.com

a) 0 1 2 3 4 5 (3,603,600 entries)

b) 0 9 10 11 12 13 14 (3) (43) (40) (410) (8 8 9 4 7 6

Undergraduates can hard-code these patterns into the PDB code and ranking function. Graduate students should write code that takes any pattern as input for building the pdb.

DS://THTOTCS.COM

Your PDB should store its values as an array/vector of 8-bit values. To build the PDB, do a breadth-first search from the goal state. Compute the (abstract) rank of a state to store its depth in the PDB. If you generate a state in the BFS which is already in the PDB you should discard the state to avoid generating states multiple times.

Ranking/Unranking:

Use a lexicographical ranking and unranking function (as described in class). To compute the abstract rank you must:

- 1) Compute the dual of the pattern
- 2) Compute the mixed-radix value of the pattern
- 3) Compute the rank of the mixed-radix pattern

Note that a naive implementation of step 1 takes O(n^2) time, while a smarter implementation (which computes the location of each tile first) will only take O(n) time.

Testing:

Test your code on the 20 test instances from homework three. Cor expanded using:

程序代写代做 CS编程翱

New

Course Chat

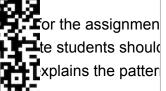


· Only Manhattan distance

The max of Manhattan distance and the PDBs

What to turn in:

Your submission should inclu your program that tests on a provides the experimental re



Verifying Correctness:

If you print the distribution of depths in your PDBs, you should get WeChat: cstutorcs

PDB complete; 3603600 of 360600 entries written Project Exam Help

0:1

1:2

2:4

3:9

4:20 5:32

6:53

7:78 8:140

9:215

10:383 11:572

12:994

13: 1487

14: 2551

15 : 3662

16:6083

17:8412

18: 13285

19: 17198

20: 25715

21: 31361

22: 44669

23 : 51069

24: 69998

25 : 76509

26: 102351 27: 108545

28: 142635

29: 146533

30: 187956

31: 184448

Send

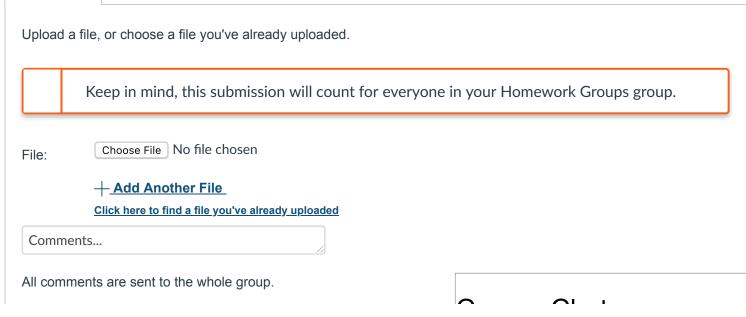
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Assignment Project Exam Help

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