判断题
5
单选题
5
多选题
3
编程题
1

每个选项独立判分

3-1

分数 4
作者 Yuchen Mao
单位 浙江大学

Let TTT be an AVL tree with 19 nodes. What are the possible height of TTT? (We assume that the height of a single node is 1.)

☐
A.

4

☒
B.

5

☐
C.

6

☐
D.

7

答案正确：4 分

3-2

分数 8
作者 Yuchen Mao
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You are given nnn jobs, each with a processing time pjp_jpj and a deadline djd_jdj. Given a schedule σ\sigmaσ of the jobs, we define the lateness of job jjj as λj(σ)=max(Cj(σ)−dj,0)\lambda_j(\sigma) = \max (C_j(\sigma) - d_j, 0)λj(σ)=max(Cj(σ)−dj,0), where Cj(σ)C_j(\sigma)Cj(σ) is the completion time of job jjj in σ\sigmaσ. You task is to find a scheduling σ\sigmaσ that minimizes the total lateness ∑jλj(σ)\sum_{j}\lambda_j(\sigma)∑jλj(σ). Which of the following greedy algorithm produces an optimal schedule?

(This problem is from *Algorithms Illuminated* by Tim Roughgarden.)

☒
A.

Schedule the jobs in increasing order of deadline djd_jdj.

☐
B.

Schedule the jobs in increasing order of processing time pjp_jpj.

☐
C.

Schedule the jobs in increasing order of the product dj·pjd_j\cdot p_jdj·pj.

☐
D.

None of the above works.

部分正确：4 分

3-3

分数 4
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We have introduced the knapsack problem in class. Which of the following

statements are correct?

☒
A.

The knapsack problem can be solve in (nC)(nC)(nC) time where nnn is the number of items and CCC is the capacity of the knapsack.

☐
B.

The knapsack problem can be solve in (nV)(nV)(nV) time where nnn is the number of items and VVV is the total value of items.

☐
C.

The knapsack problem can be solved by greedily selecting items according to their values.

☐
D.

The knapsack problem can be solved by greedily selecting items according to their efficiencies (the ratio of value to weight viwi\frac{v_i}{w_i}wivi).

部分正确：3 分

上一题

☐单题作答

下一题

退出答题

判断题
5/5
共 10 分

1
2
3
4
5

单选题

5/5

共 14 分

1

2

3

4

5

多选题

3/3

共 16 分

1

2

3

编程题

0/1

共 10 分

1

共 50 分

未作答

待评测

答案正确

答案错误

ADS23MID

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