Lab4

November 07, 2023

1 Task description

Suppose you have one machine and a set of n jobs a_1, a_2, ..., a_n to process on that machine. Each job a_j has a processing time t_j, a profit p_j, and a deadline d_j. The machine can process only one job at a time, and job a_j must run uninterruptedly for t_j consecutive time units. If job a_j is completed by its deadline d_j, you receive the profit p_j, but if it is completed after its deadline, you receive the profit of 0.

Give an algorithm to find the schedule that obtains the maximum amount of profit, assuming that all processing times are integers between 1 and n. Please write code and analyze time complexity.

2 Scoring criteria

1. Algorithm and implemented code (including three use cases) (60%).
2. Efficiency of the algorithm (20%).
3. Document (20%).

3 Points for Attention

(1) For the implementation of these algorithms, you are free to select a programming language of your choice.

(2) Kindly upload the source code files along with their associated documentation in a compressed ZIP format to the elearning system for assessment.

(3)Your document should be submitted in electronic format whenever possible. The document format should be either Word, PDF, or Markdown.

(4) The deadline of this lab is 23:59:59 on November 10.

(5) The naming format for the file should be "lab6-StudentID-Name," and make sure to compress all the files into a single compressed folder.

(6) If you have any questions please feel free to contact teaching assistants.