Introduction to Algorithms Assignment3

Due Date: 2018/06/22 12:00:59

Language: C、C++、Python

Score:

If you pass the given data(d1), you get 30% each problem

Another 20% will be gotten if you pass the hidden data(d2, d3)

Report 5%

if you pass d1, you'll get 60(30 + 30)

if you pass d1 and (d2 or d3) you'll get 80

if you all pass, you'll get 100

Resource Allocation Problem

- ✓ Given m resources and n projects, a profit(i, j) will be obtained if j, $\mathbf{0} \le \boldsymbol{j} \le \boldsymbol{m}$, resources are allocated to project i.
- ✓ Find an allocation of resources to maximize the total profit.
- ✓ Please use dynamic programming approach to design an algorithm and implement the program to solve the resource allocation problem.

e.g. You have 7 days to study four courses. Each course should study at least 1 day.

How to plan your schedule to get the highest score?

Days to study	course			
	1	2	3	4
1	3	4	3	6
2	6	6	4	7
3	7	9	8	9
4	8	11	9	10

Answer: max score is 24.

P.S. If you study course 1 two days, you will get 6 points.

Input:

3 4 3 6

6 6 4 7

7 9 8 9

8 11 9 10(profit table)

7(resource)

3 4 3

6 6 4

7 9 8

8 11 9

6

Output:

24(6+9+3+6)

18(6+9+3)

Rule of programing and the dataset:

(1) Resources is larger than number of plans (Because one plan need to choose once)

(2) One profit table may contain more than one allocation problem

(3) All element type is positive Integer.

(4) Cannot use not standard header file or you should attach on your zip

(5) Auto input and output, the relative path is beside the main program