Introduction to Algorithms Assignment3

Due Date: 2018/06/22 12:00:59 **Language:** C \cdot C++ \cdot 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, $0 \le j \le m$, 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

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