

Homework 6

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- **Acknowledgments:** This assignment refers to the textbook: Introduction to Operations Research(10th).
 - **Collaborators:** I finish this assignment by myself.
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The answer below are about problem 11.3-3 in the textbook.

SOLUTION:

Let n be the ID of courses ($n=1,2,3,4$), s_n be the number of study days remaining to be allocated to the left courses, c_{sx_n} be the number of grade points expected when x_n days are allocated to course n . Hence we have:

$f_n^*(s_n) = \max_{1 \leq x_n \leq \min(s_n, 4)} [c_{sx_n} + f_{n+1}^*(x_n)]$. The solution procedure is as follows(4 stages in total):

s_4	$f_4^*(s_4)$	x_4^*
1	6	1
2	7	2
3	9	3
4	9	4

Table 1: Stage 4

	$f_3(s_3, x_3)$					
s_3	1	2	3	4	$f_3^*(s_3)$	x_3^*
2	8	-	-	-	8	1
3	9	10	-	-	10	2
4	11	11	13	-	13	3
5	11	13	14	14	14	3,4

Table 2: Stage 3

	$f_2(s_2, x_2)$					
s_2	1	2	3	4	$f_2^*(s_2)$	x_2^*
3	13	-	-	-	13	1
4	15	13	-	-	15	1
5	18	15	14	-	18	1
6	19	18	16	17	19	1

Table 3: Stage 2

Hence the optimal policy is $(x_1^*, x_2^*, x_3^*, x_4^*) = (2, 1, 3, 1)$.

	$f_1(s_1, x_1)$					
s_1	1	2	3	4	$f_1^*(s_1)$	x_1^*
7	22	23	21	20	23	2

Table 4: Stage 1

A Relevant Files

Relevant files can be found in my GitHub repository:
<https://github.com/OpenGHZ/TBSI-MyHomework.git>.