B03902062 資工二 董文捷

Use DP to add course one by one and update the table. When a course of index i is added, we can get table[j] + credit[i] credit in j + take_time[i] time. If the new credit is larger than the original credit in table[j + take_time[i]], replace the original credit with the new credit. To avoid repeatedly choosing the same course, we should update the table reversely.

My code in C++

```cpp
#include <bits/stdc++.h>
const int course_num = 5;
int main()
{
    int credit[course_num] = {4, 3, 1, 3, 2};
    int take_time[course_num] = {6, 5, 1, 4, 4};
    int i, j;
    int table[20 + 1] = {0};
    for(i = 0; i < course_num; i++)
    {
        for(j = 20; j >= take_time[i]; j--)
        {
            int new_credit_j = table[j - take_time[i]] + credit[i];
            if(new_credit_j > table[j])
                table[j] = new_credit_j;
        }
    }
    for(i = 0; i <= 20; i++)
        printf("%d : %d\n", i, table[i]);
}
```

ANS:

Time	Credit
0	0
1	1
2	1
3	1
4	3
5	4
6	4
7	5
8	5
9	6
10	7
11	8
12	8
13	8
14	9
15	10
16	11
17	11
18	11
19	12
20	13