Coding Area

Travel Pass

Problem Description

You are given the data of travel schedule of a traveler and prices of travel passes. There is no restriction on the number of times one can buy the passes. However the objective is to buy optimal number such that the traveling cost is minimized.

The pass can be single day or multi-day pass. In case of multi-day pass the pass is valid for those many travels on consecutive days only. For e.g. a 10-day pass can be used to travel 10 times from *Day 1* to *Day 10*. The pass expires at the end of 10^{th} day. Hence it can not be used for any further travel. Similarly a N day pass expires at the end of N^{th} day from the day of issue.

For better understanding refer to *Examples* section:

Constraints

0 <= W < 10 ^ 4

Input

First line contains five space separated integers in ascending order denoting the number of days of validity for that pass

Second line contains five space separated integers which denotes price of the i^{th} pass where 1 <= i <= 5

Third line contains an integer W which denotes the number of weeks of schedule

Next W lines contain string of length 7. This string comprises of characters 'X' and '0', where 'X' denotes the day of traveling whereas '0' denotes day of no traveling

Output

A single integer denoting the minimum cost of traveling for a schedule of W weeks.

Time Limit

1

Examples

Example 1

Input

1 5 10 15 30

3 12 18 25 40

2

0X0X0X0

XXXXXXX

Output

24

Explanation:

The first and the second line of input together states that

Cost of 1-day pass is 3

Cost of 5-day pass is 12

Cost of 10-day pass is 18

Cost of 15-day pass is 25

Cost of 30-day pass is 40

Third line denotes that 2 weeks of schedule is provided i.e. W = 2

Next two lines with 7 character strings can be interpreted as below.

Sunday Monday Tuesday Wednesday Thursday Friday Saturday

0 X 0 X 0 X 0

X X X X X X X

Across two weeks i.e. across 14 days there are 10 days of travel. Simplest solution to have ten 1-day passes, which will cost 30. Another could be buying a 15-day pass, which will cost us only 25. However this can still be optimized further as explained below.

The most optimum solution is if we buy two 1-day passes and one 10-days pass.

0 X 0 X 0 X 0

X X X X X X X

Here blue depicts 1-day pass and red depicts 10-days pass. The overall cost with this strategy is only 24. Since there is no other way to reduce the cost below 24, the output should be 24.

Example 2

Input

2 6 11 14 27

3 12 18 25 40

2

0X0X0X0

XXXXXXX

Output

21

Explanation:

The first and the second line of input together states that

Cost of 2-day pass is 3

Cost of 6-day pass is 12

Cost of 11-day pass is 18

Cost of 14-day pass is 25

Cost of 27-day pass is 40

Third line denotes that 2 weeks of schedule is provided i.e. W = 2

Next two lines with 7 character strings can be interpreted as below.

Sunday Monday Tuesday Wednesday Thursday Friday Saturday

0 X 0 X 0 X 0

X X X X X X X

Across two weeks i.e. across 14 days there are 10 days of travel. Simplest solution to have one 14-day pass, which will cost 25. However this can still be optimized further as explained below.

The most optimum solution is if we buy seven 2-day passes, which costs 21.

0 X 0 X 0 X 0

X X X X X X X

Another optimum solution is if we buy one 2-day pass and one 11-day pass.

0 X 0 X 0 X 0

X X X X X X X

Here blue depicts 2-day pass and red depicts 11-days pass. The overall cost with this strategy also is only 21. Since there is no other way to reduce the cost below 21, the output should be 21.

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