Soldiers And MagicalPosition

In a single player computerized game, a player is given 4 soldiers, each soldier has a max of 10 slots (similar to chess board). [0,1,2,3,4,5,6,7,8,9] but is free to move to any slot, for example 9 to 0 or 0 to 9, in one go. But each soldier can move only once in each chance.

The initial position of all soldiers is 0000 , a string that represents the state/position of the 4 soldiers.

You are given a list of positions where in the soldiers cannot be together, the game will not work if the soldiers are in this deadlock position.

GIven a magical soldier position combination representing the positions of the soldiers, return the total number of moves required to attain this magical position or -1 if impossible.

Note:
1. The length of deadlock will be in the range [1, 500] .
2. target will not be in the list deadlocks.
3. Every string in deadlocks and the string target will be a string of 4 digits from the 10,000 possibilities '0000' to '9999'

Input/Output

Input	Output	Comments
0201 0101 0102 1212 2002 0202	**6**	A sequence of valid moves would be "0000" -> "1000" -> "1100" -> "1200" -> "1201" -> "1202" -> "0202". Note that a sequence like "0000" -> "0001" ->"0002" -> "0102" -> "0202" would be invalid, because the soldiers would be stuck at deadlock position "0102".
8888 0009	**1**	We can move the soldiers back ,to move from "0000" -> "0009".
8887 8889 8878 8898 8788 8988 7888 9888 8888	**-1**	We can't reach the magical position without getting stuck.
0000 8888	**-1**	

Meera and her luck

Meera is a home maker and wants to try her hand at stock market. She has set a few days aside for this challenge. And has made up her mind that she will learn to buy and sell the shares. She is given the past share prices of the company GOOGL , for S days by her friend and she is now to find the max profit that one can make. Initially, it is assumed that she has zero shares.

We need to help Meera in making the maximum profit that is possible. Let us say the share prices are for D days (array A), where the jth element denotes the price of the jth day.

Input/Output

Input	Output	Comments
3 1 1 2 4	4	• --First Line takes the number of days and share count separated by a space. • --Second line takes the share price each day • Find the maximum profit. This is the ideal test case, where the lowest price is the first one and highest share price is the last one.
5 2 7 1 2 3 8	14	• In this test case the minimum is the second and max is last price.
4 4 12 55 7 54	188	• This is tricky as the maximum is before the minimum so there will be 2 sets of profits. one from 12 and 55 . And the other from 7 and 54. The sum of these two gives the total max profit.

Who is the President

Boris Trump (0) and Donald Johnson (1) are competing for the role of a president of a student counsel. The counsel has come up with a voting mechanism where in i-th vote was cast by students at the times[i] and given a time m, it will return the number(0 or 1) of the president that was leading at the time m.

Votes cast at time m will count towards the mechanism. In a situation where there is a tie between candidates, the most recent vote between/among the tied candidates wins.

Input/Output

Input	Output	Comments
0 1 1 0 0 1 0 0 5 10 15 20 25 30 3 12 25 15 24 8	0 1 1 0 0 1	• At time 3, the votes are 0 and 0 is leading. • At time 12, the votes are 0 1 1 and 1 is leading. • At time 25, the votes are 0 1 1 0 0 1 and so 1 is leading (as ties go to the most recent vote.)
1 0 0 0 1 1 1 0 1 3 8 23 34 38 41 55 67 78 10 20 35 50 60	0 0 0 1 1	• At time 10 0 is leading. (as ties go to the most recent vote) • At time 20 0 is leading. • At time 35 0 is leading. • At time 50 1 is leading. • At time 60 1 is leading.

Usain and his Speed

Usain likes to walk a few kilometres every day. He published a list that has the (N) kilometres(1 through N) that he walked in M days.

For each valid i, the ith distance there will be only one Di-th day. Usian has analysed his walking distance and knows that for each valid i, the i-th distance has a speed of Vi.

Usain wants to know the highest sum of speed in two days in the given N days. He can walk any number of times on the same day but we need to pick only one speed for that day to get the overall maximum speed.

Input/Output

Input	Output	Comments
3 6 5 7 1 9 2 5	16	First Line takes number days and number of different Speeds at which he walked. The rest of the lines take day followed by speed . Day(Di) and Speed(Vi) Ex: 3 is the number of days. 6 are the different speeds. On 5th day he walked at 7kmph On 1st day he walked at 9 kmph On 2nd day he walked at 5 kmph The top two speeds in these 3 days are 7 and 9, sum of these two gives us the output -16
3 7 5 8	15	3 is the number of days.7 are the different speeds. On 5th day he walked at 8 kmph

2 5		On 2nd day he walked at 5 kmph
5 10		On 5th day he walked at 10 kmph
		The day 5 here is repeated, so we need to go for the max speed on that day, which is 10kmph. The top two speeds now are 10 and 5, sum of these two gives us the output -15