Walk

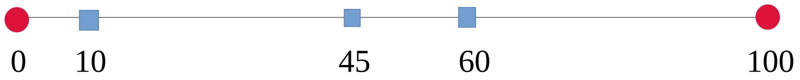
1 second, 256 MB

On a long straight road, there are N gas stations at locations $X_1, X_2, \ldots, X_N$, where $X_1 < X_2 < \ldots < X_N$. You want to go on this road from location 0 to location Z, where $Z >= X_N$.

You have a car which can travel for a distance of D if it gets a full tank of gas. Initially, at location 0, the car is completely full. However, you do not like to go into the gas stations. You hate going into the gas stations so much that you can let the car runs out of gas if the next gas station or the final location Z is within a distance of E. In that case, you will walk to the gas station, get the gas into the container, walk back to the car, refill the car to the full tank, and continue. You will **never drive back nor walk back** to the gas stations that you have passed.

Consider the following examples.

Example 1: Suppose that N = 3, Z = 100, D = 48, and E = 15; and the locations of gas stations are as shown below.



In this case, to reach the destination at location Z = 100, you start at location 0 and travel to location 48, where your car runs out of gas. You walk to the third gas station because it is not too far (you can walk for E=15 units but the gas station is only 12 units away). You refill the car and now you can reach location 96. However, it is not too far from the final destination so you can walk for another 4 units and get to your goal. Therefore, you have to stop at only one gas station.

Example 2: Suppose that N = 3, Z = 100, D = 50, and E = 2; and the locations of gas stations are the same as in Example 1.

In this case, to reach the destination at location Z = 100, you start at location 0 and travel to the second gas station at location 45 to refill. Then you have to stop again at the station at location 60 to refill again to reach the destination. Note that you have to stop at these 2 gas stations. If you do not stop at the gas station at location 45, your car will run out of gas at location 50, but you cannot walk to location 60 because it is too far (you can walk for E=2 units but the gas station is 10 units away). After your car is refilled at location 45, it can travel to location 95, but the destination is too far to walk. So if you do not stop again at the gas station at location 60, you will never reach your destination.

Example 3: Suppose that N = 3, Z = 100, D = 20, and E = 80; and the locations of gas statios are the same as in Example 1. In this case, you do not have to refill at all. You can drive to location 20, then walk all the way after that to reach the destination with the walkable distance of 80.

Example 4: Suppose that N = 3, Z = 100, D = 20, and E = 5; and the locations of gas statios are the same as in Example 1. In this case, you cannot reach the destination.

Input

The first line of input contains four integers N Z D and E (2 <= N <= 3,000; 1 <= Z <= 100,000; 1 <= D <= 100,000; 0 <= E <= 100,000).

The next line contain N integers representing the locations of gas stations: X_1 X_2 … X_N (0 <= $X_1 < X_2 < \ldots < X_N <= Z$).

There are 30% of test cases where E=0, i.e., you will not walk at all.

Output

The output contains one line, specifying the minimum number of times you have to stop at gas stations. If it is impossible to reach the destination, you should output `-1`.

(Examples are on the next page.)

Example 1

Input	Output
3 100 48 15 10 45 60	1

Example 2

Input	Output
3 100 50 2 10 45 60	2

Example 3

Input	Output
3 100 20 80 10 45 60	0

Example 4

Input	Output
3 100 20 5 10 45 60	-1

Example 5

Input	Output
3 100 50 0 10 45 60	2