PRINCETON COS CON

Problem 3: Unreliable TigerTransit (10 points) [Codeforces]

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It is the year 1746, and you are one of the first class of computer science majors in the new College of New Jersey. As a very responsible student, you go to attend classes in the Friend Center every day, but the "endless" n-day winter of 1746 has arrived, and you no longer wish to walk up the hill in the inhospitable cold predating global warming. As such, you decide to take the College's bus service.

Unfortunately, the bus service is not consistent: it arrives on day i at some time t_i between 1 and 10^9 microseconds after 9am. Fortunately, using the time machine you built in your Ancient Greek writing seminar, you have determined exactly what time it will come on each day, but you think it is too complicated to match your schedule to the bus every day. As such, you come up with the following system: you will arrive at the bus stop at a time s every day, and wait k microseconds for the bus. If the bus does not come by then, you will walk instead. (Formally, you will take the bus on day i if $t_i \in [s, s+k)$.) Based on the time it takes for you to walk to Friend, you have already decided k. Can you choose s so that you take the bus on the maximum possible number of days?

Input

The first line contains two space-separated positive integers n and k (in that order), which represent the number of days in winter, as well as the time (in microseconds) you will wait for the bus. The next line contains n space-separated integers $t_1, \ldots, t_n$ that represent the time the bus arrives on each day, in microseconds after 9am.

Output

The output should consist of one integer: the maximum number of days that you can catch the bus if you choose the optimal value of s. Please note that, for your convenience, you do not need to output s itself.

Constraints

You can assume that $1 \leq n \leq 2 \cdot 10^5$, and $1 \leq k, t_i \leq 10^9$. The program has a time limit of 1 second.

Partial Credit

You will get 3 points if you can solve cases where $1 \leq n \leq 100$, $1 \leq k, t_i \leq 100$, and 3 additional points (i.e., 6 points total) if you can solve cases where $1 \leq k, t_i \leq 2 \cdot 10^5$.

Tip: Come to us if you're not sure if your solution is fast enough!

Example

Input:

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5 5
1 7 9 2 8
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Output:

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3
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Explanation: There are $n = 5$ days, and $k = 5$. The bus arrives at times $1, 7, 9, 2, 8$. One optimal choice of s is $s = 6$. Then, you arrive at the bus stop at time 6 and leave at time 11, so you will take any bus that comes at times 6, 7, 8, 9, or 10. This matches days 2, 3, and 5, for a total of 3 days. It can be seen that in this case it is impossible to match 4 or more days.