Mont Blanc

Time limit: 1 sec

After finishing the algorithm design class, you and your friend plan to use your summer holiday to take a trip to the Alps. You wish to scale the highest peak, Mont Blanc. To scale Mont Blanc, you will start at the base of Monc Blanc and ascending upward the mountain. Scaling the peak of Mont Blanc may takes several days and it is very dangerous to ascend at night. At the end of the day, you have to set up a camp and stay the night at the camp. Not every place in Mont Blanc is suitable for camping. Luckily, earlier mountain climbers have made a list of **N** possible camping sites. The camping sites are described by their height from the base of the mountain. For simplicity, assume that the height of Monc Blanc is the height of the highest camping site, i.e., the peak always is the possible camping site.

Your plan is very simple. You and your friend decide that, for each day, you will ascend at most **K** unit of heights. However, it might not be possible to ascend exactly **K** unit because at the end of the day, you might end up at the height that is not suitable for camping. In that case, you have to stay at the highest camping site that you have reached and start ascending on the next day from that camping site.

The problem is you don't know which value of **K** is suitable. Of course you can choose very large value of **K** such that you can scale Mont Blanc in one day, however that won't be much fun, you will spend most time climbing without having a chance to appreciate the beauty of the Alp. Since your trip to the Alp lasts **D** days, you wish to choose smallest value of **K** such that the entire climbing takes as many days as possible but not exceeding **D** days.

Your task is to write a program to calculate such value of **K.**

Input

- The first line of input contains two integers **N** ($1 \le N \le 100{,}000$) and **D** ($1 < M < 100{,}000$)
- The next line contains **N** distinct integers that indicates the height from the base of each camping site. These number are sorted ascending. Notice that we define the peak of Mont Blanc as the highest camping site. So, the last value in this line is the height of Mont Blanc. The height of Mont Blanc does not exceed 1,000,000,000 unit.

Output

The output must has exactly one line containing the value **K** and the number of days you spend climbing the mountain.

Example

Input	Output
9 3 10 30 50 70 90 110 120 170 180	70 3
6 4 30 60 90 120 150 180	60 3

Note:

For the first example, when K = 70, we stop for the first day at height 70. On the next day we stop at 120 and the last day at 180. If we choose k = 69, we would have to camp at 50, 110, 170 and 180, taking 4 days which is more than the time that we have.

For the second example, when K = 60, we stop for the first day at height 60. On the next day we stop at 120 and the last day we reach the peak at 180. However, if we choose K = 59, we can climb only one camping site per day. That would take 6 days which is more than the time we have (4 days). Hence, we have to use K = 60 because it is the minimal value of K that allows us to climb the mountain in not more than 4 days.