

Download Speed Monitor

Input file: **standard input**
Output file: **standard output**
Time limit: 1 second
Memory limit: 1024 megabytes

You are currently downloading something from a cloud storage, but the download speed is very disappointing. Staring at the download speed monitor will make you feel a little more comfortable.

The download speed monitor works as follows: from the first to the $(k - 1)$ -th second, the download speed monitor will always display “loading”, but from the k -th second, the monitor will display the average download speed from the $(i - k + 1)$ -th second to the i -th second on the i -th second. However, due to the small size of the monitor, when the average download speed is greater than or equal to 1024KiBps, the download speed monitor will display the result in MiBps.

Your download task will last for n seconds. Given the calculation interval k for the average speed, you want to know what will be displayed on the monitor from the k -th second to the n -th second.

Note: 1MiBps= 1024KiBps.

Input

The first line contains two positive integers n, k ($2 \leq n, k \leq 10^5, n > k$).

The next line contains n positive integers a_i ($1 \leq a_i \leq 10^5$), where the i -th positive integer represents a_i KiB data downloaded in the i -th second.

Output

Output $n - k + 1$ lines, where the i -th line outputs the content displayed on the screen from the i -th second to the $(i + k - 1)$ -th second. Each line outputs a real number and a string, separated by a space. First output the average download speed, and then output the unit, as KiBps or MiBps. Refer to the sample output for the specific format. Your average download speed will be considered correct only if the relative or absolute error between your answer and the correct answer does not exceed 10^{-4} .

Example

standard input	standard output
5 2	512.500000 KiBps
1 1024 2048 3 5	1.500000 MiBps
	1.001465 MiBps
	4.000000 KiBps

Note

Please note that reading in a large number of floating-point numbers will cause an I/O slowdown.