Coupons

1 second, 256 MB

There are N types of coupons. Coupon type i , for $1 \le i \le N$, has value of C_i baht. The value are increasing, i.e., $C_i < C_{i+1}$, for $1 \le i < N$. Also, $C_1 = 1$.

You want to give out coupons of total value W. The way you do that is by finding the type of coupon with the highest value which is not larger than W and give that coupons of that type as many coupons as possible. If the total value of the coupons is not equal to W, you continue finding another type of coupons.

For example, if you have 3 types of coupons where $C_1 = 1$, $C_2 = 3$, and $C_3 = 4$ and you want to give out coupons of value 6 baht. You would first give out a 4-baht coupon, and then give out 2 1-baht coupons. Note that the way you give out coupons does not guarantee that you will give out the smallest number of coupons.

Input

The first line contains 2 integers: N and W ($1 \le N \le 1000$; $1 \le W \le 1{,}000{,}000{,}000$)

The next line contains N integers: $C_1\ C_2\ \ldots\ C_N$ ($1 \le C_i \le 10{,}000$; $C_1 = 1$; $C_i < C_{i+1}$)

Output

Your program should print a single line containing N integers: the number of coupons for each type of the coupons that you give out to make W baht. More specifically, the i-th integer is the number of coupons of type i.

Example 1

Input	Output
3 6 1 3 4	2 0 1

Example 2

Input	Output
4 87 1 3 4 10	0 1 1 8