Charles Babbage's Computers

There are few circumstances which so strongly distinguish the philosopher, as the calmness with which he can reply to criticisms he may think undeservedly severe." -Charles Babbage

Charles Babbage, the father of Computer Science orginated the concept of a digital programmable computer. While working on the first such system he wrote **P** different programs each of complexity $C_1, C_2, \ldots C_P$.

In order to built a computer, Charles need to form a rooted binary tree using as many programs as he wants such that the overall difficulty of the computer is **X**. The Quality, **Q** of that computer is defined by the number of possible configurations of the rooted binary tree with above said condition. So he starts building prototypes such that the first prototype has **X=1**, second protoype has **X=2**, third prototype has **X=3** and so on till **X=M**. Before launching the final product Charles need to anaylis the Quality of all the prototypes.

Help Charles with his analysis!

Input Format

The first line contain the values n and m. The next line contains n integers.

Constraints

- $1 \leq n, m \leq 10^5$
- $1 \leq ci \leq 10^5$

Output Format

Print the required answer for every value of s

Sample Input 0

```
5 10
9 10 6 4 15
```

Sample Output 0

```
0
0
0
1
0
1
0
2
1
5
```