HOME   TOP   CATALOG   CONTESTS   GYM   PROBLEMSET   GROUPS   RATING   EDU   API   CALENDAR   HELP

PROBLEMS   SUBMIT CODE   MY SUBMISSIONS   STATUS   HACKS   ROOM   STANDINGS   CUSTOM INVOCATION

D. Elections

time limit per test: 2 seconds

memory limit per test: 256 megabytes

input: standard input

output: standard output

Elections are taking place in Berland. There are n candidates participating in the elections, numbered from 1 to n. The i-th candidate has a_i fans who will vote for him. Additionally, there are c people who are undecided about their favorite candidate, let's call them *undecided*. Undecided people will vote for the candidate with the lowest number.

The candidate who receives the maximum number of votes wins the elections, and if multiple candidates receive the same maximum number of votes, the candidate with the lowest number among them wins.

You found these elections too boring and predictable, so you decided to exclude some candidates from them. If you do not allow candidate number i to participate in the elections, all a_i of his fans will become undecided, and will vote for the candidate with the lowest number.

You are curious to find, for each i from 1 to n, the minimum number of candidates that need to be excluded from the elections for candidate number i to win the elections.

Input

Each test consists of multiple test cases. The first line contains a single integer t ($1 \leq t \leq 2 \cdot 10^4$) — the number of test cases. The description of the test cases follows.

The first line of each test case contains two integers n and c ($1 \leq n \leq 2 \cdot 10^5$, $0 \leq c \leq 10^9$) — the number of candidates in the elections and the number of undecided people.
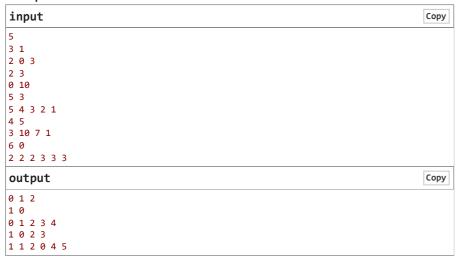
The second line of each test case contains n integers $a_1, a_2, \ldots, a_n$ ($0 \leq a_i \leq 10^9$) — the number of fans for each candidate.

It is guaranteed that the sum of n over all test cases does not exceed $2 \cdot 10^5$.
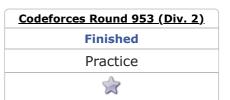
Output

For each test case, output n integers, the i-th of which should be equal to the minimum number of candidates that need to be excluded from the elections for candidate number i to win.

Example

```
input
5
3 1
2 0 3
2 3
0 10
5 3
5 4 3 2 1
4 5
3 10 7 1
6 0
2 2 2 3 3 3
```

```
output
0 1 2
1 0
0 1 2 3 4
1 0 2 3
1 1 2 0 4 5
```
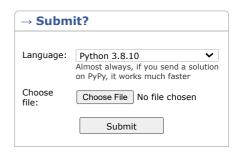
Note

In the first test case:

→ **Virtual participation** ⌄

Virtual contest is a way to take part in past contest, as close as possible to participation on time. It is supported only ICPC mode for virtual contests. If you've seen these problems, a virtual contest is not for you - solve these problems in the archive. If you just want to solve some problem from a contest, a virtual contest is not for you - solve this problem in the archive. Never use someone else's code, read the tutorials or communicate with other person during a virtual contest.

[Start virtual contest]

→ **Clone Contest to Mashup** ⌄

You can clone this contest to a mashup.

[Clone Contest]

→ **Submit?**

Language: Python 3.8.10 ⌄
Almost always, if you send a solution on PyPy, it works much faster

Choose file: [Choose File] No file chosen

[Submit]

→ **Last submissions**

Submission	Time	Verdict
266039714	Jun/16/2024 13:51	Accepted

→ **Problem tags**

data structures   greedy   implementation

math   *1600

No tag edit access

→ **Contest materials**

- Announcement (en)   ✕
- Tutorial (en)   ✕

- If candidate number 1 is not allowed, his 2 fans will become undecided. Then candidate number 2 will receive 3 votes (3 undecided people will vote for him), and candidate number 3 will receive 3 votes. Therefore, candidate number 2 wins (he received the same number of votes as candidate 3, but his number is lower), so the answer for him is 1.

- If candidates with numbers 1 and 2 are not allowed, candidate number 3 wins, so the answer for him is 2.

In the second test case, candidate number 1 will win if candidate number 2 is not allowed to participate.