Fwendwy Seqwences

I give y-you a pewmutation p of N integews.

Definye t-the fwendwinyess of an index i to be the nyumbew of indices $j \neq i$ that e-exist in aww wongest i-incweasing subsequences that incwude p_i.

Fow aww i fwom 1 to N, o-output the fwendwinyess of i!

uwu

Subtasks and Constwaints

Fow aww subtasks, you awe g-guawanteed that $1 \leq N \leq 250000$.

- Fow Subtask 1 (15 points), $N \leq 100$.
- Fow Subtask 2 (25 points), $N \leq 2000$.
- Fow Subtask 3 (60 points), nyo fuwthew constwaints.

Input

The fiwst winye of input contains the integew N.

The second winye of input contains the integews $p_1...p_N$.

Output

Output N integews, the ith o-of which shouwd be the fwendwinyess of i-index i.

Sampwe Input

```
9
1 2 3 6 5 4 7 8 9
```

Sampwe Output

```
5 5 5 6 6 6 5 5 5
```