ECE30018 Problem Solving Studio, Fall 2023

P5. Card Game

| Submission due: 1:00 PM, 10 Oct Tue

Card Game

There is a single-player card game with n card for $1 \leq n \leq 50{,}000$. Each card has an integer between 1 and 10^9 on its face. For each turn, the dealer shows a card to the player, and the player decides whether to take the card according to the following rules:

- The player always can take a card if he had not taken any card before.
- The player can take a card if the number on the current card is greater than the number on the last card that the player has taken.
- The player can take a card whose number is lower than the card taken last time. Once this decision is made, the player becomes no longer able to take a card with a greater number, but thereafter the player becomes allowed only to take a card whose number is less than the card taken last time.
- The player can skip a card even though he is allowed to take a card.

At the end, the score of a game is counted as the number of cards the player had taken.

Write a program that finds the maximum score that a player can achieve in a game, given a sequence of n cards.

Input data

- The input data is given from the standard input.
- The first line contains an integer n that represents the number of cards in the game for $1 \leq n \leq 50{,}000$.
- The second to (n+1)-th lines contains the numbers on a sequence of n cards. The i-th line has one integer between 1 and 10^9 that represents the number on (i-1)-th card.

Output data

- Print an integer to the standard output. The integer should be the maximum number of the cards that a player can take in the game.
- Your program should return the answer within 0.5 second.

Example of test data

Input data

```
11
0
1
0
2
3
1
8
3
3
6
6
```

Output data

```
6

```