Tournaments

There is a football league that's very popular in ByteLand with teams from many countries, and the broadcasters have decided to profit by telecasting them.

The tournament is organised as follows,

There are in total N

teams each of them have a unique team id.

The tournament is decided by knockout.

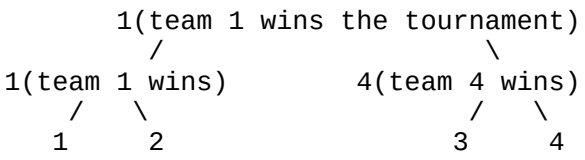
In the first round, team 1 plays with team 2, team 3 plays with team 4 and so on.

In the second round, the winner of the match between team 1 and team 2 plays with the winner of the match between teams 3 and 4 and so on.

The winner of the tournament is the winner of the last round.

For $N=4$

:



A sample possibility of the tournament for N=4 is shown above.

In the first round, team 1 plays with 2 and wins, team 4 plays with 3 and wins. In the finals, team 1 wins the tournament.

In total there are N-1 matches.

Matches are numbered starting from the finals, i.e finals is match #1, first semifinals between teams with team ids from 1 to N/2 is match #2, second semifinals between teams with team ids from N/2+1 to N is match #3 and so on.

In the above example,

Match between 1 and 4 is match #1(finals) Match between 1 and 2 is match #2 Match between 3 and 4 is match #3

All countries are numbered for convenience and the country of team i

is given as Ci

.

The broadcasters want to know which matches are profitable.

A match is profitable if among all possible teams playing that match, the two teams are from different countries.

Write a program which calculates the total **number** of profitable matches given the countries of each team.

Think about merge sort, and how it could be used to solve this problem

Input

The first line contains and integer N

denoting the number of players

The next line contains N

integers , the ith integer denoting the province of player i

.

Output

Output in a single line, an integer, the **number** of matches that are profitable

Constraints

$1 \leq N \leq 262144$

$1 \leq Ci \leq N$

N *is a power of* 2

Sample Input

```
4
1 3 2 3
```

Sample Output

```
2
```

Explanation

In the first match, if player 2 and 4 had won their matches, then they would play against each other in the finals. Hence match 1 is not profitable.

In the second and third matches, two players from different countries play this match and hence they are profitable, the total number of profitable matches is thus 2.