

Gopu and Create Collections Part Two

Little Gopu likes to play very much. As you know he only plays with numbers. So he is given n numbers. Now he tries to group the numbers into collections where each collection contains exactly two numbers. He can form the collection of two numbers a and b ($a \leq b$), if and only if b is either $2 * a$ or $2 * a + 1$.

Note that you can not use a single number in forming of more than one collections. Eg. 1, 2, 4 He can divide the numbers into a single collection only either [1, 2] or [2, 4] because each collection requires exactly two numbers, and each number has to be used only once in a group.

Given n numbers, Find out how many maximum number of collections he can form ?

Input

T: number of test cases.

For each test case, First line will contain n : ($1 \leq n \leq 10^5$)

Then next line will contain n numbers single space seperated. Range of each number will be between 1 and 10^{18} .

Sum of n over all the tests will be atmost 10^6 . So number of test cases are decided on this criteria.

Output

For each test case, output maximum number of collections that can be formed.

Example

Input:

```
4
2
1 2
3
1 2 4
4
1 2 4 8
2
4 4
```

Output:

```
1
1
2
0
```