Problem A
XOR Pairs

XOR is a bitwise operator that evaluates the resulting bit into 1 if and only if their corresponding input bits differ (one of them is 1 while the other is 0). XOR operator is usually written with a symbol $\oplus$, or in most programming languages, the character ^(caret). For example, $(10 \oplus 6) = 12$.

```
10 =>   1010
 6 =>   0110
       ----- ⊕
        1100   => 12
```

In this problem, you are given an integer N and a set of integers $S_{1..M}$. Your task is to count how many pairs of integers $\langle A, B \rangle$ such that $1 \leq A, B \leq (A \oplus B) \leq N$, and $(A \oplus B) \notin S$.

For example, let $N = 10$ and $S_{1..4} = \{4, 6, 7, 10\}$. There are 6 pairs of $\langle A, B \rangle$ that satisfy the condition.

- $\langle 1, 2 \rangle \rightarrow (1 \oplus 2) = 3$
- $\langle 1, 4 \rangle \rightarrow (1 \oplus 4) = 5$
- $\langle 1, 8 \rangle \rightarrow (1 \oplus 8) = 9$
- $\langle 2, 1 \rangle \rightarrow (2 \oplus 1) = 3$
- $\langle 4, 1 \rangle \rightarrow (4 \oplus 1) = 5$
- $\langle 8, 1 \rangle \rightarrow (8 \oplus 1) = 9$

Observe that a pair such as $\langle 2, 4 \rangle$ does not satisfy the condition for this example as $(2 \oplus 4) = 6$ but $6 \in S$. Another pair such as $\langle 5, 1 \rangle$ also does not satisfy the condition as it violates the requirement $A, B \leq (A \oplus B)$.

Input

Input begins with a line containing two integers N M ($1 \leq N \leq 10^6$; $1 \leq M \leq 100\,000$) representing the given N and the size of the set of integers $S_{1..M}$. The next line contains M integers S_i ($1 \leq S_i \leq 10^6$) representing the set of integers $S_{1..M}$.

Output

Output contains an integer in a line representing the number of $\langle A, B \rangle$ such that $1 \leq A, B \leq (A \oplus B) \leq N$ and $(A \oplus B) \notin S_{1..M}$.

Sample Input #1

```
10 4
4 6 7 10
```

Sample Output #1

```
6
```

Explanation for the sample input/output #1

This is the example from the problem description.

Sample Input #2

```
8 5
4 3 5 8 1
```

Sample Output #2

```
10
```

Explanation for the sample input/output #2

There are 10 pairs of $\langle A, B\rangle$ that satisfy the condition.

- $\langle 1,6\rangle \rightarrow (1 \oplus 6) = 7$
- $\langle 2,4\rangle \rightarrow (2 \oplus 4) = 6$
- $\langle 2,5\rangle \rightarrow (2 \oplus 5) = 7$
- $\langle 3,4\rangle \rightarrow (3 \oplus 4) = 7$
- $\langle 3,5\rangle \rightarrow (3 \oplus 5) = 6$
- $\langle 4,2\rangle \rightarrow (4 \oplus 2) = 6$
- $\langle 4,3\rangle \rightarrow (4 \oplus 3) = 7$
- $\langle 5,2\rangle \rightarrow (5 \oplus 2) = 7$
- $\langle 5,3\rangle \rightarrow (5 \oplus 3) = 6$
- $\langle 6,1\rangle \rightarrow (6 \oplus 1) = 7$

Sample Input #3

```
20 7
3 7 18 15 12 18 19
```

Sample Output #3

```
50
```

Sample Input #4

```
5 6
1 2 3 4 5 6
```

Sample Output #4

```
0
```