

Topper Rama Rao

Rama Rao is the topper of his branch. One of his friends was jealous of it. So, he poses a question to test Rama Rao and is as follows:

For a given n , find the number of even and odd numbers among the set, $\{ {}^n C_0, {}^n C_1, \dots, {}^n C_n \}$.

Rama Rao was having hard time solving it. He hopes you can help him.

Input

First line contains t ($1 \leq t \leq 10^5$), the number of test cases. Next t lines contain one integer per line, denoting n ($0 \leq n \leq 10^{12}$).

Output

For each test case, output two space separated integers specifying the number of even numbers and odd numbers respectively.

Example

Input:

2

3

4

Output:

0 4

3 2

Explanation:

for 3, values are: **1 3 3 1**. All are odd. Hence **0 4**

for 4, values are: **1 4 6 4 1**. Hence **3 2**