

# THE SATELLITE LAUNCH

For a space mission, ISRO is planning to launch a lot of satellites. Timings at ISRO are only shown by minutes. The mission lasts for 10000000 minutes. From day break ( $t = 0$ ), they launch after 1 minute ( $t = 1$ ), 4 minutes ( $t = 4$ ), 16 minutes ( $t = 16$ ), 64 minutes ( $t = 64$ ), and so on; in other words, a new satellite departs at time  $4^k$  for each integer  $k \geq 0$ . ISRO's chairman has arrived at the ISRO launch pad at the time  $S$  and he is trying to count how many satellite launches he has missed; in other words, the number of satellites that have launched strictly before time  $S$ . But there is another catch,  $S$  is a binary number. For example if  $S = 10100$  which is **equivalent to decimal 20**, then he missed satellites which have launched at 1, 4 and  $16^{\text{th}}$  minute. As you are the only one who knows the time, help them!

## Input:-

- The first line of the input contains a single integer  $T$  denoting the number of test cases. The description of  $T$  test cases follows.
- The first and only line of each test case contains one integer  $S$  which is a binary number.

## Output:-

- Output a single number — the number of trains which have departed strictly before the time  $S$ .

## Constraints:-

- $1 \leq T \leq 10^3$
- 
- $1 \leq \text{Length of } S \leq 18$

## Sample:-

- Input:-

1

100000000

- Output:-

4

Time Limit – 1 sec

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