

primes triangle (II)

primes triangle is a triangle that contain all prime numbers .

```
2
3 5
7 11 13
17 19 23 29
.....
```

your task is very easy given an integer from 1 to 10^9 prints its place in the primes triangle .

Input

in the first line integer $1 \leq T \leq 10^4$, followed by T lines each line contain integer $1 \leq n \leq 10^9$.

Output

one line contain pair of integers i, j .where i is the row number and j is the column number , 1 base . or -1 if n not exist in the primes triangle .

Example

Input:

3

3

23

4

Output:

2 1

4 3

-1