☆ Collision Course

There are *n* particles numbered from 0 to *n − 1* lined up from smallest to largest ID along the *x*-axis. For example:

The particles are all released simultaneously. Once released, each particle travels indefinitely in a straight line along the positive *x*-axis at a speed. When two particles *collide*, the faster particle moves through the slower particle and they both continue moving without changing speed or direction. Given a list of particle speeds for particles arranged left to right by position, determine the number of collisions that occur with the particle at index *pos*.

For example, assume there are *n=2* particles, *p[0]* and *p[1]*, located at positions *0* and *1* at time *t = 0*. The particle *p[0]* is traveling to the right at *speed[0] = 2* units velocity and particle *pos[1]* is traveling at *speed[1] = 1* unit velocity per unit of time. At time *t = 1*, *p[0]* has moved to position *0 + 2 = 2*, and *p[1]* is at position *1 + 1 = 2* on the x-axis. Since they both occupy the same position, they have collided at time *t = 1*. At time *t = 2*, the particle *p[0]* is at position *2 + 2 = 4*, and *p[1]* is at *2 + 1 = 3* at time *t = 2*. Since *p[0]* is moving faster than *p[1]*, and is now ahead of *p[1]* on the x-axis, they will never collide again. In this case, there is *1* collision.

Function Description

Complete the function *collision* in the editor below. The function must return the number of collisions occurring with particle *pos*.

collision has the following parameter(s):

speed[speed[0],...speed[n-1]]: an array of *speed[i]* indicating speed of particle *i*.

pos: index of the particle for which to count collisions

Constraints

- $1 \le n \le 10^5$
- $1 \le speed[i] \le 10^9$
- $0 \le pos < n$

Input Format for Custom Testing

Sample Case 0

Sample Input 0

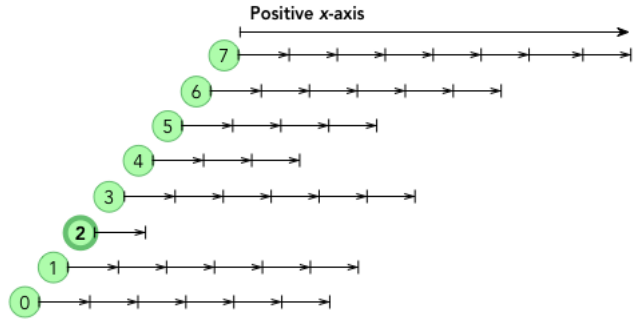
```
8
6
6
1
6
```

2

Sample Output 0

2

Explanation 0



An expanded view of the particles showing the number of units moved in the first second.

The particle at position *pos = 2* will only collide with particles *0* and *1* as they pass it from behind. Particle *2* is not moving fast enough to collide with any particle ahead of it at the start.

Sample Case 1

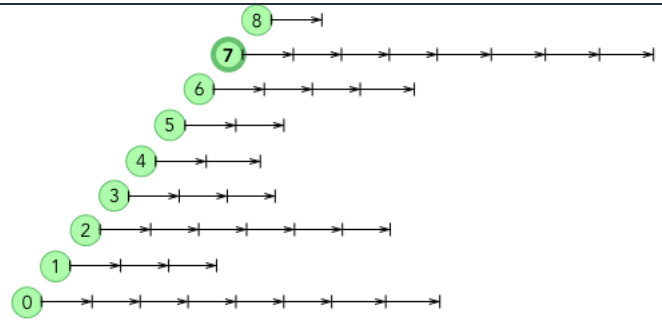
Sample Input 1

```
10
8
3
6
3
2
2
4
8
1
6
7
```

Sample Output 1

2

Explanation 1



An expanded view of the particles showing the number of units moved in the first second.

The particle at position *pos = 7* will only collide with particles *8* and *9* as it passes them from behind. There are no other particles moving fast enough to collide with particle *7*.

Sample Case 2

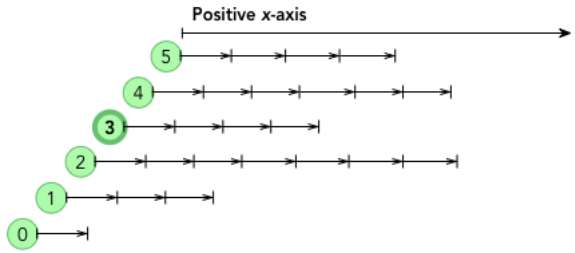
Sample Input 2

```
6
1
3
7
4
6
4
3
```

Sample Output 2

```
1
```

Explanation 2



An expanded view of the particles showing the number of units moved in the first second.

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YOUR ANSWER

We recommend you take a quick tour of our editor before you proceed. The timer will pause up to 90 seconds for the tour. Start tour

For help on how to read input and write output in Python 3, click here.

Draft saved 09:54 pm | View Code Diff | Python 3

```
1   #!/bin/python3 ···
10
11  #
12  # Complete the 'collision' function below.
13  #
14  # The function is expected to return an INTEGER.
15  # The function accepts following parameters:
16  #  1. INTEGER_ARRAY speed
17  #  2. INTEGER pos
18  #
19
20  def collision(speed, pos):
21      # Write your code here
22      print("gerg")
23
24  if __name__ == '__main__':···
```

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Test against custom input

Run Code | Submit code & Continue

(You can submit any number of times)

1 Download sample test cases *The input/output files have Unix line endings. Do not use Notepad to edit them on windows.*

2

3