

## Kick Start 2020 - Round B

# Bus Routes

### Problem

Bucket is planning to make a very long journey across the countryside by bus. Her journey consists of  $N$  bus routes, numbered from 1 to  $N$  in the order she must take them. The buses themselves are very fast, but do not run often. The  $i$ -th bus route only runs every  $X_i$  days.

More specifically, she can only take the  $i$ -th bus on day  $X_i, 2X_i, 3X_i$  and so on. Since the buses are very fast, she can take multiple buses on the same day.

Bucket must finish her journey by day  $D$ , but she would like to start the journey as late as possible. What is the latest day she could take the first bus, and still finish her journey by day  $D$ ?

It is guaranteed that it is possible for Bucket to finish her journey by day  $D$ .

### Input

The first line of the input gives the number of test cases,  $T$ .  $T$  test cases follow. Each test case begins with a line containing the two integers  $N$  and  $D$ . Then, another line follows containing  $N$  integers, the  $i$ -th one is  $X_i$ .

### Output

For each test case, output one line containing `Case #x: y`, where  $x$  is the test case number (starting from 1) and  $y$  is the latest day she could take the first bus, and still finish her journey by day  $D$ .

### Limits

Time limit: 10 seconds.

Memory limit: 1 GB.

$1 \leq T \leq 100$ .

$1 \leq X_i \leq D$ .

$1 \leq N \leq 1000$ .

It is guaranteed that it is possible for Bucket to finish her journey by day  $D$ .

### Test Set 1

$1 \leq D \leq 100$ .

### Test Set 2

$1 \leq D \leq 10^{12}$ .

### Sample

### Sample Input

```
3
3 10
3 7 2
4 100
11 10 5 50
1 1
1
```

### Sample Output

```
Case #1: 6
Case #2: 99
Case #3: 1
```

In Sample Case #1, there are  $N = 3$  bus routes and Bucket must arrive by day  $D = 10$ . She could:

- Take the 1st bus on day 6 ( $X_1 = 3$ ),
- Take the 2nd bus on day 7 ( $X_2 = 7$ ) and
- Take the 3rd bus on day 8 ( $X_3 = 2$ ).

In Sample Case #2, there are  $N = 4$  bus routes and Bucket must arrive by day  $D = 100$ . She could:

- Take the 1st bus on day 99 ( $X_1 = 11$ ),
- Take the 2nd bus on day 100 ( $X_2 = 10$ ),
- Take the 3rd bus on day 100 ( $X_3 = 5$ ) and
- Take the 4th bus on day 100 ( $X_4 = 50$ ),

In Sample Case #3, there is  $N = 1$  bus route and Bucket must arrive by day  $D = 1$ . She could:

- Take the 1st bus on day 1 ( $X_1 = 1$ ).