

Round E APAC Test 2017

[A. Diwali lightings](#)

[B. Beautiful Numbers](#)

**C. Partitioning Number**

[D. Sorting Array](#)

Questions asked 3

#### Submissions

##### Diwali lightings

5pt	Not attempted 1615/2160 users correct (75%)
8pt	Not attempted 1262/1580 users correct (80%)

##### Beautiful Numbers

6pt	Not attempted 1429/1592 users correct (90%)
15pt	Not attempted 211/1189 users correct (18%)

##### Partitioning Number

9pt	Not attempted 646/851 users correct (76%)
17pt	Not attempted 193/470 users correct (41%)

##### Sorting Array

13pt	Not attempted 5/65 users correct (8%)
27pt	Not attempted 2/2 users correct (100%)

#### Top Scores

AngryBacon	100
LittleBuger	100
wcwswws	78
legedexinshi	73
TheTerminalGuy	71
Shaon	71
ajs97	65
thonsi	65
john0312	65
rossSJTU	65

## Problem C. Partitioning Number

This contest is open for practice. You can try every problem as many times as you like, though we won't keep track of which problems you solve. Read the [Quick-Start Guide](#) to get started.

Small input  
9 points

Solve C-small

Large input  
17 points

Solve C-large

### Problem

Shekhu has  $N$  balls. She wants to distribute them among one or more buckets in a way that satisfies all of these constraints:

1. The numbers of balls in the buckets must be in non-decreasing order when read from left to right.
2. The leftmost bucket must be non-empty and the number of balls in the leftmost bucket must be divisible by  $D$ .
3. The difference (in number of balls) between *any* two buckets (not just any two adjacent buckets) must be less than or equal to 2.

How many different ways are there for Shekhu to do this? Two ways are considered different if the lists of numbers of balls in buckets, reading left to right, are different.

### Input

The first line of the input gives the number of test cases,  $T$ .  $T$  test cases follow. Each test case consists of one line with two integers  $N$  and  $D$ , as described above.

### 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 answer, as described above.

### Limits

$1 \leq T \leq 100$ .  
 $1 \leq D \leq 100$ .

### Small dataset

$1 \leq N \leq 2000$ .

### Large dataset

$1 \leq N \leq 10^5$ .

### Sample

Input	Output
3	Case #1: 10
7 1	Case #2: 1
7 2	Case #3: 0
2 4	

In sample case #1, the possible distributions are:

- 1 1 1 1 1 1
- 1 1 1 1 1 2
- 1 1 1 1 3
- 1 1 1 2 2
- 1 2 2 2
- 1 1 2 3
- 1 3 3
- 2 2 3
- 3 4
- 7

Note that 1 2 4 is not a valid distribution, since the difference between 1 and 4 is more than 2.

In sample case #2, the possible distributions are:

- 2 2 3

3 4 is not possible, since the first term is not divisible by 2.

In sample case #3, no possible arrangement exists.

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