Plates

Problem

Dr. Patel has **N** stacks of plates. Each stack contains **K** plates. Each plate has a positive *beauty value*, describing how beautiful it looks.

Dr. Patel would like to take exactly **P** plates to use for dinner tonight. If he would like to take a plate in a stack, he must also take all of the plates above it in that stack as well.

Help Dr. Patel pick the **P** plates that would maximize the total sum of beauty values.

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 three integers **N**, **K** and **P**. Then, **N** lines follow. The i-th line contains **K** integers, describing the beauty values of each stack of plates from top to bottom.

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 maximum total sum of beauty values that Dr. Patel could pick.

Limits

Time limit: 20 seconds.
Memory limit: 1 GB.
$1 \le T \le 100$.
$1 \le K \le 30$.
$1 \le P \le N * K$.
The beauty values are between 1 and 100, inclusive.

Test Set 1

$1 \le N \le 3$.

Test Set 2

$1 \le N \le 50$.

Sample

Sample Input	Sample Output
2 2 4 5 10 10 100 30 80 50 10 50 3 2 3 80 80	Case #1: 250 Case #2: 180

```
15 50
20 10
```

In Sample Case #1, Dr. Patel needs to pick **P** = 5 plates:

- He can pick the top 3 plates from the first stack (10 + 10 + 100 = 120).
- He can pick the top 2 plates from the second stack (80 + 50 = 130) .

In total, the sum of beauty values is 250.

In Sample Case #2, Dr. Patel needs to pick **P** = 3 plates:

- He can pick the top 2 plates from the first stack (80 + 80 = 160).
- He can pick no plates from the second stack.
- He can pick the top plate from the third stack (20).

In total, the sum of beauty values is 180.

Note: Unlike previous editions, in Kick Start 2020, all test sets are visible verdict test sets, meaning you receive instant feedback upon submission.