Greetings From Globussoft

❖ Given below are 5 Programming questions, you have to solve any 3 out of 5 questions.

❖ These 5 questions you can attempt in any technology like C/C++, java, .Net, PHP

❖ To solve these 3 questions you've max. 3 hours.

❖ While Solving these questions you are not allowed to use any Search Engine like Google, Yahoo, Bing …

All the best for your test

Globussoft

QUESTION - 1

Seraph is a smart boy who, one day at the time of his birthday he was wearing a lot of lights for the event. The number of lights is installed for as many as N, which are numbered 1 through N. lights are connected to a controller that has 4 buttons. Each button functions as follows:

1. if this button is pressed, then all light will change the state from OFF to ON or from ON to OFF

2. if this button is pressed, then the odd-numbered light will change its state

3. if this button is pressed, then the even-numbered light will change its state

4. if this button is pressed, all lights are numbered 3K +1 will change its state

In the controller, there are counter C that count number of button will be pressed. when the initial state, the state of all the lights are ON and the counter C is set to 0. After that you will be given information of light at the end of the show, and you have to count how many kinds of configuration according to the information provided.

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Input

The first line containing N (10 <= N <= 100) that indicates number of lamps. The second line is C (1 <= C <= 1000) that indicate the final value of counte. The third line is lists the number of ON lights at the end of the show, each number separated by a space and the end of the line given

the value -1. The fourth line is lists the number of OFF light at the end of the show, each number separated by a space and the end of the line given the value -1.

Output

configurations are possible at the end of the event. There should be no repetitive configuration and output must be in lexicographical. If there is no configuration, print "Impossible".

Example

```
Input:
10
1
-1
7 -1

Output:
0000000000
0101010101
0110110110
```

QUESTION – 2

You are given an array of N integers. Now you want to find the sum of all those integers which can be expressed as the sum of at least one subset of the given array.

Input

First line contains T the number of test case. then T test cases follow, first line of each test case contains N $(1<=N<=100)$ the number of integers, next line contains N integers, each of them is between 0 and 1000 (inclusive).

Output

For each test case print the answer in a new line.

Example

```
Input:
2
2
0 1
3
2 3 2

Output:
1
21
```

QUESTION – 3

Consider a table with 2 rows and 2N columns (a total of 4N cells). Each cell of the first row is coloured by one of the colours A, B, C, D such that there are no two adjacent cells of the same colour. You have to colour the second row using colours A, B, C, D such that:

• There are exactly N cells of each colour (A, B, C and D) in the table.

• There are no two adjacent cells of the same colour. (Adjacent cells share a vertical or a horizontal side.)

It is guaranteed that the solution, not necessarily unique, will always exist.

Input

[a natural number N ≤ 50000]

[a string of 2N letters from the set {A, B, C, D}, representing the first row of the table]

Output

[a string of 2N letters from the set {A, B, C, D}, representing the second row of the table]

Example

Input

1

CB

Output

AD

Input

2

ABAD

Output

BCDC

QUESTION – 4

Danny has created a new civilization on a 2D grid. At the outset each grid location may be occupied by one of three life forms: Woods, Axe, or Grass. Each day, differing life forms occupying horizontally or vertically adjacent grid locations wage war. In each war, Woods always defeat Axe, Axe always defeat Grass, and Grass always defeat Woods. At the end of the day, the winner expands its territory to include the loser's grid position. The loser vacates the position.Determine the territory occupied by each life form after n days.

Input

The first line of input contains t, the number of test cases. Each test case begins with three integers not greater than 100: r and c, the number of rows and columns in the grid, and n. The grid is represented by the r lines that follow, each with c characters. Each character in the grid is W, A, or G, indicating that it is occupied by Woods, Axe, or Grass respectively.

Output

For each test case, print the grid as it appears at the end of the nth day.

Example

```
Input:
2
3 3 1
WWW
WAW
WWW
3 4 2
WAGW
AGWA
GWAG


Output:
WWW
WWW
WWW

WWWA
WWAG
WAGW
```

QUESTION – 5

A number is said to be made up of non-decreasing digits if all the digits to the left of any digit is less than or equal to that digit. For example, the four-digit number **1234** is composed of digits that are non-decreasing. Some other four-digit numbers that are composed of non-decreasing digits are **0011**, **1111**, **1112**, **1122**, **2223**. As it turns out, there are exactly 715 four-digit numbers composed of non-decreasing digits.

Notice that leading zeroes are required: 0000, 0001, 0002 are all valid four-digit numbers with non-decreasing digits.

For this problem, you will write a program that determines how many such numbers there are with a specified number of digits.

Input

The first line of input contains a single integer P, $(1 \leq P \leq 1000)$, which is the number of data sets that follow. Each data set is a single line that contains the data set number, followed by a space, followed by a decimal integer giving the number of digits N, $(1 \leq N \leq 64)$.

Output

For each data set there is one line of output. It contains the data set number followed by a single space, followed by the number of N digit values that are composed entirely of non-decreasing digits.

Example

Input:
```
3
1 2
2 3
3 4
```

Output:
```
1 55
2 220
3 715
```