



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

Digo is planning to recruit members for his ACM team, he designs a game in which who ever beats him will be recruited in his team. Darshil is a friend of yours. You have to help him get recruited in Digo's ACM team.

There are N piles, where i^{th} pile contains either $2*i$ or $2*i+1$ stones. During the game, Darshil and Digo take turns and Darshil takes the first turn. In each turn they can select any pile containing 2 or more stones and then remove an **EVEN** number of stones from the selected pile. The player who can't make the next move loses the game.

You have to find:-

1. Number of ways in which stones can be put in those N piles. (Each way is distinct if any one pile has different number of stones). If number of ways is M then print $M \% 1000000007$.
2. For each configuration of part-1 Darshil counted the number of ways he can choose the first move such that no matter how optimally Digo plays he wins. Find the integral part of average number of such ways of all the configurations.

Input Format

The first line contains an integer T (number of test cases).

Each of the next T lines contains a single positive integer N .

Output Format

T lines containing two space-separated integers - the answers to the first and second parts of the questions.

Constraints

$$1 \leq N \leq 10^9$$

$$1 \leq T \leq 10^3$$

Sample Input

3

1

2

3

Sample Output

2 1

4 1

8 0

QUESTION – 2

Mr Durgeshwara was very impressed by Rahul. But now he was in trouble. He has already fixed his daughter's marriage with Thangabali who was the best coder of his town. He got an idea and arranged a contest between Rahul and Thangabali. They have to solve a problem at the same time and whoever solves first will marry Meenamma. Rahul was not such a good coder and was also getting help from Meenamma. Your task is to help Thangabali to solve the problem to create a twist in story.

The problem was that there are large number of building in the town which are of different heights and all the building are in a single line.

You have to find the maximum possible length of the subsequences of buildings which are possible which are first increasing in heights and then decreasing! Please Note: the heights of the building in the subsequences should be strictly increasing and then strictly decreasing

Input Specification:

First line contains an integer T ($1 \leq T \leq 100$) that represents the number of test cases. Then follows the T containing the integer N ($1 \leq N \leq 1000$) specifying the total number of elements and the next line contains the N integers $A_1, A_2, A_3 \dots A_n$ ($1 \leq A_i \leq 1000$)

Output Specification:

For each test case, print only one line, the maximum length of such sequence.

Sample input:

```
2
10
1 3 5 6 4 8 4 3 2 1
6
8 6 3 4 2 1
```

Sample Output:

QUESTION – 3

Economic times these days are tough, even in Byteland. To reduce the operating costs, the government of Byteland has decided to optimize the road lighting. Till now every road was illuminated all night long, which costs 1 Bytelandian Dollar per meter and day. To save money, they decided to no longer illuminate every road, but to switch off the road lighting of some streets. To make sure that the inhabitants of Byteland still feel safe, they want to optimize the lighting in such a way, that after darkening some streets at night, there will still be at least one illuminated path from every junction in Byteland to every other junction.

What is the maximum daily amount of money the government of Byteland can save, without making their inhabitants feel unsafe?

Input Specification

The input file contains several test cases. Each test case starts with two numbers m and n , the number of junctions in Byteland and the number of roads in Byteland, respectively. Input is terminated by $m=n=0$. Otherwise, $1 \leq m \leq 200000$ and $m-1 \leq n \leq 200000$. Then follow n integer triples x, y, z specifying that there will be a bidirectional road between x and y with length z meters ($0 \leq x, y < m$ and $x \neq y$). The graph specified by each test case is connected. The total length of all roads in each test case is less than 2^{31} .

Output Specification

For each test case print one line containing the maximum daily amount the government can save.

Sample Input

```
7 11
0 1 7
0 3 5
1 2 8
1 3 9
1 4 7
2 4 5
3 4 15
```

```
3 5 6
4 5 8
4 6 9
5 6 11
0 0
```

Sample Output

51

QUESTION – 4

Sailor Crow'n-beard has many pieces of rope. Every piece has a different value and it is well known that money equals quality. Crow'n-beard wants you to create a program that given pieces of rope, creates a rope with the length as close as possible to his desired length (but never too short) while maximizing the quality.

Input

Input describes a single test case. The first line contains two integers N ($1 \leq N \leq 80$) and L ($1 \leq L \leq 10000$): the number of rope pieces Crow'n-beard and the desired length respectively. Then N lines will follow, each with two integers: the length L_i ($0 \leq L_i < 2^{31}$) followed by the value V_i ($0 \leq V_i \leq 26843545$) of the piece of rope. It is guaranteed that the sum of L_i is never less than L .

Output

You should output the maximal total quality you can reach. Remember that the priority is to get the smallest total length that is still at least equal to L . Only then output the best total quality amongst equal length solutions.

Sample

Input:

```
4 4
20 2
1 4
3 4
4 7
```

Output:

8

QUESTION – 5

There are 'N' people standing in a Queue. You are given the height of each person and the number of people who are taller and standing ahead of him. You have to find the position of each person.

Input

First line contains a single integer T, the number of test cases. It is followed by T test cases each of which contains 3 lines. First line of each test case contains a single integer N. Second line contains N integers representing the heights of these N people. Third line also contains N integers denoting the number of taller people standing ahead of him.

Output

Output one line for each test case which contains the heights of the N people in the order in which they are standing.

Constraints

$$0 < T \leq 100$$

$$0 < N \leq 1000$$

Expected Time Complexity : $O(N^2)$

Example

Input:

1

5

33 11 22 44 55

0 2 1 1 0

Output:

33 22 11 55 44

