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Problems

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A	Odd or Even?	standard input/output 1 s, 256 MB		👤 x274
B	Can you solve Arithmetic Expressions?	standard input/output 1 s, 256 MB		👤 x98
C	Array Reverse	standard input/output 1 s, 256 MB		👤 x59
D	Fast Sum	standard input/output 1 s, 256 MB		👤 x104
E	Bubble Sort?	standard input/output 1 s, 256 MB		👤 x35
F	Sorting Again??	standard input/output 1 s, 256 MB		👤 x15
G	Trains?	standard input/output 3 s, 256 MB		👤 x13

Complete problemset

🎨 Ask a question

Questions about problems

#	Party	When	Question	Answer
No items				

CSE221 Assignment 01 Spring 2025

Contest is running

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A. Odd or Even?

time limit per test: 1 second

memory limit per test: 256 megabytes

Do you know how to tell if a number is **Odd** or **Even**? You are given T numbers, and for each of those numbers, you have to tell whether the number is odd or even.

Input

The first line will contain a single integer T ($1 \le T \le 100$). Each of the next T lines will contain a number N ($-10^5 \le N \le 10^5$).

Output

For each N, you have to print whether the number is odd or even. Please see the sample input-output format to know what exactly you have to print.

Example

input	Copy
5 10 19 7 3 100	

output	Copy
10 is an Even number. 19 is an Odd number. 7 is an Odd number. 3 is an Odd number. 100 is an Even number.	

→ Submit?

Language: GNU GCC C11 5.1.0

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B. Can you solve Arithmetic Expressions?

time limit per test: 1 second

memory limit per test: 256 megabytes

Can you solve arithmetic expressions with your programming knowledge? Let's find it out. You will be given some arithmetic expressions, and you have to solve them.

Input

The first line will contain a number $T(1 \leq T \leq 1000)$ representing the number of test cases. Then for each test case, you will be given an arithmetic expression. Please see the sample input below. It is guaranteed that the numbers inside the arithmetic expression will be between 1 and 1000.

Output

For each test case, you have to print the result. Look at the sample output for reference.

Important Note: Your answer might contain floating point numbers, and in that case, your answer doesn't have to be exactly equal to the actual answer. For example, if your answer is 20.250000001 and the judge's solution is 20.25, your answer will still be considered correct. As long as it is really close to the correct solution, your solution will be considered correct. Formally speaking, if your solution is x, and the judge's solution is y, then as long as $|x - y| \leq 10^{-6}$, your solution will be correct. In the above example, your solution was 20.250000001 and the judge's solution was 20.25. If you take the difference of these two numbers, they are smaller than 10^{-6}. Similarly, if the judge's solution is 19.0000000000 and your solution is 19, it is still correct, as the difference is 0, which is less than 10^{-6}.

Example

input
15 calculate 67 + 41 calculate 85 / 5 calculate 13 - 56 calculate 99 - 95 calculate 3 / 10 calculate 12 * 19 calculate 14 - 6 calculate 3 * 88 calculate 45 * 68 calculate 81 - 0 calculate 77 + 40 calculate 8 * 84 calculate 73 - 22 calculate 85 - 86 calculate 28 * 58

output
108.000000 17.000000 -43.000000 4.000000 0.300000 228.000000 8.000000 264.000000 3060.000000 81.000000 117.000000 672.000000 51.000000 -1.000000 1624.000000

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C. Array Reverse

time limit per test: 1 second

memory limit per test: 256 megabytes

You are given an array of **N** integers. Your task is to reverse the array and print the last **K** integers from the reversed array.

Input

The first line contains two integers N $(1 \leq N \leq 10^6)$ and K $(1 \leq K \leq N)$ — the number of elements in the array and the value K.

The second line contains N integers separated by spaces $a_1, a_2, a_3 \ldots a_n$ $(1 \leq a_i \leq 10^6)$ — the elements of the array.

Output

Print K space separated integers as described in the statement.

Examples

input
5 3 5 6 7 8 9

output
7 6 5

input
8 5 20 8 9 3 10 7 100 12

output
10 3 9 8 20

→ Submit?

Language: GNU GCC C11 5.1.0

Choose file: Choose File No file chosen

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D. Fast Sum

time limit per test: 1 second
memory limit per test: 256 megabytes

Your friend is trying to solve the following problem. You are given T test cases. For each test case, you are given an integer N. You have to find out the summation of 1 to N. More formally, your friend has to caculate

$$\sum_{x=1}^{x=N} x$$

Your friend wrote the following Python code to solve it:

```python
T = int(input())

for _ in range(T):
    N = int(input())
    sum = 0
    for i in range(1, N + 1):
        sum += i
    print(sum)
```

However, the code is not passing the online judge due to some unknown errors for large values of N.

Since you are currently studying CSE221 and have learned about time complexity, help your friend come up with a more efficient solution.

Input
The first line contains a single integer T $(1 \le T \le 10^4)$ — the number of test cases.

The next T lines each contain a single integer N $(1 \le N \le 10^6)$.

Output
For each test case, print a single integer — the summation from 1 to N.

Example

input
```
5
2
5
10
12
100
```

output
```
3
15
55
78
5050
```

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E. Bubble Sort?

time limit per test: 1 second

memory limit per test: 256 megabytes

Here is the code of bubble sort. Its run time complexity is $\theta(n^2)$. Change the code in a way so that its time complexity is $\theta(n)$ for the best-case scenario. You are not allowed to use any builtin sort function to solve this problem.

```
def bubbleSort(arr):
    for i in range(len(arr)-1):
        for j in range(len(arr)-i-1):
            if arr[j] > arr[j+1]:
                arr[j], arr[j+1] = arr[j+1], arr[j]
```

Input

In the first line, you will be given N ($1 \leq N \leq 10^5$). Then you will be given an array a of N integers ($1 \leq a_i \leq 10^9$) that you have to sort in increasing order. **It is guaranteed that if the original input array is not in the best case scenario, $1 \leq N \leq 1000$.**

Output

Output the sorted array (Please see the sample output for reference)

Examples

input	Copy
5 3 2 1 4 5	

output	Copy
1 2 3 4 5	

input	Copy
6 5 10 15 20 25 30	

output	Copy
5 10 15 20 25 30	

Note

Remember that you have to use **Bubble Sort**, but modify it in a way that ensures it runs on $\theta(n)$ in the **Best-Case Scenario**.

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Language: GNU GCC C11 5.1.0

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F. Sorting Again??

time limit per test: 1 second
memory limit per test: 256 megabytes

Suppose you are given a task to rank the students. You have gotten the marks and ID of the students. Now your task is to rank the students based on their marks using a sorting algorithm. If two or more students get the same mark, then students with the lower ID will get prioritized. See the input and output for a better understanding.

However, **you have to keep in mind that your sorting algorithms perform the minimum number of swapping operations.**

Input

The first line of the input file will contain an integer $N(1 \leq N \leq 1000)$. The second line will contain N integers, representing the Student ID, $S_i(1 \leq S_i \leq 1000)$. The next line will contain the N integers, $S_m(1 \leq S_m \leq 1000)$, which denotes the obtained mark of the corresponding students.

Note: It is guaranteed that the student IDs are unique. In other words, $S_i \neq S_j$ if $i \neq j$.

Output

The first line of the output must contain a number X which denotes the number of minimum swaps. The rest of the N lines will contain the Student ID and obtained marks sorted based on the instruction above. See the sample output for a better understanding.

Important Note: Since you are asked to minimize the number of swaps, if your number of swaps doesn't match with the judge's answer, your solution will be considered incorrect.

Look at the first sample input. It can be shown that this can be sorted with only 4 swaps. It can also be shown that it is not possible to sort this in less than 4 swaps.

Examples

input
```
7
7 4 9 3 2 5 1
40 50 50 20 10 10 10
```

output
```
Minimum swaps: 4
ID: 4 Mark: 50
ID: 9 Mark: 50
ID: 7 Mark: 40
ID: 3 Mark: 20
ID: 1 Mark: 10
ID: 2 Mark: 10
ID: 5 Mark: 10
```

input
```
4
7 2 5 3
80 60 80 50
```

output
```
Minimum swaps: 2
ID: 5 Mark: 80
ID: 7 Mark: 80
ID: 2 Mark: 60
ID: 3 Mark: 50
```

→ **Submit?**

Language: GNU GCC C11 5.1.0 ▼

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G. Trains?

time limit per test: 3 seconds

memory limit per test: 256 megabytes

You have been recently recruited as the Software Engineer at Jumanji Railway Software System. You have a big task at hand. You will be given $N(1 \leq N \leq 100)$ schedule of the train. The next N line will contain the name of the train and the departure time. See the input format for better understanding.

Your task is to write a sorting algorithm that will group the trains in the lexicographical order based on the name of the trains. If two or more trains have the same name, then the train with the latest departure time will get prioritized. If there is still a tie, then the train which comes first in the input will come first.

Input

The first line will contain an integer $N(1 \leq N \leq 100)$. For the next N lines, i_{th} line will describe i_{th} train. Please see the sample input for better understanding.

Please note that the names of the trains and destinations don't contain any white spaces, and the length of the names and destinations will be at most 100. For example, look at the following description:

```
DhumketuExpress will departure for Chittagong at 02:30
```

Here, **DhumketiExpress** is the name of the train **Chittagong** is the destination, and they don't contain any whitespaces, and their length is less than 100.

Output

Print the train description in the sorted order (specified above). Please see the output format for better understanding.

Example

input
8 ABCD will departure for Mymensingh at 00:30 DhumketuExpress will departure for Chittagong at 02:30 ABC will departure for Dhaka at 17:30 ABCD will departure for Chittagong at 01:00 ABC will departure for Khulna at 03:00 ABC will departure for Barisal at 03:00 ABCE will departure for Sylhet at 23:05 PadmaExpress will departure for Dhaka at 19:30

output
ABC will departure for Dhaka at 17:30 ABC will departure for Khulna at 03:00 ABC will departure for Barisal at 03:00 ABCD will departure for Chittagong at 01:00 ABCD will departure for Mymensingh at 00:30 ABCE will departure for Sylhet at 23:05 DhumketuExpress will departure for Chittagong at 02:30 PadmaExpress will departure for Dhaka at 19:30

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