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UITS180225A - UITS Intra-University Programming Contest Spring 2025 [Details ▶](#)

Challenges

in Current Rank: N/A

The Secret of the Enchanted Mirror

Success Rate: 78.13% Max Score: 1

[Solve Challenge](#)

The Avengers' New Mission

Success Rate: 62.50% Max Score: 1

[Solve Challenge](#)

The Duel of Shahbag

Success Rate: 28.57% Max Score: 1

[Solve Challenge](#)

Drainage Dilemma

Success Rate: 0.00% Max Score: 1

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Solve Challenge

Safe Passage on Dhaka Metro ○



Success Rate: 0.00% Max Score: 1

Solve Challenge

Faiasian Activation ○



Success Rate: 58.33% Max Score: 1

Solve Challenge

Shakespeare's Broken Keyboard ○



Success Rate: 93.55% Max Score: 1

Solve Challenge

Mr. Rifat vs Evil Rudra ○



Success Rate: 38.10% Max Score: 1

Solve Challenge

The Secret of the Enchanted Mirror

 locked

Problem

Submissions

Once upon a time, in the magical land of Palindoria, there was an ancient Enchanted Mirror hidden deep inside the Temple of Reflections. Legends say that this mirror possesses a special power—it only reveals the true form of those who speak a perfect palindrome in front of it.

One day, a young coder named Turzo embarked on a journey to uncover the mirror's secrets. Upon reaching the temple, a mystical voice whispered:

"To unlock my power, speak a phrase that remains the same whether read forward or backward. But beware! I do not recognize spaces, symbols, or uppercase letters. Only true alphanumeric forms shall pass!"

Turzo scratched his head and realized the challenge: he needed to check if a given phrase was a valid palindrome before speaking it aloud. If the phrase passed the test, the mirror would reveal its magic. If not, the temple doors would remain shut forever!

Can you help Turzo write a program that determines whether a given phrase is a valid palindrome according to the mirror's rules?

The mirror only responds to palindromic phrases, meaning:

- All uppercase letters are converted to lowercase.
- All non-alphanumeric characters are removed.
- The remaining string reads the same forward and backward.

Given a string s , your task is to return *true* if it is a *palindrome*, or *false* otherwise.

Input Format

A single string s ($1 \leq |s| \leq 2 \times 10^5$).

Constraints

- $1 \leq s.length \leq 2 \times 10^5$
- s consists only of printable ASCII characters.

Output Format

Print *true* if s is a palindrome after processing, otherwise print *false*.

Sample Input 0

```
A man, a plan, a canal: Panama
```

Sample Output 0

```
true
```

Sample Input 1

```
12321
```

Sample Output 1

true

Sample Input 2

race a car

Sample Output 2

false

in

Submissions: [32](#)

Max Score: 1

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C++20



```
1 ▼ #include <cmath>
2  #include <cstdio>
3  #include <vector>
4  #include <iostream>
5  #include <algorithm>
6  using namespace std;
7
8
9 ▼ int main() {
```

```
10  /* Enter your code here. Read input from STDIN. Print output to STDOUT */  
11  return 0;  
12  }  
13
```

Line: 1 Col: 1

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The Avengers' New Mission

 locked

Problem

Submissions

The Avengers have tracked down a powerful artifact, but it's hidden deep within an ancient Hydra compound, locked inside a secure vault. The vault lies at the bottom-right corner of a grid, and the only way to access it is by finding the safest, quickest route through the compound.

The compound is filled with obstacles and traps, each representing a threat that will cost precious energy. The Avengers can only move down or right as they navigate through the compound. They need to find the minimum cost path to reach the vault, ensuring they save as much energy as possible for the final showdown with Hydra.

Your task is to help the Avengers by calculating the minimum energy path to the vault. But beware!! Each step in the compound comes with its own energy cost. Only the smartest path will lead you to victory!

1	3	1
1	5	1
4	2	1

Input Format

- First line: Two integers m (rows) and n (columns).
- Next m lines: n space-separated integers representing energy costs.
- Only right or down moves are allowed.

Constraints

- $1 \leq m, n \leq 200$
- $0 \leq grid[i][j] \leq 200$

Output Format

- You need to return the minimum total energy cost to reach the *bottom-right corner* of the grid.

Sample Input 0

```
1 1
5
```

Sample Output 0

```
5
```

Sample Input 1

```
3 3
1 3 1
1 5 1
4 2 1
```

Sample Output 1

in

Submissions: 16

Max Score: 1

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C++20



```
1 #include <cmath>
2 #include <cstdio>
3 #include <vector>
4 #include <iostream>
5 #include <algorithm>
6 using namespace std;
7
8
9 int main() {
10     /* Enter your code here. Read input from STDIN. Print output to STDOUT */
11     return 0;
12 }
13
```

Line: 1 Col: 1

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The Duel of Shahbag

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Problem

Submissions

To celebrate the Falgun, Palash and Mridul are playing a mock duel at Shahbag. Both of them have a number pistol in their hand, having n bullets, each bullet being an actual number. If shot, the pistol shoots the largest number in its chamber. Jahirul is playing the role of the referee in this duel.

To make the game interesting, Jahirul changed the rule a little bit. Palash and Mridul both will start the game with 0 points. There will be n turns in this duel. Before each turn, he flips a coin. If the coin gives a Head(H), Palash and Mridul shoot numbers at each other; one with the larger number gets a point. If both numbers are the same, nobody gets any point. If the coin gives a Tail(T), both of the duelists take the largest number in their gun chamber, reverse it, and put it back in their gun. After n turns, the one with most points wins.

Find out who will be the final winner.

Input Format

First line of the input will be a number T ($1 \leq T \leq 500$), the number of test cases. Each test case starts with an integer number n ($1 \leq n \leq 1000$). There are three lines after this. The first line contains n integers a_i ($1 \leq a_i \leq 10^{17}$), the numbers in Palash's gun. The second line contains n integers b_i ($1 \leq b_i \leq 10^{17}$), the numbers in Mridul's gun. The third line contains n characters separated by space, each of them either H or T, denoting the result of the coin toss.

Output Format

For each test case, output PALASH or MRIDUL, name of the winner of the duel. If the duel is a tie, print TIE.

Sample Input 0

```
3
2
56 23
43 42
H T
3
612 50 450
179 10 900
T T H
3
14 95 10
32 85 5
H H T
```

Sample Output 0

```
PALASH
MRIDUL
TIE
```

in

Submissions: 14

Max Score: 1

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More

C++20



```
1 ▼ #include <cmath>
```

```
2  #include <cstdio>
3  #include <vector>
4  #include <iostream>
5  #include <algorithm>
6  using namespace std;
7
8
9  int main() {
10     /* Enter your code here. Read input from STDIN. Print output to STDOUT */
11     return 0;
12 }
```

Line: 1 Col: 1

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Drainage Dilemma

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Problem

Submissions

Dhaka, one of the most densely populated cities in the world, often faces severe waterlogging during heavy rains. To prevent flooding, the city's drainage system must efficiently channel rainwater from various low-lying areas to the main water outlets, such as rivers and canals. However, the system has limitations—each drainage pipe has a maximum capacity, beyond which it cannot handle additional water flow.

The Dhaka City Corporation has tasked you, an urban water management expert, with analyzing the city's drainage network. Given the drainage junctions and pipes between them, your goal is to determine the maximum amount of water that can flow from a primary drainage source to the main drainage outlet before the system reaches its capacity.

The city's drainage system can be modeled as a network of n junctions and m drainage pipes. Each pipe has a fixed maximum capacity, representing the amount of water (in liters per second) it can transport between two junctions. Water flows in a single direction through each pipe.

Due to an impending monsoon storm, water will start accumulating at a specific source junction (s), and it must be drained as quickly as possible to an exit junction (t). You need to calculate the maximum amount of water that can flow from the source to the exit, ensuring that no pipe exceeds its maximum capacity.

Input Format

The first line contains two integers n (the number of drainage junctions) and m (the number of drainage pipes) where $1 \leq n, m \leq 10^5$. The next m lines each contain three integers $u, v, c (1 \leq c \leq 10^9)$, meaning there is a directed drainage pipe from junction u to junction v with a maximum capacity of c liters per second. 1 is source junction and n is exit junction. There may be multiple pipes between two junctions.

Output Format

Output only one integer, the maximum flow possible through Dhaka's drainage system.

Sample Input 0

```
4 3
1 2 5
2 3 3
3 4 6
```

Sample Output 0

```
3
```

in

Submissions: 6

Max Score: 1

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C++20



```
1 ▼ #include <cmath>
```

```
2 #include <cstdio>
3 #include <vector>
4 #include <iostream>
5 #include <algorithm>
6 using namespace std;
7
8
9 int main() {
10     /* Enter your code here. Read input from STDIN. Print output to STDOUT */
11     return 0;
12 }
```

Line: 1 Col:

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Safe Passage on Dhaka Metro locked

Problem

Submissions

Rafi, Shafiq, and Imran are close friends preparing for a programming contest at Dhaka University. Currently in Uttara, they choose to travel via the Dhaka Metro Rail, one of the fastest and most efficient transportation options in the city's heavy congestion. However, they have concerns about the safety of the metro rail system and seek assistance in assessing it.

The Dhaka Metro Rail is Bangladesh's first metro system, designed to reduce traffic congestion in Dhaka, one of the most densely populated cities in the world. You are given a representation of a single metro rail as a string s , where each character represents a coach, denoted by a lowercase English letter. Some coaches are classified as good, while others are bad.

A subsegment of the rail, denoted as $s[l...r]$ (where $1 \leq l \leq r \leq |s|$), is a contiguous portion of the string, expressed as s_l, s_{l+1}, \dots, s_r .

A subsegment is considered safe if it contains at most k bad coaches. Help Rafi, Shafiq, and Imran determine the number of distinct safe subsegments of the given rail s . Two subsegments $s[x...y]$ and $s[p...q]$ are considered distinct if their content differs, i.e., $s[x...y] \neq s[p...q]$.

Input Format

The first line of the input is the rail s , consisting of small English letters, the rail's length is at most 1500 characters.

The second line of the input is the string of characters "0" and "1", the length is exactly 26 characters. If the i -th character of this string equals "1", then the i -th English letter is good, otherwise it's bad. That is, the first character of this string corresponds to the

letter "a", the second one corresponds to the letter "b" and so on. The third line of the input consists of a single integer k ($0 \leq k \leq |s|$) — the maximum acceptable number of bad characters in a safe subsegment.

Output Format

Output one integer, the number of distinct safe subsegments.

Sample Input 0

```
ababab
01000000000000000000000000000000
1
```

Sample Output 0

5

Explanation 0

In the first example, there are the following good substrings: "a", "ab", "b", "ba", and "bab".

in

Submissions: 6

Max Score: 1

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C++20



```
1 #include <cmath>
2 #include <cstdio>
3 #include <vector>
```

```
4 #include <iostream>
5 #include <algorithm>
6 using namespace std;
7
8
9 int main() {
10     /* Enter your code here. Read input from STDIN. Print output to STDOUT */
11     return 0;
12 }
13
```

Line: 1 Col: 1

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Faiasian Activation

 locked

Problem

Submissions

While working with Neural Networks, Mr. Faias Satter designed a new activation function to suit his purposes. This activation function is called a Faiasian Activation. Given two ranges a, b and a number x , the Faiasian Activation is defined as:

$$f(x) = \begin{cases} 0, & x < a \\ |x|, & a \leq x \leq b \\ x^2, & x > b \end{cases}$$

Given x, a, b , find $f(x)$.

Input Format

Each input has only one line containing 3 integers x, a, b ($-10^6 \leq x, a, b \leq 10^6$).

Output Format

Output only one integer, the value of $f(x)$.

Sample Input 0

5 0 3

Sample Output 0

25

in

Submissions: 48

Max Score: 1

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C++20



```
1 ▼ #include <cmath>
2  #include <cstdio>
3  #include <vector>
4  #include <iostream>
5  #include <algorithm>
6  using namespace std;
7
8
9 ▼ int main() {
10 ▼     /* Enter your code here. Read input from STDIN. Print output to STDOUT */
11     return 0;
12 }
```

Line: 1 Col: 1

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Shakespeare's Broken Keyboard

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Problem

Submissions

William Shakespeare, often regarded as the greatest playwright in history, was born in 1564 in Stratford-upon-Avon, England. He wrote 39 plays, 154 sonnets, and two long narrative poems, profoundly influencing English literature. His works include timeless tragedies like Hamlet, Macbeth, and Romeo and Juliet.

One of his most famous lines comes from Hamlet (Act 3, Scene 1): "To be, or not to be, that is the question."

Shakespeare's distant grandson Fakespeare is also trying to be a playwright. He is rewriting the Hamlet, but that famous line will remain in his script. However, Fakespeare's keyboard is broken and the vowels can not be typed, caps lock is always on and he does not know how to type punctuations. If he types that famous line from Hamlet using his keyboard, how would it look?

Input Format

This problem contains no input.

Output Format

Print only one single line.

Submissions: [62](#)

Max Score: 1

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C++20



```
1  ▼ #include <cmath>
2  #include <cstdio>
3  #include <vector>
4  #include <iostream>
5  #include <algorithm>
6  using namespace std;
7
8
9  ▼ int main() {
10 ▼    /* Enter your code here. Read input from STDIN. Print output to STDOUT */
11    return 0;
12 }
13
```

Line: 1 Col: 1

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Mr. Rifat vs Evil Rudra

 locked

Problem

Submissions

Mr. Rifat bought a new house. He wants to decorate his rooms with lights. So, he brought some lights to his room. As he is fear of darkness. So he always turns on all the lights. Mr. Rifat also brought a new locker and set a password.

Evil Rudra was jealous of Rifat's Success. He wants to guess the locker password. He recently discovered how to operate with binary numbers. He created a wicked idea. He restored the number of on lights for a room into binary numbers. He does the same for all the other rooms and puts those lights side by side. Finally, he converted the whole number into a decimal number and identify the password.

Input Format

Input starts with an integer $T(1 \leq T \leq 10^5)$, denoting the number of test cases.

Each case contains one integer n . The next line contains n space separated integers denoting the lights for each room and $1 \leq \sum lights \leq 63$.

Output Format

For each case, print "Case T: X" Where T is the case number and X is the password of the locker.

Sample Input 0

1
2
1 2

Sample Output 0

Case 1: 7

in

Submissions: 21

Max Score: 1

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C++20



```
1 ▼ #include <cmath>
2  #include <cstdio>
3  #include <vector>
4  #include <iostream>
5  #include <algorithm>
6  using namespace std;
7
8
9 ▼ int main() {
10 ▼     /* Enter your code here. Read input from STDIN. Print output to STDOUT */
11     return 0;
12 }
```

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Run Code

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