DIU Take-OFF Programming Contest Fall-25 [Preliminary - B Slot]

https://toph.co/c/diu-take-off-fall-25-preliminary-b-slot

Toph

Schedule

The contest will run for **3h0m0s**.

Authors

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Rules

You can use C++17 GCC 13.2, C++20 Clang 16.0, C++20 GCC 13.2, C++23 GCC 13.2, C11 GCC 13.2, C17 GCC 13.2, and C23 GCC 13.2 in this contest.

Be fair, be honest. Plagiarism will result in disqualification. Judges' decisions will be final.

Notes

There are 7 challenges in this contest.

Please make sure this booklet contains all of the pages.

If you find any discrepencies between the printed copy and the problem statements in Toph Arena, please rely on the later.

A. Three answers, One question

It was a glorious evening at the Dacca Stadium. Bangladesh had just pulled off a nail-biting victory against India - the crowd roared, screamed, and the commentators were practically losing their voices.

Among the delightful fans were two ‘trilliant’ coders from DIU_ACM, both coincidentally named $Hamjaa$. Yes, Hamjaa and Hamjaa - a debugging duo who usually spend their nights fixing segmentation faults but today were celebrating football magic.

After the match, they got the golden chance to enter the dressing room of the Bangladesh team. The atmosphere inside was electric - sweaty jerseys, tactical banter, and the smell of victory. Just as they were soaking in the moment, in walked the footballer **Hamzaa**.

Now imagine this:

- The teammates shout, *“Hamzaa!”*
- Both Hamjaas perk up, *“Yes?”*
- Hamzaa himself replies, *“Yes?”*

It was like a live coding contest where every variable had the same name. Absolute chaos.

The dressing room turned into a comedy sketch:

- One teammate yelled, *“Pass the water to Hamzaa!”*
- Three hands shot up.
- Another shouted, *“Hamzaa, sit here!”*
- Suddenly, three people tried to sit on the same chair.

Now, your job as a programmer is to **print the name of the Footballer.** Yes, the name of the footballer, not the coders.

Input

There is No input for this Problem.

Output

Print the name of the $Footballer$ mentioned above.

Example

Input	Output
	Hamzaa

Be careful about the newline('\n') at the end.

B. Ticket Treasury

It's matchday at the $Bangladesh\ National\ Stadium$, and the whole place is full of excitement! Fans are shouting, drums are beating, and someone in the crowd is loudly arguing that Bangladesh will win "*for sure this time!*"

But behind the scenes, the stadium manager is in trouble.
The finance officer went to buy *cha* and got stuck in Dhaka traffic (of course), so now no one is available to calculate today's ticket income. The match is about to start, and the manager is panicking more than a goalkeeper facing a last–minute penalty.

He runs to you and explains the situation.
Each Regular ticket for today's match costs X taka, and since VIP fans get softer seats and sometimes free peanuts, each VIP ticket costs **three times** that amount. He also tells you how many VIP tickets (V) and how many Regular tickets (R) have been sold already.

Your job is simple: $calculate\ the\ total\ revenue$ earned from all the tickets sold before the referee blows the whistle.

Input

A single line contains three integers V, R, X - the number of VIP tickets sold, the number of Regular tickets sold, the price of one Regular ticket.

- $0 \leq V \leq 10^5$
- $0 \leq R \leq 10^5$
- $1 \leq X \leq 1000$

Output

Print a single integer - the $total\ revenue\ in\ taka$ earned from all ticket sales.

Examples

Input	Output
3 7 50	800

Input	Output
10 25 500	27500

Be careful about the newline(‘\n’) at the end.

C. The Great Wall of Putul

Bangladesh is facing a European giant in a friendly match. Everyone expects the opponent to dominate possession. The opponent's strikers are aggressive and are predicted to take S shots on target.

Standing between the goalposts is Bangladesh's goalkeeper, **Putul Marma**. Today, he is in "Beast Mode." Experts calculate that Putul has the stamina to save at most K shots.

- If the opponent takes fewer or equal shots than Putul can save, the opponent scores 0 goals.
- If the opponent takes more shots than Putul can save, every shot after the K-th shot becomes a goal.

Meanwhile, on the counter-attack, captain **Kamal Bhuyan** is orchestrating the midfield. Kamal doesn't score himself; he provides "OP Assists." For every 1 assist Kamal makes, the striker **Sheikh Mohammed** is guaranteed to score 1 goal. You are given that Kamal makes A assists. Note that Putul Marma and Kamal Bhuyan are teammates. Putul's role is to prevent the opponent from scoring, while Kamal works to generate goals for his own team.

Given the stats, determine the Fan Reaction after the game.

Input

The first and only line of input contains three integers S, K, and A $(0 \leq S, K, A \leq 100)$. The number of shots by the opponent, the number of shots Putul can save, and the number of assists by Kamal.

Output

Print a single line representing the mood based on the match result:

- If Bangladesh scores strictly more goals than the opponent, print: **Shabash Bangladesh**
- If the game is a draw (equal goals), print: **Well Played**
- If Bangladesh loses (fewer goals than opponent), print: **Heartbreak**

Examples

Input	Output
10 8 3	Shabash Bangladesh

Input	Output
5 2 3	Well Played

Input	Output
4 10 0	Well Played

Notes on Example 1:

Putul Marma and

Opponent Scores $10 - 8 = 2$ goals. Bangladesh Scores 3 goals. Banladesh Wins, so print **Shabash Bangladesh***.*

D. Not Football

You all know how football is played. But this time, as a team building excercise, the BD football team decided to play another kind of football. The rules of this football game is simple. There are a total of N players in a line starting from the position 1 to N. Each of the players has a jersey number. There will be two teams divided from these N players. The two teams are: Team $Anda$ and Team Dim.

Team $Anda$ consists of players whose jersey number is Odd and who's position in the line is also Odd.

Team Dim consists of players whose jersey number is $Even$ and who's position in the line is also $Even$.

A team will only win if their player count is more than the other teams player count. If both of them have the same number of player count, the game ends in a $Draw$.

Now you have to determine who won the game or the game ends in a Draw.

Input

The first line contains N $(1 \leq N \leq 10^5)$, representing the total number of players. The second line contains N space seperated integers A_i $(1 \leq A_i \leq 10^5)$, the jersey number of the players in order from position 1 to N.

Output

Print "Anda" (without quotes) if Team Anda wins the game, Print "Dim" (without quotes) if Team Dim wins the game. Or Print "Draw" (without quotes) if the game ended in a Draw.

Example

Input	Output
5 1 2 3 4 5	Anda

E. BFL Star Player Festival

Every year, the Bangladesh Football League (BFL) hosts the grand Football Transfer Festival, where clubs from Dhaka, Chattogram, Sylhet, Khulna, and many other cities come together to form their dream squads.

In this season, N clubs are participating in the festival. Each club shortlists M prospective players, each represented by a buying cost $B_1, B_2, \ldots, B_M$. These values reflect a mix of player skill, reputation, and market demand.

A club is looking to feature a specific "Duo" on their marketing posters. The marketing potential of a duo is calculated by **multiplying** the buying cost of the players. Your task is to determine the **maximum possible marketing potential** (multiplication value) obtainable by choosing **exactly two distinct players** from a club's shortlist.

Input

The first line contains an integer $N(1 \leq N \leq 10)$ - the number of participating clubs and M $(2 \leq M \leq 10^5)$ - the number of prospective players.

Each of the next N lines contains M integers - the buying costs of the players for that club, denoted by $B_1, B_2, \ldots, B_M(-10^9 \leq B_i \leq 10^9)$.

Output

For each club, print a single line containing the maximum multiplication value of any two players.

Example

Input	Output
2 11 1 3 2 4 2 1 3 2 1 2 1 5 1 3 2 4 2 1 3 2 1 2	12 20

F. The Decisive Penalty

The legendary football rivalry between Khagan University (**KU**) and Dattapara International University (**DIU**) has reached its climax. The match has ended in a draw, and the fate of the trophy rests on a penalty shootout.

Hamza Choudhury steps up to the spot for DIU. Standing in his way are KU's superstars, Pessi and Penaldo, who have created a complex digital barrier across the goal line. To bypass them, Hamza must use his intellect rather than brute force.

A screen in front of the goal displays an arithmetic expression S of length N. Hamza has the power to manipulate the reality of this expression. He can perform the following operation any number of times (possibly zero):

- Choose any character $+$ in the string and change it to $-$.
- Choose any character $-$ in the string and change it to $+$.

The Goal: Hamza wants to modify the signs in the expression such that the final evaluated value is minimized. If he can transform the expression to yield the smallest possible mathematical value, the ball will fly past Pessi and Penaldo into the back of the net.

Help Hamza calculate this minimum possible value to secure the victory for DIU.

Expression Rules

The initial string S is guaranteed to be a valid arithmetic expression following these specific rules:

- It contains only non-negative integers, operators $+$ and $-$, and parentheses $($ and $)$.
- Consecutive operators are strictly forbidden. The substrings $++$, $--$, $+-$, and $-+$ will never appear in the input.
- Parentheses are always balanced and properly nested(e.g., every opening bracket has it's closing bracket).
- The expression does not contain leading operator in the beginning $(e.g., -8-(7) or (8)-(-7))$ or trailing operators(e.g., $(4+(5-))$).
- All integers appearing in the expression, let it be val, are in the range 1 to 1000 ($1 \leq val \leq 1000$).

Input

The first line contains a single integer N ($1 \leq N \leq 10^5$) - the length of the arithmetic expression.

The second line contains the string S — the arithmetic expression. It is guaranteed that S follows the rules described above.

The integers (operands) appearing within the expression S are in the range $[1, 1000]$.

Output

Print the modified expression S after changing the signs to minimize its total value.

Examples

Input	Output
13 (((1)+2)-3)+4	(((1)-2)-3)-4

Input	Output
7 1+2+3+4	1-2-3-4

G. Will Hamza Goal?

Hamza Choudhury arrives early at the training center, where Coach Javier decides to test both his precision and analytical skills. Instead of the usual drills, the coach hands Hamza an array of N integers $A_1, A_2, \ldots, A_N$ and a target number X.

“I have several challenges for you,” says Javier. “You will be given Q queries. For each query, I will give you two indices L and R ($1 \leq L \leq R \leq N$). You can choose any non-empty subset of elements from the subarray $A_L, A_{L+1}, \ldots, A_R$. If the product of the chosen numbers is divisible by X, you score a Goal. Otherwise, it’s Missed.”

Hamza’s task is clear: for each of the Q queries, determine whether such a subset exists.

***Note:** A subset of an array is a selection of any number of elements (at least one) from the array, without changing their order. Elements do not need to be consecutive, and each element can be selected at most once in the subset.

Example:

For the array $[3, 5, 2]$, some possible non-empty subsets are:

- $[3]$
- $[5]$
- $[2]$
- $[3, 5]$
- $[3, 2]$
- $[5, 2]$
- $[3, 5, 2]$

Input

The first line contains two integers N and X — the number of elements in the array and the target divisor.

The second line contains N integers $A_1, A_2, \ldots, A_N$ - the array elements.

The third line contains a single integer Q — the number of queries.

Each of the next Q lines contains two integers L and R ($1 \leq L \leq R \leq N$) — the indices defining the subarray for the query.

- $1 \leq N, Q \leq 10^5$
- $1 \leq X \leq 10^6$
- $1 \leq A_i \leq 10^6$
- $1 \leq L \leq R \leq N$

Output

For each query, print `"Goal"` if there exists a non-empty subset of the subarray whose product is divisible by X, or `"Missed"` otherwise with a newline.

Examples

Input	Output
5 3 1 2 3 4 5 3 1 2 4 5 1 5	Missed Missed Goal

Input	Output
10 20 13 39 44 8 26 8 45 14 27 39 5 6 9 7 8 1 4 2 3 7 7	Goal Missed Missed Missed Missed