# Introduction to Kattis

2025-02-28



## Problems

A. Hello World!
B. Which is Greater?
C. ASCII kassi
D. Keys, Phone, Wallet
E. Tok Tik
F. Guess Who

## Advice, hints, and general information

- Your solution programs should read input from standard input (e.g. System.in in Java or std::cin in C++) and produce output on standard output (e.g. System.out in Java or std::cout in C++). Anything written on standard error will be ignored. For further details and examples, please refer to the documentation in the help pages for your favorite language on Kattis.
- If you think some problem is ambiguous or underspecified, you may ask the judges for a clarification request through the Kattis system. The most likely response is "No comment, read problem statement", indicating that the answer can be deduced by carefully reading the problem statement or by checking the sample test cases given in the problem.

# Hello World!

| CPU TIME LIMIT | MEMORY LIMIT |
|---|---|
| 5 seconds | 1024 MB |

## Input

There is no input for this problem.

## Output

Output should contain one line, containing the string "Hello World!".

# Which is Greater?

**CPU TIME LIMIT**

1 second

**MEMORY LIMIT**

2048 MB

Given two positive integers, determine whether the first one is larger than the second one.

## Input

The single line of input contains two positive integers, $a$ and $b$ ($0 < a, b \leq 10^9$).

## Output

Output a single line with 1 if $a > b$, 0 otherwise.

### Sample Input 1

```
1  19
```

### Sample Output 1

```
0
```

### Sample Input 2

```
4  4
```

### Sample Output 2

```
0
```

## Sample Input 3

```
23 14
```

## Sample Output 3

```
1
```

# ASCII kassi

**CPU TIME LIMIT**

1 second

**MEMORY LIMIT**

1024 MB

Today the High School Programming Contest of Iceland is hosted on Kattis, which reviews the solutions from contestants upon their submission. Most of the process has been automated, but it wasn't always this way.

Some years ago, judges walked from contestant to contestant, to check whether the outputs from each team were correct. This was done by asking contestants to put a piece of paper on their monitor so the judges could see the contestant thought they had solved a task. The judge then asked the contestant to start up the program and enter a specific input which the judge had carefully selected and then the judge verified the correctness.



*Photo from the collection of the High School Programmin Contest of Iceland*

The head judge in these days, Algrímur, requires your assistance with judging a particular task. Algrímur usually writes his own solutions for the tasks and then prints on a paper a few outputs for specific inputs. But Algrímur has been too busy to write his own solution.

The task at hand involves drawing a square in the output, using only the symbols |, -, + and spaces.

The left and right sides of the square should be drawn using the symbol |, while the top and bottom sides of the should be drawn using the symbol -. Corners should be drawn using the symbol + and the interior of the square should be made up of spaces.

Can you write a solution for Algrímur so he can print the output on paper?

## Input

The first and only line in the input contains a single integer $N$, representing the interior sidelength of the square.

## Output

Output a square of size $N \times N$. Note that the number of spaces in the output must be exactly correct and if there are any spaces outside the square then your solution will be considered incorrect.

## Scoring

| Group | Points | Constraints |
|-------|--------|-------------|
| 1 | 20 | $0 \leq N \leq 3$ |
| 2 | 80 | $0 \leq N \leq 1\,000$ |

### Sample Input 1

```
0
```

### Sample Output 1

```
++
++
```

## Sample Input 2

```
1
```

## Sample Output 2

```
+-+
| |
+-+
```

## Sample Input 3

```
2
```

## Sample Output 3

```
+--+
|  |
|  |
+--+
```

# Keys, Phone, Wallet

| CPU TIME LIMIT | MEMORY LIMIT |
|---|---|
| 1 second | 1024 MB |

Oh no, you slept in and have to rush to get to work on time! It is also very cold outside!

In your rush to put on Winter gear and leave home quickly, you wonder if you forgot your `keys`, `phone`, or `wallet`. You had better check.

## Input

The first line of input contains a single integer $N$ ($1 \leq N \leq 20$) indicating the number of items you grabbed before heading out the door.

The next $N$ lines each contain a single nonempty string of lowercase letters with length at most 10 indicating an item you grabbed before heading out the door. No two strings will be the same.

## Output

Output each of `keys`, `phone`, and `wallet` that does not appear in the input, one per line and in alphabetic order. If you did not forget any of these items, simply print a single line with the text `ready`

## Sample Input 1

```
4
jacket
gloves
wallet
keys
```

## Sample Output 1

```
phone
```

## Sample Input 2

```
4
phone
toque
wallet
keys
```

## Sample Output 2

```
ready
```

## Sample Input 3

```
5
scarf
jacket
gloves
snowpants
shades
```

## Sample Output 3

```
keys
phone
wallet
```

# Tok Tik

**CPU TIME LIMIT**

1 second

**MEMORY LIMIT**

1024 MB

Tok Tik is a new app that youngsters are absolutely raving over. There they compete to get the most views. You have found yourself in a discussion with your friend on who is truly the most popular Tok Tikker of all time. You decide to define the most popular Tok Tikker of all time as the Tok Tikker who has the largest total number of views on all their Tok Tiks.

You are given a list of all Tok Tiks that have been uploaded to the whole internet. Each Tok Tik is described by what Tok Tikker uploaded it and how many views it has.

Determine what Tok Tikker is truly the most popular. There will always be a uniquely determined most popular Tok Tikker.

## Input

The first line of the input contains one integer $n$ ($1 \leq n \leq 10^5$) giving the number of Tok Tiks on the internet.

Then there are $n$ lines, one for each Tok Tik, where the $i$-th line contains a string $s_i$ and an integer $a_i$ ($1 \leq a_i \leq 10^4$), denoting that the Tok Tikker $s_i$ uploaded this video and $a_i$ Tok Tikkers have viewed it. Every string $s_i$ contains at most 20 English lowercase letters.

## Output

Print a single line with the name of the Tok Tikker who's most popular.

## Scoring

| Group | Points | Constraints |
|-------|--------|-------------|
| 1 | 50 | $n \leq 100$ |
| 2 | 50 | No further constraints. |

## Sample Input 1

```
5
benni 1500
bjarki 1200
unnar 1300
arnar 1600
bjarki 710
```

## Sample Output 1

```
bjarki
```

## Sample Input 2

```
3
anna 5
anna 6
anna 7
```

## Sample Output 2

```
anna
```

## Sample Input 3

```
5
kalli 1
kalli 1
gummi 5
kalli 3
gummi 1
```

## Sample Output 3

```
gummi
```

# Guess Who

**CPU TIME LIMIT**

1 second

**MEMORY LIMIT**

1024 MB

Guess Who is a two-player board game in which a number of characters are uniquely identified by a set of attributes (e.g. wearing glasses), and each player attempts to guess the other player's hidden character by asking a number of yes/no questions such as "does the person wear glasses?"

In our variation of this game, there are $N$ characters, each of which is uniquely identified by a set of $M$ attributes. The value of each attribute is either YES or NO. You will be provided with a list of the characters and their attributes, together with a series of $Q$ questions and the corresponding responses. Your task is to determine the hidden character, if possible.

## Input

Input begins with three space-separated integers $N$, $M$, and $Q$, satisfying $1 \leq N \leq 1\,000$, $1 \leq M \leq 15$, and $1 \leq Q \leq M$. The next $N$ lines each contains a string of $M$ characters that are either Y or N. The $i$th line specifies the values of the $M$ attributes of the $i$th character. Each of the next $Q$ lines contains an integer $1 \leq A \leq M$, followed by a space, followed by a single character Y or N. This indicates the question is about attribute $A$, and the response that the attribute of the hidden character is YES or NO. There is at most one question for each of the attribute. At least one of the listed characters has attributes consistent with the responses of the queries.

## Output

In the first line, output one of `unique` or `ambiguous`, indicating if there is a uniquely identifiable hidden character, or if there are multiple possible hidden characters.

In the case in which the hidden character is uniquely identifiable, output on the second line the index (between 1 and $N$) of the hidden character. If there are multiple possible hidden

characters, output on the second line the number of possible hidden characters.

## Sample Input 1

```
5 5 3
YYYYY
NNNNN
YNYNY
YYYNN
NNYYY
1 N
2 N
3 Y
```

## Sample Output 1

```
unique
5
```

## Sample Input 2

```
5 5 3
YYYYY
NNNNN
YNYNY
YYNNN
NNNYY
1 Y
5 Y
3 Y
```

## Sample Output 2

```
ambiguous
2
```