CCC '04 J1 - Squares

Time limit: 2.0s **Memory limit:** 256M

Canadian Computing Competition: 2004 Stage 1, Junior #1

Gigi likes to play with squares. She has a collection of equal-sized square tiles. Gigi wants to arrange some or all of her tiles on a table to form a solid square. What is the side length of the largest possible square that Gigi can build?

For example, when Gigi has 9 tiles she can use them all to build a square whose side length is 3. But when she has only 8 tiles, the largest square that she can build has side length 2.

Write a program that inputs the number of tiles and then prints out the maximum side length. You may assume that the number of tiles is less than ten thousand.

Sample Input 1

```
9
```

Sample Output 1

```
The largest square has side length 3.
```

Sample Input 2

```
8
```

Sample Output 2

```
The largest square has side length 2.
```

Sample Input 3

```
7535
```

Sample Output 3

```
The largest square has side length 86.
```

CCC '08 J1 - Body Mass Index

Time limit: 2.0s **Memory limit:** 256M

Canadian Computing Competition: 2008 Stage 1, Junior #1

The Body Mass Index (BMI) is one of the calculations used by doctors to assess an adult's health. The doctor measures the patient's height (in metres) and weight (in kilograms), then calculates the BMI using the formula:

$$BMI = \frac{weight}{height \times height}$$

Write a program which takes the patient's weight and height as input, calculates the BMI, and displays the corresponding message from the table below.

BMI Category	Message
More than 25	Overweight
Between 18.5 and 25.0 (inclusive)	Normal weight
Less than 18.5	Underweight

Sample Input 1

```
69
1.73
```

Output for Sample Input 1

```
Normal weight
```

Explanation of Output for Sample Input 1

The BMI is $\frac{69}{1.73 \times 1.73}$ which is approximately 23.0545. According to the table, this is a "Normal weight".

Sample Input 2

```
84.5
1.8
```

Output for Sample Input 2

```
Overweight
```

Explanation of Output for Sample Input 2

The BMI is $\frac{84.5}{1.8 \times 1.8}$, which is approximately 26.0802. According to the table, this is "Overweight".

CCC '07 J1 - Who is in the Middle?

Time limit: 2.0s **Memory limit:** 256M

Canadian Computing Competition: 2007 Stage 1, Junior #1

In the story Goldilocks and the Three Bears, each bear had a bowl of porridge to eat while sitting at his/her favourite chair. What the story didn't tell us is that Goldilocks moved the bowls around on the table, so the bowls were not at the right seats anymore. The bowls can be sorted by weight with the lightest bowl being the Baby Bear's bowl, the medium bowl being the Mama Bear's bowl and the heaviest bowl being the Papa Bear's bowl.

Write a program that reads in three weights and prints out the weight of Mama Bear's bowl. You may assume all weights are positive integers less than 100.

Sample Input

```
10
5
8
```

Sample Output

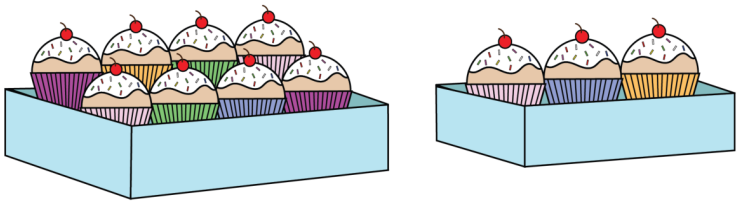
```
8
```

CCC '22 J1 - Cupcake Party

Time limit: 1.0s **Memory limit:** 1G

Canadian Computing Competition: 2022 Stage 1, Junior #1

A regular box of cupcakes holds 8 cupcakes, while a small box holds 3 cupcakes. There are 28 students in a class and a total of at least 28 cupcakes. Your job is to determine how many cupcakes will be left over if each student gets one cupcake.



Input Specification

The input consists of two lines.

- The first line contains an integer $R \geq 0$, representing the number of regular boxes.
- The second line contains an integer $S \geq 0$, representing the number of small boxes.

Output Specification

Output the number of cupcakes that are left over.

Sample Input 1

```
2
5
```

Output for Sample Input 1

```
3
```

Explanation of Output for Sample Input 1

The total number of cupcakes is $2 \times 8 + 5 \times 3$ which equals 31. Since there are 28 students, there are 3 cupcakes left over.

Sample Input 2

```
2
4
```

Output for Sample Input 2

```
0
```

Explanation of Output for Sample Input 2

The total number of cupcakes is $2 \times 8 + 4 \times 3$ which equals 28. Since there are 28 students, there are no cupcakes left over.

CCC '19 J1 - Winning Score

Time limit: 1.0s **Memory limit:** 256M

Canadian Computing Competition: 2019 Stage 1, Junior #1

You record all of the scoring activity at a basketball game. Points are scored by a 3-point shot, a 2-point field goal, or a 1-point free throw.

You know the number of each of these types of scoring for the two teams: the Apples and the Bananas. Your job is to determine which team won, or if the game ended in a tie.

Input Specification

The first three lines of input describe the scoring of the Apples, and the next three lines of input describe the scoring of the Bananas. For each team, the first line contains the number of successful 3-point shots, the second line contains the number of successful 2-point field goals, and the third line contains the number of successful 1-point free throws. Each number will be an integer between 0 and 100, inclusive.

Output Specification

The output will be a single character. If the Apples scored more points than the Bananas, output `A`. If the Bananas scored more points than the Apples, output `B`. Otherwise, output `T`, to indicate a tie.

Sample Input 1

```
10
3
```

Sample Output 1

```
B
```

Explanation for Sample Output 1

The Apples scored $10 \cdot 3 + 3 \cdot 2 + 7 \cdot 1 = 43$ points and the Bananas scored $8 \cdot 3 + 9 \cdot 2 + 6 \cdot 1 = 48$ points, and thus the Bananas won.

Sample Input 2

```
3
0

4
1
```

Sample Output 2

```
T
```

Explanation for Sample Output 2

The Apples scored $7 \cdot 3 + 3 \cdot 2 + 0 \cdot 1 = 27$ points and the Bananas scored $6 \cdot 3 + 4 \cdot 2 + 1 \cdot 1 = 27$ points, and thus it was a tie game.

CCC '18 J1 - Telemarketer or not?

Time limit: 3.0s **Memory limit:** 256M

Canadian Computing Competition: 2018 Stage 1, Junior #1

Here at the Concerned Citizens of Commerce (CCC), we have noted that telemarketers like to use seven-digit phone numbers where the last four digits have three properties. Looking just at the last four digits, these properties are:

- the first of these four digits is an 8 or 9;
- the last digit is an 8 or 9;
- the second and third digits are the same.

For example, if the last four digits of the telephone number are `8229`, `8338`, or `9008`, these are telemarketer numbers.

Write a program to decide if a telephone number is a telemarketer number or not, based on the last four digits. If the number is not a telemarketer number, we should answer the phone, and otherwise, we should ignore it.

Input Specification

The input will be 4 lines where each line contains exactly one digit in the range from 0 to 9.

Output Specification

Output either `ignore` if the number matches the pattern for a telemarketer number; otherwise, output `answer`.

Sample Input 1

```
9
6
6
8
```

Sample Output 1

```
ignore
```

Explanation for Sample Output 1

The first digit is 9, the last digit is 8, and the second and third digit are both 6, so this is a telemarketer number.

Sample Input 2

```
5
6
6
8
```

Sample Output 2

```
answer
```

Explanation for Sample Output 2

The first digit is 5, and so this is not a telemarketer number.

CCC '20 J1 - Dog Treats

Time limit: 1.0s **Memory limit:** 512M

Canadian Computing Competition: 2020 Stage 1, Junior #1

Barley the dog loves treats. At the end of the day, he is either happy or sad depending on the number and si e of treats he receives throughout the day. The treats come in three si es: small, medium, and large. His happiness score can be measured using the following formula:

$$1 \times S + 2 \times M + 3 \times L$$

where S is the number of small treats, M is the number of medium treats and L is the number of large treats.

If Barley's happiness score is 10 or greater then he is happy. Otherwise, he is sad. Determine whether Barley is happy or sad at the end of the day.

Input Specification

There are three lines of input. Each line contains a non-negative integer less than 10. The first line contains the number of small treats, S, the second line contains the number of medium treats, M, and the third line contains the number of large treats, L, that Barley receives in a day.

Output Specification

If Barley's happiness score is 10 or greater, output `happy`. Otherwise, output `sad`.

Sample Input 1

```
3
1
0
```

Output for Sample Input 1

```
sad
```

Explanation of Output for Sample Input 1

Barley's happiness score is $1 \times 3 + 2 \times 1 + 3 \times 0 = 5$, so he will be sad.

Sample Input 2

```
3
2
1
```

Output for Sample Input 2

```
happy
```

Explanation of Output for Sample Input 2

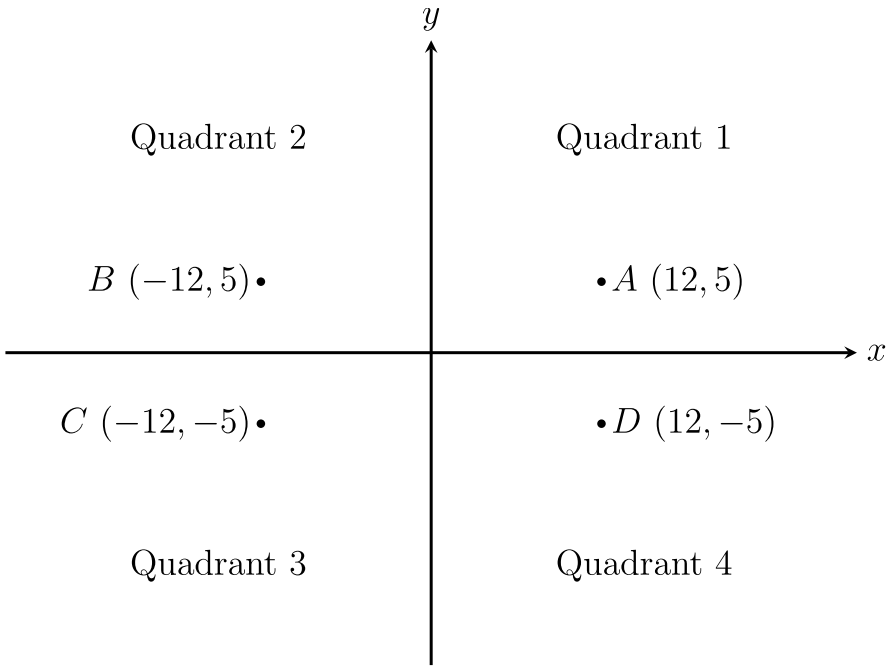
Barley's happiness score is $1 \times 3 + 2 \times 2 + 3 \times 1 = 10$, so he will be happy.

CCC '17 J1 - Quadrant Selection

Time limit: 1.0s **Memory limit:** 256M

Canadian Computing Competition: 2017 Stage 1, Junior #1

A common problem in mathematics is to determine which quadrant a given point lies in. There are four quadrants, numbered from 1 to 4, as shown in the diagram below:



For example, the point A, which is at coordinates $(12, 5)$ lies in quadrant 1 since both its x and y values are positive, and point B lies in quadrant 2 since its x value is negative and its y value is positive.

Your job is to take a point and determine the quadrant it is in. You can assume that neither of the two coordinates will be 0.

Input Specification

The first line of input contains the integer x $(-1\,000 \leq x \leq 1\,000; x \neq 0)$. The second line of input contains the integer y $(-1000 \leq y \leq 1000; y \neq 0)$.

Output Specification

Output the quadrant number (1, 2, 3 or 4) for the point (x, y).

Sample Input 1

```
12
5
```

Sample Output 1

```
1
```

Sample Input 2

```
9
-13
```

Sample Output 2

```
4
```