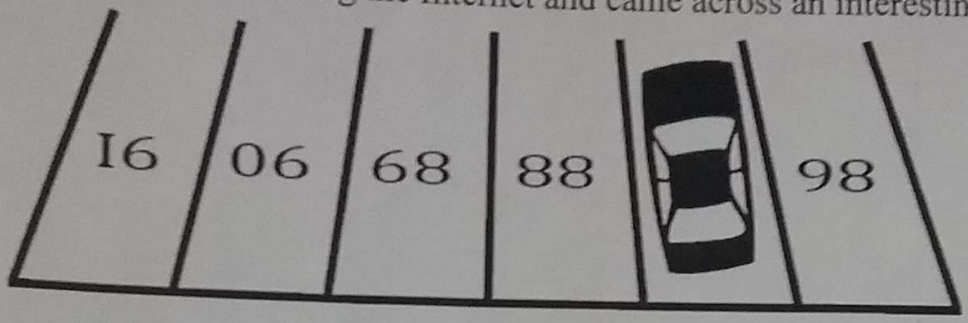
A - Overturned Numbers

Description

Little Pierre was surfing the Internet and came across an interesting puzzle:



What is the number under the car?

It took some time before Pierre solved the puzzle, but eventually he understood that there were overturned numbers 86, 88, 89, 90, and 91 in the picture and the answer was the number 87.

Now Pierre wants to entertain his friends with similar puzzles. He wants to construct a sequence of n numbers such that its overturning produces a consecutive segment of the positive integers. Pierre intends to use one-digit integers supplemented with a leading zero and two-digit integers only. To avoid ambiguity, note that when the digits 0, 1, and 8 are overturned, they remain the same, the digits 6 and 9 are converted into each other, and the remaining digits become unreadable symbols.

Input

The only line contains the number n of integers in a sequence ($1 \le n \le 99$).

Output

If there is no sequence of length n with the above property, output "Glupenky Pierre" ("Silly Pierre" in Russian). Otherwise, output any of such sequences. The numbers in the sequence should be separated with a space.

Sample Input

input	output
2	11 01
99	Glupenky Pierre

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B - Exact Sum

Peter received money from his parents this week and wants to spend it all buying books. But he does not read a book so fast, because he likes to enjoy every single word while he is reading. In this way, it takes him a week to finish a book.

As Peter receives money every two weeks, he decided to buy two books, then he can read them until receive more money. As he wishes to spend all the money, he should choose two books whose prices summed up are equal to the money that he has. It is a little bit difficult to find these books, so Peter asks your help to find them.

Input

Each test case starts with $2 \leq N \leq 10000$, the number of available books. Next line will have N integers, representing the price of each book, a book costs less than 1000001. Then there is another line with an integer M, representing how much money Peter has. There is a blank line after each test case. The input is terminated by end of file (EOF).

Output

For each test case you must print the message: 'Peter should buy books whose prices are i and j.', where i and j are the prices of the books whose sum is equal do M and $i \leq j$. You can consider that is always possible to find a solution, if there are multiple solutions print the solution that minimizes the difference between the prices i and j. After each test case you must print a blank line.

Sample Input

```
2
40 40
80

5
10 2 6 8 4
10
```

Sample Output

```
Peter should buy books whose prices are 40 and 40.
Peter should buy books whose prices are 4 and 6.
```

80

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C - Ciel and Flowers

Description

Fox Ciel has some flowers: r red flowers, g green flowers and b blue flowers. She wants to use these flowers to make several bouquets. There are 4 types of bouquets:

- To make a "red bouquet", it needs 3 red flowers.
- To make a "green bouquet", it needs 3 green flowers.
- To make a "blue bouquet", it needs 3 blue flowers.
- To make a "mixing bouquet", it needs 1 red, 1 green and 1 blue flower.

Help Fox Ciel to find the maximal number of bouquets she can make.

Input

The first line contains three integers r, g and b ($0 \le r, g, b \le 10^9$) — the number of red, green and blue flowers.

Output

Print the maximal number of bouquets Fox Ciel can make.

Sample Input

Input

```
3 6 9
```

Output

```
6
```

Input

```
4 4 4
```

Output

```
4
```

Input

```
0 0 0
```

Output

```
0
```

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D - Table Decorations

Description

You have r red, g green and b blue balloons. To decorate a single table for the banquet you need exactly three balloons. Three balloons attached to some table shouldn't have the same color. What maximum number t of tables can be decorated if we know number of balloons of each color?

Your task is to write a program that for given values r, g and b will find the maximum number t of tables, that can be decorated in the required manner.

Input

The single line contains three integers r, g and b ($0 \le r, g, b \le 2 \cdot 10^9$) — the number of red, green and blue baloons respectively. The numbers are separated by exactly one space.

Output

Print a single integer t — the maximum number of tables that can be decorated in the required manner.

Sample Input

input

```
5 4 3
```

Output

```
4
```

Input

```
1 1 1
```

Output

```
1
```

Input

```
2 3 3
```

Output

```
2
```

Hint

In the first sample you can decorate the tables with the following balloon sets: "rgg", "gbb", "brr", "rrg", where "r", "g" and "b" represent the red, green and blue balls, respectively.

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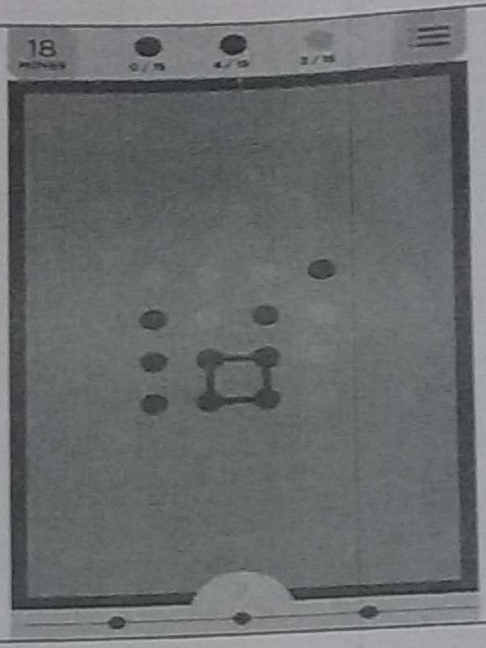
E - Fox And Two Dots

Fox Ciel is playing a mobile puzzle game called "Two Dots". The basic levels are played on a board of size $n \times m$ cells, like this:



Each cell contains a dot that has some color. We will use different uppercase Latin characters to express different colors.

The key of this game is to find a cycle that contain dots of same color. Consider 4 blue dots on the picture forming a circle as an example. Formally, we call a sequence of dots $d_1, d_2, ..., d_k$ a cycle if and only if it meets the following condition:

1. These k dots are different: if $i \neq j$ then d_i is different from d_j.
2. k is at least 4.
3. All dots belong to the same color.
4. For all $1 \leq i \leq k - 1$: d_i and d_{i+1} are adjacent. Also, d_k and d_1 should also be adjacent. Cells x and y are called adjacent if they share an edge.

Determine if there exists a cycle on the field.

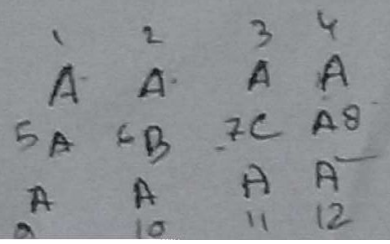
Input

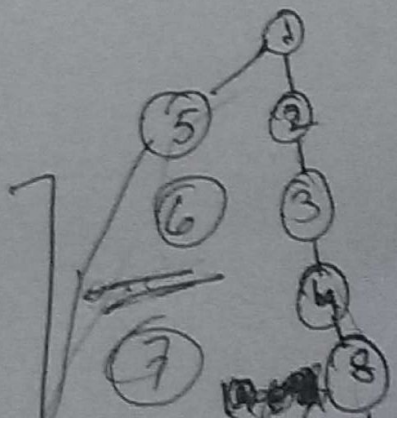
The first line contains two integers n and m ($2 \leq n, m \leq 50$): the number of rows and columns of the board.

Then n lines follow, each line contains a string consisting of m characters, expressing colors of dots in each line. Each character is an uppercase Latin letter.

Output

Output "Yes" if there exists a cycle, and "No" otherwise.





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Input	Output
3 4 AAAA ABCA AAAA	Yes
Input	Output
3 4 AAAA ABCA AADA	No
Input	Output
4 4 YYYR BYBY BBBY BBBY	Yes
Input	Output
7 6 AAAAAB ABBBAB ABAAAB ABABBB ABAAAB ABBBAB AAAAAB	Yes
Input	Output
2 13 ABCDEFGHIJKLM NOPQRSTUVWXYZ	No

Hint

In first sample test all 'A' form a cycle.
In second sample there is no such cycle.
The third sample is displayed on the picture above ('Y' = Yellow, 'B' = Blue, 'R' = Red).

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