More Exercises: Data Types and Variables

Please, submit your source code solutions for the described problems to the Judge System.

Note: These exercises are excluded from your homework!

1. Exchange Integers

Read two integer numbers and, after that, **exchange their values**. Print the variable values before and after the exchange, as shown below:

Examples

Input	Output

5
10
	Before:
	a = 5
	b = 10
	After:
	a = 10
	b = 5

10
20
	Before:
	a = 10
	b = 20
	After:
	a = 20
	b = 10

Hints

You may use a **temporary variable** to remember the old value of **a**, then assign the value of **b** to **a**, and then assign the value of the temporary variable to **b**.

2. Prime Number Checker

Write a program to check if a number is **prime**. A prime number is a natural number greater than 1, not a product of two smaller natural numbers. For example, the only ways of writing 5 as a product, 1 × 5 or 5 × 1, involve 5 itself.

The **input** comes as an integer number.

The **output** should be **True** if the number is prime and **False** otherwise.

Examples

Input	Output
7	True
8	False
81	False

3. Decrypting Messages

On the **first line**, you will receive a **key** (**integer**). On the **second line**, you will receive **n** – the number of **lines**, which will **follow**. On the next **n lines** – you will receive a **lower** and an **uppercase** letter per line.

You should **add the key** to **each of the characters** and append them to a **message**. In the end, **print the decrypted message**.

Examples

Input	Output
3 **7** P l c q R k f	SoftUni

Input	Output
1 **7** C d b q x o s	Decrypt

4. Balanced Brackets

On the **first line**, you will receive **n** – the number of lines, which will follow. On the following **n** lines, you will receive **one** of the following:

- Opening bracket – "**(**",
- Closing bracket – "**)**" or
- **Random string**

Your task is to find out if the **brackets** are **balanced**. That means after every **opening** bracket should follow a **closing** one. Nested parentheses are **not valid**, and if, for example, **two consecutive opening brackets** exist, the expression should be marked as **unbalanced**. You should print "**BALANCED**" if the parentheses are balanced and "**UNBALANCED**" otherwise.

Examples

Input	Output
8 (5 + 10) * 2 + (5) -12	BALANCED

Input	Output
6 12 *) 10 + 2 - (5 + 10)	UNBALANCED