java vs. c++

In an unnamed company, some people use Java and some use C++. This was always a nuisance, and they kept on arguing which single language they should all be using. To settle the dispute, the management decided that they'll buy a translator program that will be able to rewrite their C++ programs to Java and vice versa.

An important part of the translator will be a routine that will rewrite all the identifiers. This is because Java coders in the company write multiword identifiers in a different way than C++ coders in the company do. We will now describe both methods.

In Java a multiword identifier is constructed in the following manner: the first word is written starting with a lowercase letter, and the following ones are written starting with an uppercase letter, no separators are used. All other letters are lowercase. Examples of Java identifiers are `javaIdentifier`, `longAndMnemonicIdentifier`, `name`, and `kSP`.

In C++ people use only lowercase letters in their identifiers. To separate words they use the underscore character '_'. Examples of C++ identifiers are `cpp_identifier`, `long_and_mnemonic_identifier`, `name` (here Java and C++ people agree), and `k_s_p`.

Task

Write the identifier translation routine. Given an identifier, detect whether it is a Java identifier or C++ identifier (as defined above) and translate it to the other dialect. If it is neither, then your routine should report an error. Translation must preserve the order of words and must only change the case of letters and/or add/remove underscores.

Input

The input consists of one line that contains an identifier. It consists of letters of the English alphabet and underscores. Its length does not exceed 100.

Output

If the input identifier is a Java identifier, output its C++ version. If it is a C++ identifier, output its Java version. If it is none, output "`Error!`" instead.

Example

input	output
long_boring_identifier	longBoringIdentifier

input	output
otherWay	other_way

input	output
same	same

input	output
generate_Error	Error!