Problem ID: elementary

Even time travellers need money for food, so unfortunately you have to have a day job. Since using time travel for personal gain is prohibited and you want to be a lawful time traveller, you found a start-up instead, in the year 3018. Why 3018? Well, it was around that time that mankind discovered how to safely create and contain all the elements of the periodic table[1] in pure form. And you need that for your business idea: selling words created from elements.

Now the only thing left for you to do is to check if and how any given word can be spelled out using element symbols.

Input

The input consists of:

- One line with one string s $(1 \leq |s| \leq 1\,000)$ consisting of lowercase letters a-z.

Output

If there is no solution, output impossible. Otherwise, output a sequence of element symbols that spell out the given string s. If there is more than one solution, any one of them will be accepted.

Sample Input 1	Sample Output 1
fauerlangen	F Au Er La N Ge N

Sample Input 2	Sample Output 2
wintercontest	impossible

Sample Input 3	Sample Output 3
prognosis	Pr Og N O Si S

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[1]You may find the following code snippet useful, which is also available in the samples.zip archive that can be downloaded via the DOMjudge web interface. These are all 118 element symbols:

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"H",  "He", "Li", "Be", "B",  "C",  "N",  "O",  "F",  "Ne",
"Na", "Mg", "Al", "Si", "P",  "S",  "Cl", "Ar", "K",  "Ca",
"Sc", "Ti", "V",  "Cr", "Mn", "Fe", "Co", "Ni", "Cu", "Zn",
"Ga", "Ge", "As", "Se", "Br", "Kr", "Rb", "Sr", "Y",  "Zr",
"Nb", "Mo", "Tc", "Ru", "Rh", "Pd", "Ag", "Cd", "In", "Sn",
"Sb", "Te", "I",  "Xe", "Cs", "Ba", "La", "Ce", "Pr", "Nd",
"Pm", "Sm", "Eu", "Gd", "Tb", "Dy", "Ho", "Er", "Tm", "Yb",
"Lu", "Hf", "Ta", "W",  "Re", "Os", "Ir", "Pt", "Au", "Hg",
"Tl", "Pb", "Bi", "Po", "At", "Rn", "Fr", "Ra", "Ac", "Th",
"Pa", "U",  "Np", "Pu", "Am", "Cm", "Bk", "Cf", "Es", "Fm",
"Md", "No", "Lr", "Rf", "Db", "Sg", "Bh", "Hs", "Mt", "Ds",
"Rg", "Cn", "Nh", "Fl", "Mc", "Lv", "Ts", "Og"
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