16 Life on Mars

9 points

Introduction

The first human expedition on Mars has identified a new strand of microorganisms. The new life is based on a single stranded RNA-like code but uses only 3 different nucleotides or "letters" to encode its genetic information: A (Adenine), T (Thymine) and U (Uracil). The biology of the cell is based on simple proteins formed by a short series of amino acids encoded by pairs of the genetic code letters (codons). For instance: the sequence AT gives the amino acid Cysteine; the sequence TU encodes for Arginine (see table). There are especial codons for starting a coding sequence (AU) and for the end of a sequence (TA) and (TT). Note that the especial sequence UT makes the cell discard (delete) the last amino acid coded and there is no multiple START signal on a given sequence.

CODON PAIR	Amino Acid / SIGNAL
AA	Glycine
AT	Cysteine
AU	START
TA	END
TT	END
TU	Arginine
UA	Serine
UT	DELETE
UU	Lysine

Write a program that given a string containing a nucleotide sequence, returns the (comma separated) sequence of amino acids (if any) encoded in the sequence or "None" if no valid sequence is found. To be valid, a sequence must have a single START, at least one amino acid and an END signal.

Input

The input is a string with a nucleotide sequence using single capital letters.

Output

Print out the sequence of amino acid names (fist letter of the amino acid name in capital letter), separated by a comma.

Example 1

Input
AUAATUTT

Output
`Glycine,Arginine`

Example 2

Input
AUAATUUTUUATTT

Output
`Glycine,Lysine,Cysteine`

Example 3

Input
AUAATUUTUUAT

Output
None