ACSL

2009 - 2010 **American Computer Science League** **Contest #2**

Senior Division
Metaphone

Metaphone, which was first described by Lawrence Philips in the December 1990 edition of *Computer Language* magazine, uses a rough phonetics algorithm that reduces names to 16 consonants. Using just the 15 consonants it is possible to pronounce a name. An example of the need to pronounce words and names is a GPS device that gives directions using street names.

The 15 consonant sounds are:

B X S K J T F H L M N P R W Y

To convert a name to Metaphone use the rules below:

STEP 1.
Words beginning with: AE, GN, KN, PN, WR → drop the first letter as in AEBERSOLD, GNAGY, KNUTH, PNIEWSKI and WRIGHT
Words beginning with X → change to S as in XIAOPENG
Words beginning WH → change to W as in WHALEN
STEP 2.
Apply the rules in order from the table below. Each time a rule is applied immediately start over at the top of the chart with the modified string. Continue in this manner until no further changes can be made. The → symbol in the chart below directs you to change/drop a letter as indicated.

B → B	unless at the end of a word after an M, as in "DUMB", then the B is dropped
C → dropped	if in SCI or SCY
C → X	if in CIA, CH, CI, CE or CY
C → K	otherwise
D →J	if in DGE, DGY, or DG
D →T	otherwise
G → dropped	if after a vowel and no vowel follows
G →J	if before I, E, or Y and if not part of a double G
G →K	otherwise
H → dropped	if after a vowel and no vowel follows or after C, S, P, T or G
P → F	if before H
Q → K	always
S → X	if before an H or in SIO or SIA
T → X	if in TIA or TIO
V → F	always
W → dropped	if not followed by a vowel
Y → dropped	if not followed by a vowel
Z → S	always
multiple letters	keep just the first occurrence of multiple consecutive letters

STEP 3.
Delete all vowels – A,E,I,O and U.

INPUT: There will be 5 lines of input. Each line will contain one string expression containing all letters.

OUTPUT: For each line of input, print the metaphone translation.

The following examples show the results of the transformations as the rules are applied:

SCIENCE	SLACKENDGE
SIENCE	SLAKKENDGE
SIENXE	SLAKKENJGE
SIENXE	SLAKKENJJE
SNX	SLAKENJE
	SLKNJ

SAMPLE INPUT	SAMPLE OUTPUT
1. KOEHN	1. KN
2. PHILLIPSON	2. PLPSN
3. SCHAY	3. SXH
4. SCHMIDT	4. SXHMT
5. PHEISTER	5. PSTR