

Assignment#3

(Advanced Python)

Problem#1

Text Messaging



Problem J2: I Speak TXTMSG

Problem Description

Text messaging using a cell phone is popular among teenagers. The messages can appear peculiar because short forms and symbols are used to abbreviate messages and hence reduce typing.

For example, “LOL” means “laughing out loud” and “:-)” is called an emoticon which looks like a happy face (on its side) and it indicates chuckling. This is all quite a mystery to some adults.

Write a program that will continually input a short form and output the translation for an adult using the following translation table:

Short Form	Translation
CU	see you
:-)	I'm happy
:-)	I'm unhappy
;-)	wink
:-P	stick out my tongue
(~_~)	sleepy
TA	totally awesome
CCC	Canadian Computing Competition
CUZ	because
TY	thank-you
YW	you're welcome
TTYL	talk to you later

Input Specifications

The user will be prompted to enter text to be translated one line at a time. When the short form “TTYL” is entered, the program ends. Users may enter text that is found in the translation table, or they may enter other words. All entered text will be symbols or upper case letters. There will be no spaces and no quotation marks.

Output Specifications

The program will output text immediately after each line of input. If the input is one of the phrases in the translation table, the output will be the translation; if the input does not appear in the table, the output will be the original word. The translation of the last short form entered “TTYL” should be output.

Sample Session (user input is in *italics*)

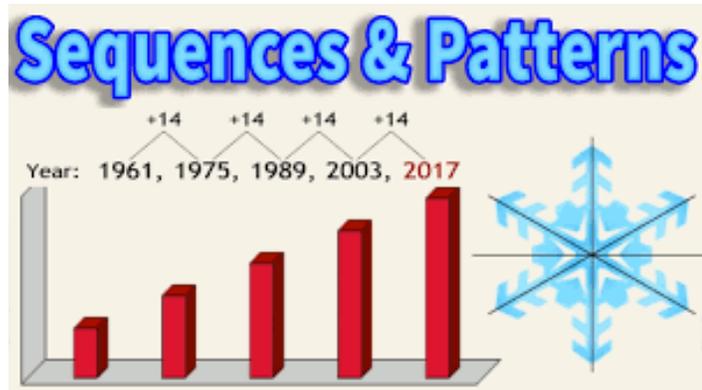
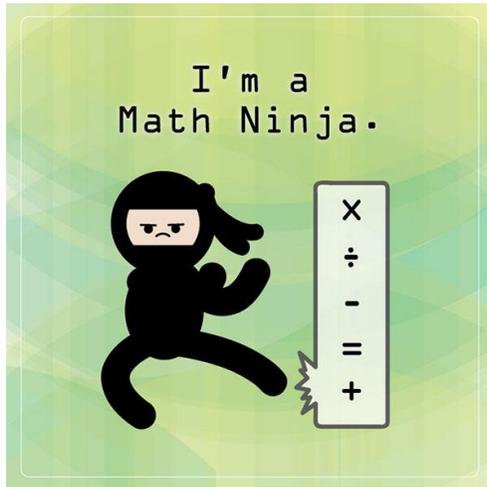
```
Enter phrase> CCC
Canadian Computing Competition

Enter phrase> :-)
I'm happy

Enter phrase> SQL
SQL

Enter phrase> TTYL
talk to you later
```

Problem#2



Problem J3: Sumac Sequences

Problem Description

In a sumac sequence, t_1, t_2, \dots, t_m , each term is an integer greater than or equal 0. Also, each term, starting with the third, is the difference of the preceding two terms (that is, $t_{n+2} = t_n - t_{n+1}$ for $n \geq 1$). The sequence terminates at t_m if $t_{m-1} < t_m$.

For example, if we have 120 and 71, then the sumac sequence generated is as follows:

120, 71, 49, 22, 27.

This is a sumac sequence of length 5.

Input Specification

The input will be two positive numbers t_1 and t_2 , with $0 < t_2 < t_1 < 10000$.

Output Specification

The output will be the length of the sumac sequence given by the starting numbers t_1 and t_2 .

Sample Input

120
71

Output for Sample Input

5

Hints:

You might try the following:

Try creating three variables: **first**, **second**, **third**

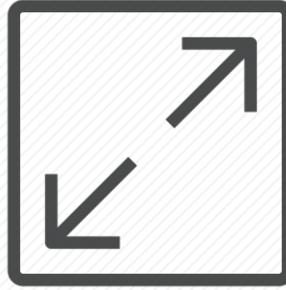
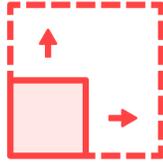
Then:

```
third = first - second
first = second
second = third
```

Repeat, and keep count until first is $<$ second

There is a solution posted on the course page. But try on your own first.

Problem#3



Problem J3: Icon Scaling

Problem Description

You have been asked to take a small icon that appears on the screen of a smart telephone and scale it up so it looks bigger on a regular computer screen.

The icon will be encoded as characters (`x` and `*`) in a 3×3 grid as follows:

```
*x*
 xx
*  *
```

Write a program that accepts a positive integer scaling factor and outputs the scaled icon. A scaling factor of k means that each character is replaced by a $k \times k$ grid consisting only of that character.

Input Specification

The input will be a positive integer k such that $k < 25$.

Output Specification

The output will be $3k$ lines, which represent each individual line scaled by a factor of k and repeated k times. A line is scaled by a factor of k by replacing each character in the line with k copies of the character.

Sample Input

```
3
```

Output for Sample Input

```
***xxxx**
***xxxx**
***xxxx**
   xxxxxx
   xxxxxx
   xxxxxx
***   ***
***   ***
***   ***
```