r/dailyprogrammer

Posts

Posted by u/Garth5689 4 months ago

[2018-03-26] Challenge #355 [Easy] Alphabet Cipher

Description

"The Alphabet Cipher", published by Lewis Carroll in 1868, describes a Vigenère cipher (thanks /u/Yadkee for the clarification) for passing secret messages. The cipher involves alphabet substitution using a shared keyword. Using the alphabet cipher to tranmit messages follows this procedure:

You must make a substitution chart like this, where each row of the alphabet is rotated by one as each letter goes down the chart. All test cases will utilize this same substitution chart.

```
  ABCDEFGHIJKLMNOPQRSTUVWXYZ
A abcdefghijklmnopqrstuvwxyz
B bcdefghijklmnopqrstuvwxyza
C cdefghijklmnopqrstuvwxyzab
D defghijklmnopqrstuvwxyzabc
E efghijklmnopqrstuvwxyzabcd
F fghijklmnopqrstuvwxyzabcde
G ghijklmnopqrstuvwxyzabcdef
H hijklmnopqrstuvwxyzabcdefg
I ijklmnopqrstuvwxyzabcdefgh
J jklmnopqrstuvwxyzabcdefghi
K klmnopqrstuvwxyzabcdefghij
L lmnopqrstuvwxyzabcdefghijk
M mnopqrstuvwxyzabcdefghijkl
N nopqrstuvwxyzabcdefghijklm
O opqrstuvwxyzabcdefghijklmn
P pqrstuvwxyzabcdefghijklmno
Q qrstuvwxyzabcdefghijklmnop
R rstuvwxyzabcdefghijklmnopq
S stuvwxyzabcdefghijklmnopqr
T tuvwxyzabcdefghijklmnopqrs
U uvwxyzabcdefghijklmnopqrst
V vwxyzabcdefghijklmnopqrstu
W wxyzabcdefghijklmnopqrstuv
X xyzabcdefghijklmnopqrstuvw
Y yzabcdefghijklmnopqrstuvwx
Z zabcdefghijklmnopqrstuvwxy
```

Both people exchanging messages must agree on the secret keyword. To be effective, this keyword should not be written down anywhere, but memorized.

To encode the message, first write it down.

```
thepackagehasbeendelivered
```

Then, write the keyword, (for example, `snitch`), repeated as many times as necessary.

```
snitchsnitchsnitchsnitchsn
thepackagehasbeendelivered
```

Now you can look up the column `S` in the table and follow it down until it meets the `T` row. The value at the intersection is the letter `L`. All the letters would be thus encoded.

```
snitchsnitchsnitchsnitchsn
thepackagehasbeendelivered
lumicjcnoxjhkomxpkwyqogywq
```

The encoded message is now `lumicjcnoxjhkomxpkwyqogywq`

To decode, the other person would use the secret keyword and the table to look up the letters in reverse.

Input Description

Each input will consist of two strings, separate by a space. The first word will be the secret word, and the second will be the message to encrypt.

```
snitch thepackagehasbeendelivered
```

Output Description

Your program should print out the encrypted message.

```
lumicjcnoxjhkomxpkwyqogywq
```

Challenge Inputs

```
bond theredfoxtrotsquietlyatmidnight
train murderontheorientexpress
garden themolessnuckintothegardenlastnight
```

Challenge Outputs

```
uvrufrsryherugdxjsgozogpjralhvg
flrlrkfnbuxfrqrgkefckvsa
zhvpsyksjqypqiewsgnexdvqkncdwgtixkx
```

Bonus

For a bonus, also implement the decryption portion of the algorithm and try to decrypt the following messages.

Bonus Inputs

```
cloak klatrgafedvtssdwywcyty
python pjphmfamhrcaifxifvvfmzwqtmyswst
moore rcfpsgfspiecbcc
```

Bonus Outputs

```
iamtheprettiestunicorn
alwayslookonthebrightsideoflife
foryoureyesonly
```