**XX. Babelfish**

# Program Name: Babelfish.java Input File: babelfish.dat

The Babel fish is small, yellow, leech-like, and probably the oddest thing in the universe. It feeds on brainwave energy; if you stick a Babel fish in your ear, you can instantly understand anything said to you in any form of language. The speech patterns you actually hear decode the brain wave matrix, which has been fed into your mind by your Babel fish. However, you dropped your Babel fish in the toilet and now it’s defective. Luckily, there’s a way to fix it.

Your Babel fish can only decode Vogon. Provided below is the algorithm the Babel fish uses to translate Vogon to English. Your task is to follow this algorithm to fix your Babel fish.

1. At the beginning of each test case, there will be an integer s, which will be either positive or negative. A positive value represents a shift s places to the right, while a negative value represents a shift s places to the left. Vogon only includes the characters with the ASCII values between 32 and 122. If you shift past these boundaries, you should wrap around. For example, if a character with the ASCII value 32 shifts to the left 1, it should now have the ASCII value 122.
2. With the new string, reverse all values; for example, the string ABCDE would become EDCBA.
3. Now, create a new string using the value of d. First, remove the dth character of the string and add it to a buffer. Next, keep removing at each multiple of d until the string is empty, wrapping around when d is greater than the length of the string. Look below for an example that is traced out with a d value of 3.

String Buffer

EDCBA null

EDBA C

DBA CE

DB CEA

B CEAD

null CEADB

**Input**

The first line of the input file will have an integer n denoting the amount of test cases to follow. The first line of each test case will have two integers, s and d. s can be either positive or negative to indicate the direction and magnitude of the shift, and d will always be >0. The second line of each test case will contain an encoded sentence that needs to be decoded.

**Output**

Output the decoded Babel fish result of each encoded message.

**Example Input File**

3

-5 2

omoq%\*qd$F]0F$q0s]Wq=

3 11

7((M:(M0exi8e0iK0(<jr(WHG

-1 4

/;i;6w@;ZTJmwxOwTpZwCZOTw@;ZTJm\_

**Example Output to Screen**

212 IS GREATER THAN 7

Beeblebrox for President!

Vogon poetry is the best poetry.