**23. Transposition**

# Program Name: Transposition.java Input File: transposition.dat

Given a melody and a degree of transposition, print out the notes to the transposed melody.

Transposition is the act of shifting entire pieces of music down or up by a certain order of degrees, known as half steps. There are a limited number of notes, so when you reach the end of the sequence of notes, the next note has the same name as the first note and the sequence loops around, being a different octave. (We will disregard octaves for this exercise, so don’t worry about them). For example, here is the order of notes when transposing up:

A A# B C C# D D# E F F# G G# A A# …

When transposing down:

A Bb B C Db D Eb E F Gb G Ab A Bb …

The distance between each pitch above is 1 half step.

**Input**

The first line of input will contain a single integer n that indicates how many test cases to follow. Each test case will contain the melody on one line, then an integer s, the distance, or the amount of half steps to transpose by on the next line.

**Output**

Output the new melody, with spaces between each pitch.

**Example Input File**

3

C C D C F E C C D C G F C C C A F E D Bb Bb A F G F

-4

B A G A B B B A A A B D D B A G A B B B B A A B A G

6

D D D A Ab G F D F G A A D A Ab G F D F G B B D A Ab G F D F G Bb Bb D A Ab G F D F G

-2

**Example Output to Screen**

Ab Ab Bb Ab Db C Ab Ab Bb Ab Eb Db Ab Ab Ab F Db C Bb Gb Gb F Db Eb Db

F D# C# D# F F F D# D# D# F G# G# F D# C# D# F F F F D# D# F D# C#

C C C G Gb F Eb C Eb F Bb Bb C G Gb F Eb C Eb F A A C G Gb F Eb C Eb F Ab Ab C G Gb F Eb C Eb F

**Note**

The sample output and input for test case number 3 will be printed on a single line; disregard word wrap.