

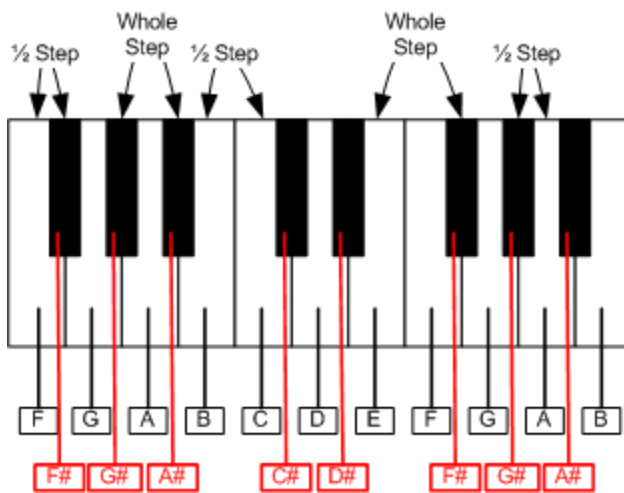


JAVA programmers: your program name must be: prob09.class

C programmers: your program name must be: prob09.exe

Task Description

A musical interval is defined as the distance between one note on a scale and another note on the same scale. We can represent notes on a piano keyboard:



Beneath the keyboard graphic are the names of the notes, above the keyboard graphic are indications of *half steps* and *whole steps*. This keyboard graphic shows only some of the available keys. Notes drop to lower tones as you move to the left and raise to higher tones as you move to the right. The notes repeat themselves, A through G, with additional notes – called *sharps* (black keys) – in between the other notes (white keys). You move a half step when you move from one key to the immediately adjacent key, and you move a whole step when you move from one key to a key that is two keys away. Also note, for example, that while E and F (or B and C) are adjacent white keys, F and G (or G and A, or C and D, or A and B) are not.

This problem works with major scales. A major scale is that series of eight notes (called an octave) which begins and ends with the same note name and progresses from one note to the next via the following progression: 1) Initial note (e.g. A); 2) Whole step higher (B); 3) Whole step (C#); 4) Half-step (D); 5) Whole step (E); 6) Whole step (F#); 7) Whole step (G#); 8) Half step (A, again). You can begin with any key and follow this pattern to derive any of the major scales. Any other major scale can be derived by following this same pattern, beginning with a base note. For example: Initial note: G#; whole step: A#; whole step: C; half step: C#; whole step: D#; whole step: F; whole step: G; half step: G#.

Now, a specific *interval* represents the space between one note and a referenced note on the same scale, counting from the initial note as one (1) and moving along the scale to the named ordinal. Thus, a *second* interval up along the A major scale from B is C# (B=1, C#=2). A *seventh* interval down along the A major scale from G# is A (move left to go down, G#=1, F#=2, E=3, D=4, C#=5, B=6, A=7).

Your program will read a single scale name and a series of intervals (maximum of 15). The scale name can be a single letter (e.g. A) or a letter plus a sharp sign (e.g. A#). The program must walk the input intervals and output each note described along the input scale, starting with the input note and continuing to the final note. Begin each interval at the note reached by moving the previous interval. Intervals to the right are represented in the input by a plus (+) sign. Intervals to the left are represented by a minus (-) sign.

Sample Input/Output

Enter intervals: A+2+5-6+9+10-11+3+3

A B F# A B D A C# E

Enter intervals: G#-3+6-13+15+2-7+2-5+6-2+7

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

Enter intervals: B-3+2-7

B G# A# B