

# Sound Lab

Create a new project named sound\_lab. Copy Sound.java and into your project. You will implement code in empty routines

Make sure you use correct java conventions.

Digital sounds can be represented as an array of integer values. For this question, you will write two unrelated methods of the Sound class.

- (a) The volume of a sound depends on the amplitude of each value in the sound. The amplitude of a value is its absolute value. For example, the amplitude of -2300 is 2300 and the amplitude of 4000 is 4000.

Write the method limitAmplitude that will change any value that has an amplitude greater than the given limit. Values that are greater than limit are replaced with limit, and values that are less than -limit are replaced with -limit. The method returns the total number of values that were changed in the array. For example, assume that the array samples has been initialized with the following values.

40	2532	17	-2300	-17	-4000	2000	1048	-420	33	15	-32	2030	3223
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With the statement

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int numChanges = limitAmplitude (2000);
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Is executed, the value of numChanges will be 5, and the array samples will contain the following values.

40	2000	17	2000	-17	-2000	2000	1048	-420	33	15	-32	2000	2000
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Complete the method limitAmplitude()

- (b) Recorded sound often begins with silence. Silence in a sound is represented by a value of 0. Write the method trimSilenceFromBeginning that removes the silence from the beginning of a sound. To remove starting silence, a new array of values is created that contains the same values as the original samples array in the same order but without the leading zeros. The instance variable samples is updated to refer to the new array. For example, suppose the instance variable samples refers to the following array:

0	0	0	0	-14	-35	-39	0	-7	16	32	37	29	0
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After trimSilenceFromBeginning has been called, the instance variable samples will refer to the following array.

-14	0	-35	-39	0	-7	16	32	37	29	0
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Complete the method trimSilenceFromBeginning().