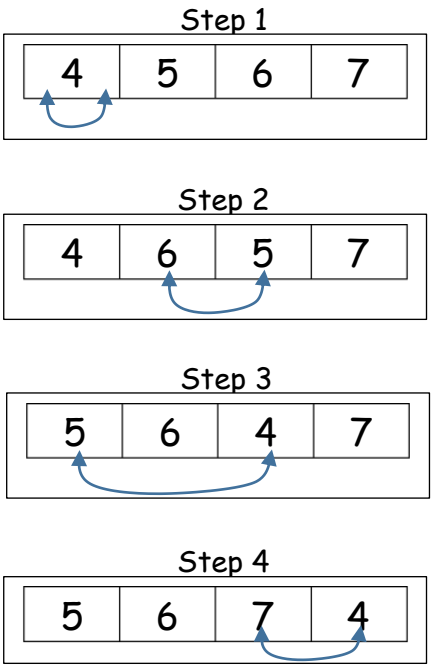
In-class Practice - Sound

Create class **Sound**.

Sound should contain only one method:

deMangleList, which should accept a single parameter that is a reference to an **ArrayList** of **Double**'s, and return nothing. **deMangleList** should start at the beginning of the **ArrayList** and exchange the element there (index i) with the element at (2i) mod (length of array), continuing the process for the entire **ArrayList**. The process is depicted on the right for a short array (naturally, your code should work on any size array).The image below shows the operation.



For the short example array, the steps are as follows:

1. Exchange the element at index 0 with the element at index 0. (No change, really.)
2. Exchange the element at index 1 with the element at index 2.
3. Exchange the element at index 2 with the element at index 0 (4%4).
4. Exchange the element at index 3 with the element at index 2 (6%4).

You can use your method to change the **wav** file provided with this assignment, to make it intelligible. Sounds can be represented by an array of "sample values" that describe the intensity of the sound at a point in time, as depicted in the graph of audio data shown to the right.

I have modified a file (MangledSoundB.wav) that contains audio data, which you can play by compiling and running PlaySoundArrayList.java (download from the assignment page). PlaySoundArrayList reads a sound file (in uncompressed monaural WAV format, with 16 bits/sample) that the user specifies, calls the deMangleList method in the Sound class to process the sample values, then plays the new, processed sound. Run it as follows:

```
MyPrompt> ls
MangledSoundB.wav  PlaySoundArrayList.java  Sound.java  StdAudio.java

MyPrompt> javac PlaySoundArrayList.java

MyPrompt> ls
MangledSoundB.wav         PlaySoundArrayList.java  Sound.java      StdAudio.java
PlaySoundArrayList.class  Sound.class              StdAudio.class

MyPrompt> java PlaySoundArrayList
Enter filename: MangledSoundB.wav
```

You can also run it in Eclipse if the three **.java** files are in the **default package** under **src** and **MangledSoundB.wav** is in the project folder (one level above the **.java** files).

Be sure to add Javadoc comments for both the file and the method.

After you feel your program is correct, further test your program, by obtaining **AutoGrade.jar** from this assignment. Put it and a copy of your **Sound.java** in the same directory. Then run it as shown in the example below.

```
MyPrompt> java -cp AutoGrade.jar;. AutoGrade2 Sound
Compilation is successful
Checking method deMangle(arrayList) with 11 doubles: [97.75, 48.09, 18.77, 86.64, 30.6, 5.23, 64.97, 68.12, 82.3, 18.89, 78.8]
MyMangle with 11 doubles: [97.75, 86.64, 30.6, 68.12, 82.3, 48.09, 18.77, 18.89, 78.8, 5.23, 64.97]
MyMangle with 11 doubles: [97.75, 86.64, 30.6, 68.12, 82.3, 48.09, 18.77, 18.89, 78.8, 5.23, 64.97]
Method deMangle(arrayList) works correctly.
Score: 100%
```