**Sound Lab FAQ**

***Why do I get a "NullPointerException" when I run my program?***

Null pointer exceptions (errors) occur when you attempt to call a method or access an instance variable of a reference type variable that hasn't been initialized. Example:

Monomial m;

m.coefficient = 5.67; //null pointer exception

The m variable is declared a Monomial type, but it hasn't been initialized to store a reference to a Monomial object (e.g. m = new Monomial()). Additionally, **arrays are objects**,despite their different-looking instantiation syntax (clip = new double[5] vs. m = new Monomial(), note the use of the new keyword in each). An array instance variable that is declared only will store a null value. Initialize the variable to store a reference to a new array object:

double[] clip; //instance variable, null until initialized

public SoundClip() {

clip = new double[5]; //initialize (allocate memory)

}

Also, make sure you haven't RE-declared instance variables in the constructor. Example:

public class SoundClip {

double[] clip; //DECLARES instance variable *clip* as double[] type

public SoundClip() {

~~double[]~~ clip = new double[5]); //don't RE-declare, just initialize!

***Why do I get an IndexOutOfBoundsException?***

You are attempting to access an element of an array outside its declared range. Example:

double[] clip = new double[10];

clip[25] = 3.14; //index out of bounds exception!

*Bounds checking doesn't happen until run time*, meaning the code above will compile despite attempting to access an obviously out-of-bounds index (but the program will crash when run). Example:

double[] clip = new clip[6000];

clip[6000] = 1.0; //out of bounds! last element is 5999

**Finally, recall that array indexes start at 0, and therefore the last element of an array will always be at** length – 1**.**

int[] nums = new int[10];

nums[10] = 500; //will crash!