**Purpose**

The purpose of unit 06 was to learn about arrays.

**Concepts**

**Array** – An array in programming is a structure that holds data in an enumerable data type. This can be written and read using an index, sorted using algorithms, and arrays have many other uses. Arrays are great for storing other objects and data types like arrays, structs, strings, etc.

**Index** – A numerical indication of a position inside of an array. This indicator allows you to read or set the data at any given location within the array up to its length – 1 and must be positive. Since a negative indexed array would rip a hole in time and space. Also, an array index always starts at zero, anyone who tells you otherwise probably uses a Mac.

**Two-Dimensional Array** – An array that has one or more array’s inside of it. The structure of a two-dimensional array is used commonly in programming, especially in vector math which is useful in games.

$arr = [ [0,1,2] ]

^ Array within an array ^

**Subscript** – The entire identifier for a data type at an index within an array. For example

$arr[0] would be equal to the array [0,1,2]

$arr[0][1] would be equal to the number 1

Subscripts allow use to access and write to data store within an array.

**Linear Search** – A simple walk by index technique that searches through an array a single index at a time. For example if you wanted to find the number 2 in the above array you could write a for loop that walks through each index in the array up to it’s length and test the value of that arrays index with the value you are searching for.

// where $i is the current index in the array

for( $i = 0; $i < count($arr) $i++ ) {

$a = $arr[$i];

if( $a == 2 ) {

print(“found it”);

}

}

This is a useful technique but can be very slow when the array is large and the index you seek is in a location from the entries of the array.

**Implications**

Arrays are incredibly useful tools in mathematics and in programming, they allow us to store, and more importantly, organize lots of data. That data can then be manipulated or used as input for external manipulations and calculations.

I prefer using associative arrays which index using keys. The keys make accessing and manipulating data easy since the actual data you are referencing could be at any index within the array and you won’t need to find that specific index before using the desired data / object stored there.

Arrays are powerful when used correctly, and monsters of burden when abused. Sometimes you don’t need array when you could have used a simpler data type. Just leave linked lists out of this and we will get along just fine.