

Arrays – Part A

Previously we have looked at different data types and discussed how values can be assigned to variables, so for example we looked at:

```
x = 3
```

The result would be 3.

And then we would have realised that if I then wrote:

```
x = 2
```

The result would be 2.

So the answer has changed now to 2, so x was equal to 3 but as I assigned it to a new value its changed inside the variable.

What if I wanted to hold the values 3 and 2 together inside the variable 'x'?

What if I wanted to assign many values and keep them together, similar to a table? For example, I would like to record the average weather temperature for each day in March. How could I do this? I could make a variable for each day, so March1, March2, March3 etc.

This would not be the most efficient way and I would then need to write each month out and assign a different number to each one.

Instead we will use Arrays to store a list of items together and assign them to one variable. In this video we will be looking at one dimensional arrays, how to create and assign values and we will discuss how they can be used.

A one dimensional array is a list of related variables stored under one collective name. Arrays are common in programming. In this video I will use Python to help me program and explain these concepts to you. Python is a popular first language used by many educators. The concepts explained here today, are universal concepts that are relevant to any programming language.

So, going back to our first example in Python, currently x equals 2... but we wanted a way to assign 3 and 2 to x. To do this in Python we write:

```
x = [3,2]
```


So now what does x equal?

This is a one dimensional array. I can add values to the array and I can also amend what we have entered inside it. So if I wanted to add another entry I would type...*[see screen]*

'append' here allows me to add a value at the end of the list. I can also have a list with a mixture of different data types; take a minute to look at these two arrays as I write them.

So, in the first array called 'Days' I have seven string values, the days of the week. In the second array called 'score' I have made up values for a quiz I could have given. In this example, I have a mixture of string, integers and real data type values.

Now, say if I only wanted to pull up one value, I could have done this by typing the following... *[see screen]*



Here I asked for the 'score' array value to be looked up for record 1, an important point here to remember is that in Python and also in Java the first value is indexed from the record 0. This is not universal in all programming languages, for example in Pascal, array items are indexed from record 1.

This is why when I asked Python to look up the first value it gave me 'Tue' and '3'. Let's look up the 0 record. So, as you can see '2' is the first value.

This method makes arrays a really powerful tool as you can look up and change values very easily, for example, if I typed `Days[6]` the result would be Sunday.