Operations on numeric and Boolean data – Part B

Take a moment to familiarise yourself with these comparison operators, hopefully you are familiar with these from your Maths lessons. The result will always be one of the two, either TRUE or FALSE. These are known as Boolean logic.

For example:
Is 3 less than 4 – the result is true.
Is 4 less than 3 – the result is false.
Is 3 less than or equal to 4 – this result is true
… and so on.

So how could this be used? We can create a truth table that will explain this further.

'NOT' I think you will be able to understand what this means, so in a truth table it would then be as:
If x is true – then NOT x is false.
Therefore:
If x is false – then NOT x is true.

Now let's look at how 'AND' can be used.

If x is false and y is false then the result of x AND y is false.
If x is false and y is true then the result is still false.
If x is true and y is false then the result is also false.
Only when x is true and y is true than the result of x AND y is true.

Now let's look at how 'OR' can be used.

If x is false and y is false then the result of x OR y is false.
If x is false and y is true then the result is true.
If x is true and y is false then the result is still true.
When x is true and y is true then the result is true.

So now that we know about these Boolean logic terms, we can then have much more complex operations taking place. We could for example have a combination of these terms to evaluate the result of a value.

For example:
x = True
y = False
a = True
b = False
and if we wrote print x AND y OR a AND NOT b which gives the result – depending on the brackets – so in this case it will give the result as true!

Summary
So to summarise we have learnt in this video how mathematical and Boolean operations can be performed to give a result.

We have understood how an operation can be assigned to a variable and we have looked at how truth tables can be used to understand the results from Boolean logic.