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Logical Nested Functions – Part 1

We're going to get stuck into one of the most commonly used and really useful function which is an IF statement. We'll also take a look at an AND and an OR as well because we often find that nesting formulas is a very useful function in financial modelling. We will look at a very simple IF statement first of all and then we'll look at nesting it, so putting an IF and then another IF in there and then perhaps also nesting it with an AND and an OR as well.

This is useful for all sorts of different things. Really good for hypotheticals and for scenarios, being able to change your formulas so that you change your inputs and the outputs change. It is a very commonly used formula in financial modelling.

We have a file called Logical Nested Functions and I've got a couple of tabs on this file. The first one is a fairly complicated valuation but I'm not going to go into all the details of the valuation modelling. Basically I've done a valuation for a particular business and I want to know if I should go ahead with the project or not. Should I accept or reject the deal and that all hinges on the numbers.

What I've got here is the value of the deal and the cost of the deal. If the value of the deal is more than the cost of the deal, I should go ahead and if the value of the deal is less than what it's going to cost you then you would reject the deal. We're going to do a sort of go/no go kind of scenario here.

Go into this cell, B29. We're going to go in and find an IF statement now. You can either go here and insert function or you can go to the formula tab here and find it. You can go to insert here or you can go to logical and you can find all of the logical functions in here. I'm just going to type equals IF and then I'm going to go into the function wizard. I find the

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function wizard very helpful because it takes you through and helps you with what goes where.

There are three different fields in an IF statement. However when you get into doing nested IF statements, you can't use the function wizard, so we'll use the function wizard first of all just to get the hang of it and then you need to understand what the syntax is so that we can then go in and make it a nested IF statement.

The test is whether or not the value of the deal is greater than the cost of the deal. We'll test that here. The value of the deal is that amount there, so we'll click on that. What we're testing here is if that value there is greater than or equal too, in this case I think I'll just do greater than, the cost of the deal. So that is the condition that we are testing and you can see from the formula wizard it's got true in there, so that in shows that is in fact true. What do we want to do if it's true, what do we want to say? If it is in fact greater, then we want to accept and if it's not then we want to reject and also the function wizard puts inverted commas in there for you. If you're typing out straight into the cell, you do need to put the inverted commas in manually. That has given us a go/no go decision formula. That's using a very basic IF statement.

Let's go over to the next tab now and I've got a list of temperatures. It's not a financial example this one. I'm actually planning my holidays and I'm trying to decide where I should go based on the temperatures. I've got cities down the left hand side and months of the year across the top. In column P, I've got the minimum temperature that I'm prepared to bear on my holidays. If the temperature drops to less 15 degrees Celsius, I'm not going. I'm going to create a little map so if you get a chance, just pause the video and have a go yourself and when you're ready to go ahead let's do it together.

What I want to do is say IF, you can use the function wizard or you can have a go at typing it straight out as I am going doing this as a nested formula. So IF, this cell here, the temperature in London in January is less than the minimum temperature that I'm prepared to bear then, if it's less than, it will be too cold, otherwise it will be okay. Don't worry about the maximum temperature yet, we'll just worry about the minimum temperature for now. There we go, it's too cold. Let's copy it across. I can just drag like that and then double click. Something

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doesn't look quite right. You can see there that I forgotten to put in my dollar signs again. Let's go back into here, press F4 to fix my reference and then if you've already got your block of data, you can Ctrl C, Shift Ctrl right arrow down that will just highlight the whole block quickly and then enter. That's a much faster way of doing it.

We can see here that London in January through to May is too cold. The only time I can go to London is June through to September. So that helps with my planning doesn't it? But it's not just the cold weather I'm fussy about, I don't want to go anywhere if it's too hot. Looking at Singapore, I'm thinking the maximum temperature I'm prepared to bear is 27 degrees. I'm going to put in another IF statement. I've got one for the minimum and now I want one for the maximum temperature. This is something that we do a lot of in financial modelling is having to determine minimum and maximum ranges. We do it a lot with dates. Unfortunately there isn't a between function, so often we have to say between this date and this date and if it falls within those ranges, then we want to include the number.

We'll include the maximum temperature now. Just a bit of a tip. I find trying to do a nested formula or a formula that's quite long and complicated in a single cell does get quite tricky and easy to get something wrong. My technique I often do is put it into a separate cell. Get the original cell working, like I've done already. Use another cell, get that one working and once you're happy with both of those you can copy and paste and put it together and you've got a nice big nested formula. We're now going to do the maximum temperature in a separate cell. We'll say IF, the temperature here is greater than the maximum temperature that I'm willing to bear, F4, it will be too hot, otherwise it will be okay. Let's test that and make sure it's working. I will copy it across and copy it down. We can see there than anywhere is okay except Singapore, we can only go to Singapore in January and December.

Now both of those are working let's put the two of them together. We say IF it's less than a certain temperature it's too cold otherwise it's okay. What I'm going to do now is replace that second part of the formula the "otherwise it's okay" with the second thing. It's going to evaluate the first condition first of all, if the temperature is less than a certain amount. If it's too cold then it will stop there otherwise it will then go on to test the next condition, is it too hot? Let's go into here and copy the entire formula. You can go into F2 or highlight with

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the mouse, Ctrl C and then escape, so it's now sitting on the clipboard. Now, go into your original formula, grab that whole "okay" and Ctrl V. We're now replacing that whole okay section, that second value of false with the whole second IF statement. Let's copy, Ctrl Shift right arrow, Ctrl Shift down and enter. I can get rid of that second block because I don't need it anymore. Make sure you tidy up your model as you go along. I used that second block just for my calculations. Let's have a look at the data.

There's not many places I can go. I'm think I'm going to have to change things a little bit. Maybe I will say I think I can handle 30 degrees. You can see that opens up the options. I will just Ctrl Z that and turn it back to the way it was. That would help you with your holiday planning.