Logical and Reference Functions

Relevel
by Unacademy

Datasets For Class Practice

Please find below the link for the data set that will be used in the class for practice.

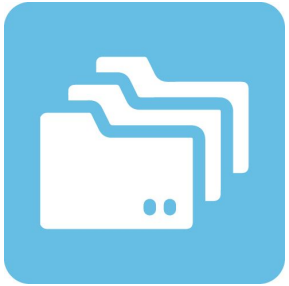
- Instructions to download the file-

  Click on the link→ File → Download → Microsoft Excel(.xlsx)

1. https://docs.google.com/spreadsheets/d/1-_PVbQ07tMOyUS8S45gInMR8xDHhAHEM/edit?usp=sharing&ouid=107266068801601122977&rtpof=true&sd=true

Consolidation

- Consolidation is transferring data from multiple worksheets or locations to a single site. You can merge data from each sheet into a master worksheet to summarize and report individual worksheets' results. The sheets can be in the same workbook as the master worksheet or in other workbooks. When you consolidate data, you gather it to update and aggregate it as needed simply.
- For example, if you have three months of week-by-week sales data, we can drive a complete sale after the quarter.



Consolidation

Sales Person	Week 1	Week 2	Week 3	Week 4
Anil	20	100	100	10
Ram	80	100	50	100
Arun	10	10	100	80
Aman	80	50	50	80
Vinita	30	60	60	50
Simba	10	70	50	70
Chiku	10	60	20	70

Sheet 1

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Sales Person	Week 1	Week 2	Week 3	Week 4
Anil	40	30	20	20
Ram	80	90	30	30
Arun	80	80	30	70
Aman	80	30	20	20
Vinita	20	60	30	40
Simba	60	60	60	90
Chiku	100	30	80	20

Sheet 2

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Sales Person	Week 1	Week 2	Week 3	Week 4
Anil	90	70	30	70
Ram	80	80	70	100
Arun	100	100	70	10
Aman	50	100	30	20
Vinita	10	50	50	100
Simba	40	50	80	90
Chiku	30	80	80	70

Sheet 3

Sales Person	Week 1	Week 2	Week 3	Week 4
Anil	150	200	150	100
Ram	240	270	150	230
Arun	190	190	200	160
Aman	210	180	100	120
Vinita	60	170	140	190
Simba	110	130	190	200
Chiku	140	170	180	160

= Consolidate sheet

Consolidation

Consolidation can be performed in 3 ways depending upon the need

1. 3D Sum Method
2. Static All Same
3. Linked All Same

Sales Person	Week 1	Week 2	Week 3	Week 4
Anil	150	200	150	100
Ram	240	270	150	230
Arun	190	190	200	160
Aman	210	180	100	120
Vinita	60	170	140	190
Simba	110	130	190	200
Chiku	140	170	180	160

Reference Function in Excel

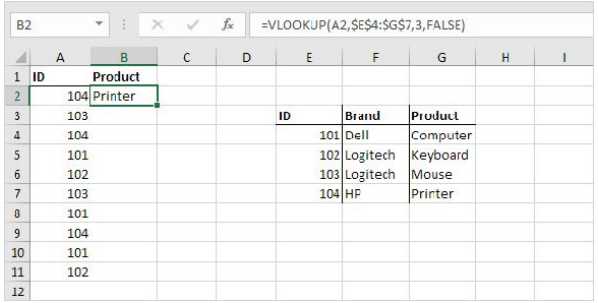
1. VLOOKUP

This is one of the most commonly used functions in Excel Advance. The VLOOKUP (Vertical Lookup) function looks for a value in the table's leftmost column and returns a value from another column you specify in the same row.

When you need to find something in a table or a range by row, use VLOOKUP. For example, you may check for the pricing of an automobile part by its part number, or you can find an employee's name by their employee ID.

vlookup(lookup value, table array, col index num, [range lookup]) is the syntax.

In its most basic form, the VLOOKUP function states =VLOOKUP (What you want to look up, where you want to look for it, the column number in the range containing the value to return, return an Approximate or Exact match – represented as 1/TRUE, or 0/FALSE).



Reference Function in Excel

2. VLOOKUP with Trim Function

In general, the VLOOKUP function can lookup a value and return the matched value. However, if there are extra spaces in cells, such as leading or trailing spaces, the formula will return an error value #N/A even if a value is matched, as shown in the screenshot below. This guide includes some tips for doing this task.

In this scenario, you can use the VLOOKUP and TRIM functions together to look up a value while ignoring unnecessary spaces.

Choose a blank cell in which to save the result and enter the following formula:

Syntax: **vlookup(lookup_value, TRIM(table_array), col_index_num, [range_lookup])**

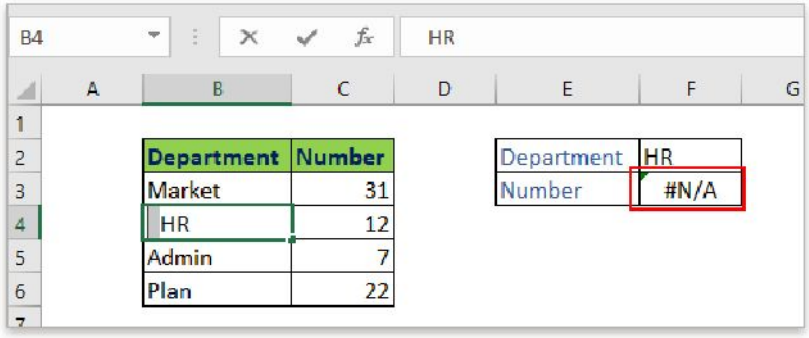
=VLOOKUP("HR",TRIM($B$3:$C$6),2,0)

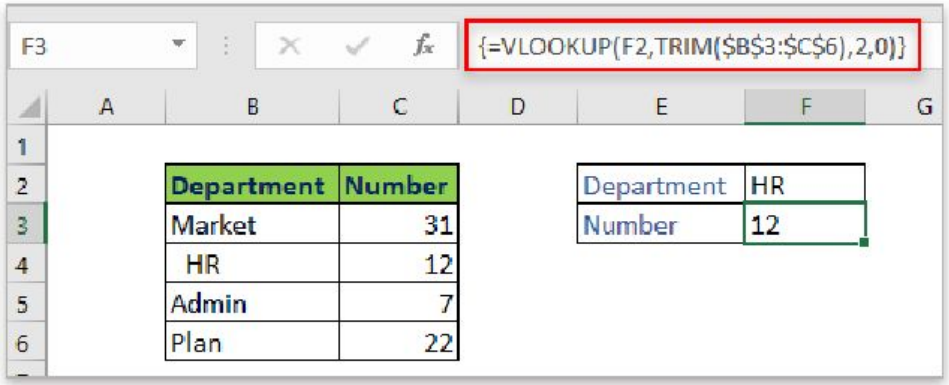
HR is the lookup value; you also can directly use the cell reference which contains the lookup value, such as =VLOOKUP(F2, TRIM($B$3:$C$6),2,0)

B3:C6 is the table array you use, 2 is the column index you want to return.

Press Shift + Ctrl + Enter key to return the match value.

Reference Function in Excel





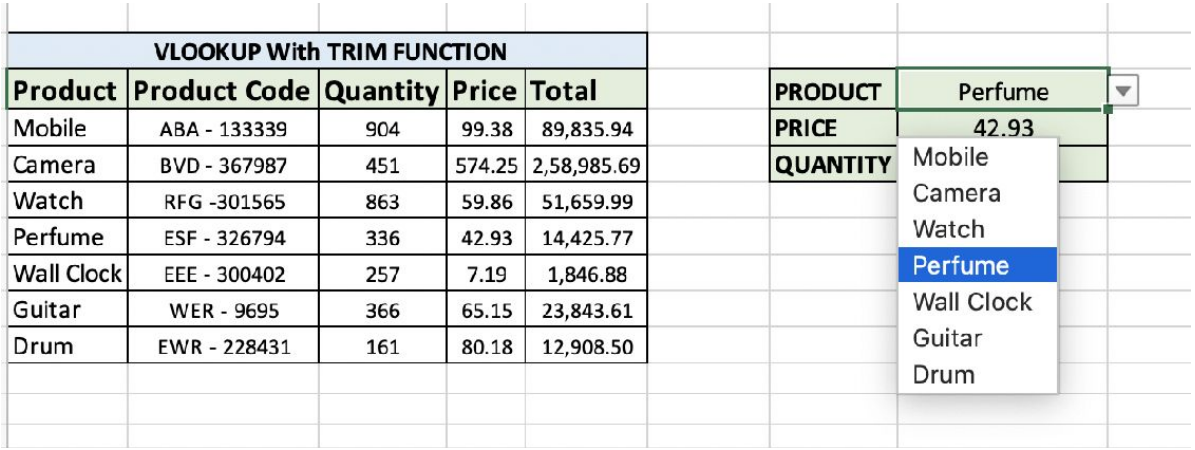
Reference Function in Excel

3. VLOOKUP with DATA VALIDATION

Data validation in Excel is a function that allows you to control the type of data that is entered into your worksheet. Excel data validation, for example, will enable you to limit data entries to a dropdown list selection and restrict specific data entries, such as dates or numbers, outside of a predetermined range.

Sometimes to give more control in the Sheet or a Report, we use Data Validation or dropdown with Vlookup.

The below example will make it further clear.

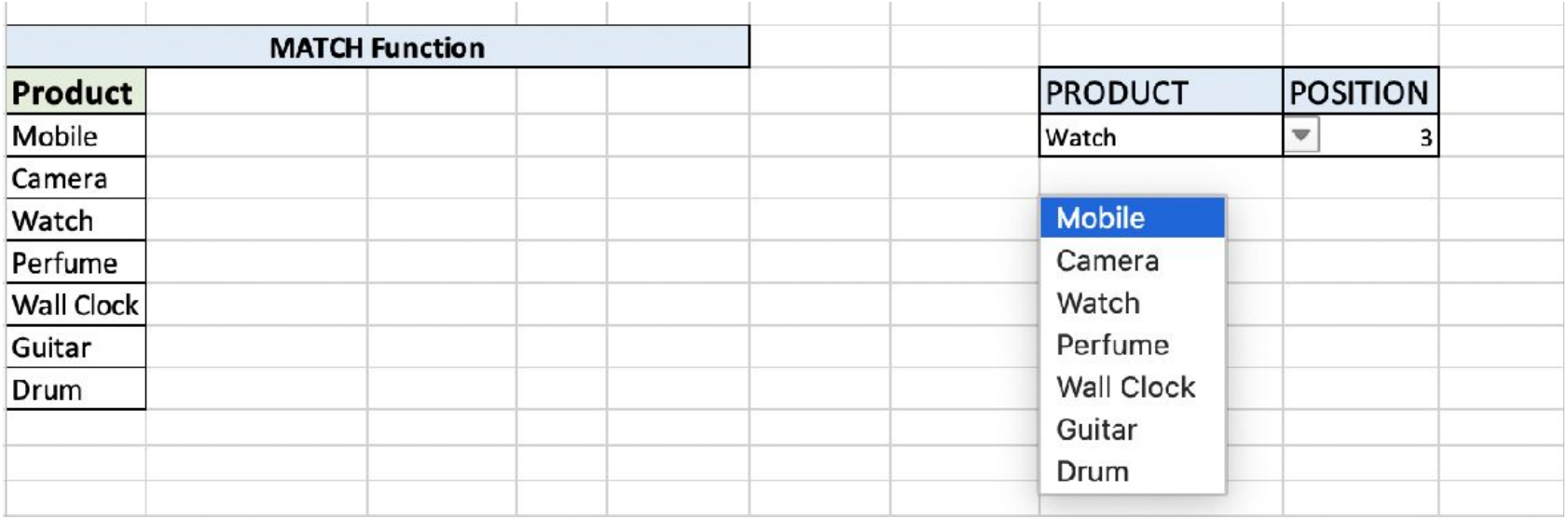


VLOOKUP With TRIM FUNCTION				
Product	**Product Code**	**Quantity**	**Price**	**Total**
Mobile	ABA - 133339	904	99.38	89,835.94
Camera	BVD - 367987	451	574.25	2,58,985.69
Watch	RFG -301565	863	59.86	51,659.99
Perfume	ESF - 326794	336	42.93	14,425.77
Wall Clock	EEE - 300402	257	7.19	1,846.88
Guitar	WER - 9695	366	65.15	23,843.61
Drum	EWR - 228431	161	80.18	12,908.50

Reference Function in Excel

4. MATCH Function

MATCH is an Excel function used to find the location of a lookup value in a row, column, or table. MATCH allows for approximate and accurate matching and wildcards (*?) for partial matches. MATCH is frequently used in conjunction with the INDEX function to obtain a value at a matched place.

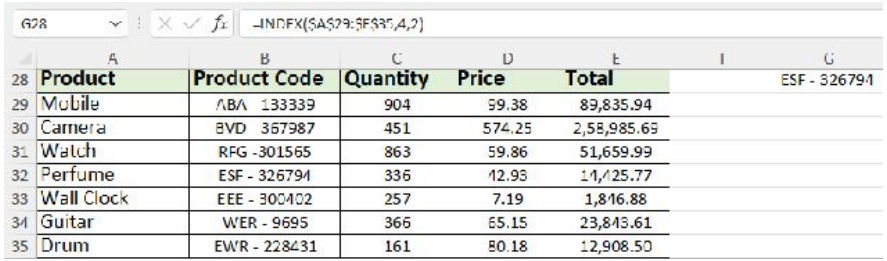


Reference Function in Excel

4. MATCH Function

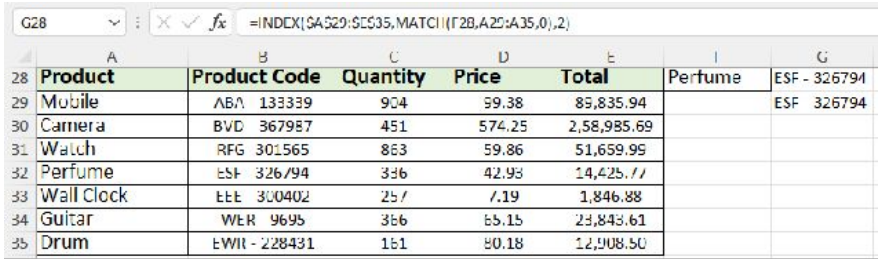
INDEX function with MATCH - INDEX is a function that returns a value corresponding to the row number entered in SYNTAX

=INDEX (array, row_num, [col_num], [area_num]) - col_num and area_num are optional



	A	B	C	D	E	I	G
28	Product	Product Code	Quantity	Price	Total		ESF - 326794
29	Mobile	ABA 133339	904	59.38	89,835.94		
30	Camera	BVD 367987	451	574.25	2,58,985.69		
31	Watch	RFG -301565	863	59.86	51,659.99		
32	Perfume	ESF - 326794	336	42.93	14,425.77		
33	Wall Clock	EEE - 300402	257	7.19	1,846.88		
34	Guitar	WER - 9695	366	65.15	23,843.61		
35	Drum	EWR - 228431	161	80.18	12,908.50		

As you can see here, the value returned is Row 4 - Column 2 from the selected range.



	A	B	C	D	E	I	G
28	Product	Product Code	Quantity	Price	Total	Perfume	ESF - 326794
29	Mobile	ABA 133339	904	59.38	89,835.94		ESF 326794
30	Camera	BVD 367987	451	574.25	2,58,985.69		
31	Watch	RFG 301565	863	59.86	51,659.99		
32	Perfume	ESF 326794	336	42.93	14,425.77		
33	Wall Clock	EEE 300402	257	7.19	1,846.88		
34	Guitar	WER 9695	366	65.15	23,843.61		
35	Drum	EWR - 228431	161	80.18	12,908.50		

This can be combined with MATCH function to get results similar to VLOOKUP.
G29 has the output from VLOOKUP

Reference Function in Excel

G28 =INDEX($A$29:$E$35,MATCH(F28,B29:B35,0),1)

	A	B	C	D	E	F	G
28	**Product**	**Product Code**	**Quantity**	**Price**	**Total**	BVD - 367987	Camera
29	Mobile	ABA - 133339	904	99.38	89,835.94		
30	Camera	BVD - 367987	451	574.25	2,58,985.69		
31	Watch	RTG -301565	863	59.86	51,659.09		
32	Perfume	LSF - 326794	336	42.93	14,425.77		
33	Wall Clock	LLL - 300402	257	7.19	1,846.88		
34	Guitar	WER - 9695	366	65.15	23,843.61		
35	Drum	EWR - 228431	161	80.18	12,908.50		
36							

This cannot be achieved with VLOOKUP

Reference Function in Excel

5. HLOOKUP

The HLOOKUP function in Microsoft Excel conducts a horizontal lookup by searching for a value in the table's top row and returning the value in the same column depending on the index number.

The HLOOKUP function is an Excel built-in function classified as a Lookup/Reference Function. It can be used in Excel as a worksheet function (WS). The HLOOKUP function is a worksheet function that can be used as part of a formula in a worksheet cell.

Syntax

SYNTAX: HLOOKUP(value, table, index_number, [approximate_match])

Parameters or Arguments

Value - The value to search for in the first row of the table.

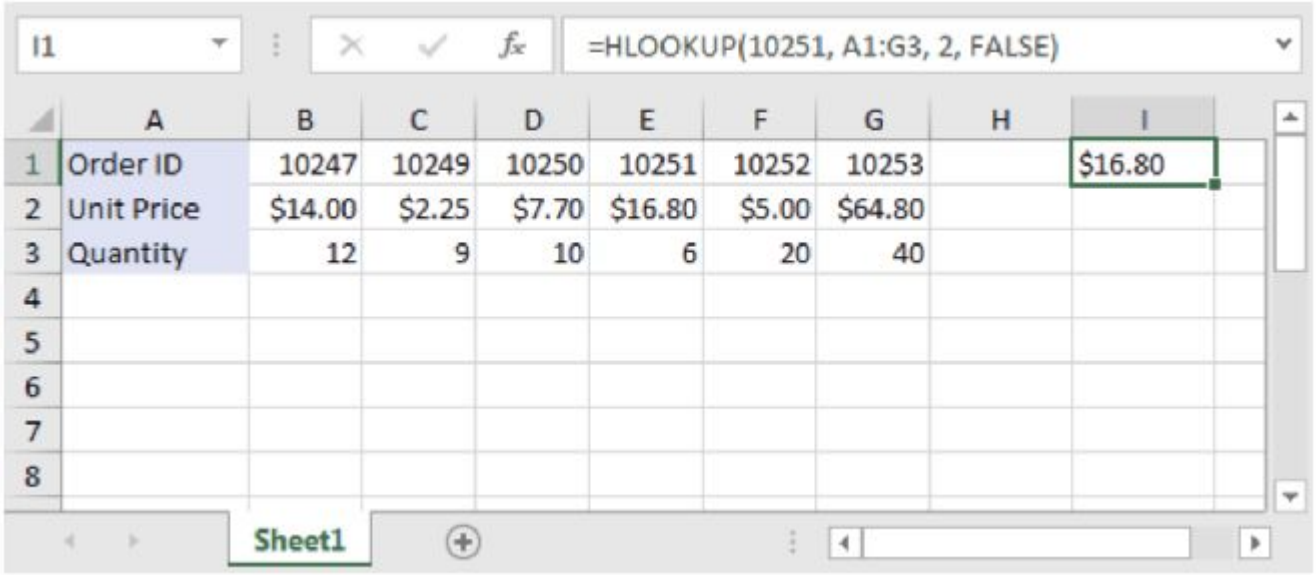
Table - Two or more rows of data sorted in ascending order.

index_number - The row number in the table from which the matching value must be returned. The first row is 1.

approximate_match - Optional. To locate an exact match, enter FALSE. Enter TRUE to discover a close match. If this parameter is omitted, TRUE is the default.

Reference Function in Excel

5. HLOOKUP



Logical Operators in Excel

What are Logical Operators: Logical operator (sometimes called as Boolean Operators) are used in Excel to compare Two Values. In Excel, logical operators are widely used with conditional statements, mathematical formulas etc. Below is the list of logical operators widely used in Excel.

Condition	Operator	Formula Example	Description
Equal to	=	=A1=B1	The formula returns TRUE if a value in cell A1 is equal to the values in cell B1; FALSE otherwise.
Not equal to	<>	=A1<>B1	The formula returns TRUE if a value in cell A1 is not equal to the value in cell B1; FALSE otherwise.
Greater than	>	=A1>B1	The formula returns TRUE if a value in cell A1 is greater than a value in cell B1; otherwise it returns FALSE.
Less than	<	=A1<B1	The formula returns TRUE if a value in cell A1 is less than in cell B1; FALSE otherwise.
Greater than or equal to	>=	=A1>=B1	The formula returns TRUE if a value in cell A1 is greater than or equal to the values in cell B1; FALSE otherwise.
Less than or equal to	<=	=A1<=B1	The formula returns TRUE if a value in cell A1 is less than or equal to the values in cell B1; FALSE otherwise.

Logical Functions in Excel

In spreadsheets, logical functions determine whether a scenario is true or untrue. You can then choose to perform one of two things based on that test results. These choices can show information, make various calculations, or run more tests.

There are different logical functions. Let’s study them one by one

- IF ()
- AND()
- OR()
- IFERROR()

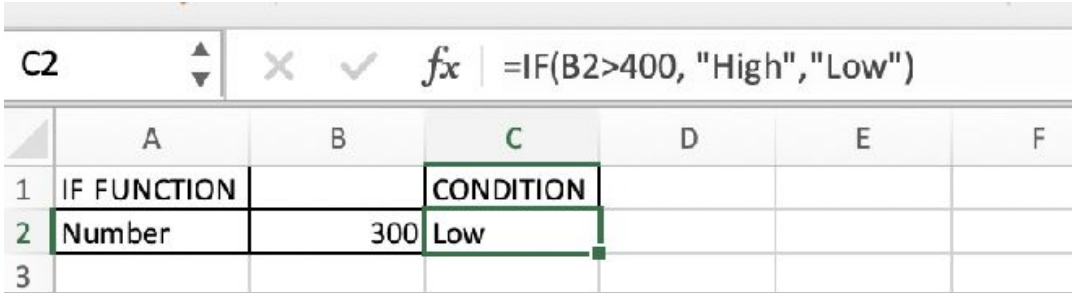
Logical Functions in Excel

1. The IF Function:

The IF function is the most critical logical function in decision making. It follows this format: IF/THEN (condition, true, false) You could, for example, use the following formula: **=IF(B2 > 400, "High," "Low")** where B2 > 400 is the condition to be tested (this can be interpreted as "Is the value in cell B2 greater than 400?")

If B2 is more significant than 400, the text "High" will be displayed (the result of the test is yes or TRUE)

If B2 is less than or equal to 400, the text "Low" will be shown (the result of the test is no or FALSE)



	A	B	C	D	E	F
1	IF FUNCTION		CONDITION			
2	Number	300	Low			
3						

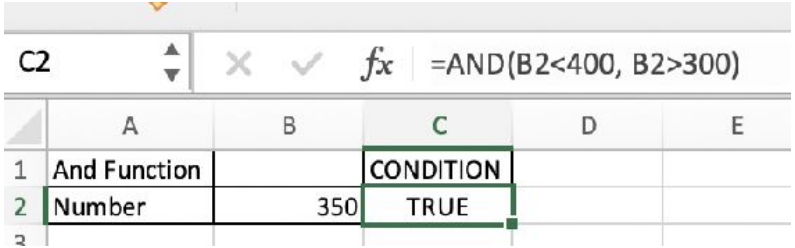
Logical Functions in Excel

2. The AND Function:

When comparing multiple conditions, the AND function is utilised. It returns TRUE only if all of the conditions are met and has the following syntax: **AND (condition1, condition2,...)**

You could, for example, use the following formula:

=AND(B2<400, B2>300) where B2 < 400 is the initial condition tested The second criterion being checked is B2 > 300. This will only get the result TRUE if the value in cell B2 is less than 400 and larger than 300. In all other cases, the answer will be FALSE. So basically it will return TRUE for numbers between 300 to 400.



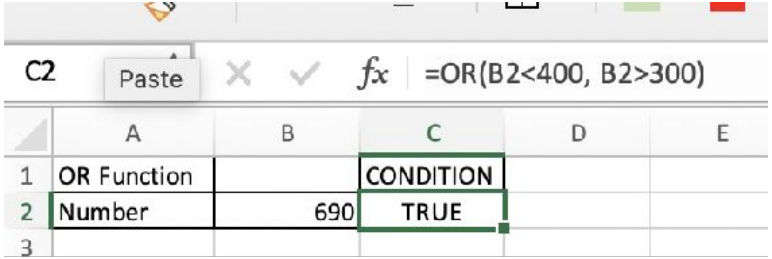
Logical Functions in Excel

3. The OR Function:

The OR function can also be used to compare multiple conditions. If any of the conditions are met, it returns TRUE and has the following format: =OR(condition1, condition2,....)

You could, for example, use the following formula:

=OR(B2<400, B2>300) where B2 < 400 is the initial condition tested The second criterion being checked is B2 > 300. If either the value in cell B2 is less than 400 or the value in cell B2 is greater than 300, the result is TRUE. In all other cases, the answer will be FALSE. So basically, it will return TRUE for all the numbers.



Logical Functions in Excel

4. The IFERROR Function:

The IFERROR function is one of the widely used functions in complex formulas in Excel. This function is not used to calculate anything but rather to Trap an error. Generally, based on IFERROR results, further calculations are drawn.

If a formula evaluates to an error, IFERROR returns the value you specify; otherwise, it returns the formula result. The simplest example could be divided by 0. Excel throws an error when a number is divided by 0; hence IFERROR, the function can check the denominator and print the result instead of Error. This function is also widely used with VLOOKUP to check if the reference value is available or not in the Range

=IFERROR(Value, Value_If_Error)

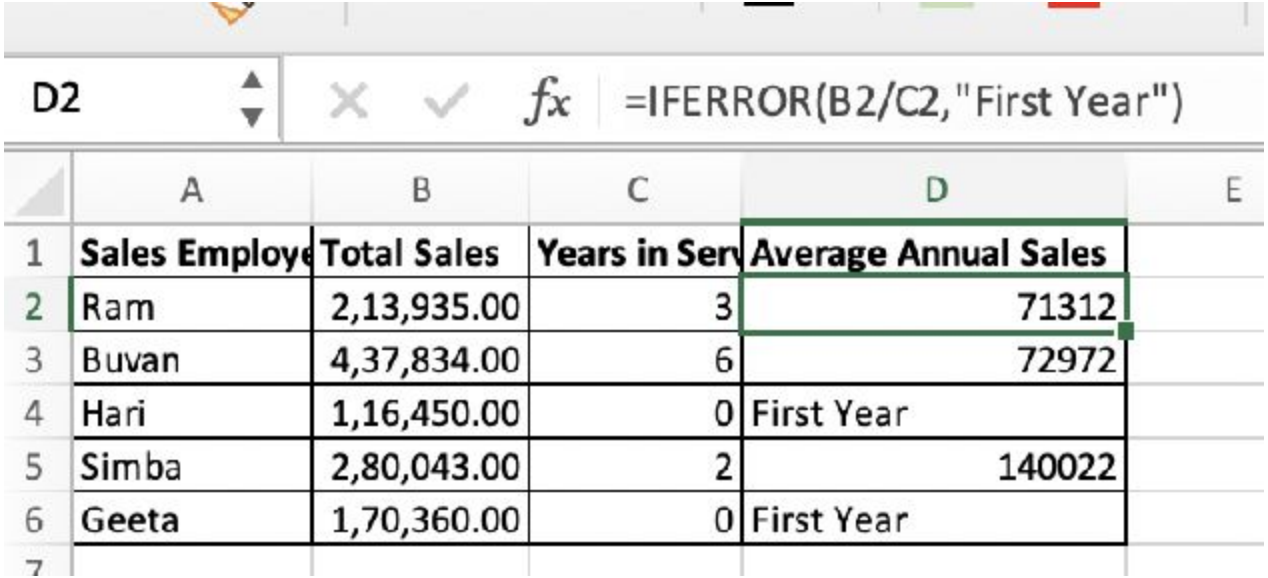
value : Required. The argument that is checked for an error.

value_if_error : Required. The value to return if the formula evaluates to an error. The following error types are evaluated: #N/A, #VALUE!, #REF!, #DIV/0!, #NUM!, #NAME?, or #NULL!.

Logical Functions in Excel

4. The IFERROR Function:

In this example, We have data for Sales employees and their years in Service. If the formula return is divided by 0 error, we can predict which employee is in its first year of Sales, and thus average salary cannot be drawn.



	A	B	C	D	E
1	Sales Employe	Total Sales	Years in Ser	Average Annual Sales	
2	Ram	2,13,935.00	3	71312	
3	Buvan	4,37,834.00	6	72972	
4	Hari	1,16,450.00	0	First Year	
5	Simba	2,80,043.00	2	140022	
6	Geeta	1,70,360.00	0	First Year	
7					

THANK YOU

In the next class we will study:

Nested Statements