Mail

Excel

Create Advanced Formulas and Macros

Create Advanced Formulas and Macros

Formulas in Excel

- **Formula in Excel**

    - A formula in excel is an equation that is entered into a cell on a Microsoft Excel spreadsheet.

- **Simple Formula**

    - A mathematical expression containing a single mathematical operator.

    - Example: 5+3

- **Complex Formula**

    - A mathematical expression which has more than one mathematical operator.

    - Example: 6-2*8

Note: In a complex formula, the order of operations tells the excel sheet or spreadsheet which operation needs to be calculated first.
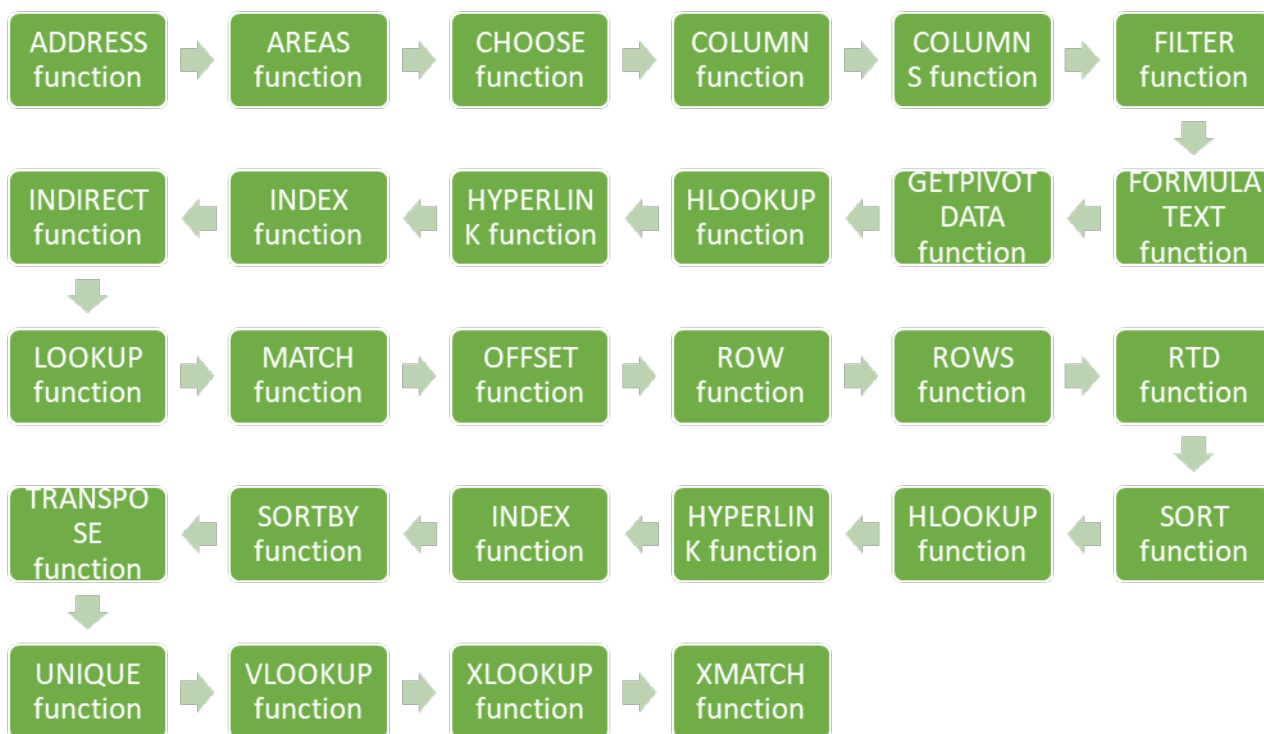
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Order of Operations

Excel programmes calculate formulas in the following order:

- Operations with in parentheses

- Exponential calculations

- Multiplication

- Division

- Addition

- Subtraction

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LOOKUP Functions and Formulas available in Excel

 The lookup functions in Microsoft Excel are used to look through a single column or row to find a particular value in the same place in a second column or row.

ADDRESS function	→	AREAS function	→	CHOOSE function	→	COLUMN function	→	COLUMNS function	→	FILTER function

INDIRECT function	←	INDEX function	←	HYPERLINK function	←	HLOOKUP function	←	GETPIVOTDATA function	←	FORMULATEXT function

LOOKUP function	→	MATCH function	→	OFFSET function	→	ROW function	→	ROWS function	→	RTD function

TRANSPOSE function	←	SORTBY function	←	INDEX function	←	HYPERLINK function	←	HLOOKUP function	←	SORT function

UNIQUE function	→	VLOOKUP function	→	XLOOKUP function	→	XMATCH function

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LOOKUP Functions in Excel

- VLOOKUP helps you to find a piece of information in a table or from a dataset and finding the corresponding information.

- HLOOKUP stands for Horizontal look up which can be used to retrieve information or value from a table by searching a row.

- XLOOKUP helps you to search a range or an array and returns the corresponding value. If there is no exact match, then XLOOKUP returns the closest match.

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VLOOKUP Function in Excel

The syntax for VLOOKUP is:

=VLOOKUP(lookup_value, table_array, col_index_num, [range_lookup])

- Lookup_value (required argument)

    o The value you want to look up in the first column of a table.

- Table_array (required argument)

    o The data array from which the value to be searched. The VLOOKUP function looks at the array's left-most column.

- Col_index_num (required argument)

    o This is an integer that specifies the column number of the supplied table array from which a value should be returned.

- Range_lookup (optional argument)

    o TRUE – Approximate match - If there is no exact match, the closest match below the lookup_value is used.

    o FALSE – Exact match - If there is no exact match, then it will return an error.

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HLOOKUP Function in Excel

The syntax for HLOOKUP is:

=HLOOKUP(lookup_value, table_array, row_index_num, [range_lookup])

- Lookup_value (required argument)

    - The value you want to look up in the first row of a table.

- Table_array (required argument)

    - The data array from which the value to be searched. The VLOOKUP function looks at the array's top-most row.

- row_index_num (required argument)

    - This is an integer that specifies the row number of the supplied table array from which a value should be returned.

- Range_lookup (optional argument)

    - TRUE – Approximate match - If there is no exact match, the closest match below the lookup_value is used.

    - FALSE – Exact match - If there is no exact match, then it will return an error.

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XLOOKUP Function in Excel

The syntax for XLOOKUP is:

=XLOOKUP(Lookup_value, lookup_array, return_array, [if_not_found], [match,mode], [search_mode])

- Lookup_value

    - The value we are looking for

- Lookup_array

    - The array or range where the values can be searched

- Return_array

    - The array or range we want to be returned by the XLOOKUP function

- If_not_found

    - The value should be returned if the Lookup value is not found.

- Match_mode

    - The user has to define how to match the lookup value against values in lookup array.

- Search_mode

    - The user has to define the search mode to use. By default a first to last search mode is used in the formula.

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Various Advanced Date Function Available in Excel

The date functions in Excel helps you to perform wide range of date related tasks.

The different date functions available in excel are:

- DATE
- DATEDIF
- DATEVALUE
- DAY
- DAYS
- DAYS360
- EDATE
- EOMONTH
- HOUR
- ISOWEEKNUM
- MINUTE
- MONTH

- NETWORKDAYS

- NETWORKDAYS.INTL

- NOW

- SECOND

- TIME

- TIMEVALUE

- TODAY

- WEEKDAY

- WEEKNUM

- WORKDAY

- WORKDAY.INTL

- YEAR

- YEARFRAC

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Steps to Create a Date using DATE Function in Excel

The steps for creating a date are:

1. To create a date from three different column, select the cell.

2. Type the formula = DATE(year,month,day)

3. Now, the date is formed.

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Steps to Change the Date Format in Excel

The steps to change the date format are:

1. To change the format, select the cell and navigate to the Home tab.

2. Click Format and select Format Cells.

3. In the Format Cells pop-up window, select the date format and click OK.

4. As you can see the date format is changed.

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Steps to Calculate a Date Based on another Date in Excel

The steps for calculating a date based on another date are:

1. To calculate a date based on another date, select the cell.

2. Enter the formula _=DATE(year, month, day+Number of days)._

3. Now, you can see that a new date is formed.

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Steps to Calculate Between Two Days in Excel

The steps for calculating number of days between two dates are:

1. To calculate a date based on another date, select the cell.

2. Enter the formula *=DAYS(end_date, start_date).*

3. Now, you can see that the number of days are calculated.

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Steps to Find the Current Date in Excel

The steps to find the current date in Excel are:

1.   To find the current date, select the cell.

2.   Enter the formula *=TODAY()* .

3.   Now, you can see that the current date is displayed.

Trace Precedents in Excel

The trace precedents option helps you to find the cell's input as it possible that one of these inputs causing error.

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Evaluate Formula in Excel

Evaluate Formula helps you to evaluate the formula and the output step by step to find the error.

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Types of Errors in Excel

- #DIV/0

    - If you divide a value by 0, excel will return #DIV/0 error.

- #NAME?

    - Excel will consider the text as a cell range or reference in a formula. When you refer to a range incorrectly or the text is not enclosed in a quotation, excel will return #NAME? error.

- #NULL!

    - If you give space instead of comma in a formula, Excel will return #NULL! Error.

- #NUM!

    - When the argument in a formula is invalid or the number is too large or too small, Excel will return #NUM! error.

- #REF!

    - If you refer to a incorrect cell, Excel will return #REF! error.

- #VALUE!

    - If you express a wrong data type or operator, Excel will return #VALUE! Error.

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Macros in Excel

Macros helps you to record and save the actions to perform repetitive tasks. Excel saves Macros as a VBA code and you can view it in VBA Editor. VBA stands for Visual Basic for Applications.

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Steps to Record a Macro in Excel

The steps to record a macro in Excel are:

1. Navigate to the DEVELOPER tab and click Record Macro.

2. A Record Macro pop-up window is displayed. Enter the Macro name and the Shortcut key perform run the macro and click OK

3. Perform the steps. Once you finish the actions, click Stop Recording.

4. Now, the macro is recorded and saved.

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Developer Commands available in Excel

- Visual Basic

    o Visual basic command helps you to open the VBA Editor.

- Macros

    o Macros command helps you to view, run, edit, and delete the macros.

- Record Macro

    o Record macro command helps you to record and save a macro.

- Use Relative References

    o Relative Reference command helps you to record an offset action from the active cell. This helps to perform the same action at different places of the workbook.

- Macro Security

    o Macro security command helps you to perform macro settings and developer macro settings.

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Steps to Create a Macro by writing the code in the VBA editor

1. To create a macro, Click Insert under the DEVELOPER tab.

2. Enter a name for the macro and click New.

3. The VBA Editor window opens and a new module is inserted in Project Explorer.

4. The Code window with title appears and a sub procedure is inserted in the code.

5. Enter the code.

6. Now, run the macro.

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User Form and Controls in Excel

A user form helps you to collect the required information from the user.

The user form will have various options such as text boxes, check boxes, radio buttons, list boxes, combo boxes, scroll bars which are known as controls.

The different controls are:

- Form controls

- ActiveX controls

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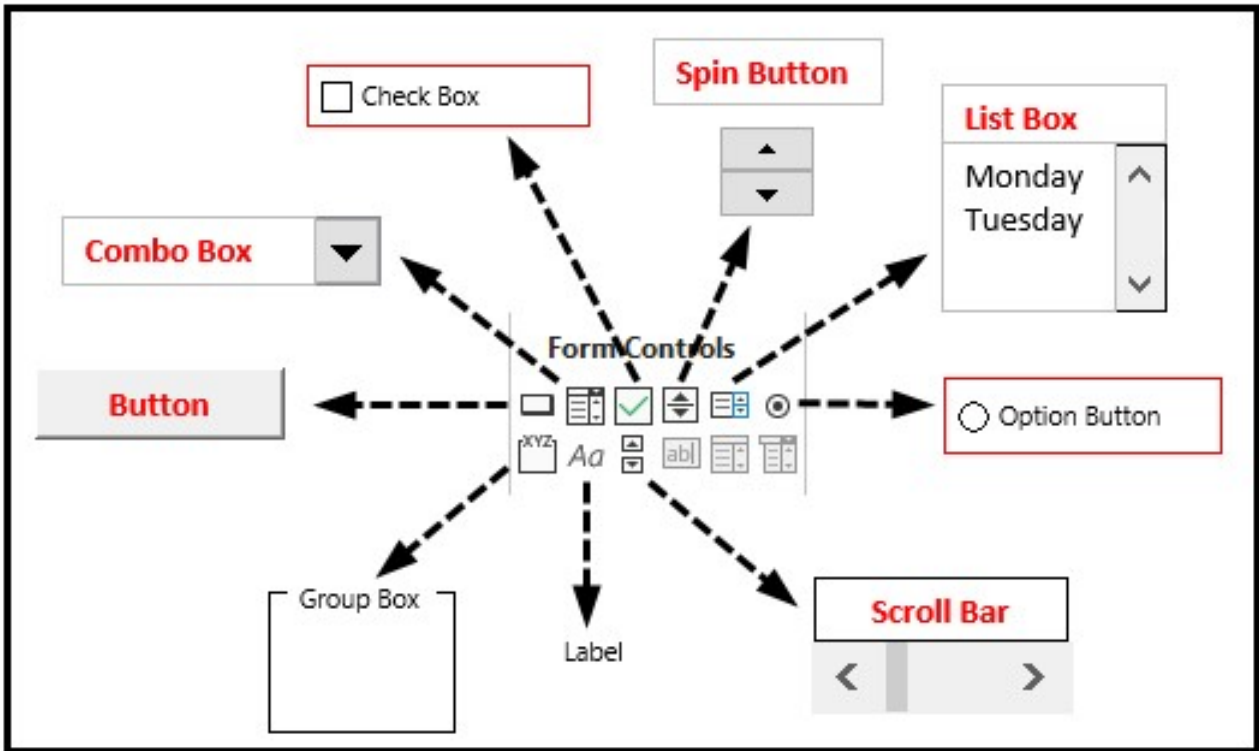
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Form Controls in Excel

Form controls are used to run macros in Excel. You can assign an existing macro to a control, or write or record a new macro.

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ActiveX Controls in Excel

ActiveX controls are used use to customize their appearance, behavior, fonts and other characteristics of a VBA userform.

- Pointer
- Label
- TextBox
- ComboBox
- ListBox
- CheckBox
- OptionButton
- Frame

- ToggleButton
- CommandButton
- TabStrip
- MultiPage
- ScrollBar
- SpinButton
- Image

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Common Terminologies Used in VBA

- Module

- Procedure

- Function

- Sub-Procedure

- MsgBox function

- Variable

- Data types

- Constant

- Operators

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Steps to Write and Execute Code in Module Area in VBA Editor

1. On a worksheet, navigate to the Developer tab and click Visual Basic.

2. To insert a module, click Insert and select Module.

3. The module area is opened and module 1 is added under Modules.

4. Write the code and save it.

5. Insert a button from Form Control under Developer tab. The Assign Macro pop-up window is displayed.

6. Select the UserReportQuery and click OK.

7. If you click the button, the respective message box opens.

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Recap:

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    - o ActiveX controls