

Excel – Advanced Interview Questions

(Practice Project)



Basic Questions

Basic Questions:

1. What is the purpose of data validation in Excel?

Controlling the kind of data or values that users can enter into a column or group of cells is the goal of Excel's data validation feature. By limiting input to established criteria, such as particular numbers, dates, or text lengths, it helps assure data consistency and accuracy. It can also give users dropdown options to make data entry simpler and error-free. Within a spreadsheet, data validation preserves data integrity and helps to prevent errors.

2. How does the FILTER function work, and what is its primary use?

Excel's `FILTER` function generates an array that satisfies the user-specified criteria. It functions by applying a condition or combination of conditions to filter a range or array. The `FILTER` function is primarily used to extract and present a subset of data from a larger dataset, freeing users from the laborious task of manually sorting or filtering through data so they can concentrate on pertinent information.

3. You need to extract the first 5 characters from a string in cell A1. Which function would you use?

To extract the first 5 characters from a string in cell A1, We can use the LEFT function in Excel.

LEFT Function Syntax

text: The string from which we want to extract characters (in this case, the content of cell A1).

num_chars: The number of characters we want to extract (5 in this case).

Example Formula

Here's how we would write the formula:

=LEFT(A1, 5)

Explanation

This formula takes the string in cell A1 and extracts the first 5 characters from it.

If A1 contains the string "Hello World", the result will be "Hello".

4. What formula would you use to find the average of numbers in cells A1 through A10 while excluding zero values?

To find the average of numbers in cells A1 through A10 while excluding zero values, you can use the AVERAGEIF

function in Excel. Here's the formula you would use:

Formula

=AVERAGEIF(A1:A10, ">0")

Explanation

A1 : This is the range of cells you want to calculate the average from.

">0" : This condition specifies that you want to include only the cells that are not equal to zero.

Result

This formula calculates the average of the numbers in the specified range, ignoring any cells that contain zero values. If all values are zero, the formula will return a #DIV/0! error because there are no values to average.

5. What is the formula to calculate the number of days between two dates in cells A1 and B1?

To calculate the number of days between two dates in cells A1 and B1, you can use the following formula:

DATEDIF Function : =DATEDIF(A1, B1, "d")

This formula explicitly calculates the difference in days between the two dates, with "d" specifying that you want the result in days.

Intermediate

Basic Questions:

6. Explain the difference between a slicer and a timeline in PivotTables.

By clicking on buttons that correspond to the categories, users can use a slicer in PivotTables as a visual filter tool to filter data based on categorical fields, such as text or non-date values.

Similar in function, but created especially for date field-based data filtering, is a timeline. Using a sliding bar, users can filter data by a range of dates, quarters, months, or years.

Slicers are essentially used for non-date data, and timelines are only used in PivotTables for date-related filtering.

7. What are some advantages of using XLOOKUP over traditional lookup functions like VLOOKUP and HLOOKUP?

Compared to more conventional lookup functions like VLOOKUP and HLOOKUP, XLOOKUP has the following advantages:

Flexibility: XLOOKUP does not require two functions (VLOOKUP for vertical searches and HLOOKUP for horizontal searches) in order to search both vertically and horizontally.

Exact Match by Default: XLOOKUP reduces errors by defaulting to an exact match, while VLOOKUP defaults to an approximate match.

No Column/Row Index Required: XLOOKUP is less error-prone and easier to use when columns or rows are added or removed because it does not require the specification of a column or row index.

Search in Any Direction: Unlike VLOOKUP and HLOOKUP, which can only search from top to bottom and left to right, XLOOKUP can search in any direction, including top to bottom, bottom to top, left to right, and right to left.
Return many Values: While VLOOKUP/HLOOKUP can only return one value at a time, XLOOKUP can return many columns or rows of data in a single calculation.

Error Handling: To make XLOOKUP more robust, it comes with built-in error handling that lets you specify a value to return in the event that the lookup value cannot be located.

8. How does the DATEDIF function calculate the difference between two dates?

Excel's `DATEDIF` function determines the difference between two dates using a given unit of time, such as days "D", months "M", or years "Y". With "MD" (difference in days ignoring months and years), "YM" (difference in months ignoring days and years), and "YD" (difference in days ignoring years), it also provides more detailed computations. Although it isn't included in Excel's formula suggestions, this function is helpful for precisely calculating the difference between dates in different time units. However, date inputs must be handled carefully to prevent unexpected results.

9. How does the SUBSTITUTE function differ from the REPLACE function in text manipulation?

While both the SUBSTITUTE and REPLACE functions are utilised for text manipulation, their roles are different. The SUBSTITUTE function is intended to substitute a new substring for each instance of a given substring that appears in a text string. This makes it especially helpful when you wish to alter a word or character in a text at every time. For instance, if you were to use =SUBSTITUTE("apple orange apple", "apple", "banana"), all instances of "apple" would be replaced with "banana," resulting in the text "banana orange banana."

Conversely, the REPLACE function is more focused on positions. You must indicate the beginning and ending points of the replacement as well as the number of characters to be replaced, because it replaces a portion of a text string according to its position within the string. When you need to change a specific text segment at a known position instead of based on the content, this function is perfect. To modify the text to "a123ef," for example, use =REPLACE("abcdef", 2, 3, "123"). Three characters would be replaced, beginning at the second position.

10. How do the percentile and quartile functions differ in statistical analysis?

PERCENTILE Function in Excel

Purpose: Calculates the value below which a specific percentage of data falls.

Usage: Useful for identifying specific percentiles (e.g., 10th, 25th, 50th, etc.).

Formula:

=PERCENTILE(array, k)

array: The range of data.

k: The percentile value (between 0 and 1). For example, for the 30th percentile, use 0.3.

QUARTILE Function in Excel

Purpose: Divides the dataset into four equal parts and returns specific quartile values.

Usage: Provides the first quartile (25th percentile), second quartile (median), and third quartile (75th percentile) directly.

Formula:

=QUARTILE(array, quart)

array: The range of data.

quart: The quartile number (0 for minimum, 1 for 1st quartile, 2 for median, 3 for 3rd quartile, and 4 for maximum).

Key Differences in Excel

Range of Values: PERCENTILE can calculate any percentile, while QUARTILE focuses specifically on quartiles.

Flexibility: PERCENTILE allows for more granular analysis (e.g., the 10th percentile), whereas QUARTILE provides a quick summary of data distribution in terms of quartiles.

11. How would you use the XLOOKUP function to find a value in a table where the lookup value is in the second column?

Example Scenario

Assume you have a table with the following data:

A	B	C
ID	Name	Score
101	Alice	85
102	Bob	90
103	Charlie	78

Goal

You want to find the score of "Bob" using **XLOOKUP**.

XLOOKUP Formula

Here's how to set up the XLOOKUP function:

=XLOOKUP("Bob", B2:B4, C2:C4)

Breakdown of the Formula

Lookup Value: "Bob" – This is the value we are searching for in the second column.

Lookup Array: B2:B4 – This is the range where Excel will look for the value "Bob".

Return Array: C2:C4 – This is the range from which you want to return the corresponding score.

Result

In this case, the formula will return **90**, which is Bob's score.

12. How would you apply conditional formatting to highlight cells that contain dates within the next 30 days?

To apply conditional formatting in Excel to highlight cells that contain dates within the next 30 days, follow these steps:

- 1. Select the Range:** Highlight the cells with dates (e.g., A1:A100).
- 2. Open Conditional Formatting:** Go to the Home tab > Conditional Formatting > New Rule.
- 3. Use a Formula:** Select Use a formula to determine which cells to format.
- 4. Enter the Formula:** =AND(A1<=TODAY()+30, A1>=TODAY())
- 5. Set the Format:** Click Format, choose your highlight options, and click OK.
- 6. Apply the Rule:** Click OK again to finish.

Now, cells with dates within the next 30 days will be highlighted!

13. How can you use the FILTER function to display only rows where the value in column B is greater than 100?

To use the **FILTER** function to display only rows where the value in column B is greater than 100, follow these steps:

Formula : =FILTER(A1:C10, B1:B10 > 100)

Breakdown

A1

: The range of your data that you want to filter.

B1

> 100: The condition to filter rows where the value in column B is greater than 100.

Steps

Enter the Formula: Click on a cell where you want the filtered results to start.

Type the Formula: Enter the FILTER formula above.

Press Enter: The results will display only the rows where the value in column B exceeds 100.

This will show only the rows from the specified range where the condition is met.

14. How would you calculate the payment amount for a loan using the PMT function with an annual interest rate of 5%, a term of 10 years, and a principal of \$10,000?

To calculate the payment amount for a loan using the PMT function in Excel with an annual interest rate of 5%, a term of 10 years, and a principal of \$10,000, you can use the following formula:

PMT Function Syntax: =PMT(rate, nper, pv)

Parameters

rate: The interest rate for each period.

nper: The total number of payment periods.

pv: The present value, or the total amount of the loan.

Steps to Calculate

- Convert Annual Interest Rate to Monthly: Since payments are typically made monthly, divide the annual interest rate by 12.

Monthly Rate: $5\% / 12 = 0.4167\% \text{ or } 0.05 / 12$

- Calculate Total Number of Payments: Multiply the number of years by 12 to get the total number of monthly payments.

Total Payments: $10 \text{ years} * 12 = 120 \text{ payments}$

- Use the PMT Function: Enter the following formula in a cell:

=PMT(0.05/12, 10*12, -10000)

Explanation of the Formula

0.05/12: Monthly interest rate (annual rate divided by 12).

10*12: Total number of monthly payments (10 years times 12 months).

-10000: Principal amount (negative because it's an outgoing payment).

Result

After entering the formula, Excel will return the monthly payment amount for the loan.

In this case, the result will be approximately **\$106.07**, indicating that the monthly payment for the loan will be around **\$106.07**.

15. What formula would you use to highlight all cells in a range that contain duplicates?

To highlight all cells in a range that contain duplicates, use Conditional Formatting with this formula:
Steps and Formula

- Select the Range:** Highlight the range you want to check for duplicates (e.g., A1:A100).

- Apply Conditional Formatting:**

- Go to Home > Conditional Formatting > New Rule.
- Choose Use a formula to determine which cells to format.
- =COUNTIF(\$A\$1:\$A\$100, A1) > 1

- Set the Format:** Choose your desired formatting (e.g., a fill color), and click OK.

Explanation

COUNTIF(\$A\$1:\$A\$100, A1): Counts occurrences of the value in each cell within the specified range.

> 1: Highlights cells where the count is more than 1, indicating duplicates.

This formula will highlight all cells in the selected range that contain duplicate values.

Advanced

16. What is the purpose of using Power Query in Excel?

Data from several sources can be connected, combined, and transformed with Excel's Power Query feature. Users can save time and guarantee data accuracy by importing data in a variety of formats, cleaning and shaping it as needed, and then loading it into Excel for additional analysis.

17. Describe the role of conditional formatting in data visualization.

Excel's conditional formatting, which applies styling (such colours, icons, or data bars) to cells based on their values, is essential to data visualisation. By emphasising significant information, trends, or outliers, this improves the readability of data by making patterns and linkages more immediately apparent. Without having to manually go over the complete dataset, it enables users to rapidly discover important data points, compare results, and come to well-informed judgements.

18. What is the purpose of using VBA in Excel, and how does it enhance functionality?

Visual Basic for Applications, or VBA is a tool used in Excel to automate repetitive processes, build custom functions, and create sophisticated applications. By enabling users to create custom scripts and macros that can carry out activities beyond Excel's built-in capabilities, VBA expands the usefulness of the spreadsheet. This includes generating interactive forms, automating procedures, and altering data in ways that are either time-consuming or not possible with the built-in Excel capabilities. Excel may be efficiently transformed into a strong, adaptable tool with VBA that is suited to certain user requirements and corporate operations.

19. What is the significance of using array formulas in complex calculations?

Array formulas are significant in complex calculations because they allow you to perform multiple calculations on a range of data in a single formula. This can:

- **Increase Efficiency:** An array formula may analyse a whole data set at once, saving time and decreasing errors compared to developing several formulas.
- **Enable Advanced Calculations:** They may do intricate operations that traditional formulae may find challenging or impossible, such as multiplying, averaging, or summing data that satisfy certain requirements.
- **Boost Clarity:** They make the spreadsheet easier to handle and comprehend by combining several procedures into a single calculation.

All things considered, array formulae simplify data processing and allow for more advanced analysis in programs like Google Sheets and Excel.

20. What is the purpose of a PivotChart, and how does it relate to a PivotTable?

The data summarised in a PivotTable is shown visually in a PivotChart. It accomplishes the following goals:

- **Visual Data Analysis:** Trends, patterns, and insights in your data may be easily spotted with PivotCharts, which might be challenging in a table format.
- **Interactive Exploration:** PivotCharts are dynamic and interactive, just like PivotTables. It is now simpler to investigate various facets of your data because you can filter, sort, and dig down into the data immediately within the chart.
- **Enhanced Reporting:** Since visual data is frequently more comprehensible and engaging than rows and columns of statistics, PivotCharts facilitate the presentation of your results to others.
- **PivotTable Relation:** Using the same data source and taking into account any modifications made to the PivotTable, a PivotChart is directly connected to a PivotTable. It's basically a graphical PivotTable addon that offers a more user-friendly interface for comprehending and presenting the compiled data.

21. What are the benefits of using dynamic named ranges in Excel?

Dynamic named ranges in Excel offer several benefits:

- 1. Automatic Range Adjustment:** They automatically expand or contract as data is added or removed, ensuring your formulas always reference the correct data without manual updates.
- 2. Simplifies Formulas:** Instead of adjusting cell references, you define a dynamic named range once and use it across your workbook, making formulas easier to manage.
- 3. Dynamic Charts and Pivot Tables:** These ranges ensure that charts and pivot tables automatically update with new data, which is essential for accurate analysis.
- 4. Error Reduction:** By using dynamic named ranges, you minimize the risk of errors from manually updating ranges in formulas.
- 5. Improved Data Validation:** They can be used in dropdown lists, ensuring that validation lists are always current without requiring manual updates.

Dynamic named ranges streamline data management, improve accuracy, and simplify complex Excel tasks

22. How would you use a dynamic named range in a formula to ensure it adjusts as new data is added?

To use a dynamic named range in a formula that adjusts as new data is added:

Step 1: Create a Dynamic Named Range

- 1. Go to the Formulas tab and click on Name Manager.**
- 2. Click on New and enter a name (e.g., SalesData).**
- 3. In the "Refers to" box, enter:**

```
=OFFSET(Sheet1!$A$1, 0, 0, COUNTA(Sheet1!$A:$A), 1)
(or use INDEX):
=Sheet1!$A$1:INDEX(Sheet1!$A:$A, COUNTA(Sheet1!$A:$A))
```

- 4. Click OK.**

Step 2: Use in a Formula

Use the named range in formulas, e.g.: =AVERAGE(SalesData)

Result

The formula will automatically adjust as new data is added in column A

23. How would you use a combination of the FIND and MID functions to extract a substring from a cell, starting after the first occurrence of a specific character?

To extract a substring from a cell using a combination of the FIND and MID functions, you can follow this approach:

Example Scenario

Assume you have the text "apple, orange, banana" in cell A1 and you want to extract the substring starting after the first occurrence of the comma (,) character.

Formula : =MID(A1, FIND(“, A1) + 1, LEN(A1) - FIND(“, A1))

Breakdown of the Formula

1. **FIND(“, A1)**: This part finds the position of the first comma in the string.
2. **FIND(“, A1) + 1**: Adds 1 to the position found to start the extraction right after the comma.
3. **LEN(A1) - FIND(“, A1)**: This calculates the number of characters to extract from the string, which is the total length of the string minus the position of the comma.
4. **MID(A1, ..., ...)**: The MID function then extracts the substring from the starting position calculated and the length specified.

Result

For the example "apple, orange, banana," the formula will return "**orange, banana**", which is the substring starting after the first comma. You can adjust the character in the **FIND** function to extract substrings based on different characters.

24. What role do calculated measures play in a data model?

A data model cannot exist without calculated measures since they enable the creation of unique metrics and the extraction of deeper insights from the raw data. Formulas or expressions that carry out calculations dynamically while the data is being examined are used to define these metrics. Users can customise their study to meet certain business objectives by adding calculated measurements, such as figuring out average sales by region, growth rates, or profit margins. This allows users to get more insightful and pertinent data.

The dynamic character of computed measures—which adapt to the context in which the data is presented, such as different time periods or categories—is one of its main features. This adaptability improves the analysis's precision and applicability. Furthermore, calculated measures make complicated computations simpler by combining them into a single, reusable metric, improving the effectiveness and manageability of the data model. In a data model, calculated measurements are essential for improving reporting, facilitating sophisticated analysis, and facilitating data-driven decision-making.