



# Macro Programming

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# Macro Programming

## Introduction

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### OFFSET Function

- The OFFSET function returns a reference to a range that is a specified number of rows and columns from a starting cell or range. It is useful for creating dynamic ranges and performing complex data manipulations.

Syntax: `OFFSET(reference, rows, cols, [height], [width])`

*Example:* Use OFFSET to dynamically select a range of cells based on a starting point and specified offsets, which can be useful for tasks like summing groups of cells or creating dynamic charts



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### INDIRECT Function

- The INDIRECT function is used to return a reference specified by a text string. This allows for dynamic referencing of cells, ranges, or named ranges within formulas.

Syntax: INDIRECT(ref\_text, [a1])

*Example:* You can use INDIRECT to reference a range name selected from a dropdown list, enabling dynamic data retrieval based on user input





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## INDIRECT Function



The INDIRECT function converts a text string into a valid cell reference in Excel.

### Syntax

`INDIRECT(ref_text, [a1])`

`ref_text`: A text string representing the cell reference you want to use.

`a1`: (Optional) A logical value specifying the reference style:

TRUE or omitted: A1 style

FALSE: R1C1 style



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## INDIRECT Function

Example:

	A	B	C	D
1	Quarter	Q1	Q2	Q3
2	Product A	1000	1200	1100
3	Product B	1500	1800	1600
4	Product C	2000	2200	2100





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## INDIRECT Function



*Example:*

Dropdown List

1. In cell F1, create a dropdown list with the quarter options:Select cell F1.
2. Go to Data > Data Validation.
3. Set "Allow" to "List."
4. In "Source," enter: Q1,Q2,Q3

```
=SUM(INDIRECT("B"&MATCH(F1, $B$1:$D$1, 0) & "D" & MATCH(F1, $B$1:$D$1, 0)))
```



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## OFFSET Function

The OFFSET function in Excel returns a reference to a cell or range that is a specified number of rows and columns away from a starting cell.



### Syntax

`OFFSET(reference, rows, cols, [height], [width])`

**reference:** The starting point from which the offset is applied.

**rows:** The number of rows to move from the starting reference.

**cols:** The number of columns to move from the starting reference.

**height:** (Optional) The height, in number of rows, of the returned reference.

**width:** (Optional) The width, in number of columns, of the returned reference.



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## OFFSET Function

*Example:*

	A	B	C	D
1	Product	Jan	Feb	Mar
2	Apples	1000	1200	1100
3	Oranges	1500	1800	1600
4	Bananas	2000	2200	2100

=SUM(OFFSET(B2, 0, 0, 1, 3))





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## Advantages and Limitations



Advantages	Description
Flexibility	Adaptability to changes in data structure and dynamic ranges that adjust automatically based on user input or conditions.
Dynamic Data Referencing	Enables responsive formulas that update with data changes and allows cross-sheet references for consolidating data.
Ability to Handle Complex Lookups	Supports advanced lookups that search both horizontally and vertically, and allows for lookups based on multiple criteria.



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## Advantages and Limitations



Limitations	Description
Complexity in Formula Construction	Requires a steep learning curve and can be challenging to debug and maintain, especially with nested functions.
Potential for Errors	Volatile functions can slow down performance, and incorrect parameters can lead to errors or incorrect data retrieval.
Maintenance and Scalability	Difficult to maintain as spreadsheets grow in complexity, and volatile functions can affect performance in large datasets.



THANK YOU

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