



# SIMPLIFY REPORTING

## [DATE TABLES & FISCAL YEARS]



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## CREATING A DATE TABLE IN POWER QUERY

Creating a date table in Power Query is a fundamental task in data analytics, especially for time series analysis and reporting. A date table allows you to easily manipulate and analyze data by various date attributes such as year, quarter, month, week, etc. Here's how you can create a date table in Power Query.

### STEPS TO CREATE A DATE TABLE:

1. **Open Power Query Editor:** In Excel, Power BI Desktop, or any other tool where Power Query is available, open the Power Query Editor.
2. **Create a New Query:** In the Power Query Editor, select *"Home" > "New Source" > "Other Sources" > "Blank Query."*
3. **Enter M Code:** In the formula bar, enter the following M code to generate a list of dates spanning your desired range:

**[ = {Number.From(#date(YYYY,MM,DD))..Number.From(#date(YYYY,MM,DD)) } ]**

4. - Replace YYYY, MM, and DD with the starting year, month, and day respectively.  
- Replace YYYY, MM, and DD with the ending year, month, and day respectively.

**Explanation of M Code:** Let's break down the M code:

- #date(year, month, day): This function creates a date value with the specified year, month, and day.
- Number.From(date): This function converts a date value into a number.
- '..' This operator creates a list of numbers from the starting number to the ending number.

5. Press Enter. You will see a list of numbers generated in the table.
6. To convert this list into a table, click on the *"To Table"* button in the *"Transform"* tab.
7. In the dialog box, click **"OK"** to accept the default settings.
8. Now, click on the double-arrow icon in the header of the new column and select **"DATE"** to convert the data type to DATE.
9. Rename the column to "Date" by double-clicking on the column header and typing in the new name.
10. To add additional columns like year, month, start of month and month name etc., goto *"Add Column" > "Date"* and select the desired column (Year, Month, etc.).
11. Repeat step 10 for each additional column you want to add.
12. **Rename Columns:** After transforming the data, you might want to rename the columns appropriately. You can do this by right-clicking on the column headers and selecting "Rename."
13. **Load the Data:** Once you're satisfied with the transformations and column names, click on "Close & Load" to load the data into your Power BI or Excel workbook.



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## HOW TO USE A DATE TABLE IN A DATA MODEL

- **Import or Create Date Table:** You can import a pre-existing date table from a data source or create a new date table within Power BI using Power Query. Ensure that the date table includes a column for each relevant date component (e.g., year, month, day) and any additional columns required for analysis (e.g., fiscal year, quarter).
- **Establish Relationships:** Establish relationships between the date table and other tables in your data model based on date-related fields. For example, if you have a sales table with a "Date" column, create a relationship between the "Date" column in the sales table and the corresponding date column in the date table.
- **Create Calculated Columns and Measures:** Utilize the date table to create calculated columns and measures that capture relevant metrics and KPIs based on dates. For instance, you can calculate year-to-date sales, month-over-month growth rates, or cumulative totals using DAX expressions referencing the date table.
- **Design Visualizations:** Build visualizations such as charts, graphs, and tables using data from your primary tables along with the date table. Utilize slicers based on date attributes from the date table to enable interactive filtering and drilling down into specific time periods.
- **Analyze and Interpret Data:** Use the interactive dashboards and reports created with Power BI to analyze trends, patterns, and insights within your data. Leverage the flexibility of the date table to perform ad-hoc analyses and explore data from different time perspectives.

In summary, integrating a date table into your data model provides a solid foundation for time-based analysis and enables more robust and insightful data-driven decision-making within your organization.

## WHY USE A DATE TABLE

- **Data Consistency:** A date table ensures consistency in date-related calculations across different datasets. It provides a standardized set of dates that can be used as a reference point for analysis.
- **Easy Filtering and Slicing:** With a date table, you can easily filter and slice your data by various time periods such as days, weeks, months, quarters, and years. This simplifies data exploration and helps in identifying trends and patterns.
- **Time Intelligence Functions:** Power Query offers a range of time intelligence functions that can be applied to date tables. These functions allow for advanced calculations such as year-to-date totals, moving averages, and comparisons between different time periods.



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- **Integration with Visualizations:** Date tables seamlessly integrate with data visualizations in tools like Power BI, Excel, and other BI platforms. They enable interactive dashboards and reports that dynamically respond to user-selected time periods.
- **Fiscal Analysis:** Date tables can be customized to align with fiscal calendars, enabling organizations to perform fiscal analysis and reporting based on their specific financial periods.
- **Data Modeling:** Date tables are essential for data modeling and building relationships between different datasets. They serve as a central reference point for date-related dimensions in a data model.

## WHEN TO USE YOUR DATE TABLE

- **Time-Series Analysis:** When analyzing time-series data, such as sales trends over months or years, a Date table is essential. It allows for easy grouping, filtering, and comparison of data based on specific time periods.
- **Financial Reporting:** Date tables are crucial for financial reporting, especially when dealing with fiscal calendars or custom financial periods. They enable accurate tracking of financial metrics like revenue, expenses, and profits over time.
- **Business Intelligence (BI) Dashboards:** In BI dashboards and reports, Date tables play a vital role in creating dynamic and interactive visualizations. Users can slice and dice data based on dates to gain insights into performance metrics and trends.
- **Forecasting and Predictive Analytics:** For forecasting models and predictive analytics, a Date table provides the necessary structure for time-based calculations. It allows analysts to project future trends and make informed decisions.
- **Comparative Analysis:** Date tables facilitate comparative analysis by enabling comparisons between different time periods, such as year-over-year growth, quarter-to-date performance, or month-to-month changes.
- **Data Modeling and Relationships:** In data modeling, Date tables serve as a central dimension for establishing relationships with other tables. They help create meaningful connections between data elements and support complex analytical queries.
- **Holiday and Seasonal Analysis:** Date tables can include information about holidays, seasons, or other important events. This data is valuable for analyzing the impact of holidays or seasonal variations on business operations.



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## FISCAL YEAR

A fiscal year is a period used for financial reporting and budgeting purposes by organizations, governments, and businesses. Unlike the calendar year, which starts on January 1st and ends on December 31st, the fiscal year can start and end at any point in the year, depending on the organization's needs and requirements.

### THERE ARE SEVERAL REASONS WHY A FISCAL YEAR IS IMPORTANT IN DATA ANALYSIS:

- **Financial Reporting:** Many organizations use their fiscal year as the basis for financial reporting. Analyzing data based on the fiscal year allows stakeholders to track financial performance over consistent periods, facilitating comparison and trend analysis.
- **Budgeting and Planning:** Businesses often align their budgeting and planning processes with the fiscal year. Analyzing data within the context of the fiscal year enables better tracking of budget utilization, forecasting, and strategic planning.
- **Seasonal Variations:** Some businesses experience seasonal fluctuations in their operations, sales, or revenue. Aligning data analysis with the fiscal year helps to account for these seasonal variations and identify patterns or trends that may affect business performance.
- **Regulatory Compliance:** Certain regulatory requirements or reporting standards may dictate the use of a specific fiscal year for financial reporting purposes. Adhering to these standards ensures compliance and facilitates accurate data analysis for regulatory purposes.
- **Internal Reporting and Decision Making:** Internal reporting within organizations often follows the fiscal year structure. Analyzing data based on the fiscal year allows for consistent and meaningful reporting to support decision-making processes at various levels of the organization.
- **Performance Evaluation:** Evaluating performance metrics and key performance indicators (KPIs) within the context of the fiscal year provides a clearer understanding of annual performance goals and targets. It allows organizations to assess performance against predefined objectives and make informed adjustments as needed.

In summary, the fiscal year serves as a standardized timeframe for financial reporting, budgeting, planning, and performance evaluation. Incorporating the fiscal year into data analysis ensures consistency, accuracy, and relevance in interpreting and utilizing financial and operational data for decision-making purposes.





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## STEP FOR ADDING A FISCAL YEAR COLUMN IN POWER QUERY

- 1. Create a Date Table:** If you haven't already created a date table, follow the steps mentioned earlier to create one.
- 2. Add a Custom Column:** In Power Query Editor, select your date table & navigate to the **"Add Column"** tab. Then, click on **"Custom Column"**.
- 3. Enter M Code:** In the **Custom Column** dialog box, enter the following M code to calculate the fiscal year

```
[ = if Date.Month([YourDateColumn]) >= 4 then Date.Year([YourDateColumn]) + 1  
else Date.Year([YourDateColumn]) ]
```

This code checks if the month of the date is greater than or equal to APRIL (which is represented by the number 4). If it is, it adds 1 to the year to represent the next fiscal year; otherwise, it returns the current year.

- 4. Apply Changes:** Click "OK" to apply the changes.
- 5. Rename Column:** After creating the custom column, you can rename it to something like "Fiscal Year" for clarity.
- 6. Load the Data:** Once you're satisfied with the changes, click on "Close & Load" to load the data back into your Power BI or Excel workbook.

Following these steps will add a column to your date table indicating the fiscal year based on the **1<sup>st</sup> APRIL** to **31<sup>st</sup> MARCH** period of the next year. This column can then be used for further analysis and reporting within your data model



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## EXPLANATION OF FISCAL YEAR “M CODE” WITH EXAMPLES

Suppose we have a date column with dates ranging from January 1, 2023, to December 31, 2024. We want to calculate the fiscal year for each date, where the fiscal year starts from April 1st of the current year and ends on March 31st of the next year.

Here's the M code we'll use to calculate the fiscal year:

```
[ = if Date.Month([Date]) >= 4 then Date.Year([Date]) + 1 else Date.Year([Date]) ]
```

### LET'S APPLY THIS M CODE ON EXAMPLE DATES:

#### Example - 1: Date: April 15, 2023

- `Date.Month([Date])``: Returns the month of the given date, which is 4 (April).
- Since April is greater than or equal to 4, the condition ``Date.Month([Date]) >= 4`` evaluates to TRUE.
- So, the fiscal year is calculated as ``Date.Year([Date]) + 1``, which is  $2023 + 1 = 2024$ .
- Therefore, the fiscal year for April 15, 2023, is 2024.

#### Example - 2: Date: February 10, 2024

- `Date.Month([Date])``: Returns the month of the given date, which is 2 (February).
- Since February is not greater than or equal to 4, the condition ``Date.Month([Date]) >= 4`` evaluates to FALSE.
- So, the fiscal year is calculated as ``Date.Year([Date])``, which is 2024.
- Therefore, the fiscal year for February 10, 2024, remains 2024.

#### Example - 3: Date: March 20, 2025

- `Date.Month([Date])``: Returns the month of the given date, which is 3 (March).
- Since March is not greater than or equal to 4, the condition ``Date.Month([Date]) >= 4`` evaluates to FALSE.
- So, the fiscal year is calculated as ``Date.Year([Date])``, which is 2025.
- Therefore, the fiscal year for March 20, 2025, remains 2025.

[This M code efficiently calculates the fiscal year based on the specified criteria and can be applied to a dataset containing date values to create a fiscal year column for analysis.]



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## ANOTHER WAY TO ADD FISCAL YEAR COLUMN IN POWER QUERY

1. **Create a Date Table:** If you haven't already created a date table, follow the steps mentioned earlier to create one.
2. Determine the starting month of your fiscal year. *For example*, if your fiscal year starts in **SEPTEMBER** & ends in **AUGUST** of next year, you will need to add 4 months to each date to align them with the fiscal year
3. **Add a Custom Column:** In Power Query Editor, before using the below M code select your date column & navigate to **"Add Column" > "Date" > "Month" > "Start of Month"**. Renamed it as **"Month"**, this column is used in below code. Now, again click on **"Custom Column"**.
4. **Enter M Code:** In the **Custom Column** dialog box, enter the following M code to calculate the fiscal year

```
[ = Date.AddMonths([Month], 4) ]
```

This code will add 4 months to each date in the **"Month"** and create a new column representing the fiscal year.

5. After creating this column, you might want to further refine it to extract the fiscal year as a separate value if needed, such as extracting just the year part. So, to extract just the fiscal year as a separate value, you can use the **Date.Year()** function:

```
[ = Date.Year(Date.AddMonths([Month], 4)) ]
```

This would give you just the fiscal year as a separate column.

**OR**

you can select the Fiscal year Column & goto **"Add Column" > "Date" > "Year"** & select the year option to extract only the year part.

6. **Rename Column:** After creating the custom column, you can rename it to something like "Fiscal Year" for clarity.
7. **Load the Data:** Once you're satisfied with the changes, click on "Close & Load" to load the data back into your Power BI or Excel workbook.

The following steps will add a column to your date table indicating only the year part based on the **1<sup>st</sup> SEPTEMBER** to **31<sup>st</sup> AUGUST** period of the next year. This column can then be used for further analysis and reporting within your data model.

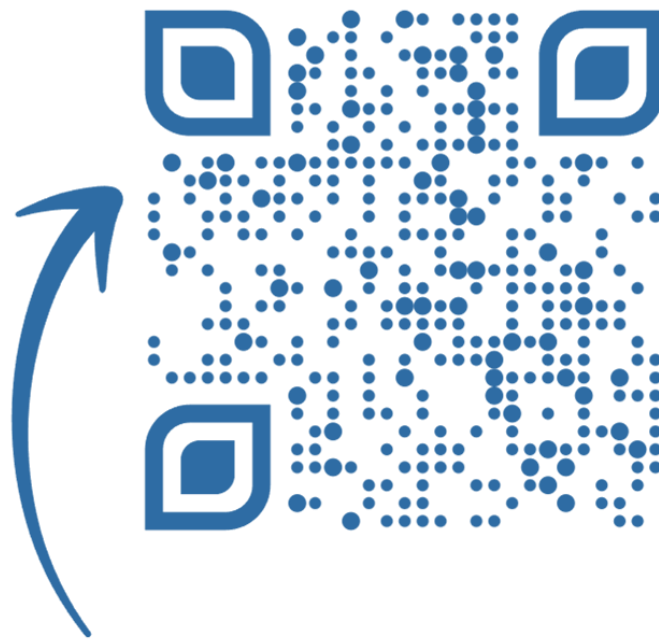


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