

Excel Power Query for Analytics

Repeatable data preparation, M expressions and workbook dashboards

FA-0747 · Approximately 14.5 instructional hours

Data & Analytics

Introduction

Use Excel Power Query to build repeatable preparation and consolidation workflows for tabular data. Progress from importing files and inspecting query steps to transformations, custom M expressions, multi-file joins and a workbook dashboard.

Practice uses supplied or appropriately licensed sample datasets and assessments within the major modules. Advanced patterns and external connectors are demonstrated selectively according to the capabilities and access available in the training environment.

Learning outcomes

- Import, clean and transform sample Excel, CSV/text and permitted online data.
- Reshape ERP-style exports into analysis-ready tables.
- Consolidate workbook, sheet and folder sources using appropriate append/merge operations.
- Use selected custom M expressions and functions for repeatable preparation.
- Choose worksheet versus Data Model load destinations.
- Create relationships and PivotTable/PivotChart outputs in a compatible Power Pivot environment.
- Assemble an interactive Excel dashboard with appropriate slicers and date controls.

Prerequisites

- Comfortable using Excel with:

xlsx

- csv
- txt
- Column based formula creation
- Pivoting
- Filing system
- Character manipulation
- Joins and types
- Data types
- A compatible desktop Excel edition with the Power Query, Data Model and Power Pivot features needed by the labs.
- Access to supplied files and authorised accounts for optional web, SharePoint/OneDrive or Exchange exercises.

Training outline

1. Module 1 – Query Basics (approximately 2.5 hours)

- Import sample data and inspect size/quality rather than assuming all large files process quickly.
- Power Query Editor, basic transformations, data-quality/distribution views where available.
- Formula bar, Applied Steps and M code.
- Close/load destinations, refresh and refresh options.
- CSV text-pattern extraction and merging with another file for a PivotTable example.
- Compare a conventional Excel preparation method; assessment.

2. Module 2 – Query Management (approximately 1.5 hours)

- Current Excel Get & Transform interface and workbook-source import.
- Named/table source references and a supplied hidden-table pattern where appropriate.
- Handle source changes, data types versus formatting, nulls and errors.
- Navigation, data views and query dependencies.
- Delete, manage and copy queries; preserve output snapshots; assessment.

3. Module 3 – Transformations (approximately 3 hours)

- Text Transformations (Format, Extract & more)
- Merging Columns & What to Watch Out For

- Fill & Replace Values to Create Proper Datasets
- Sort Data including Multiple Levels
- Remove Duplicates including Multiple Columns
- Number Transformations & What to Watch Out For
- Working with Filter (AND & OR Conditions)
- ASSESSMENT
- Challenges with Filter
- Change Type & Remove Columns Trap
- Column From Examples - Extract Patterns Quickly
- Allocate Data to Groups or Buckets
- Conditional Columns in Power Query
- Aggregating (Grouping) Data on Multiple Levels
- Group By with All Rows; unpivot as a separate operation.
- Unpivot & How to Overcome Common Errors
- Pivot Columns - Basics
- Problem with Split by Delimiter
- Split Column by Rows instead of Columns
- ASSESSMENT

4. Module 4 – Dates and M Expressions (approximately 2 hours)

- Date Transformations (Extract Age, Weekday etc.)
- Creating Dates from Text or Columns
- Time Transformations (Calculating Hours worked)
- Date & Number Errors When Importing Data
- ASSESSMENT
- Important Basic Power Query M Logic
- Logic behind Custom Columns
- Introduction to "Add Custom Column"
- Custom Columns Type Compatibility & Intrinsic Functions
- Inspect step dependencies before bypassing a transformation.
- Adjusting FILTER & Conditional Columns to Reference a Dynamic Variable
- Drill-Down in Power Query
- Custom Formulas for Template Creation

- ASSESSMENT
- Introduce a small reusable custom M function for a selected task.

5. Module 5 – External Sources (approximately 0.5 hour)

- Compare connector availability, authentication and refresh requirements.
- Introduce permitted web tables/files and suitable database/service sources.
- Use an authorised Google Sheets export/import example in Excel; the dedicated Power Query Google Sheets connector is documented for Power BI/Fabric, not Excel.
- Introduce Exchange Online mailbox import where available and authorised.
- SharePoint/OneDrive for Business sources and changing local paths to service paths.
- Short source-selection assessment.

6. Module 6 – Combining and Joining Data (approximately 2.5 hours)

- Why Append Data? The Difference Between Merge & Append
- Combine / Append Data from Multiple Workbooks
- Combine All Files in a Folder (with Excel Tables)
- Combine All Files in a Folder (Without Excel Tables)
- How to Adjust Folder Path from Local to SharePoint Drive
- Combine All Sheets in a File (Pivot Table from Multiple Sheets)
- Overcome Potential Errors when Combining Sheets
- Consolidate Data from Multiple Sheets in the Current Workbook
- Overview of Merge Options and Join Kinds
- Left Outer Join & Right Outer Join
- Merge Based on Multiple Columns
- Merging Text Columns
- Expand multiple matching rows and inspect changed row counts.
- Inner & Full Join in Power Query
- Left & Right Anti Join when Merging in Power Query
- How to Use Fuzzy Match in Power Query
- Fuzzy Match with Transformation Table
- ASSESSMENT

7. Module 7 – Data Model and Power Pivot (approximately 0.5 hour)

- When to Load Data to the Data Model
- Availability of Power Pivot
- Pivot Table from Multiple Excel Tables
- Power Pivot Table with Data Model & Power Query
- Create a Calendar Table in Power Pivot
- Pivot Slicers & TimeLine with Power Pivot & Power Query
- ASSESSMENT

8. Module 8 – Analytics Patterns and Dashboard (approximately 2 hours)

- Messy Data from Multiple Rows to One Row
- Search and Replace Bulk Values
- Calculate Value Difference to Previous Row
- Approximate Match Lookup with Merge
- ASSESSMENT
- Assign Unique Number to Group
- Advanced Unpivot Techniques
- Advanced Pivot Techniques
- Review a supplied incremental/self-referencing workbook pattern, its state/dependency risks and refresh limitations; do not equate it with Power BI managed incremental refresh.
- Import Master data from External Workbook with Power Query
- Import Data from Text File with Power Query
- Create the Data Model & Define Relationships in Power Pivot
- Create Logic for Latest and Previous Month in Power Query
- Setup Calculations with Pivot Tables for Latest Month
- Link Excel Shapes to Data & Linked Picture Trick
- Sorted Excel Pivot Table
- Linked Table for Sales by Product Category
- Excel Pivot Chart for Monthly Sales
- Pivot Slicer Connected to Multiple Pivot Tables
- Finalize the Excel Dashboard
- ASSESSMENT

