



ATI-MIRAGE
TRAINING & BUSINESS
SOLUTIONS

Power BI Essentials Reference Information

WWW.ATI-MIRAGE.COM.AU



ATI-MIRAGE

TRAINING & BUSINESS SOLUTIONS

Enriching lives, empowering organisations

Trademark Acknowledgements

All terms mentioned in this manual that are known to be trademarks or service marks have been appropriately acknowledged or capitalised. ATI-Mirage cannot attest to the accuracy of this information. Use of a term in this manual should not be regarded as affecting the validity of any trademark or service mark.

Disclaimer

Every effort has been made to provide accurate and complete information. However, ATI - Mirage assumes no responsibility for any direct, indirect, incidental, or consequential damages arising from the use of information in this document. Data and case study examples are intended to be fictional. Any resemblance to real persons or companies is coincidental.

Copyright Notice

No part of this publication may be reproduced in any form, or stored in a database or retrieval system, or transmitted or distributed in any form by any means, electronic, mechanical photocopying, recording, or otherwise without written permission from ATI-Mirage Pty Ltd.

Copying without authorisation is illegal.

For details of other course programs and services provided by ATI-Mirage, please visit our website www.ati-mirage.com.au or contact us on (08) 92189059



ATI-MIRAGE

TRAINING & BUSINESS SOLUTIONS

Enriching lives, empowering organisations

About ATI-Mirage

ATI-Mirage is a wholly West Australian owned organisation. The company was formed in October 2003 by the amalgamation of Australian Training Institutes (established 1983) and Mirage Technology (established 1990). The company provides training in Computer Skills, Office and Secretarial Skills, Human Resources & Management Skills and Information Technology training to the Government and Private sectors. The company is also involved in the supply of professional training and room hire facilities to a number of organisations Australia-wide.

ATI-Mirage is committed to providing quality training to its customers. Course curricula encompass current National Training Reform Agenda recommendations of nationally recognised training governed by the Australian National Training Authority (ANTA). The credential courses are accredited through the Training Accreditation Council (TAC) and ATI-Mirage is a registered provider of these courses.

It is the philosophy of ATI-Mirage to provide FLEXIBLE, BROADLY BASED and MODULARISED training programmes for its customers, in order to ensure a maximum return on the training dollar spent coupled with optimum learning for skills transfer. ATI-Mirage firmly embraces the principles and theories of Adult Learning and incorporates these techniques in their training programmes.

Training methods used by ATI-Mirage include instructor led classroom based training, roving training delivered within the workplace, flexi-learn (self-paced supported learning) and a range of e-learning options.

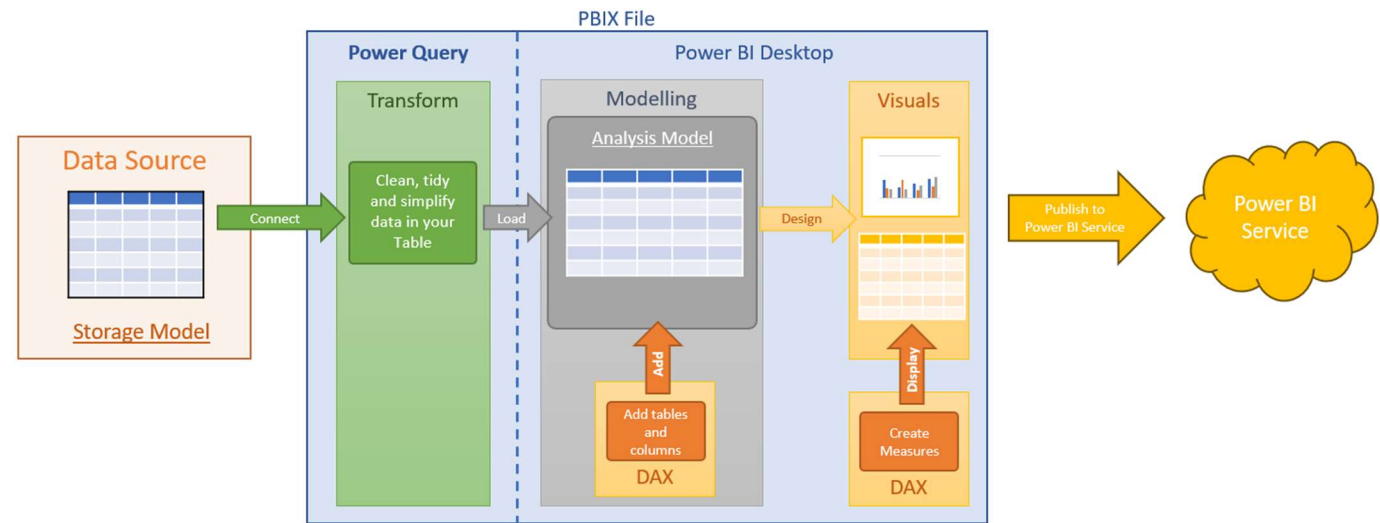
If you would like to find out more about the different delivery methods available and how they could work for you, please visit our website www.ati-mirage.com.au or contact us on (08) 92189059

All the exercises used in this course are available to download from the ATI-Mirage Website at - <https://www.ati-mirage.com.au/it-training-course-data-files>

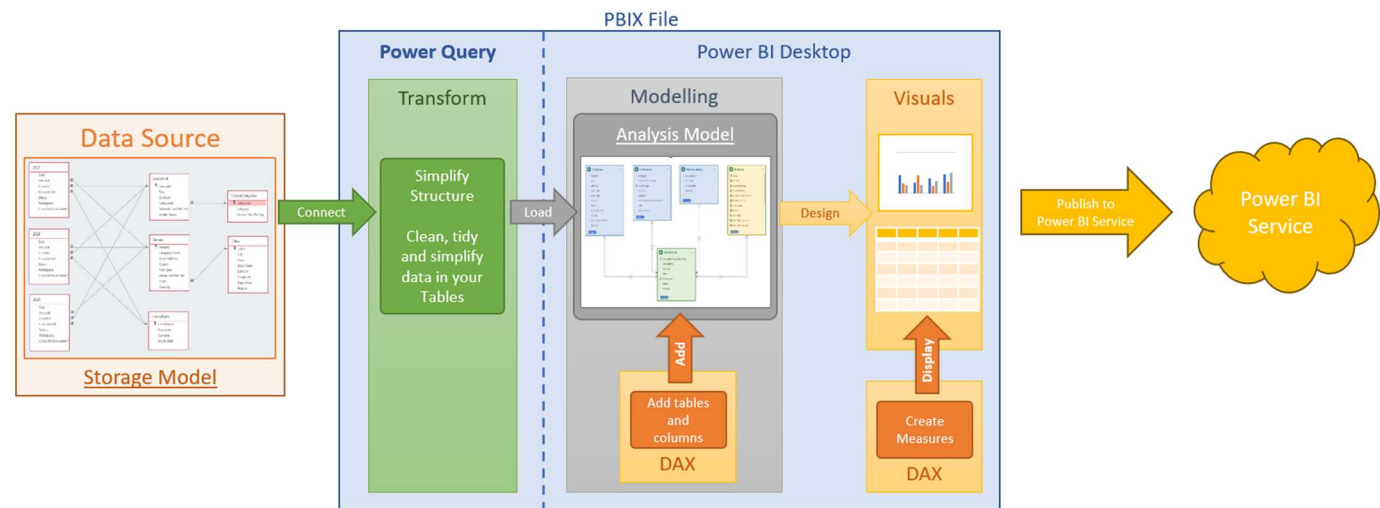
Storage and Analysis Models

Basic Power BI Process with different Storage Models

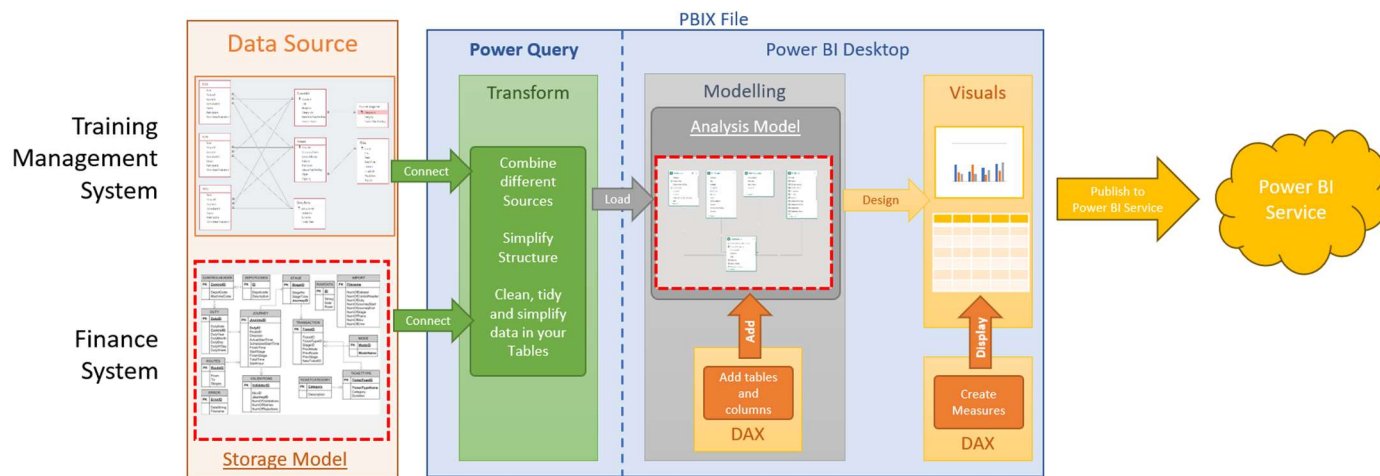
Single-table Storage Model



Multi-table Storage Model

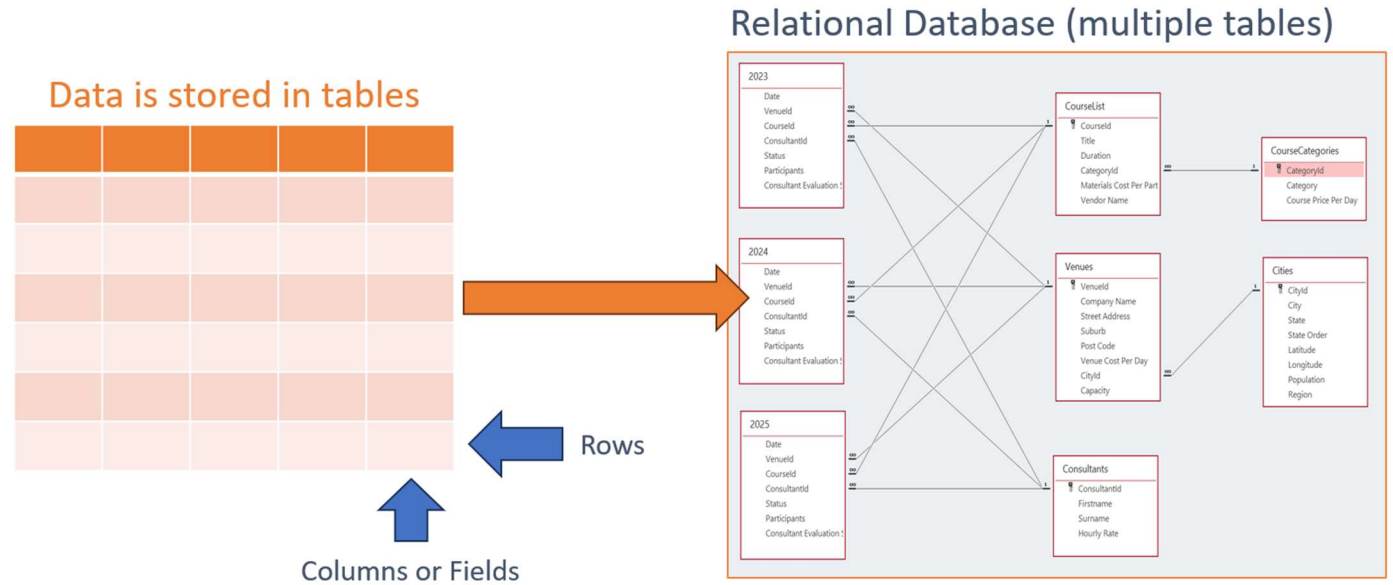


Multi-source Storage Model

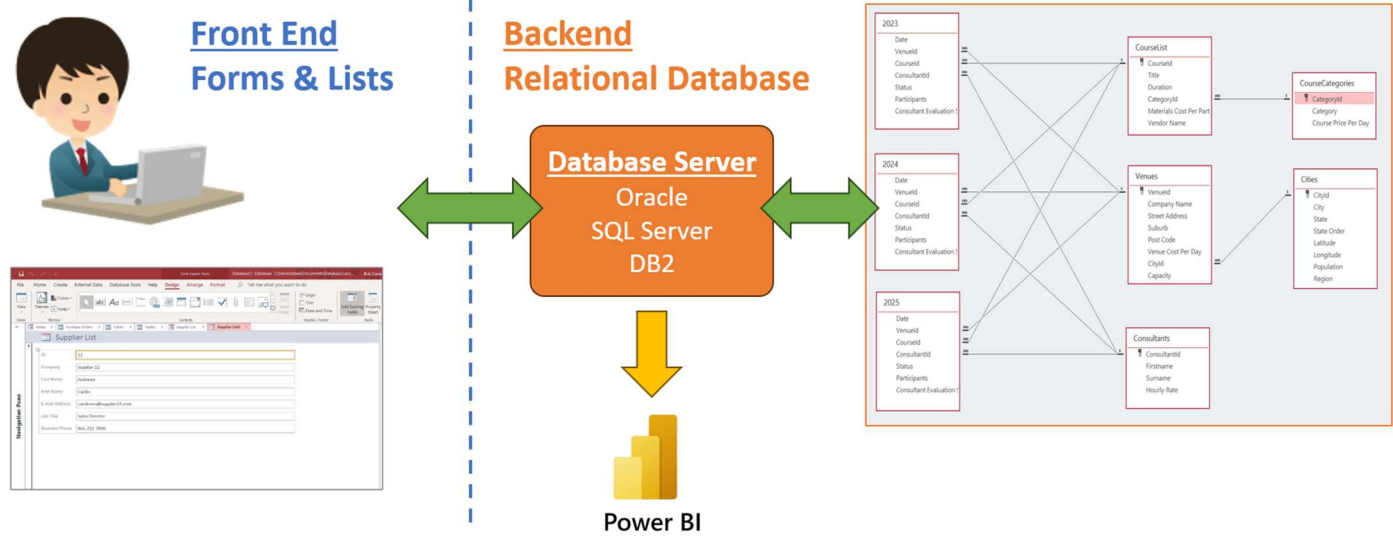


Data Storage Models

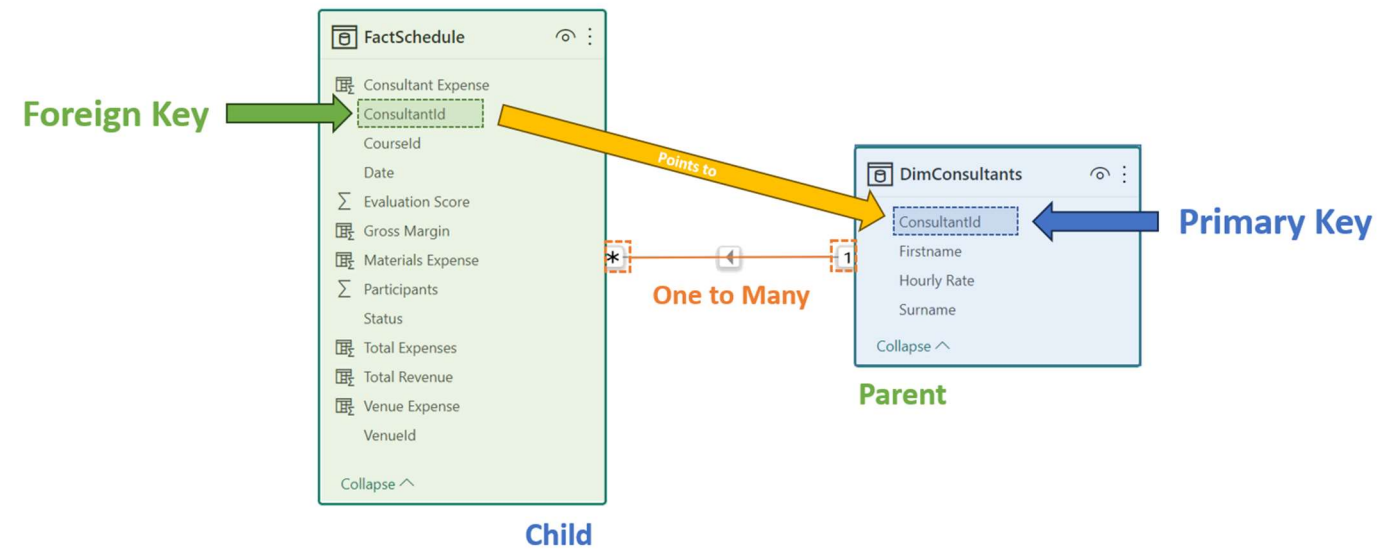
How your data is stored:



Multi-table Database Storage Model

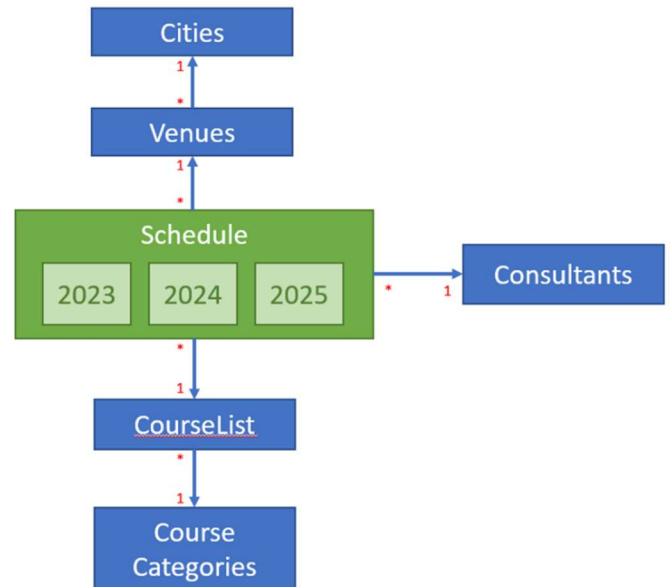
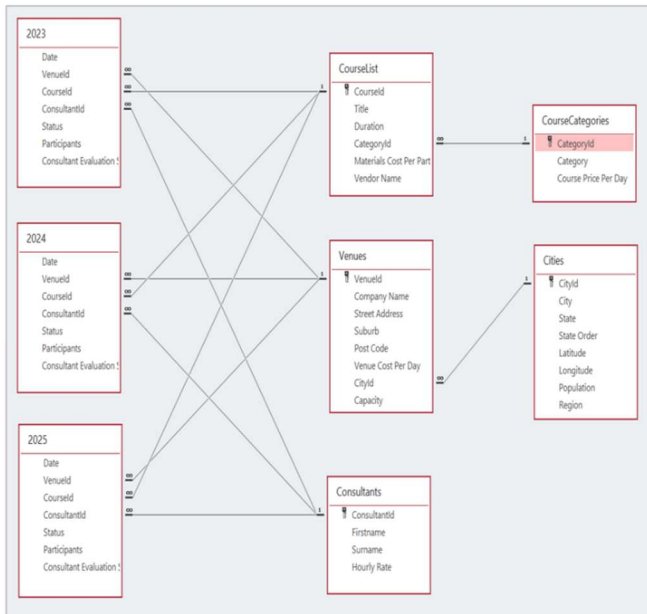


One to Many Database Relationship:



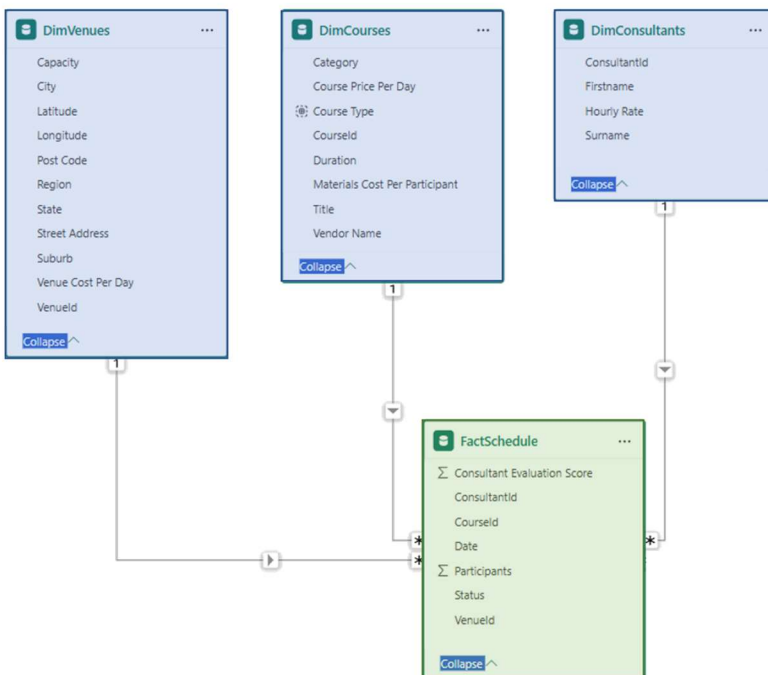
Our initial Storage Model

After data is originally stored like this:



Our desired Analysis Model

After the Power Query transformations, we want this:

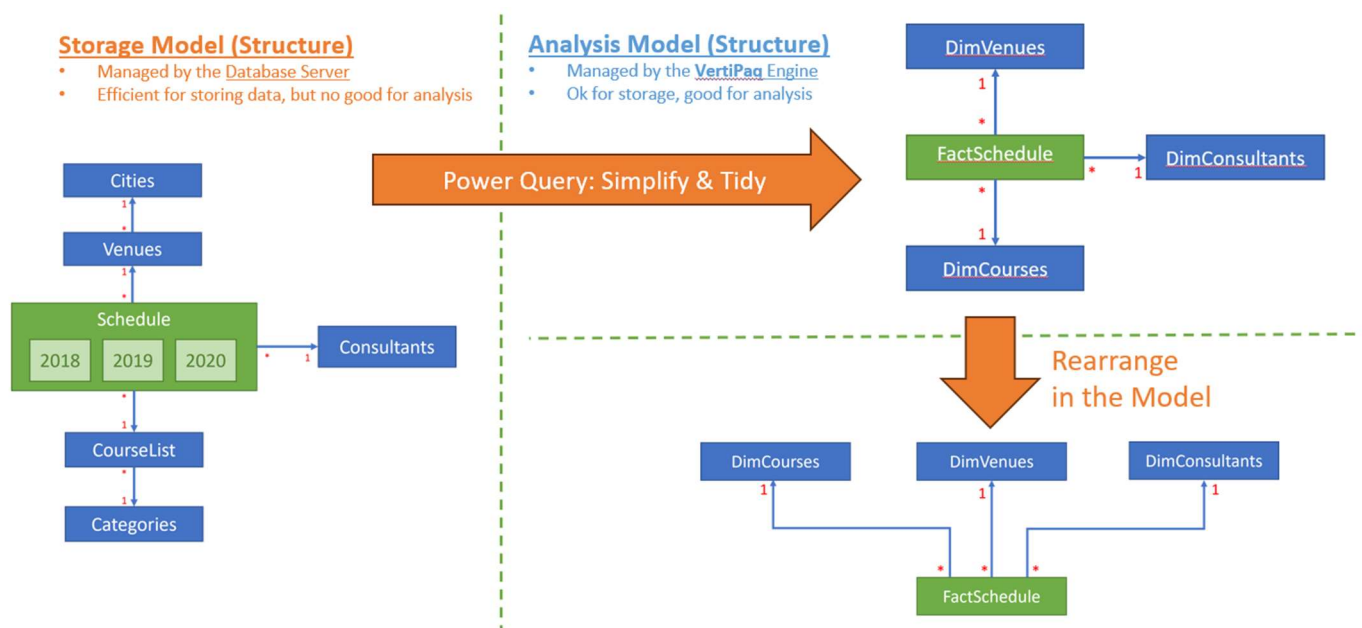


Why? Model Best Practices

- Less tables
- Less relationships
- Less Levels of relationships (2 ideally)
- One-to-many only
- Single direction Filter Prop

Where is DimDates?

Power Query: Simplify the Table Structure



Power Query: General Process for Transformations

1. **Important:** Check the Data Type for each column in each table
 - Straight after “Change Types” step
2. Perform *Table Combinations* to simplify a multi-table Model
 - Appending – Same columns, more rows
 - Merging – Same rows, more columns
3. Perform *Individual Table clean and tidy* Transformations
 - Remove Columns
 - Remove and filter Rows
 - Rename Fields (column headers) and Table (query name)
 - Fix column data
 - Other column transformations
4. Optional: Add New Columns
5. Optional: Organise in Query groups

Power Query: General Process for Merging Tables

Part 1

1. Choose CHILD table (on many side)
2. Click the Merge button
3. Choose PARENT table
4. Choose the column in each which join them
5. Check for Matches at bottom
6. Click OK

Part 2

1. Expand table column
 - No Name Prefix
 - Leave out linking column

Part 3 (tidy up)

1. Remove linking column from child table
2. Uncheck "Enable Load" from parent table
3. Rename Child Table (optional)

Exercise: Column Name Changes

Change the following column names in the indicated tables using Power Query

	Old Field Name	New Field Name
Date	Date	
Course	Category	Course Category
	Title	Course Title
	Status	
	Participants	
	Days	Duration
	PricePerDay	Course Price Per Day
	MaterialsPerParticipant	Materials Cost Per Participant
Venue	Company Name	Venue Name
	City	
	State	
	Region	
	CostPerDay	Venue Cost Per Day
Consultant	Firstname	Consultant First Name
	Surname	Consultant Surname
	Hourly Rate	
	ConsultantEvalScore	Consultant Evaluation Score

DAX Formulas

Gross Margin Calculations

Logic for the calculations ...



Single Table DAX Formulas

DAX Financial Formulas

Revenue = [Participants] * [Course Price]

Venue Expense = [Venue Cost Per Day] * [Duration]

Consultant Expense = [Consultant Daily Rate] * [Duration]

Materials Expense = [Materials Cost Per Participant] * [Participants]

Total Expenses = [Venue Expense] + [Consultant Expense] + [Materials Expense]

Gross Margin = [Revenue] - [Total Expenses]

Related Table DAX Formulas

DimCourse table

Course Price = [Duration] * [Course Price Per Day]

FactSchedule Table

Revenue = [Participants] * RELATED(DimCourses[Course Price])

Venue Expense = RELATED(DimVenues[Venue Cost Per Day]) * RELATED(DimCourses[Duration])

Consultant Expense = RELATED(DimConsultants[Daily Rate]) * RELATED(DimCourses[Duration])

Materials Expense = [Participants] * RELATED(DimCourses[Materials Cost Per Participant])

Expenses = [Consultant Expense] + [Materials Expense] + [Venue Expense]

Gross Margin = [Revenue] - [Expenses]

Date Table DAX Formulas

DimDates	CALENDARAUTO(12)
	CALENDAR(DATE(2020,01,01), DATE(2020,12,31))

Basic Columns

Year	YEAR([Date])
Quarter Number	QUARTER([Date])
Quarter Name	"Qtr " & QUARTER([Date])
Month Number	MONTH([Date])
Month Name Short	FORMAT([Date], "MMM")
Month Name Long	FORMAT([Date], "MMMM")
Month Year Name	FORMAT([Date], "MMM YY")
Weekday Number	WEEKDAY([Date], 2)
Day Name Short	FORMAT([Date], "DDD")
Day Name Long	FORMAT([Date], "DDDD")
Weekday Weekend	IF([WeekdayNum] <=5, "Weekday", "Weekend")

Financial Year Columns

Financial Year	IF([QuarterNum]>2, [Year] + 1, [Year])
Financial Year Name	"FY" & RIGHT(FORMAT(IF(QUARTER([Date]) > 2, YEAR([Date]) + 1, YEAR([Date])), "0000"), 2)
Financial Quarter Number	IF([QuarterNum]>2, [QuarterNum]-2, [QuarterNum]+2)
Financial Month	IF(MONTH([Date]) >= 7, MONTH([Date]) - 6, MONTH([Date]) + 6)

Date Table – Creation using DAX AddColumns

1) Paste the formula

Paste this DAX into the **New Table** formula from file: **DimDates Formula Simple.txt**

```
DimDates_Simple =
// -- Manual dates version
VAR current_year = YEAR(TODAY())
VAR start_date = DATE(current_year, 1, 1)
VAR end_date = DATE(current_year, 12, 31)
VAR base = CALENDAR(start_date, end_date)

// -- Auto dates version
// VAR fiscal_end_month = 6
// VAR base = CALENDARAUTO(fiscal_end_month)

RETURN
ADDCOLUMNS(
    base,

    -- Basic Columns
    "Year", YEAR([Date]),
    "Quarter Number", QUARTER([Date]),
    "Quarter Name", "Qtr " & QUARTER([Date]),
    "Month Number", MONTH([Date]),
    "Month Name Short", FORMAT([Date], "MMM"),
    "Month Name Long", FORMAT([Date], "MMMM"),
    "Month Year Name", FORMAT([Date], "MMM YY"),
    "Month Year Sort", FORMAT([Date], "YYYYMM"),
    "Weekday Number", WEEKDAY([Date], 2),
    "Day Name Short", FORMAT([Date], "DDD"),
    "Day Name Long", FORMAT([Date], "DDDD"),
    "Weekday Weekend", IF(WEEKDAY([Date], 2) <= 5, "Weekday", "Weekend"),

    -- Financial Year Columns
    "Financial Year", IF(QUARTER([Date]) > 2, YEAR([Date]) + 1, YEAR([Date])),
    "Financial Year Name", "FY" & RIGHT(FORMAT(IF(QUARTER([Date]) > 2, YEAR([Date]) + 1, YEAR([Date])), "0000"), 2),
    "Financial Quarter Number", IF(QUARTER([Date]) > 2, QUARTER([Date]) - 2, QUARTER([Date]) + 2),
    "Financial Month Number", IF(MONTH([Date]) >= 7, MONTH([Date]) - 6, MONTH([Date]) + 6)
)
```

2) Additional Actions

1. Set the datatype of the Date column to "Date"
2. Set the following text columns to sort by the following number columns:

Text Column to select	Sort by column ...
Month Name Short	Month Number
Month Name Long	Month Number
Month Year Name	Month Year Sort
Day Name Short	Weekday Number
Day Name Long	Weekday Number

3. Mark the table as a Date Table.