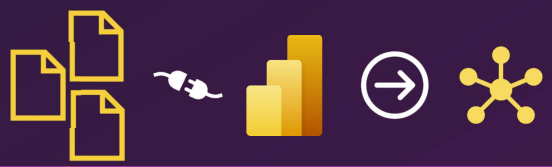
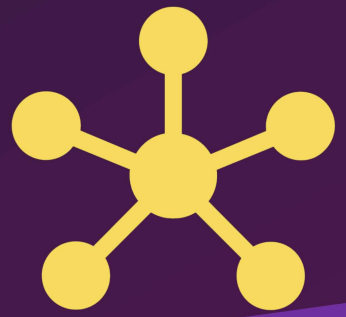
The Power BI Desktop Workflow

Query Editor *Data Preparation*	Clean & Transform	**E**xtract **T**ransform **L**oad
Data & Model View *Data Analysis*	Inspect, Explore & Understand Data	View & Edit Relationships between Tables
Report View *Data Visualization*	Create Reports with Multiple Visuals	

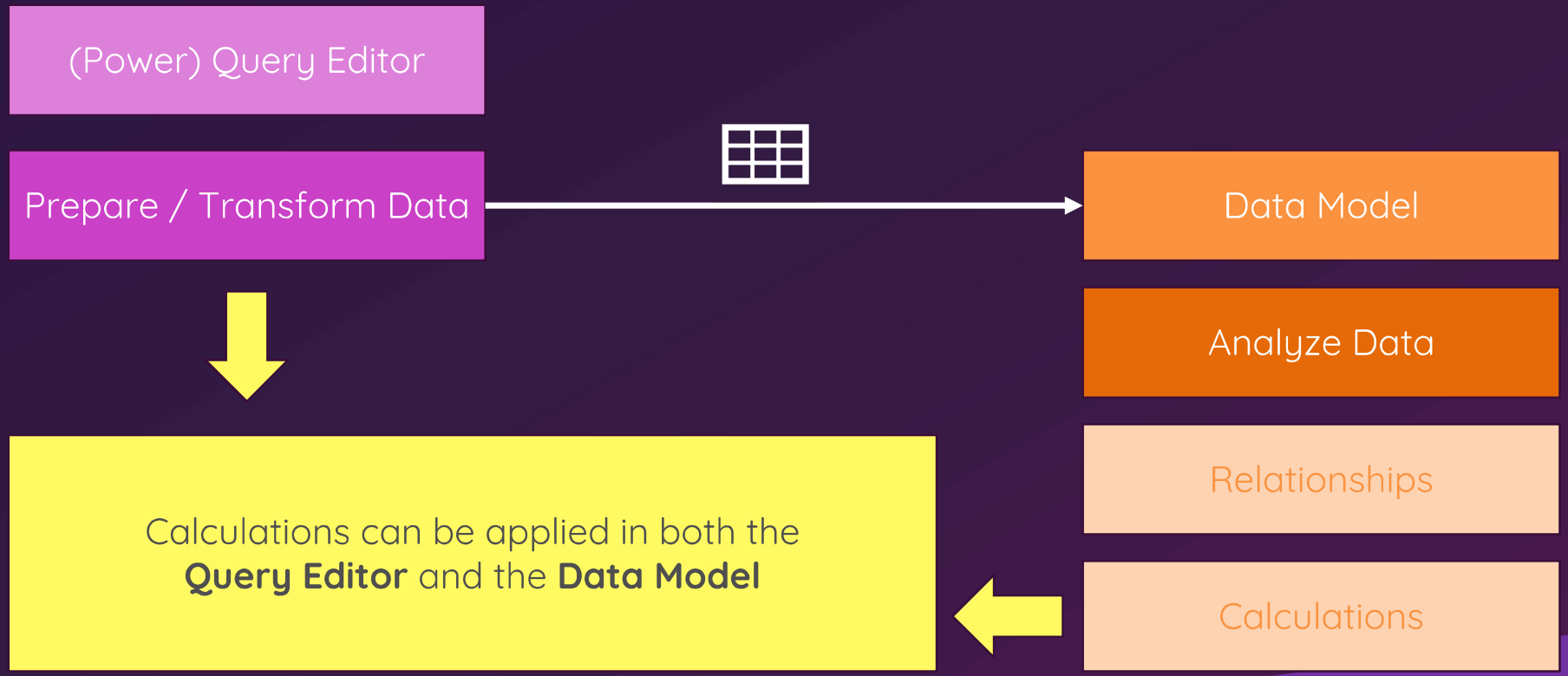
Query Editor



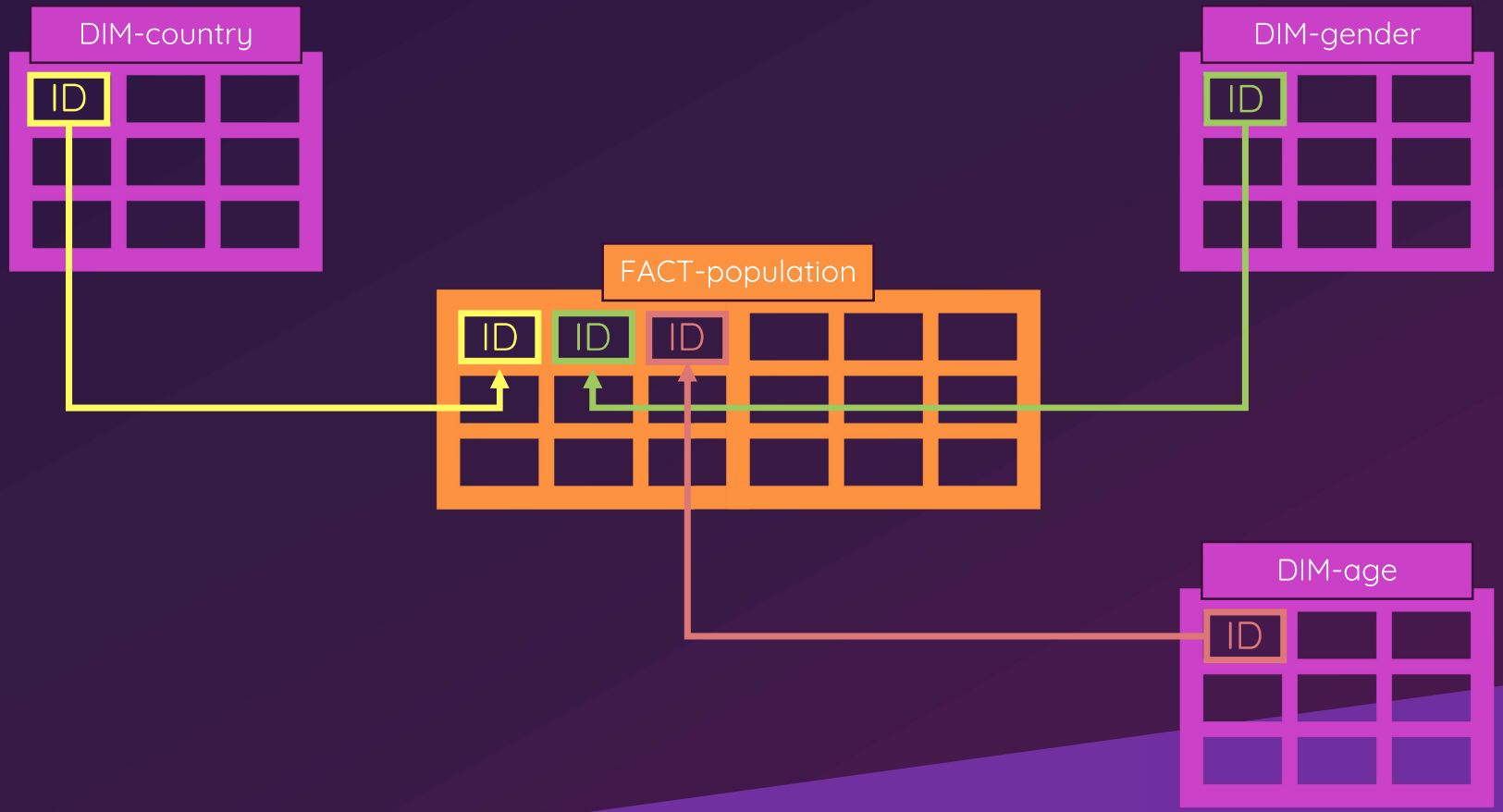
Data Model



Query Editor vs Data Model



Relationships to the Rescue!



Understanding Relationships

- Cardinality
- Relationship Type
- Cross Filter Direction
- Active Properties

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Different Kinds Of Data Relationships

One-to-Many
(1:n)

One record in table A has one or many related records in table B

e.g. an employee belongs to one company but a company has many employees

Many-to-Many
(n:n)

One record in table A has one or many related tables in table B – and vice versa

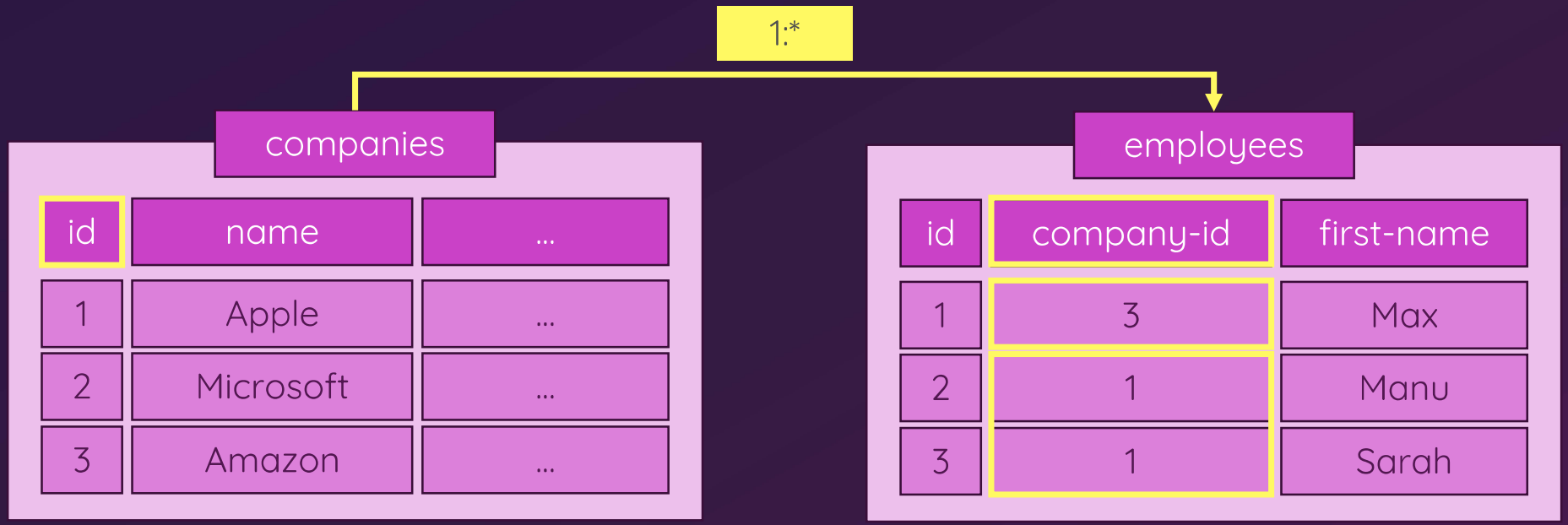
e.g. an employee is part of multiple projects and every project has multiple employees assigned to it

One-to-One
(1:1)

One record in table A belongs to exactly one record in table B – and vice versa

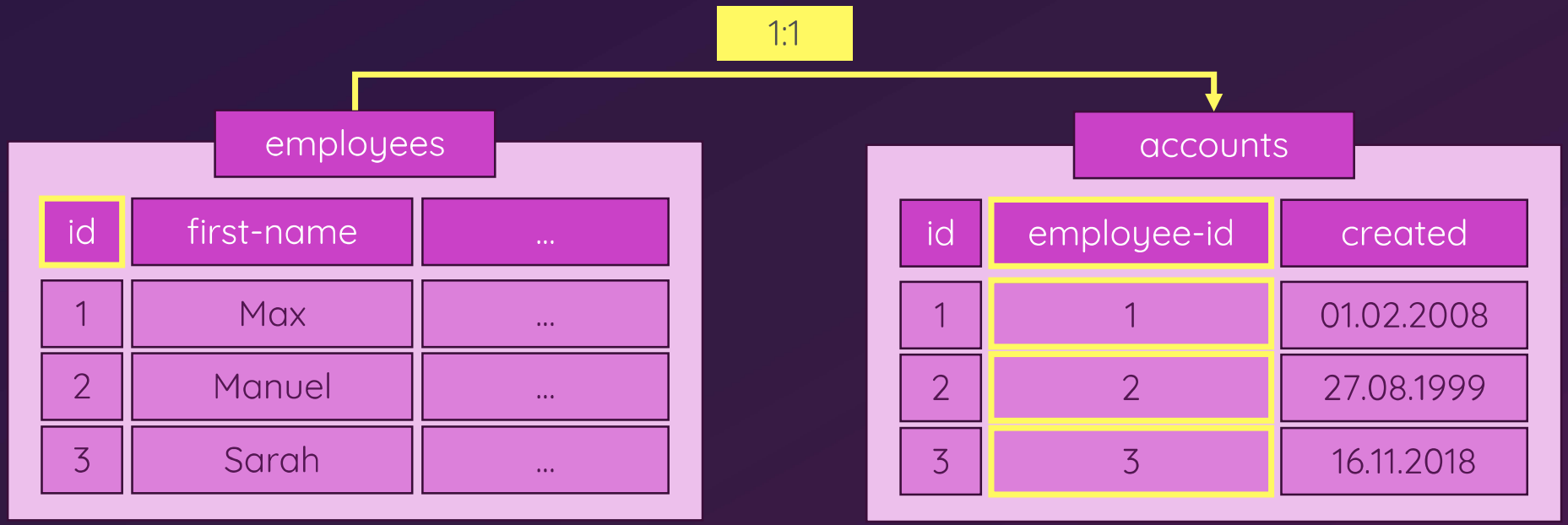
e.g. an employee has exactly one intranet account and every intranet account belongs to exactly one employee

One to Many (1:*)



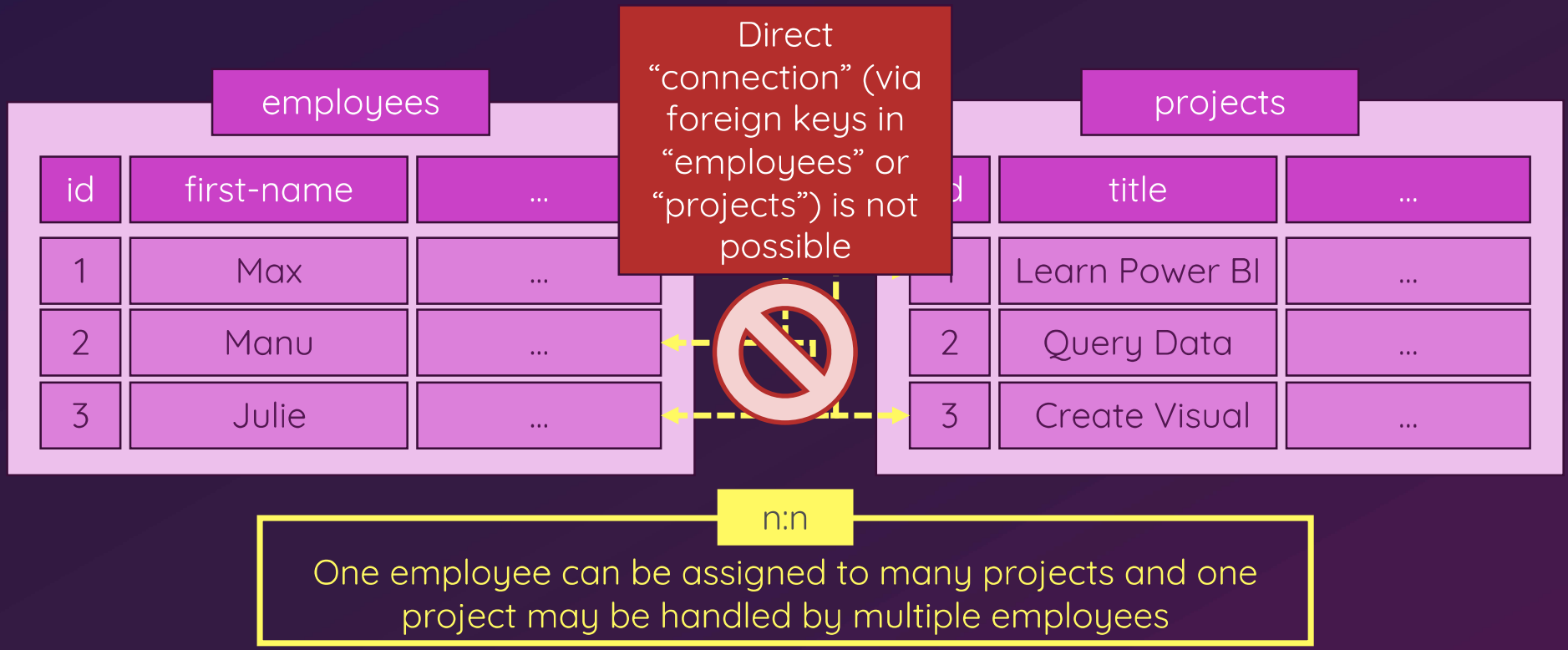
"One": **Unique** entry for **primary key**
"Many": **One or multiple** entries for **foreign key**

One to One (1:1)



"One": **Unique** entry for **primary key**
"One": **Unique** entry for **foreign key**

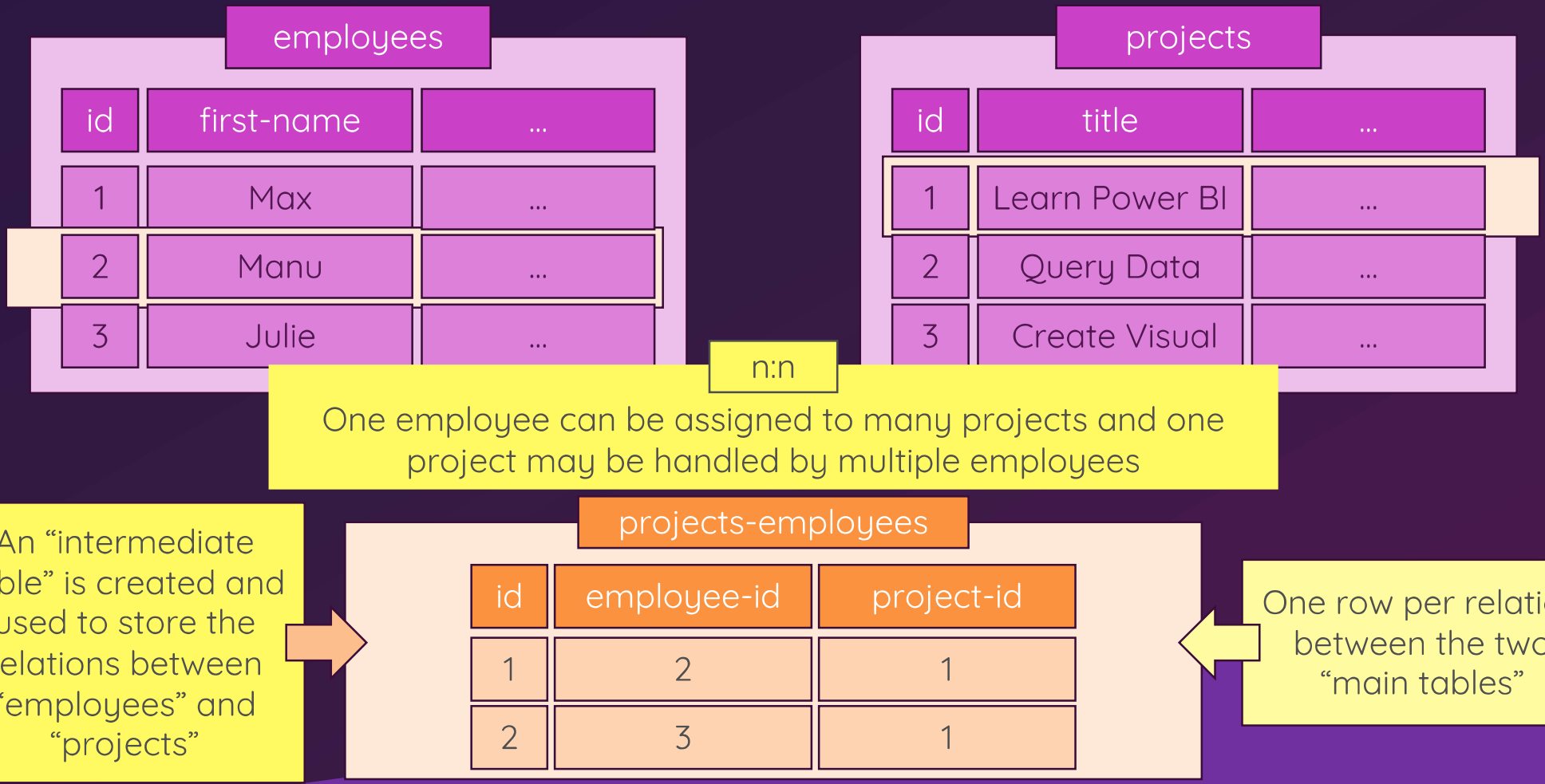
Many-To-Many Relations Need Intermediate Tables



n:n

One employee can be assigned to many projects and one project may be handled by multiple employees

Many-To-Many Relations Need Intermediate Tables



Understanding Relationships

- Cardinality
  - Relationship Type
- Cross Filter Direction
  - Table “Communication”
- Active Properties

Understanding Relationships

Cardinality	Cross Filter Direction	Active Properties
Relationship Type	Table “Communication”	Activate / Deactivate Relationship

M vs DAX (Data Analysis Expressions)

	Description	Application
M	Power Query Formula Language	Data Preparation
	Data Transformation	Before Data Model
DAX	**D**ata **A**nalysis **E**xpression Language	Create Insights
	Analytical Data Calculations	In Data Model
	Comparable to Excel Functions	

DAX Basics

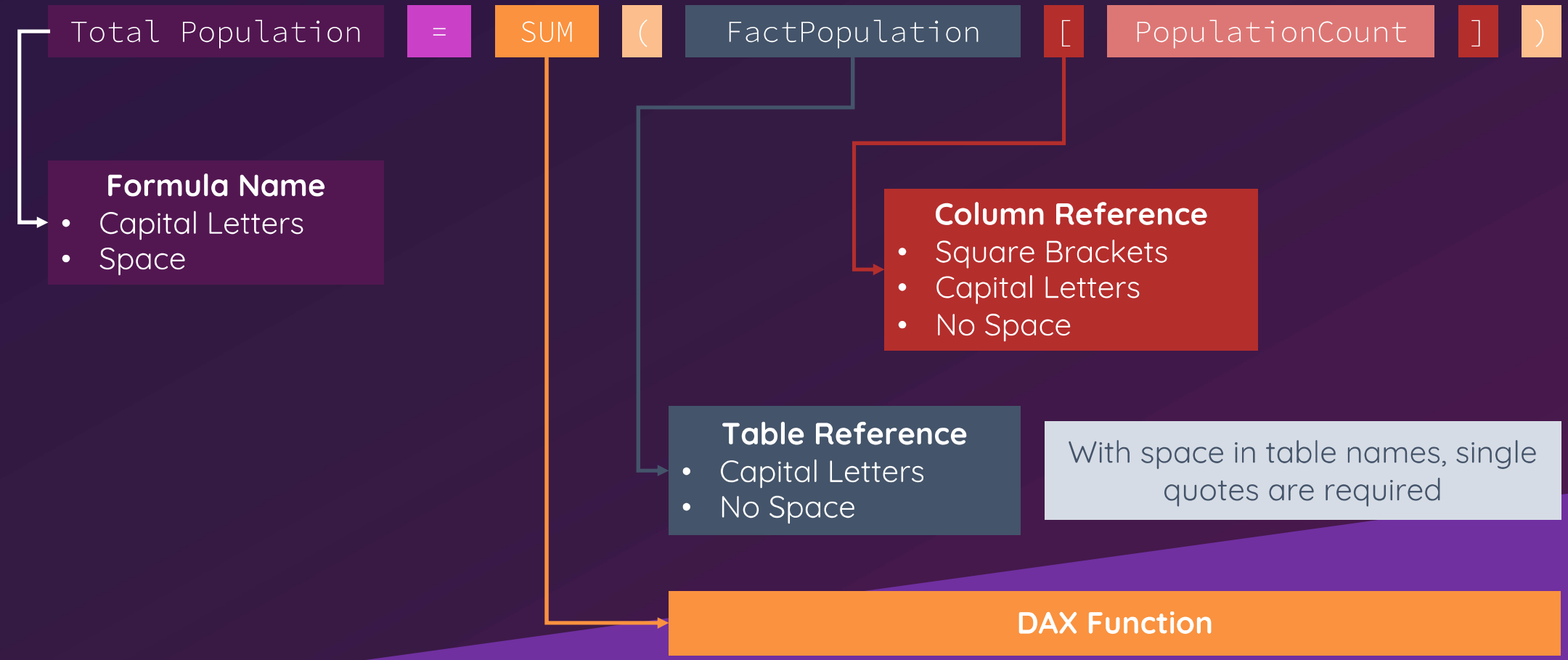
DAX Reference	https://docs.microsoft.com/en-us/dax/		
Syntax	`Formula = …`		
Data Types	`String`	`Number`	…
Operators	`+`	`-`	…
Functions	`CONCATENATE()`		

Basics

Advanced

DAX Statements	`DEFINE`	`EVALUATE`	`ORDER BY`	`VAR`
DAX Queries				

The Core DAX Syntax



DAX Data Types

String (Text)	"The DAX Basics"	
Whole & Decimal Numbers	564	949.59
Boolean	TRUE	FALSE
Date/Time	January 1st 2020	
Currency		
Blank (NA)		

DAX Operators

Arithmetic	Comparison	Logical	Text concat.
+	=	&&	&
-	==	||	
*	>	IN	
/	>=		
^	<>		

DAX Core Functions

Type	Function	Output
Text	`CONCATENATE("I Love Power","BI")`	`I Love PowerBI`
Information	`ISNUMBER(2020)`	`TRUE`
Logical	`IF([Population]>100000,"Big","Small")`	`Big` / `Small`
Math	`ROUND(352.867, 2)`	`352.87`
Statistical	`AVERAGE(Fact-Pop[Population])`	
Filter	`FILTER(Fact-Pop[Year]=2020)`	
Date & Time	`CALENDAR(DATE(2000,01,01),DATE(2020,12,31))`	

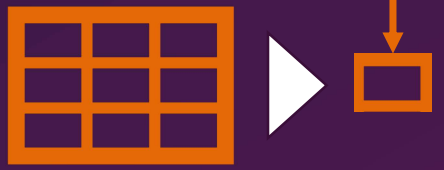
Calculated Column or Measure?

Calculated Column

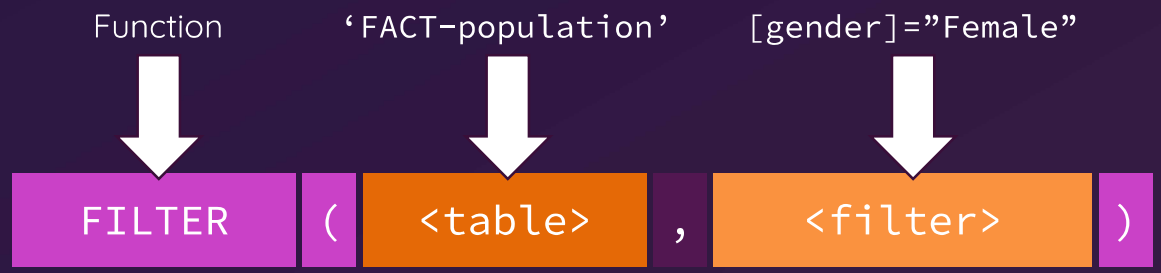
"Perform an operation that generates results for each row of your table"

Measure

"Return a single result of a calculation or an aggregated value (e.g. Averages)"



The "FILTER" & "CALCULATE" Functions



The "FILTER" & "CALCULATE" Functions