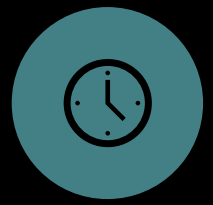
Getting Started with SQL Server

Ami Levin, October 2019

Welcome!



4 HOURS

13
MODULES

4 CHAPTERS

13
EXERCISES

3 BREAKS

Ami

Agenda

What is SQL Server?
Creating tables
Managing data
Supporting objects

Goals

UNDERSTAND WHAT IT IS

USE IT EFFECTIVELY

GET YOUR HANDS “DIRTY”

Bonus Goals

LEARN SOME SQL FUNDAMENTALS

GET CURIOUS AND MOTIVATED

HAVE FUN!

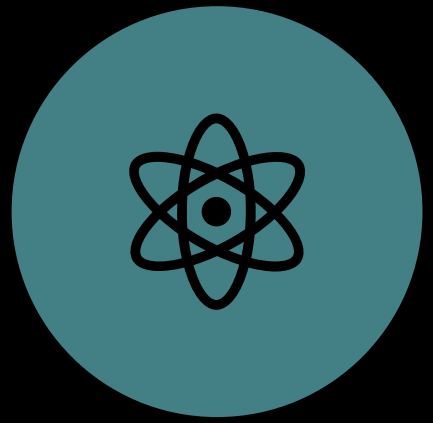
Non-Goals

ZERO TO HERO

IN DEPTH COVERAGE

Focus

FOUNDATIONS



THEORY

UNDERSTANDING

Your Participation

ATTENDANCE

CLASS EXERCISES

GROUP CHAT

FEEDBACK

What is SQL Server?

O'REILLY®

Agenda

Architecture
Managing databases
Accessing objects

SQL Server

A relational database management system (RDBMS)

Free Express
$14K/core EE

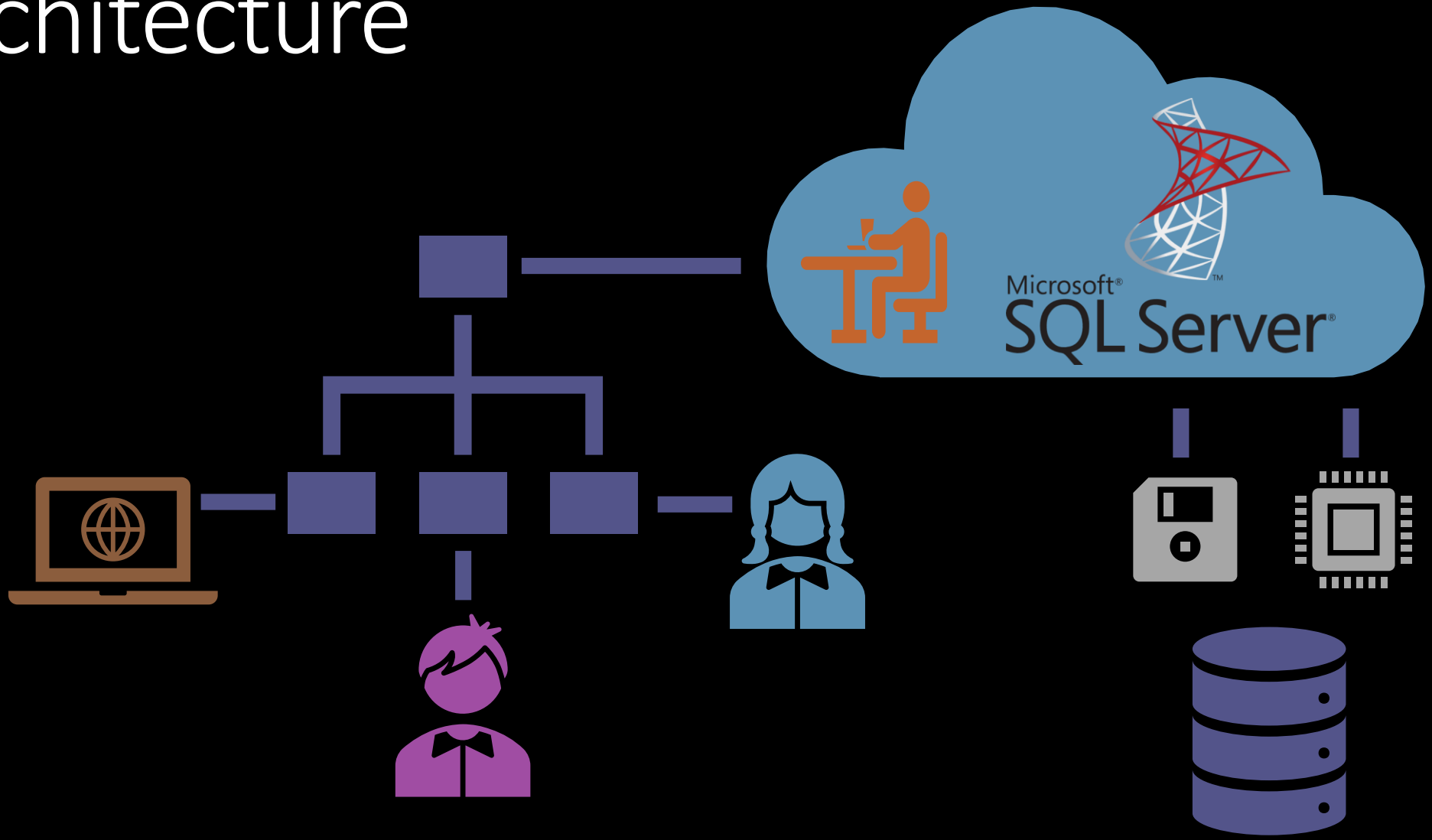
Originally licensed from Sybase in 1989 for OS/2

Top 3 most popular DBMS

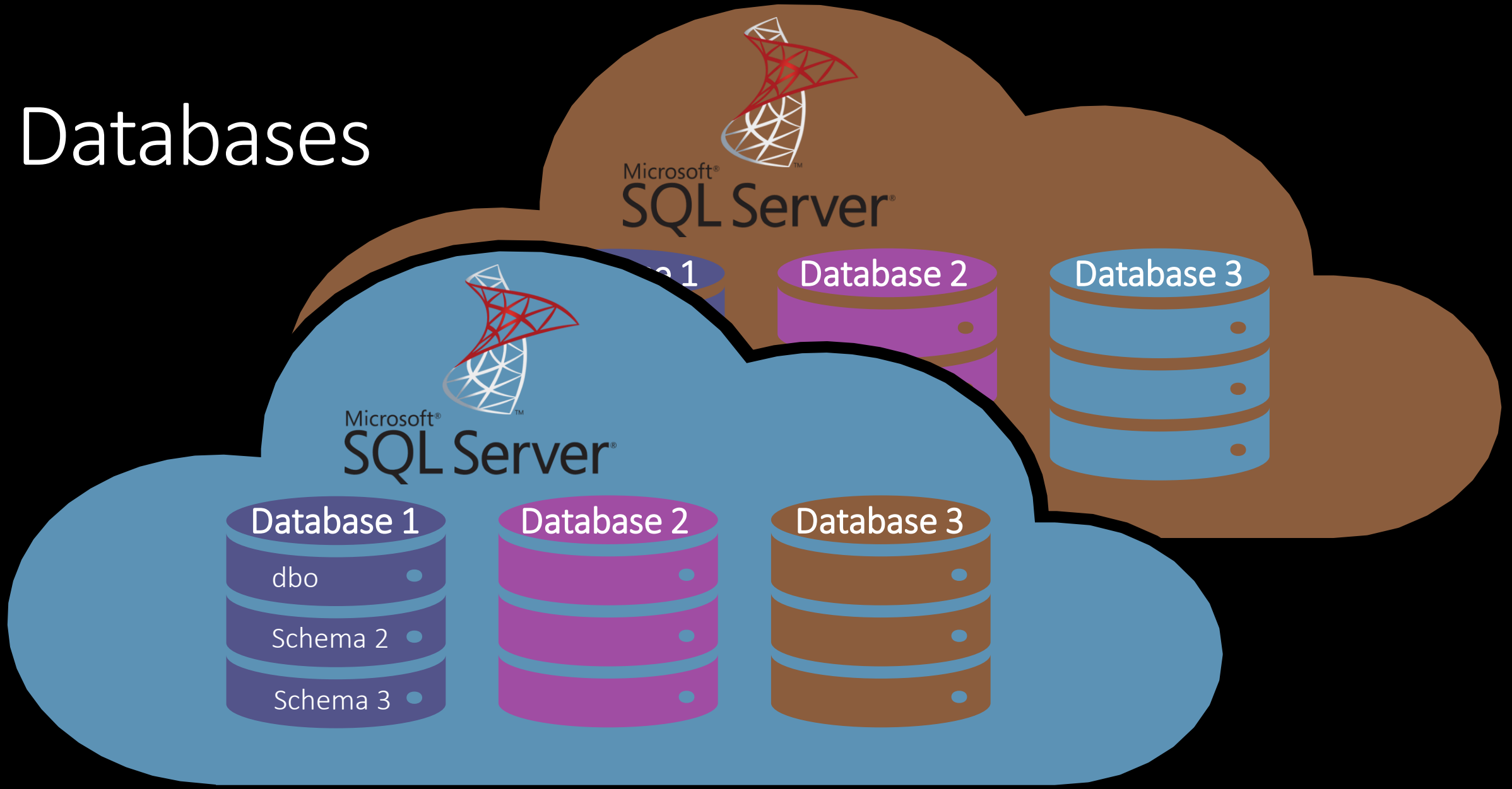
2019 release coming

microsoft.com/
sql-server

Architecture



Databases


Microsoft
SQL Server
Database 2
Database 3
Microsoft
SQL Server
Database 1
dbo
Schema 2
Schema 3
Database 2
Database 3

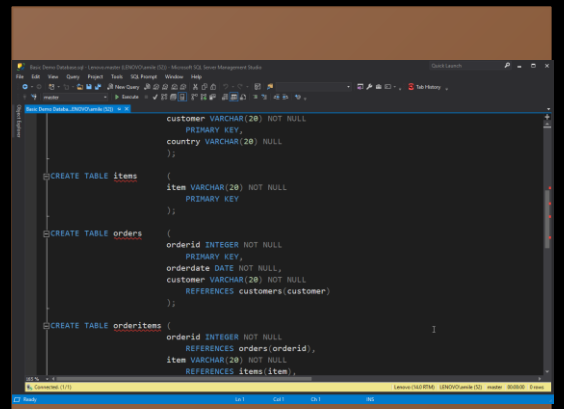
Installing vs. Hosting

LOCAL INSTALLATION

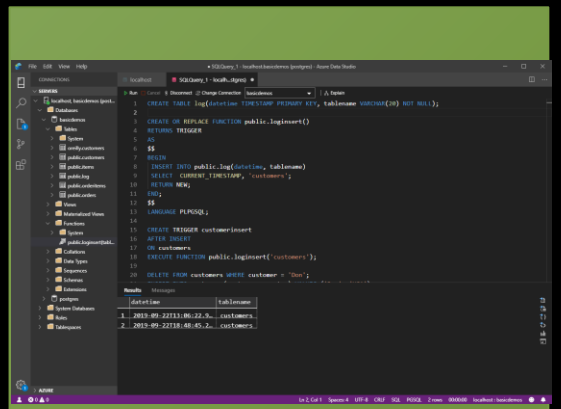
HOSTING IN PUBLIC CLOUD

PaaS

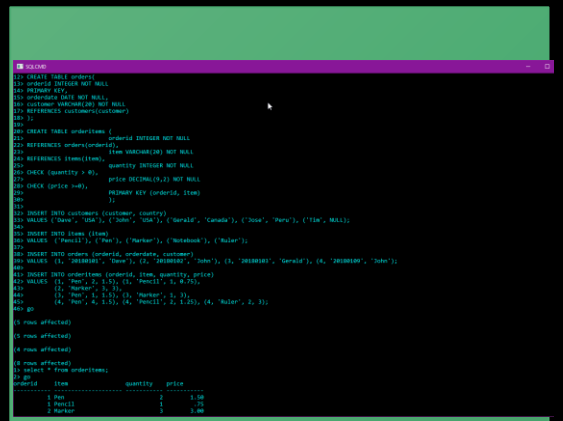
ONLINE QUERY SERVICES



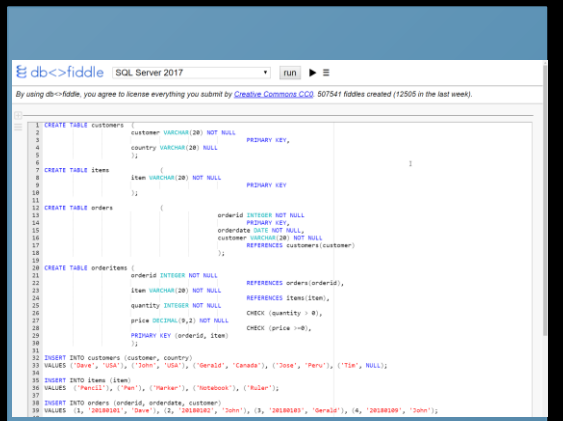
SSMS



Data Studio



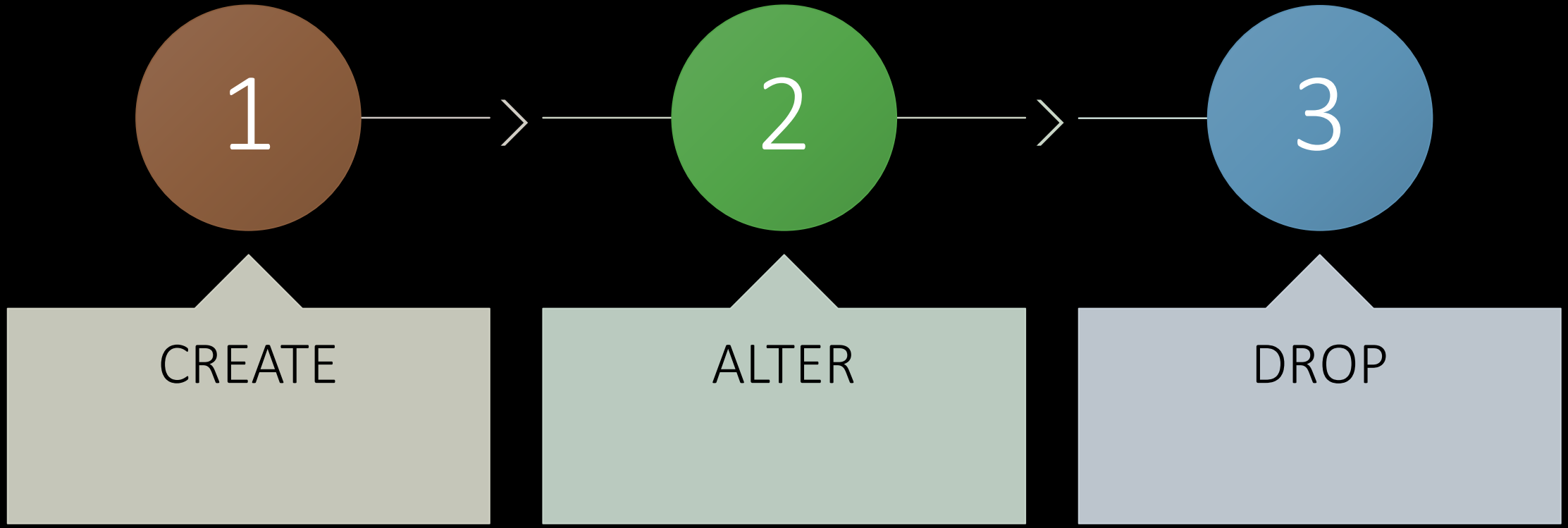
SQL CMD



db-fiddle.uk

Tools

Exercise – Module 1-1.sql



Creating Databases

Our Demo Database

Items

Item
Pencil
Pen
Marker
Notebook
Ruler

Customers

Customer	Country
Dave	USA
John	USA
Gerald	Canada
Jose	Peru
Tim	NULL

Order Items

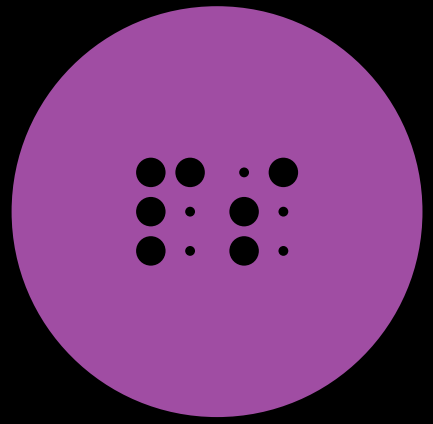
Order#	Item	Qty	Price
1	Pen	2	1.50
1	Pencil	1	0.75
2	Marker	3	3.00
3	Pen	1	1.50
4	Pen	4	1.50
4	Pencil	2	1.25
4	Ruler	2	3.00

Orders

Order#	Customer	Order Date
1	Dave	1/1/2018
2	John	1/2/2018
3	Gerald	1/3/2018
4	John	1/9/2018

Managing Databases

BACKUP

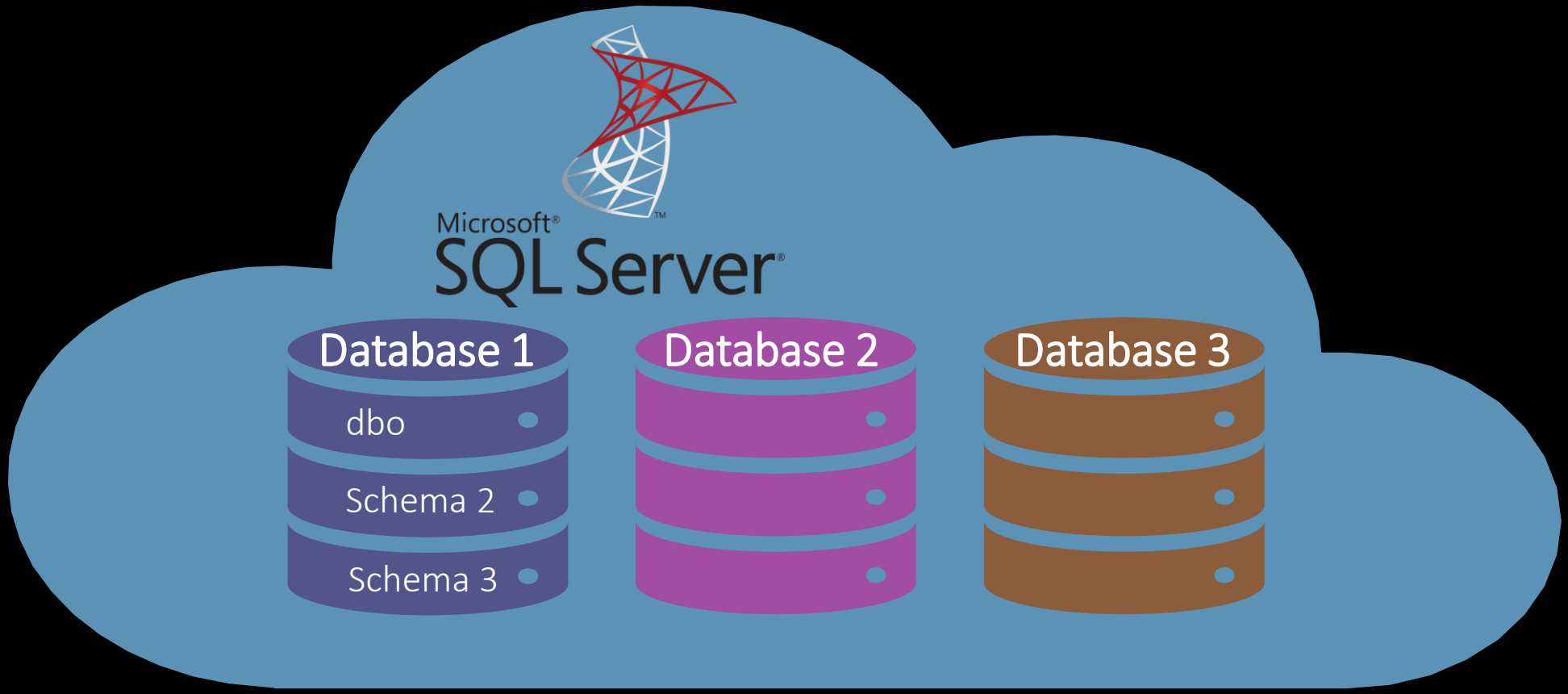


DEFRAG

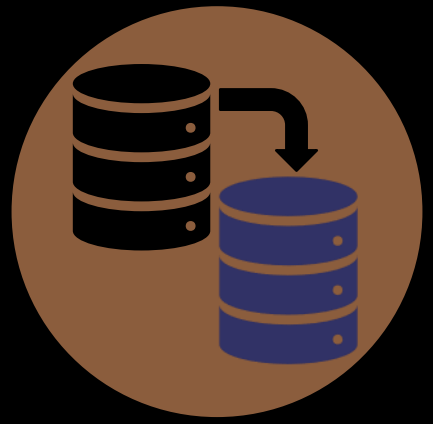
EXPORT

Exercise – Module 1-2.sql

Databases


Microsoft®
SQL Server®
Database 1
dbo
Schema 2
Schema 3
Database 2
Database 3

Using Schema Names



CROSS DATABASE ACCESS

DBO SCHEMA

EXPLICIT SCHEMA

Creating Users

USERS

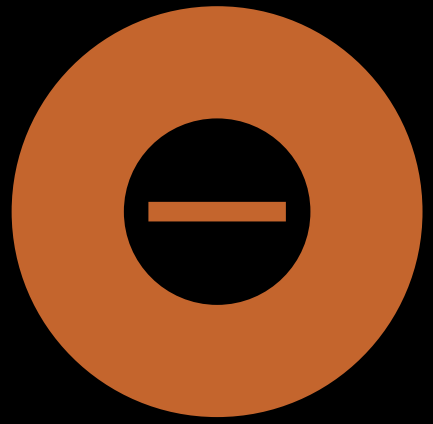
LOGINS

ROLES

Assigning Permissions

GRANT

REVOKE



DENY

Exercise – Module 1-3.sql

Break

Creating Objects

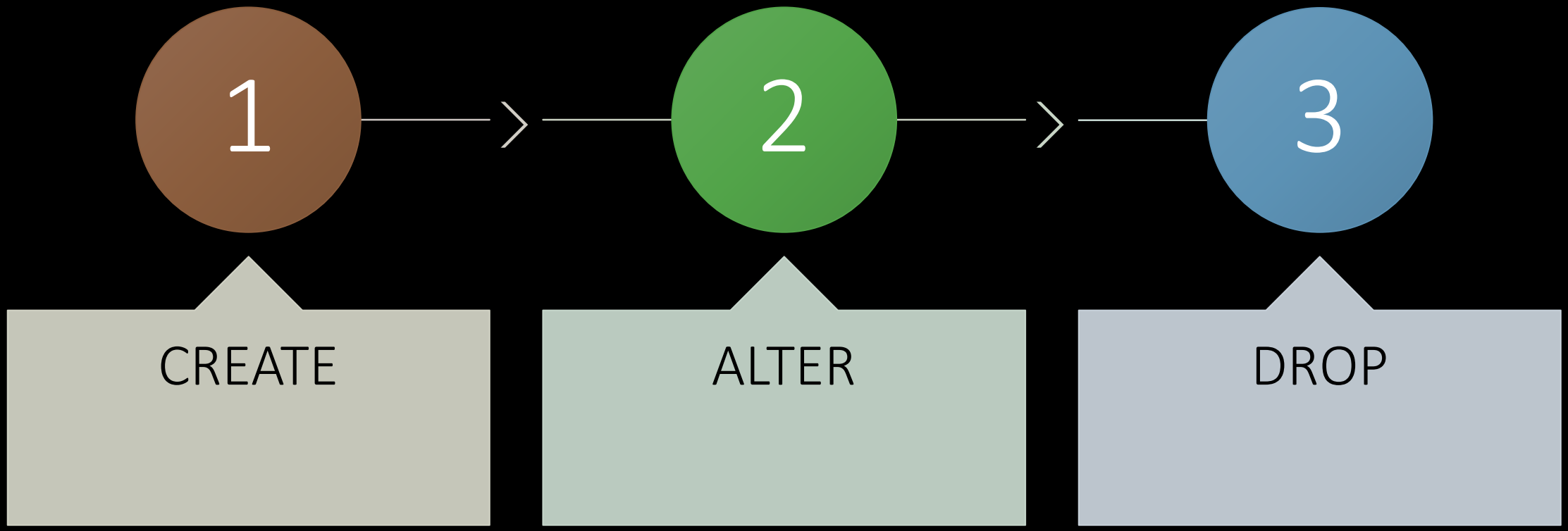
O'REILLY®

Agenda

CREATE, ALTER, DROP

Constraints

Data types



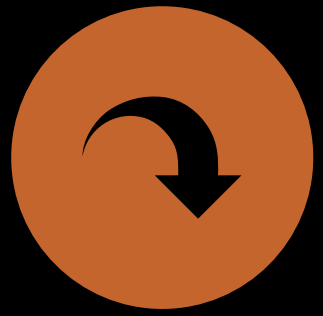
Creating Tables

Exercise – Module 2-1.sql

Constraints

KEYS

NULL



FOREIGN KEYS

CHECK

Our Demo Database

Items

Item
Pencil
Pen
Marker
Notebook
Ruler

Customers

Customer	Country
Dave	USA
John	USA
Gerald	Canada
Jose	Peru
Tim	NULL

Order Items

Order#	Item	Qty	Price
1	Pen	2	1.50
1	Pencil	1	0.75
2	Marker	3	3.00
3	Pen	1	1.50
4	Pen	4	1.50
4	Pencil	2	1.25
4	Ruler	2	3.00

Orders

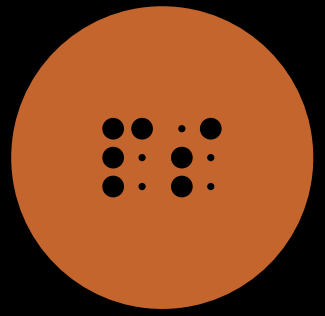
Order#	Customer	Order Date
1	Dave	1/1/2018
2	John	1/2/2018
3	Gerald	1/3/2018
4	John	1/9/2018

Exercise – Module 2-2.sql

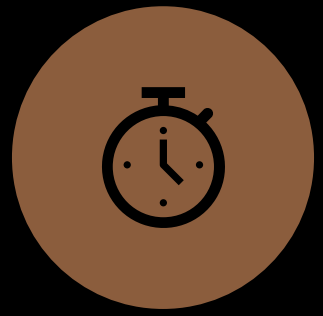
Data Types

NUMERIC

STRING



BINARY



TEMPORAL

Exercise – Module 2-3.sql

Break

Managing Data

O'REILLY®

Agenda

INSERT, UPDATE, DELETE

SELECT query processing

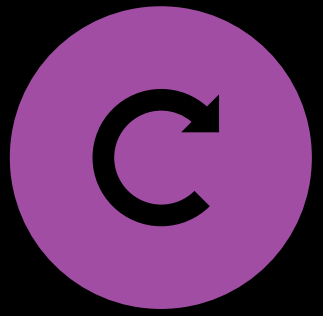
Joins

Filtering

Grouping

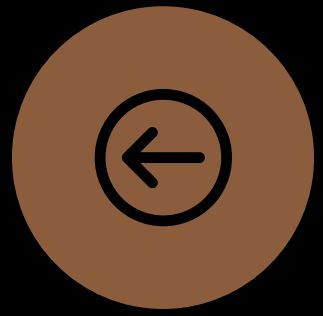
DML / DQL

INSERT



UPDATE

DELETE



SELECT

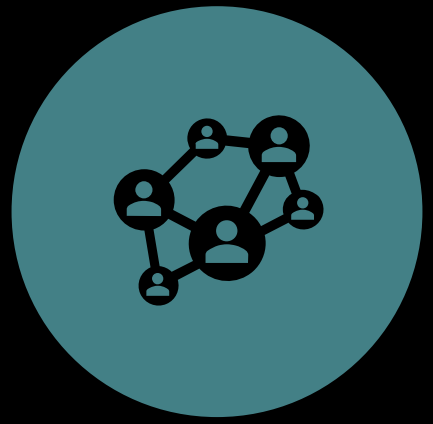
Exercise – Module 3-1.sql

SELECT	5
FROM	1
WHERE	2
GROUP BY	3
HAVING	4
ORDER BY	6

SELECT processing

Exercise – Module 3-2.sql

JOIN fundamentals



CARTESIAN PRODUCT

MATCHING ROWS

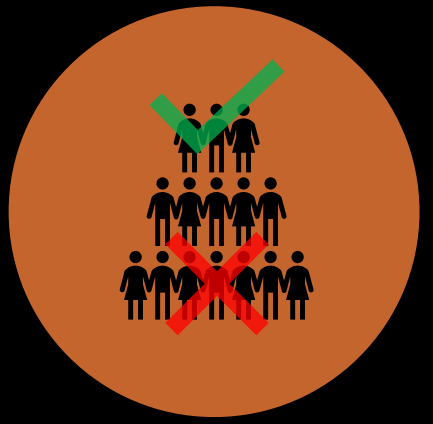
RESERVED ROWS

Exercise – Module 3-3.sql

Filtering and Grouping

WHERE

GROUP BY



HAVING

Exercise – Module 3-4.sql

Break

Questions

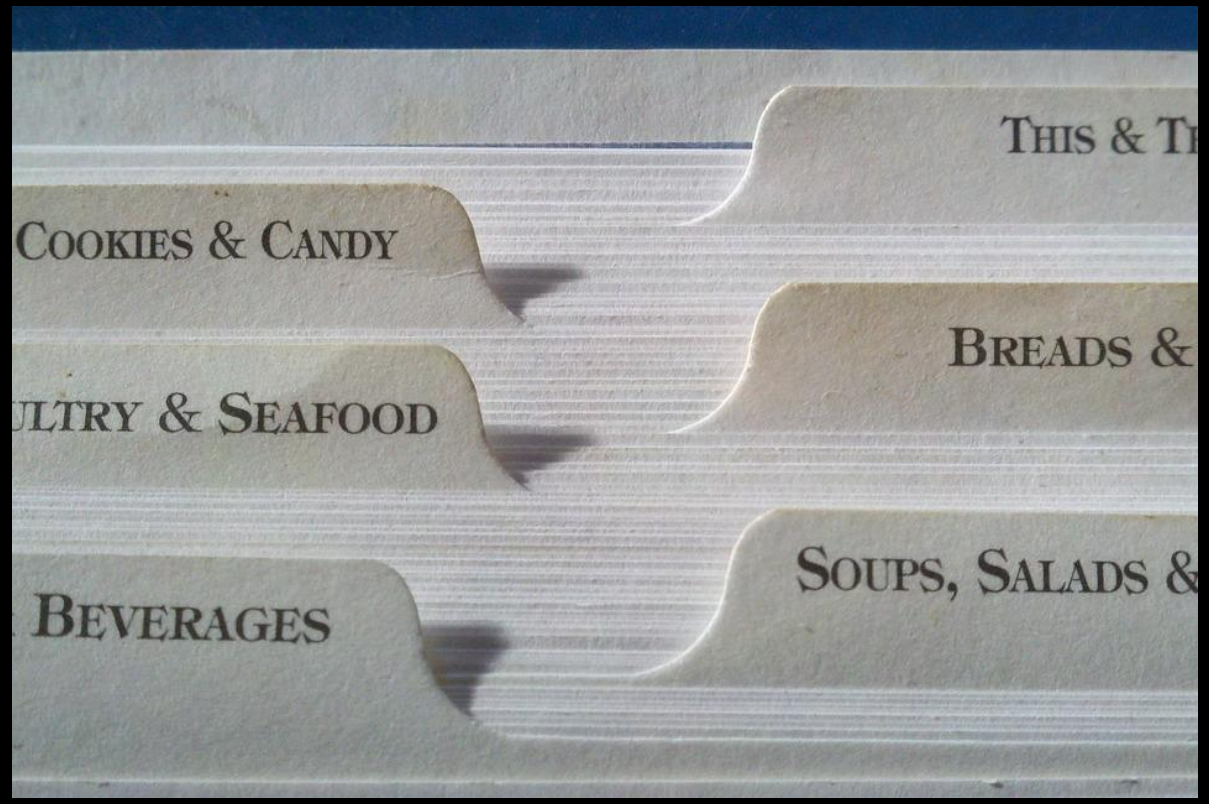
Supporting Objects

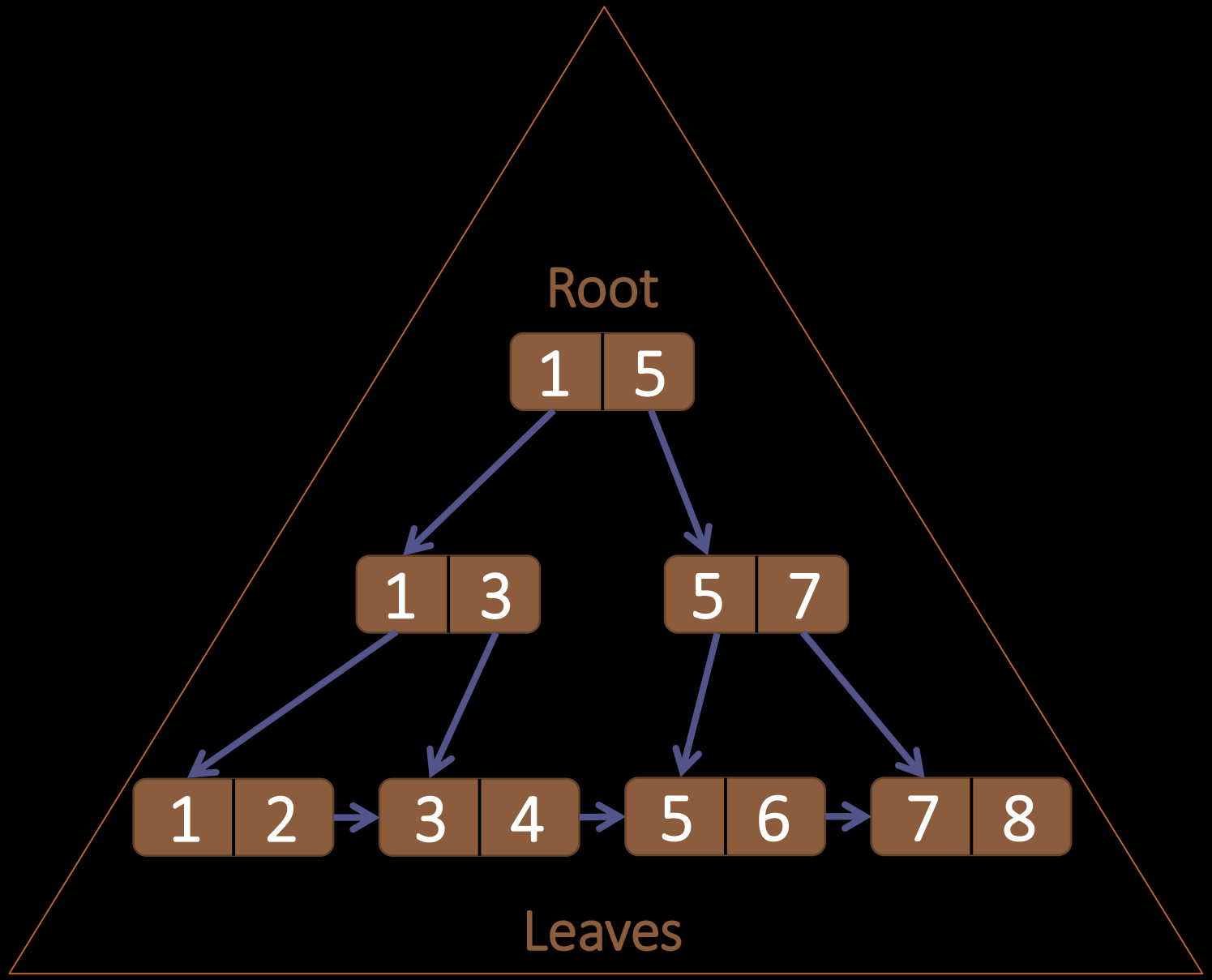
O'REILLY®

Agenda

Indexes
Operators and functions
Programming objects

Indexes


THIS & TH
COOKIES & CANDY
BREADS &
ULTRY & SEAFOOD
SOUPS, SALADS &
BEVERAGES

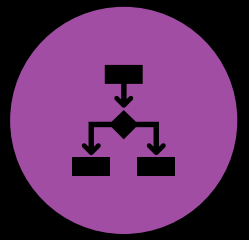


Balanced Trees

Exercise – Module 4-1.sql

Operators and Functions

MATHEMATICAL OPERATORS



LOGICAL OPERATORS

NULL HANDLING

STRING FUNCTIONS

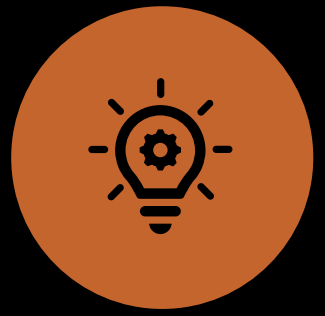
TEMPORAL FUNCTIONS

Exercise – Module 4-2.sql

Programming Objects

VIEWS

STORED PROCEDURES



TRIGGERS

USER DEFINED FUNCTIONS

Exercise – Module 4-3.sql

PostgreSQL

Conclusions

What's next?

Feedback

UNDERSTAND WHAT IT IS

USE IT EFFECTIVELY

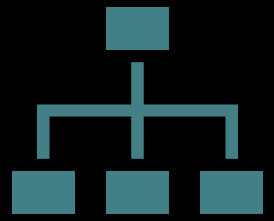
GET YOUR HANDS “DIRTY”

LEARN SOME SQL FUNDAMENTALS

GET CURIOUS AND MOTIVATED

HAVE FUN!

What Next?



RELATIONAL MODEL

ADDITIONAL COURSES

BOOKS

PRODUCT DOCUMENTATION

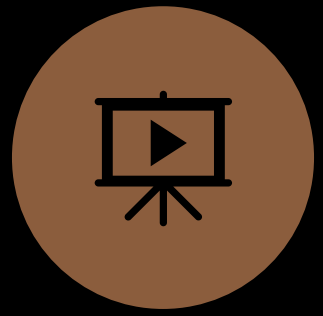
WIKIPEDIA
consider donating…

Get involved!

LOCAL EVENTS

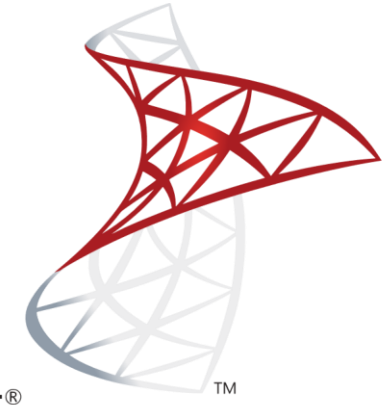
ONLINE COMMUNITIES

TRADE CONFERENCES



BLOGS, TWITTER, YOUTUBE

Questions



Microsoft® SQL Server®

O'REILLY®

Thank You!

www.amilevin.com

LinkedIn