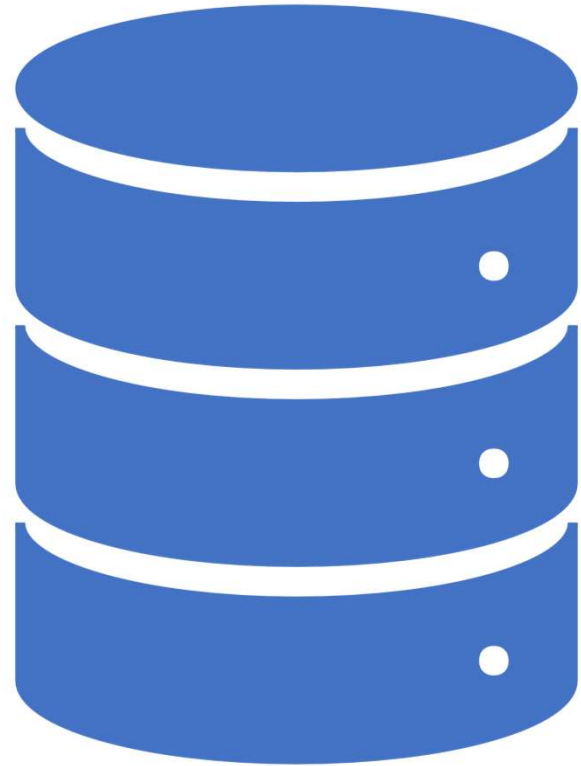
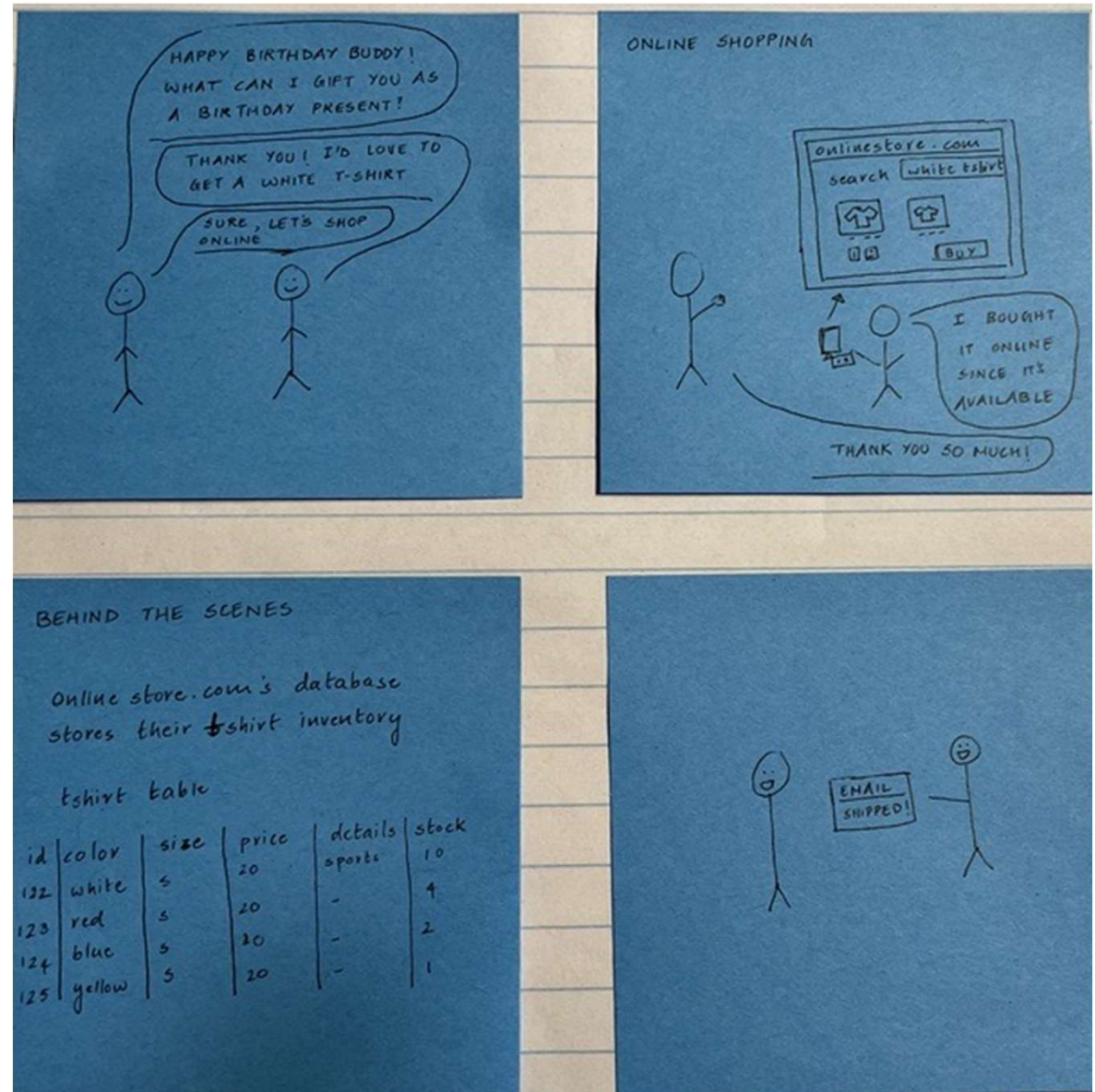


What is SQL Server and Azure SQL?

Poll: How many
of you have heard
of or used a
database?



Storyboard: Birthday gift shopping



What is a database and why does it matter

1

A database is an organized collection of data, stored and accessed electronically.

2

A database system stores important data about a business and this information helps companies make informed decisions.

3

Real World Example

- Instagram needs databases to store user information like emails and user behavior. From this data, the company can recommend content to customers and provide a great user experience.

What is the difference between SQL and SQL Server

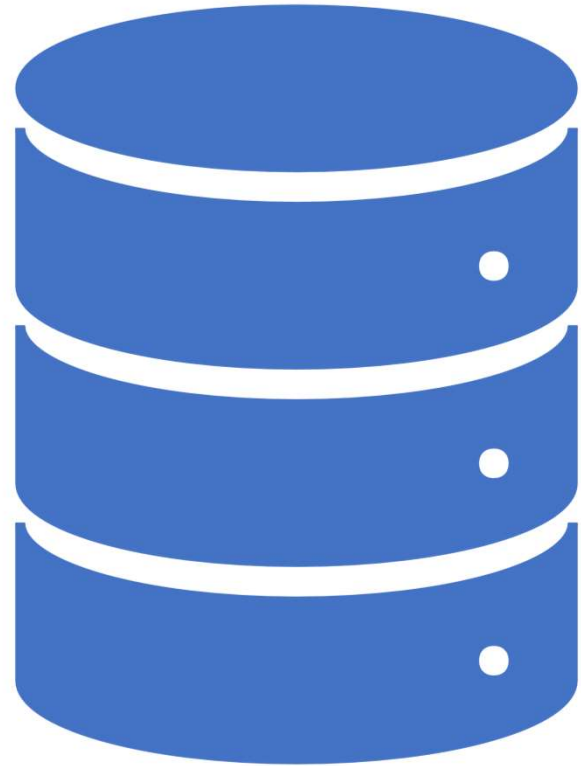
SQL

- SQL is a query language
- Used in programming and designed for managing data held in a relational database management system, or for stream processing in a relational data stream management system.

SQL Server

- A relational database management system (RDBMS) management developed by Microsoft
- As a database server, the primary function of the SQL Server is to store and retrieve data used by other applications

Poll: How many
of you have heard
of or used SQL
Server?



What is SQL Server

SQL Server is a proprietary relational database management system

SQL Server is designed to manage and store information.

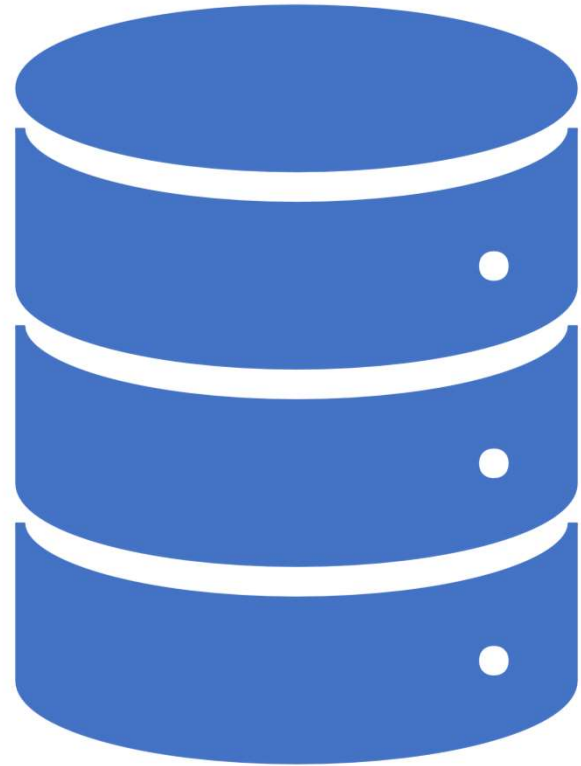
SQL Server both relational and post relational database capabilities for building applications of diverse capabilities

It is an Exciting world!

- SQL Server runs on:
 - Small IOT devices, to world's largest computers, to world's top hyperscale clouds
 - On-premises, Azure and in every cloud
 - In every single Azure data center
- SQL Server is used by:
 - 98% of Fortune 500 companies
 - From small startups to Fortune 5
- Applications: Build Once and run Everywhere
- Your skills are transferable, and desired by companies across geographies, industries, scale and size



Poll: How many
of you have heard
or used of Azure
SQL?



Azure SQL Database is the world's database



250K+

active customers every month



70T

queries run every month



10M+

active databases every month



61PB

Data under management



100TB+

Single SQL Database



60+ and counting

The most regions on the globe of any cloud provider

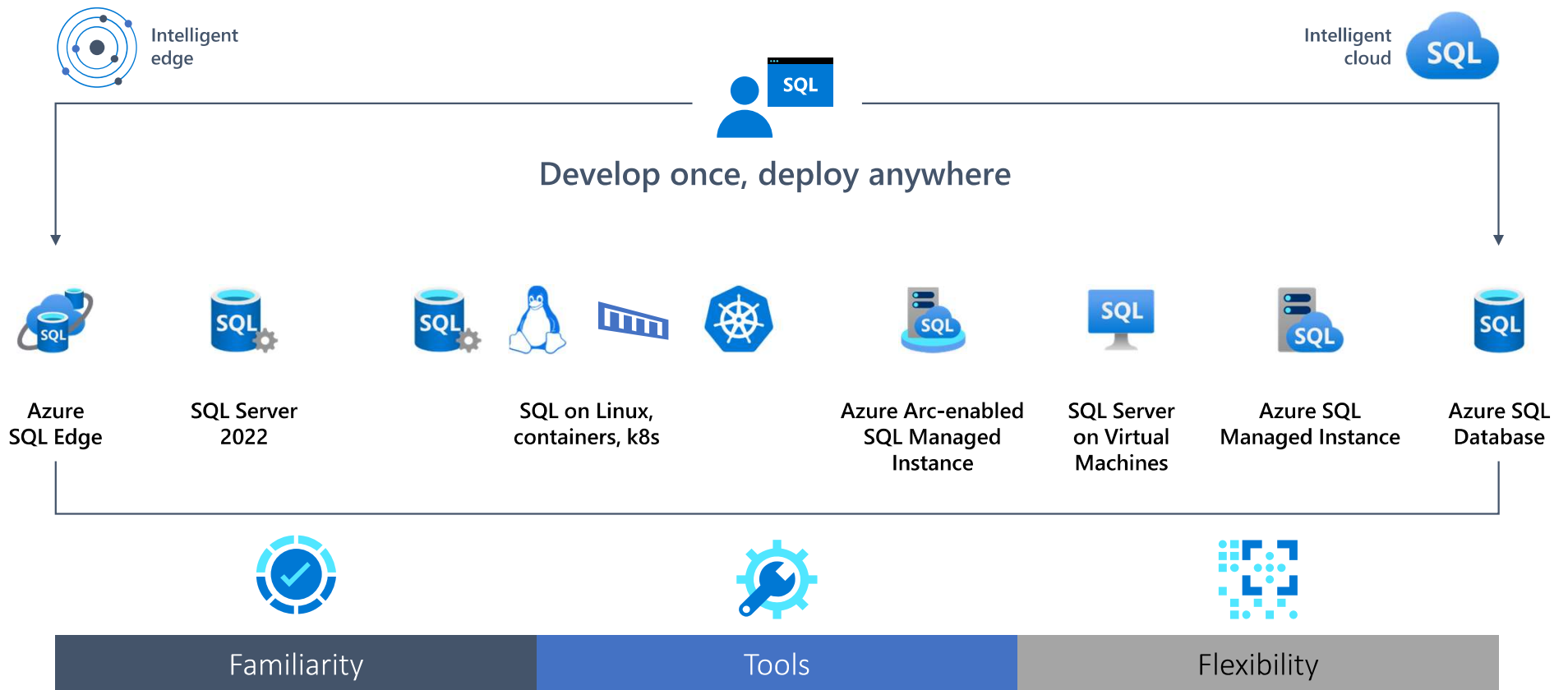
What is Azure SQL

Best for building new apps in the cloud

Azure SQL is a great post-relational database

- With security built-in
- With scale-out support
- With advanced analytical processing features
- With high-concurrency optimizations
- With a great development experience
- With native geospatial support
- With multi-model capabilities

SQL from edge to cloud





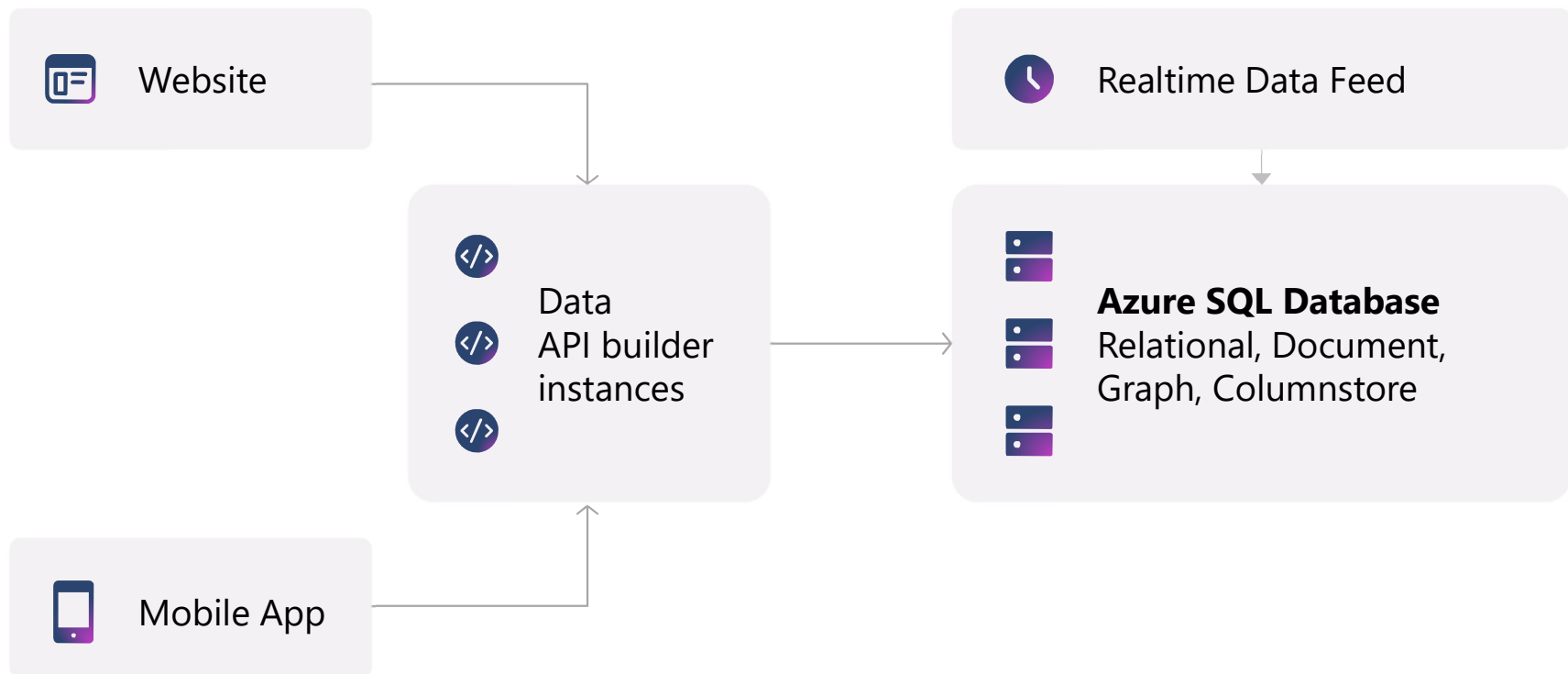
Azure SQL Customers

ASOS: Relies on Azure SQL to handle their e-commerce platform, managing customer orders and inventory.

Carnival Corporation: Uses Azure SQL for cruise ship operations, optimizing guest experiences and onboard services.

Walgreens: Every time a prescription fulfillment is initiated, Walgreens uses Azure services to create real-time, meaningful insights for its pharmacists, who access the information through dashboards and data visualizations.

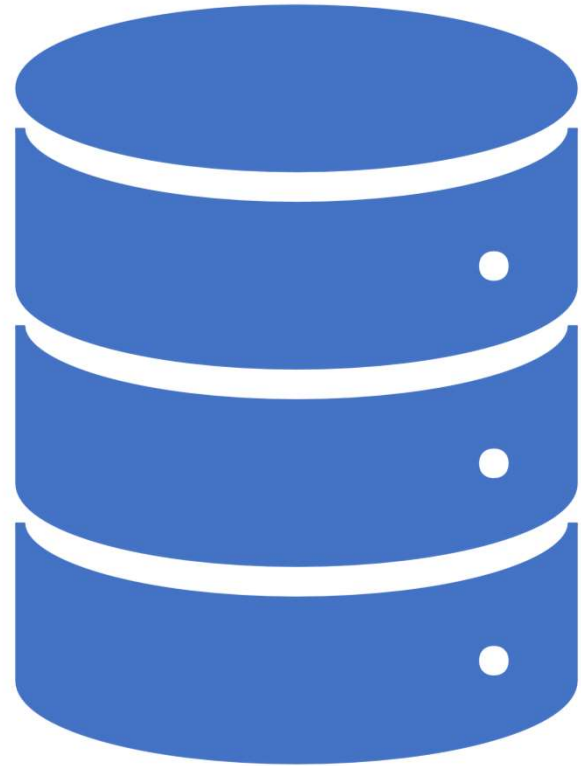
Full architecture overview—with Azure SQL





Let's see this in action!

Poll: How many
of you have used
a command line
tool?



SQL CMD

SQL CMD Overview

- The **sqlcmd** utility lets you enter Transact-SQL statements, system procedures, and script files through various modes
- It allows you to connect to a database, run queries, and output information with SQL CMD.

How to get started with SQL CMD

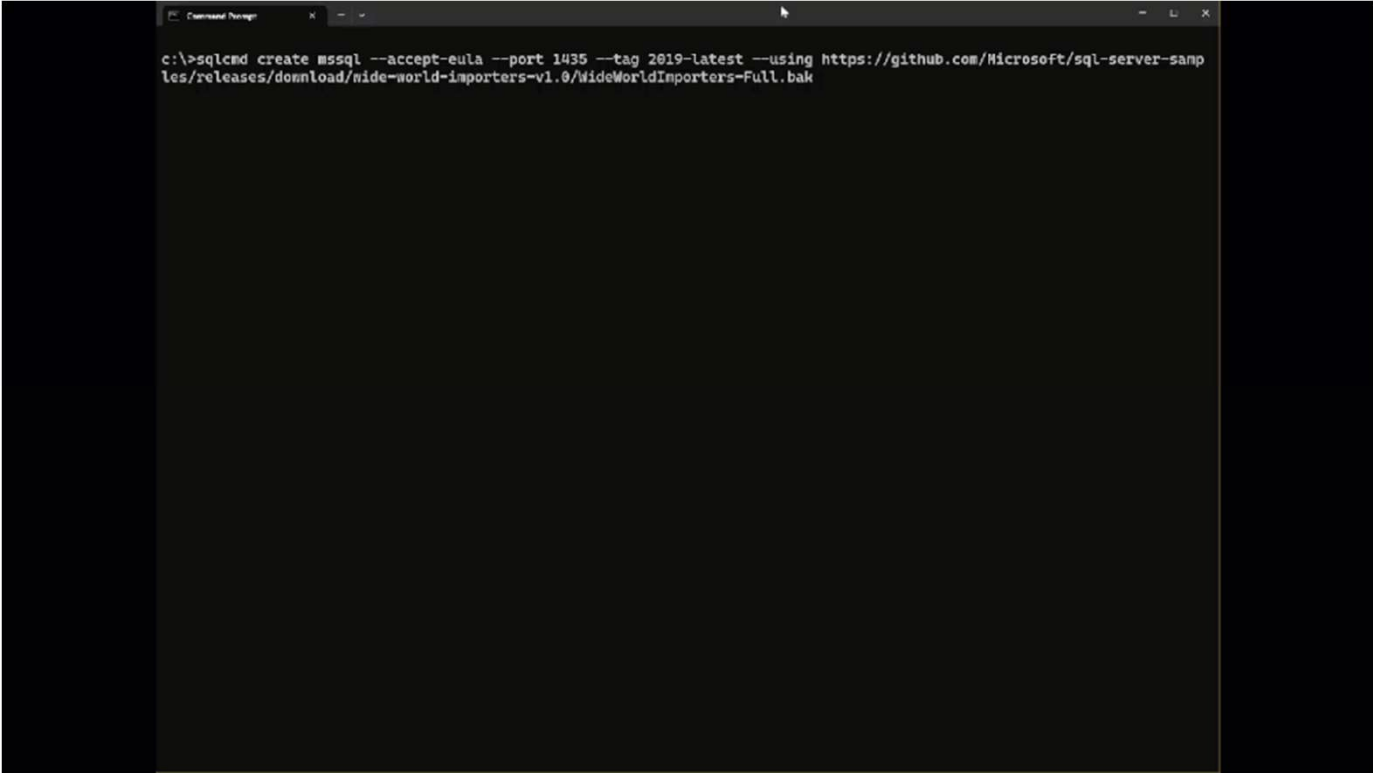
- First, you can download sqlcmd from your favorite package manager - winget, brew, apt, yum, choco.
- After it's downloaded and installed: **sqlcmd create mssql** will create a SQL Server container running on your computer.
- You can also create an instance with a database from a backup by using the command: **sqlcmd create mssql --using <https://url.com/backup.bak>**
- If you want to query the new instance and database from within the command line, you can run
- **sqlcmd query "SELECT ... FROM ..."**

Demo: SQL CMD

Step 1: Install SQL CMD

```
c:\>winget install sqlcmd  
Found Sqlcmd Tools [Microsoft.Sqlcmd] Version 1.0.0  
This application is licensed to you by its owner.  
Microsoft is not responsible for, nor does it grant any licenses to, third-party packages.  
Downloading https://github.com/microsoft/go-sqlcmd/releases/download/v1.0.0/sqlcmd-x64_1.0.0-1.msi  
██████████████████████████████████████████████████████████████████████████████ 6.30 MB / 6.30 MB  
Successfully verified installer hash  
Starting package install...  
Successfully installed  
  
c:\>
```

STEP 2: Create a SQL Server 2019 container mapped to port 1435 using the [WideWorldImporters database](#) with one command.



```
c:\>sqlcmd create mssql --accept-eula --port 1435 --tag 2019-latest --using https://github.com/Microsoft/sql-server-samples/releases/download/wide-world-importers-v1.0/WideWorldImporters-Full.bak
```

The image shows a terminal window with a dark background. The command is entered in a single line. The prompt is 'c:\>'. The command itself is 'sqlcmd create mssql --accept-eula --port 1435 --tag 2019-latest --using https://github.com/Microsoft/sql-server-samples/releases/download/wide-world-importers-v1.0/WideWorldImporters-Full.bak'. The window title bar at the top says 'Command Prompt'.

Step 3: Verify that you have a container with SQL Server 2019

```
c:\>sqlcmd query "SELECT @@VERSION"
```

```
-----  
-----  
-----  
Microsoft SQL Server 2019 (RTM-CU21) (KB5025808) - 15.0.4316.3 (X64)  
Jun  1 2023 16:32:31  
Copyright (C) 2019 Microsoft Corporation  
Developer Edition (64-bit) on Linux (Ubuntu 20.04.6 LTS) <X64>
```

```
(1 row affected)
```

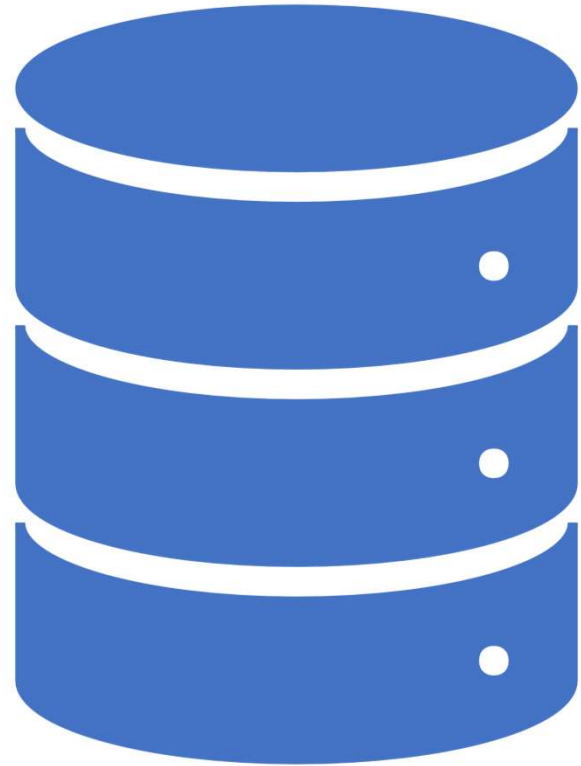
Step 4: Verify the database WideWorldImporters was restored

```
c:\>sqlcmd query "SELECT name, database_id, state_desc, recovery_model_desc FROM sys.databases"
```

name	database_id	state_desc	recovery_model_desc
master	1	ONLINE	SIMPLE
tempdb	2	ONLINE	SIMPLE
model	3	ONLINE	FULL
msdb	4	ONLINE	SIMPLE
WideWorldImporters-Full	5	ONLINE	SIMPLE

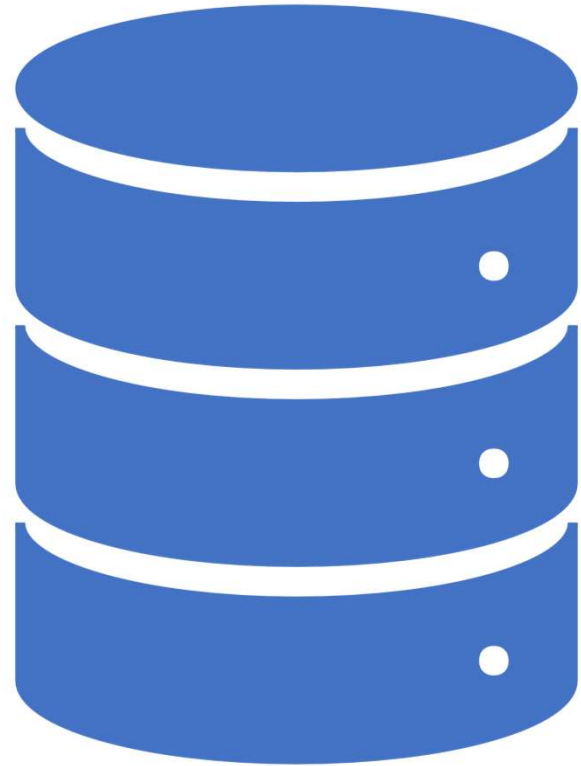
(5 rows affected)

Poll: How many
of you have ever
created a
database in
Azure?



Demo: Creating a Free SQL Database in Azure

Poll: How many
of you have used
or built REST API's
and/or graphQL
endpoints?



Data API builder

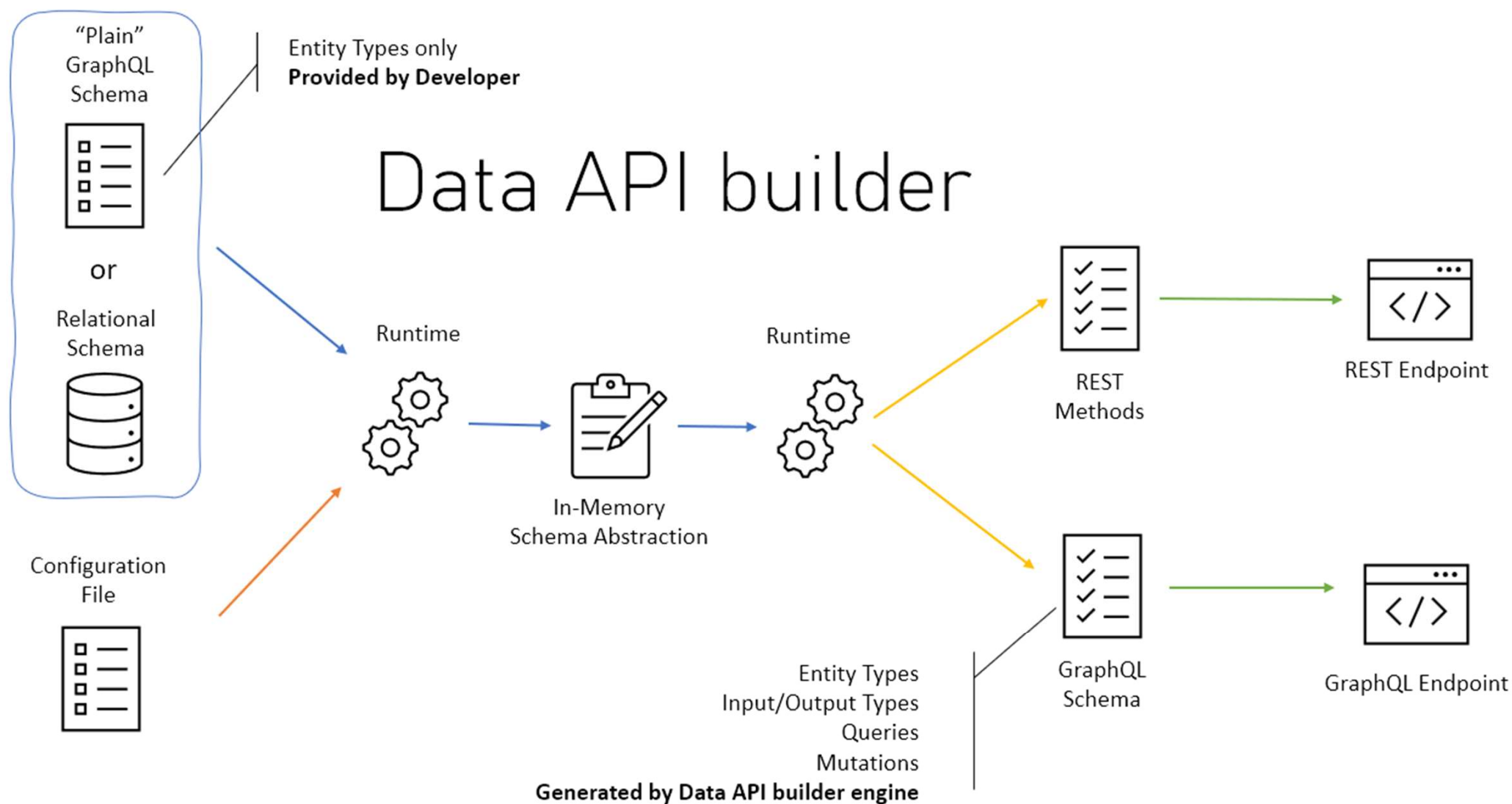
Turns databases (tables, views and stored procedures) into API

Full support for GraphQL and REST endpoints

- With projection, sorting, filtering and pagination
- Support for authentication and authorization

Open Source, MIT License

- <https://aka.ms/dab>: Data API builder
- <https://www.youtube.com/watch?v=bqGuvTwqJTo>
- <https://aka.ms/swa/db>: Static Web Apps + Data API builder





Demo: Data API Builder

File Edit View Help • SQLQuery_1 - tcp:127.0.0.1,1433.DAB_Todo (damauri) - azure-sql-db-openai - Azure Data Studio

Welcome mssql SQLQuery_1 - tcp:12...amauri

Run Cancel Disconnect Change Database: DAB_Todo Estimated Plan Enable Actual Plan Parse Enable SQLCMD To Notebook

```
1 select * from dbo.todos
```

Results Messages

	id	title	completed	owner_id	position
1	bf2fc918-0f88-4fd1-aa7d-3a29d42fd90d	Test Anonymous	0	public	1
2	d4df3f66-4bc3-4f6a-85aa-e348c732bf1c	Test Authenticated 1	0	12345	2
3	17172900-b80a-4133-8d29-f707f72f5cbe	Test Authenticated 2	0	56789	3
4	c19942d8-f548-48b2-b740-d8911103cfd1	Test Authenticated 3	0	john@contoso.com	4
5	ff8b82e6-6b65-455a-a0c4-0000f6ee6f95	Test Item #06980	0	public	NULL
6	b47a9f29-3552-46ec-8d06-00147bdf0ec4	Test Item #08280	0	public	NULL
7	4d1a9400-7fb7-46f3-8da9-001792781fa8	Test Item #06910	0	public	NULL
8	e05e0c0e-c015-4556-b16e-001e9d6e84ab	Test Item #03310	0	public	NULL
9	22de0354-4c2b-4c60-ac9e-00206d4af0ac	Test Item #04188	0	public	NULL
10	97c3417d-de9e-49b9-a47c-0031d81e5d4f	Test Item #02974	0	public	NULL
11	c868e3d2-e4c7-4ad8-9f13-0034a23f8120	Test Item #06478	0	public	NULL
12	03374c2e-eecc-45f9-bafc-003b6959632f	Test Item #05375	0	public	NULL

Ln 1, Col 24 Spaces: 4 UTF-8 CRLF 10,004 rows MSSQL 00:00:00 tcp:127.0.0.1,1433 : DAB_Todo 130%



Demo: Azure Data Studio Copilot



INTRODUCING COPILOT



Samples and Resources

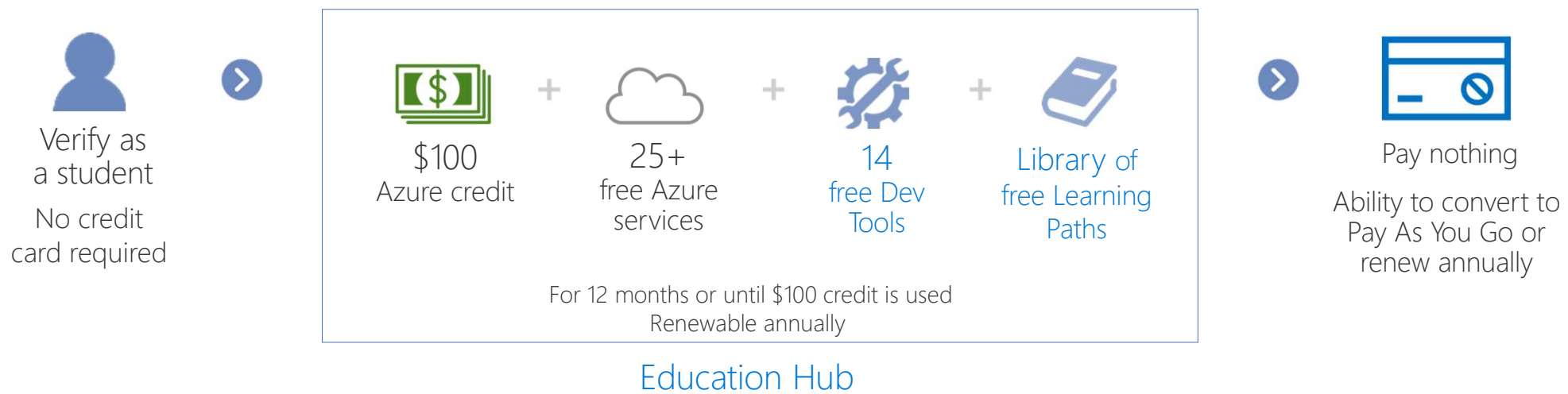
<https://learn.microsoft.com/en-us/samples/browse/?expanded=azure&products=azure-sql-database>

<p>Azure SQL Database Hyperscale Named Replicas OLTP Scale-Out Sample</p> <p>08/07/2022</p> <p>Use Azure SQL Database Hyperscale Named Replicas to easily scale-out a REST API OLTP solution.</p> <p>Azure Transact-SQL</p> <p>Add</p>	<p>Creating a REST API with .NET Core and Azure SQL</p> <p>08/04/2022</p> <p>Creating a modern REST API with .NET Core and Azure SQL, using Dapper and Visual Studio Code</p> <p>Azure Transact-SQL</p> <p>Add</p>	<p>Application Template for WebAPI and Database using ASP.NET and Azure SQL</p> <p>06/13/2022</p> <p>Get started quickly with ASP.NET Web API and Azure SQL (apptemplate)</p> <p>Azure C#</p> <p>Add</p>
<p>ToDo API backend with Azure SQL bindings</p> <p>05/19/2022</p> <p>Implement the ToDo Backend in .NET with Azure SQL bindings for Azure Functions</p> <p>Azure C#</p> <p>Add</p>	<p>An Azure SQL Database & Hasura Todo App</p> <p>05/19/2022</p> <p>Full Stack Todo Sample app, with GraphQL support, using Hasura, Azure Web Apps, Vue.js and Azure SQL</p> <p>Azure SQL</p> <p>Add</p>	<p>Creating REST API with Python, Django and Azure SQL</p> <p>04/04/2022</p> <p>Creating REST API with Python, Django and Azure SQL</p> <p>Visual Studio Code Python</p> <p>Add</p>
<p>Using Change Tracking API to sync data between Apps and the Cloud</p> <p>04/03/2022</p> <p></p> <p>Add</p>	<p>REST & GraphQL TodoMVC Sample App Full Stack Implementation with Prisma</p> <p>03/22/2022</p> <p></p> <p>Add</p>	<p>Use Azure Monitor Private Link Scope (AMPLS)</p> <p>02/01/2022</p> <p></p> <p>Add</p>

<https://github.com/yorek/awesome-azure-sql>

Try this out for your project/hackathon using Azure for Students - <https://aka.ms/azure4students>

Azure for Students provides university students (ages 18+) worldwide access to more than 25 free Azure services, plus \$100 in Azure credit. Students get access to world class Dev Tools and learning paths in one convenient place for all their Azure needs – the Azure Education Hub



Outside classroom

Usage
Scenarios

Students wanting to learn on their own, participate in hackathons, or build their Imagine Cup project

Inside classroom

Courses like Data Analytics, Machine Learning, Natural Language Processing, Statistics and Probabilistic Modeling with low to moderate resource demands

Resources



Microsoft Learn: Azure SQL
aka.ms/azuresqlfundamentals
aka.ms/fullstackappazuresql



Azure SQL documentation
aka.ms/azuresqldocs



More videos from our team
aka.ms/azuresqlyt



Azure SQL Database tips
aka.ms/sqldbtips

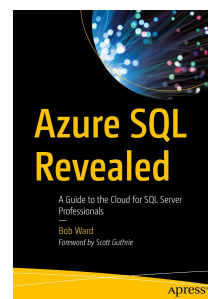


Choose your SQL driver
aka.ms/sqldrivers

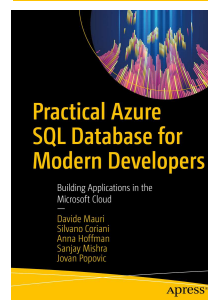


Get Azure for free
aka.ms/getfreeazuresql

<https://aka.ms/bobsqldemos>
<https://aka.ms/awesome-sql>
<https://aka.ms/sqldbtips>



aka.ms/azuresqlbook



aka.ms/azuresqlfordevelopers

Blogs

- <https://techcommunity.microsoft.com/t5/azure-sql-blog/bg-p/AzureSQLBlog>
- <https://devblogs.microsoft.com/azure-sql/>



Q&A