

School: CLOUDBOOSTA	Course: Cloud Computing & DevOps
Name: AKOSA SAMUEL ONYEJEKWE	Module: Azure App Service
	Class 5: Assignment 3 of 3_ Azure SQL & Serverless Functions
Student No: CBALC0168	Issue Date: March 22, 2026

Tasks:

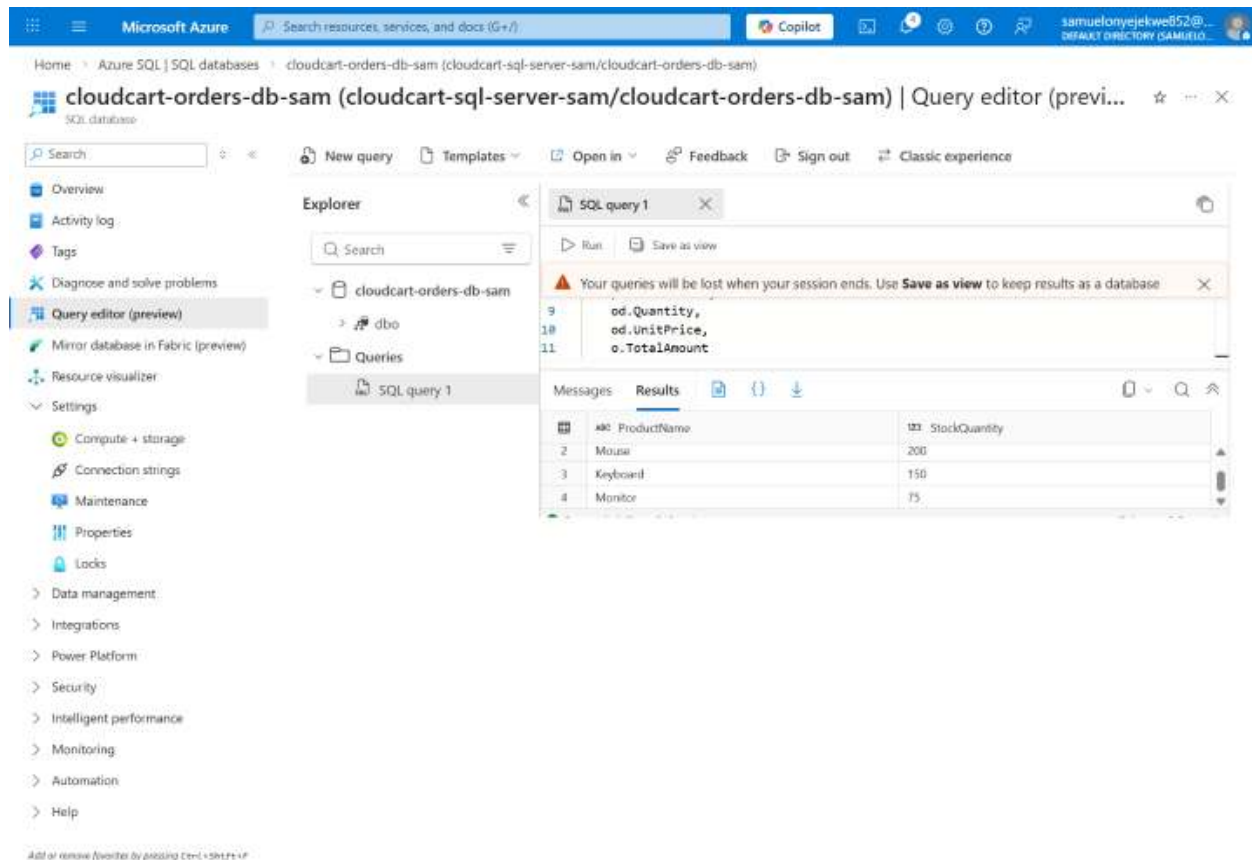
1. Create and configure an Azure SQL Database
2. Design database tables for real-world scenarios
3. Build Azure Functions triggered by HTTP requests
4. Connect Functions to databases securely
5. Implement basic business logic in serverless code

Goal:

To create an Azure SQL database and a serverless function that processes real orders

Result:

Messages		Results							
	ABC	ProductName	123	StockQuantity					
1		Laptop		50					
2		Mouse		200					
3		Keyboard		150					



Action:

- Created a SQL database + 4 tables (customers, products, orders, stock).
- Made a serverless “auto-function” (ProcessOrder) that runs only when an order arrives.
- Connected the function to the database.

Screenshots follow.

Create a resource group

Basics Tags Review + create

Resource group - A container that holds related resources for an Azure solution. The resource group can include all the resources for the solution, or only those resources that you want to manage as a group. You decide how you want to allocate resources to resource groups based on what makes the most sense for your organization. [Learn more](#)

Subscription *	Azure subscription 1
Resource group name *	cloudcart-lab-rg-sam
Region *	(Europe) West Europe

Create a resource group

...

X

Basics

Tags

Review + create

Automation Link

Basics

Subscription	Azure subscription 1
Resource group name	cloudcart-lab-rg-sam
Region	West Europe

Tags

None

Create SQL Database Server

Microsoft



Server details

Enter required settings for this server, including providing a name and location. This server will be created in the same subscription and resource group as your database.

Server name *

cloudcart sql server sam

✓

Location *

(Europe) West Europe

▼

Authentication

i Azure Active Directory (Azure AD) is now Microsoft Entra ID. [Learn more](#)

Select your preferred authentication methods for accessing this server. We recommend using only Microsoft Entra authentication. [Learn more](#) or using an existing Microsoft Entra user, group, or application as Microsoft Entra admin. [Learn more](#)

Authentication method

☐ Use Microsoft Entra-only authentication

☐ Use both SQL and Microsoft Entra authentication

☒ Use SQL authentication

Server admin login *

sqladmin

✓

Password *

✓

Confirm password *

✓

Create SQL Database

Microsoft



Basics

Networking

Security

Additional settings

Tags

Review + create

Create a SQL database with your preferred configurations. Complete the Basics tab then go to Review + Create to provision with smart defaults, or visit each tab to customize. [Learn more](#)

 Create a serverless Azure SQL Database with 100,000 vCore seconds, 12GB of data, and 12GB of backup storage free per month for the lifetime of your subscription. Limit is 10 free databases per subscription. [Learn more](#)

Apply offer

 SQL Database Hyperscale: low price, high scalability, and best feature set. [Learn more](#)

Project details

Select the subscription to manage deployed resources and costs. Use resource groups like folders to organize and manage all your resources.

Subscription * ⓘ

Azure subscription 1

Resource group * ⓘ

cloudcart-lab-rg-sam

Create new

Database details

Enter required settings for this database, including picking a logical server and configuring the compute and storage resources

Database name *

cloudcart-orders-db-sam

Server * ⓘ

(new) cloudcart-sql-server-sam (West Europe)

Create new

Want to use SQL elastic pool? ⓘ

☐ Yes ☒ No

Workload environment

☒ Development ☐ Production

 Default settings provided for Development workloads. Configurations can be modified as needed.

Compute + storage * ⓘ

Basic

2 GB storage

Configure database

Backup storage redundancy

Choose how your PITR and LTR backups are replicated. Geo restore or ability to recover from regional outage is only available when geo-redundant storage is selected.

Backup storage redundancy ⓘ

☐ Locally redundant backup storage ☐ Zone-redundant backup storage ☒ Geo-redundant backup storage ☐ Geo-Zone-redundant backup storage

 Selected value for backup storage redundancy is Geo-redundant backup storage. Database backups will be geo-replicated which might impact your data residency requirements. [Learn more](#)



Cost summary

Basic (Basic)

Cost per DTU (in USD)

0.98

DTUs selected

x 5

ESTIMATED COST / MONTH

4.90 USD

Configure

Feedback

Service and compute tier

Select from the available tiers based on the needs of your workload. The vCore model provides a wide range of configuration controls and offers Hyperscale and Serverless to automatically scale your database based on your workload needs. Alternately, the DTU model provides set price/performance packages to choose from for easy configuration. [Learn more](#)

SQL Database Hyperscale: Low price, high scalability, and best feature set. [Learn more](#)

Service tier: Basic (For less demanding workloads) [Compare service tiers](#)

DTUs [Compare DTU options](#)

5 (Basic)

Data max size (GB): 2



Cost summary

Basic (Basic)	
Cost per DTU (in US\$)	0.98
DTUs selected	x 5
ESTIMATED COST / MONTH	4.90 USD

Apply

Create SQL Database

Microsoft

X

Basics Networking Security Additional settings Tags Review + create

Configure network access and connectivity for your server. The configuration selected below will apply to the selected server "cloudcart-sql-server-sam" and all databases it manages. [Learn more](#)

Network connectivity

Choose an option for configuring connectivity to your server via public endpoint or private endpoint. Choosing no access creates with defaults and you can configure connection method after server creation. [Learn more](#) ↗

Connectivity method ^{*} 

- ☐ No access
- ☒ Public endpoint
- ☐ Private endpoint

Firewall rules

Setting 'Allow Azure services and resources to access this server' to Yes allows communications from all resources inside the Azure boundary, that may or may not be part of your subscription. [Learn more](#)

Setting 'Add current client IP address' to Yes will add an entry for your client IP address to the server firewall.

Allow Azure services and resources to access this server *

No ☒ Yes

Add current client IP address *

No Yes

Connection policy

Configure how clients communicate with your SQL database server. [Learn more](#)

Connection policy ⓘ

- ☒ **Default** - Uses Redirect policy for all client connections originating inside of Azure (except Private Endpoint connections) and Proxy for all client connections originating outside Azure
- ☐ **Proxy** - All connections are proxied via the Azure SQL Database gateways
- ☐ **Redirect** - Clients establish connections directly to the node hosting the database

Encrypted connections

This server supports encrypted connections using Transport Layer Security (TLS). For information on TLS version and certificates, refer to [connecting with TLS/SSL](#). [Learn more](#)

Minimum TLS version ①

TLS 1.2

Review • create

[◀ Previous](#)

Next : Security »

[Download a template for automation](#)

 cloudcart-orders-db-sam (cloudcart-sql-server-sam/cloudcart-orders-db-sam) | Query editor (previ...
SQL database

☆ ... ✕

Search

Feedback

Classic experience

- Overview
- Activity log
- Tags
- Diagnose and solve problems
- Query editor (preview)**
- Mirror database in Fabric (preview)
- Resource visualizer
- Settings
- Data management
- Integrations
- Power Platform
- Security
- Intelligent performance
- Monitoring
- Automation
- Help

Run queries on your database directly in the browser [Learn more](#)

Connecting to cloudcart-orders-db-sam on cloudcart-sql-server-sam

Microsoft Entra authentication

SQL authentication

Username *

Password *

X

Add or remove favorites by pressing Ctrl + Shift + F

Discard

Home > Azure SQL | SQL databases > cloudcart-orders-db-sam (cloudcart-sql-server-sam/cloudcart-orders-db-sam)

 cloudcart-orders-db-sam (cloudcart-sql-server-sam/cloudcart-orders-db-sam) | Query editor (previ... ☆ ... X

SQL database

 New query  Templates  Open in  Feedback  Sign out  Classic experience

-  Overview
-  Activity log
-  Tags
-  Diagnose and solve problems
-  **Query editor (preview)**
-  Mirror database in Fabric (preview)
-  Resource visualizer
- > Settings
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- > Integrations
- > Power Platform
- > Security
- > Intelligent performance
- > Monitoring
- > Automation
- > Help

Explorer

- cloudcart-orders-db-sam
 - dbo
 - Tables
 - Views
 - Stored Procedures
 - Functions
 - Queries



Start exploring your data

Write and run SQL queries, create database objects with a template, or open a table or view to preview your data.

New query

Add or remove favorites by pressing Ctrl+Shift+F

Home Azure SQL | SQL databases cloudcart-orders-db-sam (cloudcart-sql-server-sam/cloudcart-orders-db-sam)

cloudcart-orders-db-sam (cloudcart-sql-server-sam/cloudcart-orders-db-sam) | Query editor (previ...

SQL database

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New query Templates Open in Feedback Sign out Classic experience

Overview Activity log Tags Diagnose and solve problems Query editor (preview) Mirror database in Fabric (preview) Resource visualizer Settings Data management Integrations Power Platform Security Intelligent performance Monitoring Automation Help

Explorer

Search

Tables

- Customers
- OrderDetails
- Orders
- Products

Views

Stored Procedures

SQL query 1

Run Save as view

Your queries will be lost when your session ends. Use **Save as view** to keep results as a database

```
1 -- Create Customers Table
2 CREATE TABLE Customers (
3     CustomerID INT PRIMARY KEY IDENTITY(1,1),
```

Messages Copy messages

10:18:53 PM Started executing on line 1
Query executed successfully

Add or remove favorites by pressing Ctrl+Shift+F

Create Function App



Confirmation



Flex Consumption is now the recommended serverless hosting plan for Azure Functions. It offers faster scaling, reduced cold starts, private networking, and more control over performance and cost. Are you sure you want to continue with the Consumption plan?

Confirm

Cancel

	compute choices, virtual networking, and pay-as-you-go billing.	on the same plan with event-driven scaling.	apps on the same plan with more compute choices and pay for the instances of the plan.	Host function apps with other containerized microservices, and pay for compute capacity.	Pay for compute resources when your functions are running (pay-as-you-go).
Scale to zero					

Confirm

Cancel

Always ready	☒	☒	☒	☒	
Dedicated compute and prevent cold start	Optional with Always Ready	Minimum of 1 instance required	Minimum of 1 instance required	Optional with minimum replicas	-
Max scale out (instances)	1000	100	30	300	200

Select

X

Next : [Storage](#) >

Create Function App (Consumption (Windows))

- Basics
- Storage
- Networking
- Monitoring
- Durable Functions
- Deployment
- Authentication
- Tags
- Review + create

Summary





 Basic authentication for this app is currently disabled and may impact deployments. [Click to learn more.](#)

Details

Subscription	7374fafb-9216-4a04-b0f3-474aa5289f1b
Resource Group	cloudcart-lab-rg-sam
Name	cloudcart-functions-sam
Secure unique default hostname	Enabled
Runtime stack	.NET 8 (LTS), in-process model

Hosting

Storage (New)

Storage account	cloudcartlabrgsam8e00
-----------------	-----------------------

Plan (New)

Hosting options and plans	Consumption (Windows)
Name	ASP-cloudcartlabrgsam-9ab6
Operating System	Windows
Region	West Europe
SKU	Dynamic

Monitoring (New)

Application Insights	Enabled
Name	cloudcart-functions-sam
Region	West Europe

Deployment

Basic authentication	Disabled
Continuous deployment	Not enabled / Set up after app creation

Authentication

Host storage (AzureWebJobsStorage)

Name	cloudcartlabrgsam8e00
Role	Not applicable when using secrets

Azure Files

Name	cloudcartlabrgsam8e00
Role	Not applicable when using secrets

Application Insights

Name	cloudcart-functions-sam
Role	Not applicable when using secrets

Create

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Microsoft.Web-FunctionApp-Portal-e973b6a0-8272 | Overview

Deployment



Search

 Delete Cancel Redeploy

Download

 Refresh

 Overview

 Inputs

Outputs

 Template



Your deployment is complete



```
Deployment name : Microsoft.Web-FunctionApp-P... Start time : 3/26/2026, 10:39:09 PM
Subscription : Azure subscription 1 Correlation ID : e7cf1732-edca-43e0-94b6-277...
Resource group : cloudcart-lab-rq-sam
```

Deployment details

Next steps

[Go to resource](#)

Add or remove favorites by pressing Ctrl + Shift + F



Cost management

Get notified to stay within your budget and prevent unexpected charges on your bill.

[Set up cost alerts >](#)



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Microsoft Azure

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Copilot

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cloudcart-functions-sam

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Support + troubleshooting

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Create function

1 Select a template2 Template details

Use a template to create a function. Triggers describe the type of events that invoke your functions. [Learn more](#)

Search

Name	Trigger
HTTP trigger	A function that will be run whenever it receives an HTTP request, responding based on data in the body or query string
Timer trigger	A function that will be run on a specified schedule
Azure Queue Storage trigger	A function that will be run whenever a message is added to a specified Azure Storage queue
Azure Service Bus Queue trigger	A function that will be run whenever a message is added to a specified Service Bus queue
Azure Service Bus Topic trigger	A function that will be run whenever a message is added to the specified

NextCancel

Create

Microsoft Azure

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Update your function

Functions

Metrics

Azure p

Best opti

• Gett

• Cho

Create

Cancel

Create function

1 Select a template

2 Template details

We need more information to create the function. [Learn more](#)

Function template

Function name *

Authorization level *

HTTP trigger

ProcessOrder

Function

Create

Cancel

ProcessOrder | Code + Test

✕

cloudcart-functions-sam

- Code + Test
- Integration
- Function Keys
- Invocations
- Logs
- Metrics

 Save

 Discard

 Refresh

 Test/Run

 Get function URL

☐ Disable

 Delete

 Upload

 Resource JSON

 Send us your feedback

cloudcart-functions-sam / ProcessOrder / func.csx

```
1 #r "Newtonsoft.Json"
2
3 using System.Net;
4 using Microsoft.AspNetCore.Mvc;
```

Logs

 App Insights Logs

 Log Level

☐ Stop

 Copy

 Clear

 Maximize

 Send us your feedback

Connected! You are now viewing logs of Function runs in the current Code + Test panel. To see all the logs for this Function, please go to 'Logs' from the Function menu.

Microsoft Azure

Search resources, services, and docs (G+/)

Copilot

📧

🔔

⚙️

❓

💬

👤 samuelonyejekwe852@...
DEFAULT DIRECTORY (SAMUELO...

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Azure SQL | SQL databases

cloudcart-orders-db-sam (cloudcart-sql-server-sam/cloudcart-orders-db-sam)

cloudcart-orders-db-sam (cloudcart-sql-server-sam/cloudcart-orders-db-sam) | Connection strings

☆

...

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SQL database

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ADO.NET (Microsoft Entra passwordless authentication)

Microsoft.Data.SqlClient Quickstart [📄](#)
Entity Framework Core Quickstart [📄](#)

Server=tcp:cloudcart-sql-server-sam.database.windows.net,1433;Initial Catalog=cloudcart-orders-db-sam;Encrypt=True;TrustServerCertificate=False;Connection Timeout=30;Authentication='Active Directory Default';

ADO.NET (SQL authentication)

Server=tcp:cloudcart-sql-server-sam.database.windows.net,1433;Initial Catalog=cloudcart-orders-db-sam;Persist Security Info=False;User ID=sqladmin;Password={your_password};MultipleActiveResultSets=False;Encrypt=True;TrustServerCertificate=False;Connection Timeout=30;

Download ADO.NET driver for SQL server [📄](#)

Add or remove favorites by pressing Ctrl+L / Shift+F

Function Ap

Default Directory (samuel)

+ Create  Mana

Name

 cloudcent

Showing 1 - 1 of 1
count:

Add/Edit application setting

Name ^a

SqlConnection

Value

Deployment slot setting

Apply

Discard

rd

rd

rd

Home > Function App

Function App

Default Directory (samuelonyejekwe852@gmail.com)

Create

Manage view

Name

cloudcart-functions-sam

Showing 1 of 1. Display auto

cloudcart-functions-sam

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Browse

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Stop

Restart

Swap

Get publish profile

Update your function app to the isolated worker model for continued support. The in-process model will be retired starting November 10, 2026.

Tags

Add tags

Functions

Metrics

Properties

Notifications (1)

Create

Set up local environment

Refresh

Filter by name...

Name	Trigger	Status	Monitor
ProcessOrder	HTTP	Enabled	Invocations and

Add or remove favorites by pressing Ctrl+Shift+F

Home > Function App > cloudcart-functions-sam

ProcessOrder | Code + Test

cloudcart-functions-sam

Code + Test Integration Function Keys Invocations Logs Metrics

Save Discard Refresh Test/Run Get function URL Disable Delete Upload Resource JSON Send us your feedback

cloudcart-functions-sam / ProcessOrder / run.csx

```
45 log.LogError($"Error processing order: {ex.Message}");
46 return new ObjectResult($"Error: {ex.Message}") { StatusCode = 500 };
47 }
48 }
```

Logs App Insights Logs Log Level Stop Copy Clear Maximize Send us your feedback

Connected! You are now viewing logs of Function runs in the current Code + Test panel. To see all the logs for this Function, please go to 'Logs' from the Function menu.

Microsoft Azure

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cloudcart-functions-sam

ProcessOrder | Code + Test

cloudcart-functions-sam

Code + TestIntegrationFunction KeysInvocationsLogsMetrics

SaveDiscardRefreshTest/RunGet function URLDisableDeleteUpload

cloudcart-functions-sam / ProcessOrder / func.csx

45log.LogError(\$"Error processing order: {ex.Message}");

46return new ObjectResult(\$"Error: {ex.Message}") { StatusCode = 500 };

47}

48}

LogsApp Insights Logs

Connected! You are now viewing logs of Function runs in the current Code + Test panel. To see the logs menu.

Test/Run

InputOutput

Provide parameters to test the HTTP request. Results can be found in the Output tab.

HTTP method *POST

Key *_master (Host key)

Query parameters

Name	Value

Headers

Name	Value
------	-------

RunClose

Microsoft Azure

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Copilot

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ProcessOrder | Code + Test

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Code + TestIntegrationFunction KeysInvocationsLogsMetrics

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cloudcart-functions-sam / ProcessOrder / func.csx

45log.LogError(\$"Error processing order: {ex.Message}");

46return new ObjectResult(\$"Error: {ex.Message}") { StatusCode = 500 };

47}

48}

LogsApp Insights Logs

Connected! You are now viewing logs of Function runs in the current Code + Test panel. To see the full log menu...

Test/Run

Body

1{

2 "CustomerID": 1,

3 "Items": [

4 {

5 "ProductID": 1,

6 "Quantity": 1

7 },

8 {

9 "ProductID": 2,

10 "Quantity": 2

11 }

12]

13 }

RunClose

Home » Function App » cloudcart-functions-sam

ProcessOrder | Code + Test ...

cloudant-functions-sam

Code • Test Integration Function Keys **Invocations** Logs Metrics

Save Discard Refresh Test/Run Get function URL Disable Delete Uplo

cloudcart-functions-sam / ProcessOrder / runTask 

```
45     log.LogError($"Error processing order: {ex.Message}");
46     return new ObjectResult($"Error: {ex.Message}") { StatusCode = 500 };
47 }
48 }
```

[Logs](#)
[App Insights Logs](#)

```
Connected! You are now viewing logs of Function runs in the current Code + Test panel. To see the logs menu...
```

```
2026-03-26T21:09:01 [Information] Executing 'Functions.ProcessOrder' (Reason='This function was triggered by an event')
b9f1-c66a69371885)
2026-03-26T21:09:01 [Information] Processing order request
2026-03-26T21:09:01 [Information] Order for customer 1 calculated. Total: 1059.97
2026-03-26T21:09:01 [Information] Executed 'Functions.ProcessOrder' (Succeeded, Id=f20c...
```

Test/Run

Input	Output
1	1
2	4
3	9
4	16
5	25
6	36
7	49
8	64
9	81
10	100

HTTP response code	200 OK
--------------------	--------

HTTP response content

```
("orderId":1,"totalAmount":1059.97,"status":"Success","message":"Order processed successfully (demo mode - database connection will be added)")
```

Run Close

cloudcart-orders-db-sam (cloudcart-sql-server-sam/cloudcart-orders-db-sam) | Query editor (previ...

SQL database

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cloudcart-orders-db-sam

dbo

Queries

SQL query 1

SQL query 1

Run

Save as view

Your queries will be lost when your session ends. Use **Save as view** to keep results as a database

9 od.Quantity,

10 od.UnitPrice,

11 o.TotalAmount

Messages

Results

	ABC ProductName	StockQuantity
2	Mouse	200
3	Keyboard	150
4	Monitor	75

