



IT4090

Cloud Computing

4th Year, 1st Semester

Azure Lab 5

Azure Lab Assignment

Submitted to
Sri Lanka Institute of Information Technology

IT21228094

In partial fulfillment of the requirements for the
Bachelor of Science Special Honors Degree in Information Technology

30.09.2024

Create a single database


[Home](#) >


Select SQL deployment option

Microsoft

 Feedback


How do you plan to use the service?

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

**SQL databases**
Best for modern cloud applications. Hyperscale and serverless options are available.
Resource type


Single database

Create Show details

**SQL managed instances**
Best for most migrations to the cloud. Lift-and-shift ready.
Resource type

Single instance

Create Show details

**SQL virtual machines**
Best for migrations and applications requiring OS-level access. Lift-and-shift ready.
Image

Create Show details ☐ High availability

[Home](#) > [Select SQL deployment option](#) > [Create SQL Database](#) >

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 *

mysqlserver20011122


✓

.database.windows.net

Location *

(US) East US

Authentication

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

Select your preferred authentication methods for accessing this server. Create a server admin login and password to access your server with SQL authentication, select only Microsoft Entra authentication [Learn more](#) using an existing Microsoft Entra user, group, or application as Microsoft Entra admin [Learn more](#), or select both SQL and Microsoft Entra authentication.

Authentication method

☐ Use Microsoft Entra-only authentication

☐ Use both SQL and Microsoft Entra authentication

☒ Use SQL authentication

OK

[Home](#) > [Select SQL deployment option](#) > [Create SQL Database](#) >

Create SQL Database Server ...

Microsoft



Server name * ✓
 .database.windows.net

Location * ✓

Authentication

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

Select your preferred authentication methods for accessing this server. Create a server admin login and password to access your server with SQL authentication, select only Microsoft Entra authentication [Learn more](#) or using an existing Microsoft Entra user, group, or application as Microsoft Entra admin [Learn more](#) , or select both SQL and Microsoft Entra authentication.

Authentication method
☐ Use Microsoft Entra-only authentication
☐ Use both SQL and Microsoft Entra authentication
☒ Use SQL authentication

Server admin login * ✓

Password * ✓

Confirm password * ✓

OK

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

General Purpose (Most budget friendly)

[Compare service tiers](#)

Compute tier

- ☐ **Provisioned** - Compute resources are pre-allocated. Billed per hour based on vCores configured.
- ☒ **Serverless** - Compute resources are auto-scaled. Billed per second based on vCores used.

Compute Hardware

Select the hardware configuration based on your workload requirements. Availability of compute optimized, memory optimized, and confidential computing hardware depends on the region, service tier, and compute tier.

Hardware Configuration

Standard-series (Gen5)
up to 80 vCores, up to 240 GB memory
[Change configuration](#)

Max vCores

 1

Apply



Cost summary

General Purpose (GP_5_Gen5_1)

Cost per GB (in USD) 0.16

Max storage selected (in GB) x 41.6

ESTIMATED STORAGE COST / MONTH 6.82 USD

COMPUTE COST / VCORE SECOND ¹ 0.000175 USD

NOTES

¹ Serverless databases are billed in vCore seconds based on a combination of CPU and memory utilization. [Learn more about serverless billing](#)

Configure



Feedback

Max vCores

 1

Min vCores

 0.5 vCores

2.02 GB MIN MEMORY 3 GB MAX MEMORY

Auto-pause delay

The database automatically pauses if it is inactive for the time period specified here, and automatically resumes when database activity recurs. Alternatively, auto-pausing can be disabled.

☒ Enable auto-pause

Days 0 Hours 1 Minutes 0

Data max size (GB)

 32

9.6 GB LOG SPACE ALLOCATED

Would you like to make this database zone redundant?

☐ Yes ☒ No

Apply

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](#)

Want to try Azure SQL Database for free? Create a free serverless database with the first 100,000 vCore seconds, 32GB of data, and 32GB of backup storage free per month for the lifetime of the subscription. [Learn more](#)

[Apply offer \(Preview\)](#)

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 *

Resource group *
[Create new](#)

Database details

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

[Review + create](#)[Next : Networking >](#)



Cost summary

General Purpose (GP_S_Gen5_1)	
Cost per GB (in USD)	0.16
Max storage selected (in GB)	x 41.6
ESTIMATED STORAGE COST / MONTH 6.82 USD	
COMPUTE COST / VCORE SECOND ¹ 0.000175 USD	

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Create SQL Database

Microsoft

Database name *

Server *
[Create new](#)

Want to use SQL elastic pool? ☐ Yes ☒ No

Workload environment ☒ Development ☐ Production

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

Compute + storage * **General Purpose - Serverless**
Standard-series (Gen5), 1 vCore, 32 GB storage, zone redundant disabled
[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

[Review + create](#)[Next : Networking >](#)

Create SQL Database

Microsoft

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 'mysqlserver20011122' 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 *

Add current client IP address *

Connection policy

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

[Review + create](#) [< Previous](#) [Next : Security >](#)



Cost summary

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Create SQL Database

Microsoft

Firewall rules

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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 *

Add current client IP address *

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 *

[Review + create](#) [< Previous](#) [Next : Security >](#)

ESTIMATED STORAGE COST / MONTH 6.82 USD
COMPUTE COST / VCORE SECOND ¹ 0.000175 USD

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Create SQL Database

Microsoft



Basics Networking **Security** Additional settings Tags Review + create

Microsoft Defender for SQL

Protect your data using Microsoft Defender for SQL, a unified security package including vulnerability assessment and advanced threat protection for your server. [Learn more](#)

Get started with a 30 day free trial period, and then 15 USD/server/month.

Enable Microsoft Defender for SQL * ☒ Start free trial
☐ Not now

Ledger

Ledger cryptographically verifies the integrity of your data and detects any tampering that might have occurred. [Learn more](#)

Ledger **Not configured**
[Configure ledger](#)

Server identity

Use system assigned and user assigned managed identities to enable central access management between this database and other Azure resources. [Learn more](#)

Server identity **Not enabled**
[Configure Identities](#)

[Review + create](#) < Previous Next : Additional settings >

Cost summary

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Create SQL Database

Microsoft



Use system assigned and user assigned managed identities to enable central access management between this database and other Azure resources. [Learn more](#)

Server identity **Not enabled**
[Configure Identities](#)

Transparent data encryption key management

Transparent data encryption encrypts your databases, backups, and logs at rest without any changes to your application. To enable encryption, go to each database. Database level settings if enabled, will override the server level setting. [Learn more](#)

Server level key ☐ **Service-managed key selected**
[Configure transparent data encryption](#)

Database level key ☐ **Not configured**
[Configure transparent data encryption](#)

Always encrypted

Always encrypted is a family of industry-leading data protection features that provide a separation between those who own the data and can view it, and those who manage the data but should have no access, on-premises database administrators, cloud database operators, or other high-privileged but unauthorized users. [Learn more](#)

Enable secure enclaves ☐ ON ☒ OFF

[Review + create](#) < Previous Next : Additional settings >

Create SQL Database ...

Microsoft

Basics Networking Security **Additional settings** Tags Review + create

Customize additional configuration parameters including collation & sample data.

Data source

Start with a blank database, restore from a backup or select sample data to populate your new database.

Use existing data *

None Backup **Sample**

AdventureWorksLT will be created as the sample database.

Database collation

Database collation defines the rules that sort and compare data, and cannot be changed after database creation. The default database collation is SQL_Latin1_General_CP1_CI_AS. [Learn more](#)

Collation ⓘ

SQL_Latin1_General_CP1_CI_AS



Cost summary

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Next : Tags >

Create SQL Database ...

Microsoft

Basics Networking Security Additional settings Tags **Review + create**

Product details

SQL database
by Microsoft
[Terms of use](#) | [Privacy policy](#)

Estimated cost

Storage cost 6.82 USD / month + Compute cost 0.000175 USD / vCore second

Terms

By clicking "Create", I (a) agree to the legal terms and privacy statement(s) associated with the Marketplace offering(s) listed above; (b) authorize Microsoft to bill my current payment method for the fees associated with the offering(s), with the same billing frequency as my Azure subscription; and (c) agree that Microsoft may share my contact, usage and transactional information with the provider(s) of the offering(s) for support, billing and other transactional activities. Microsoft does not provide rights for third-party offerings. For additional details see [Azure Marketplace Terms](#).

Basics

Subscription	Azure for Students
Resource group	myResourceGroup
Region	Switzerland North
Database name	mySampleDatabase
Server	(new) mysqlserver20011122
Authentication method	SQL authentication
Server admin login	azureuser

Compute & storage

General Purpose - Serverless Standard-series (Gen5), 1 vCore, 32 GB storage

Create

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[Download a template for automation](#)

Cost summary

General Purpose (GP_S_Gen5_1)	
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Create SQL Database

Microsoft

Networking

Allow Azure services and resources to access this server	No
Add current client IP address 61.245.171.249	Yes
Private endpoint	None
Minimum TLS version	1.2
Connection Policy	Default

Security

Identity	Not enabled
Transparent data encryption (Server level)	Service-managed key selected
Database level customer-managed key	Not configured
Database level user assigned managed identity	Not configured
Advanced data security	Start free trial
Always encrypted with secure enclaves	Not configured
Sql Ledger(Database)	Disabled
Digest Storage	Disabled

Additional settings

Use existing data	Sample
Collation	SQL_Latin1_General_CP1_CI_AS

[Create](#) [< Previous](#) [Download a template for automation](#)

Microsoft.SqlDatabase.newDatabaseNewServer_f76e07ee6d1042cebb5fb | Overview

Deployment

[Delete](#) [Cancel](#) [Redeploy](#) [Download](#) [Refresh](#)

Overview

- [Inputs](#)
- [Outputs](#)
- [Template](#)

Your deployment is complete

Deployment name : Microsoft.SqlDatabase.newDatabaseNewSer... Start time : 9/21/2024, 12:39:19 AM
Subscription : Azure for Students Correlation ID : 851e04b9-98cb-43bd-8a10-176297e4746e
Resource group : myResourceGroup

[Deployment details](#)

[Next steps](#)

[Go to resource](#)

Give feedback

[Tell us about your experience with deployment](#)



Cost management

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

Home > Microsoft.SQLDatabase.newDatabaseNewServer_f75e07ee6d1042cebb5fb | Overview > mySampleDatabase (mysqlserver20011122/mySampleDatabase)

mySampleDatabase (mysqlserver20011122/mySampleDatabase) | Query editor (preview) ☆ ⋮

SQL database

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« Login + New Query ↗ Open query 🗨 Feedback 📖 Getting started

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Tags

Diagnose and solve problems

Query editor (preview)

Mirror database in Fabric (preview)

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Integrations

Power Platform

Security


Intelligent performance

Monitoring

Automation

Help

Query editor (preview) is a tool to run SQL queries against Azure SQL Database in the Azure portal. It is designed for lightweight querying and object exploration in your database. For more information and troubleshooting, [Learn more](#)



Welcome to SQL Database Query Editor

SQL server authentication

Login *
azureuser

Password *
***** ✓

OK

Microsoft Entra authentication

Continue as it21255410@my.sliit.lk

OR

Home > Microsoft.SQLDatabase.newDatabaseNewServer_f75e07ee6d1042cebb5fb | Overview > mySampleDatabase (mysqlserver20011122/mySampleDatabase)

mySampleDatabase (mysqlserver20011122/mySampleDatabase) | Query editor (preview) ☆ ⋮

SQL database

Search

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Query editor (preview)

Mirror database in Fabric (preview)

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mySampleDatabase (azureuser) ↻

Showing limited object explorer here. For full capability please click here to open Azure Data Studio.

Tables

Views

Stored Procedures

Query 1 ✕

Run ☐ Cancel query ⬇ Save query ⬇ Export data as ⌵ ☒ Show only Editor 🔗 Open Copilot

```
1 SELECT TOP 20 pc.Name as CategoryName, p.name as ProductName
2 FROM SalesLT.ProductCategory pc
3 JOIN SalesLT.Product p
4 ON pc.productcategoryId = p.productcategoryId;
```

Results Messages

Search to filter items...

CategoryName	ProductName
Road Frames	HL Road Frame - Black, 58
Road Frames	HL Road Frame - Red, 58
Helmets	Sport-100 Helmet, Red
Helmets	Sport-100 Helmet, Black
Socks	Mountain Bike Socks, M
Socks	Mountain Bike Socks, L

Query succeeded | 0s

Clean up resources

Azure services


Create a resource


Education


Cost Management


Virtual networks


Virtual machines


Load balancers


NAT gateways


Subscriptions


Azure NetApp Files


More services

Resources


Recent Favorite

Name	Type	Last Viewed
<div></div> <div>No resources have been viewed recently</div> <div>View all resources</div>		

Navigate


 Subscriptions


 Resource groups

 All resources


 Dashboard

Tools

 Microsoft Learn 
Learn Azure with free online

 Azure Monitor
Monitor your apps and

 Microsoft Defender for Cloud
Secure your apps and

 Cost Management
Analyze and optimize your