DEVOPS with MULTI-CLOUD
Practice Tasks

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Course **:** DevOps with Multi-Cloud
Batch **:** 30
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TASK-17 :- Azure SQL.

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Objective :-

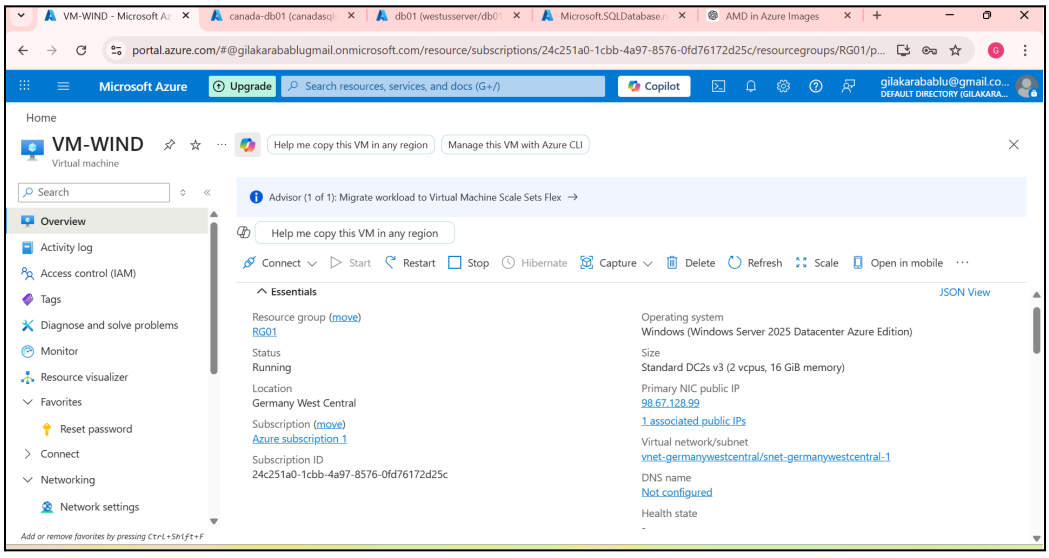
To provide a fully managed relational database service in the cloud for storing, managing, and querying structured data with high availability, security, and scalability.

Azure SQL :-

→ Azure SQL Database is a fully managed relational database service in the cloud. It stores structured data in tables using rows and columns

→ It supports SQL queries to insert, update, delete, and retrieve data. It provides automatic backups and high availability.

→ Create a windows machine and a database.



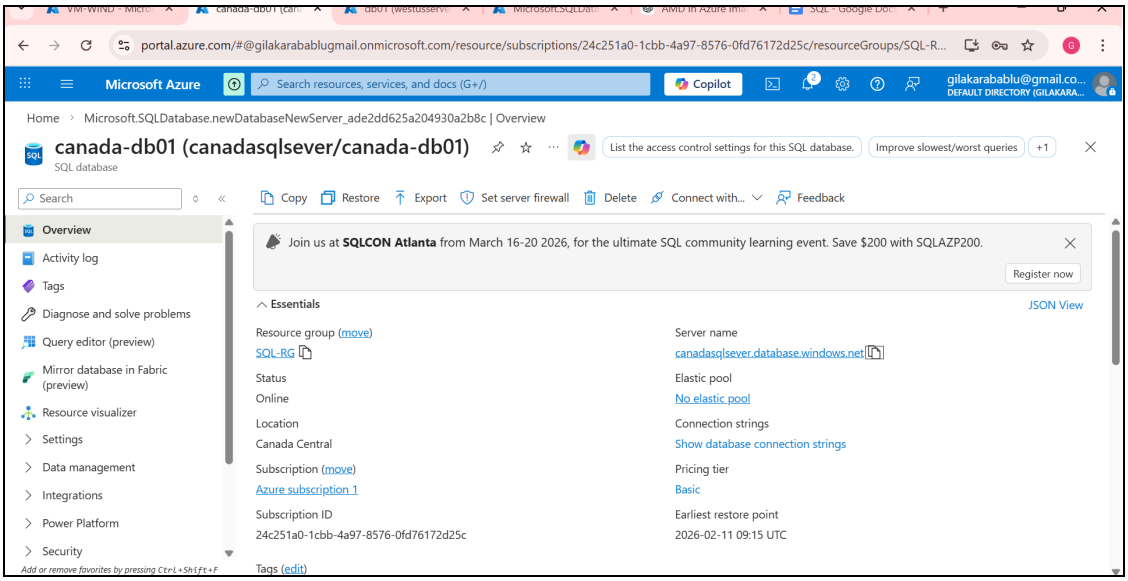


Fig (1&2) created a windows machine and database.

→ Now download the SSMS - Sql Server Management Studio in the windows machine, with this application we can connect to the database.

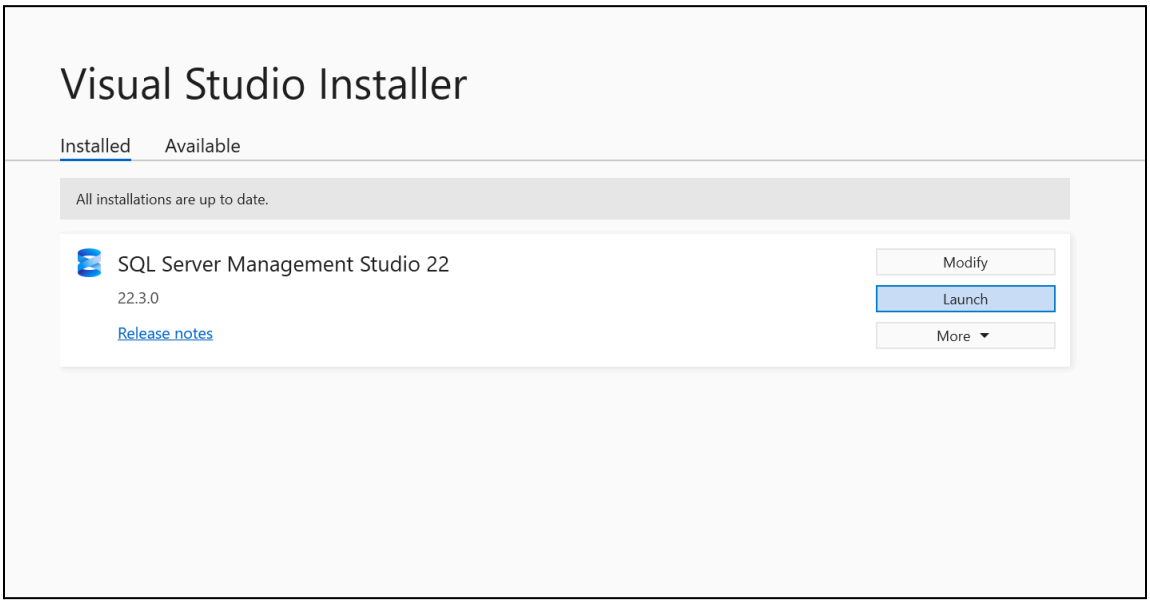
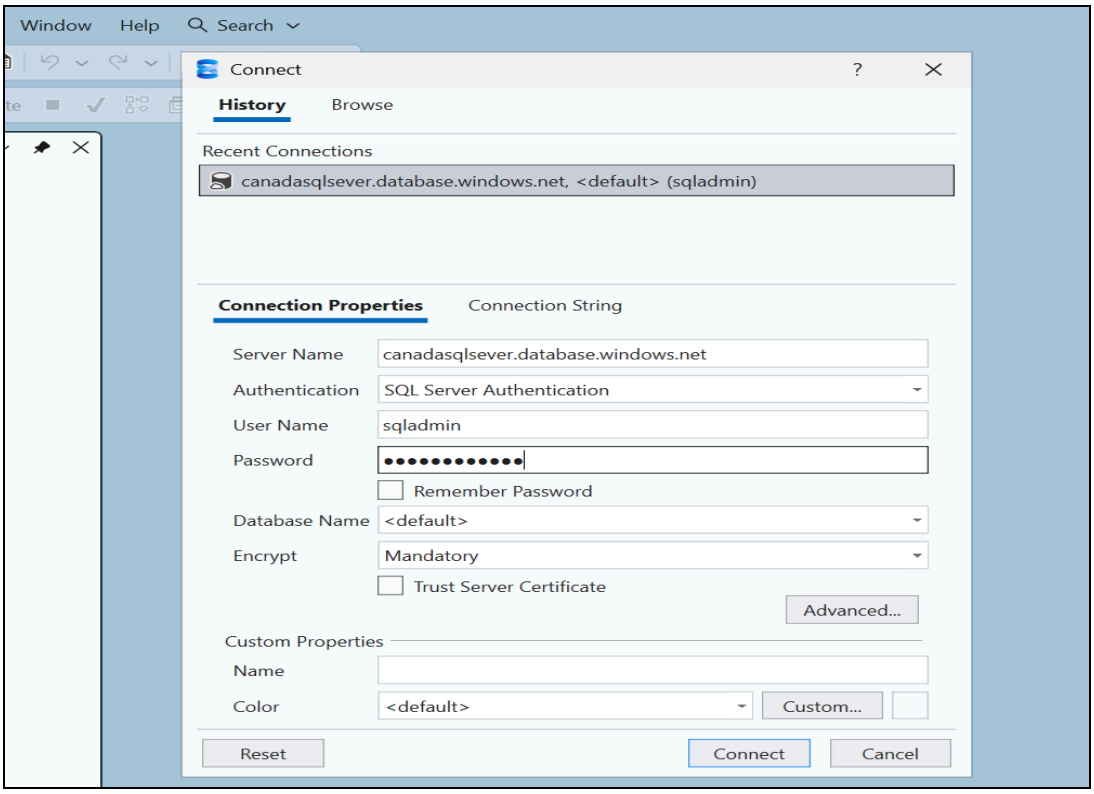
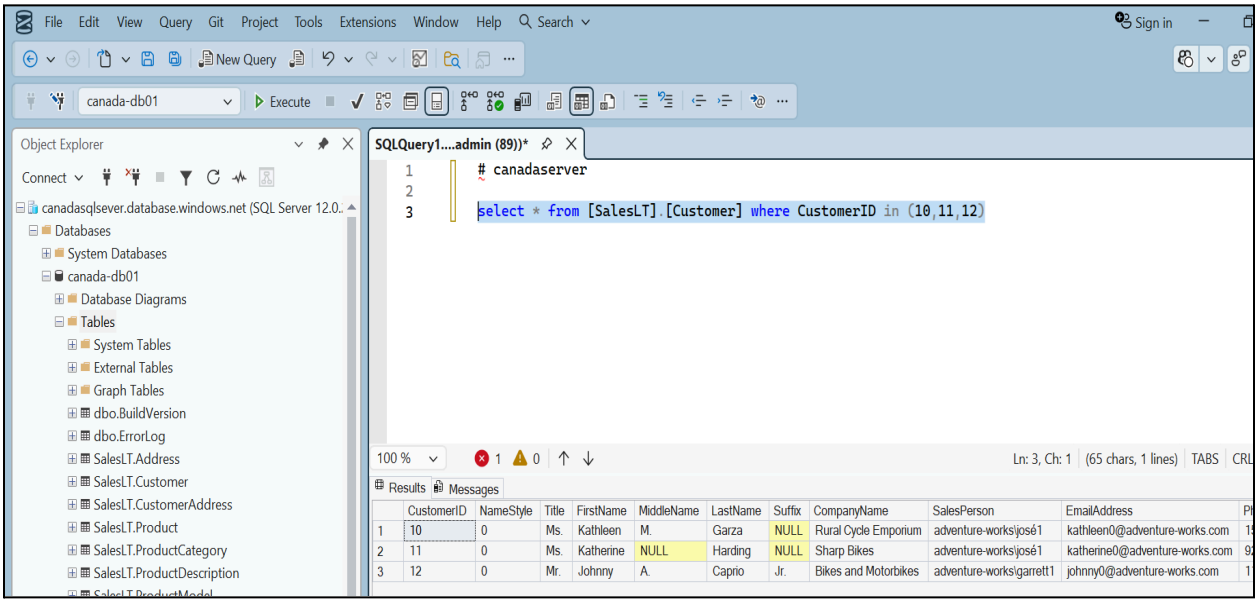


Fig (3) installed the ssms application in the Windows machine.

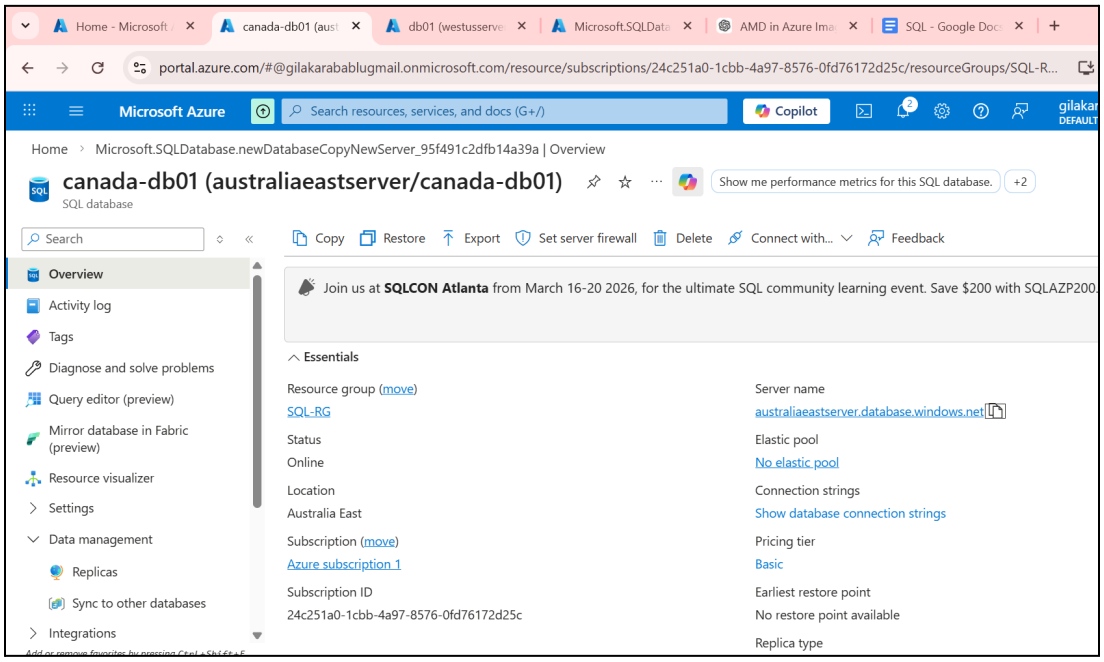


fig(4) login into the canada database using sql authentication.



fig(5) successfully connected to db and executing queries.

→ with the ssms application we can query and manage the data in the database, like add,delete etc.
→ Now create a replica of the canada db in another region for data security. Because in case if our db is crashed or a region is completely down then we can't access our data so to avoid this we create a replica of our database.



fig(6) Replica of canada db in australia server.

→ Here, The primary db is in the canada server and secondary db is in the australia server.
→ Now the primary db has R/W permissions.
→ The secondary db has only read permissions.
→ whenever there is a crash or region down then the secondary db becomes the primary db and will have R/W permissions, till the primary db is ok.

→ There are two types of replications :-

- Replica :-
  - Used for DB to DB replication, i.e one db is replicated into another db in another server.
  - It is database level.
- Failover group :-
  - Used for replication of multiple db's into another server.
  - It is server level.

→ Now connect to the secondary db.

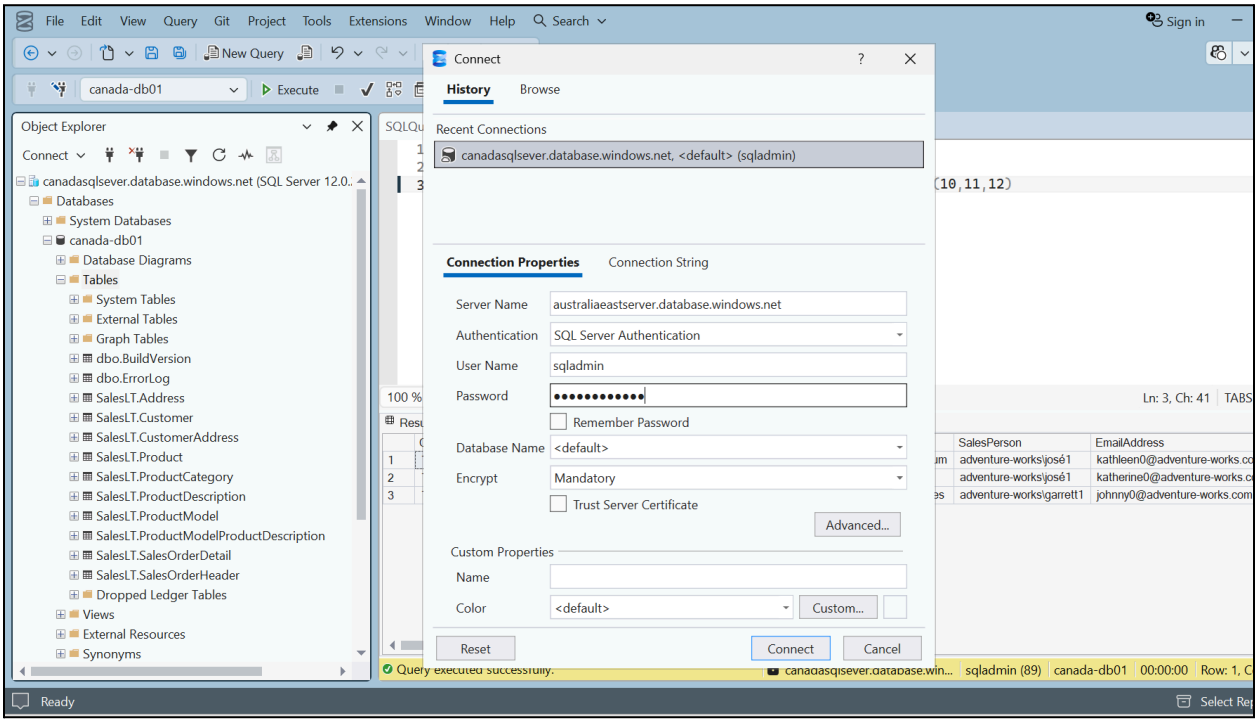
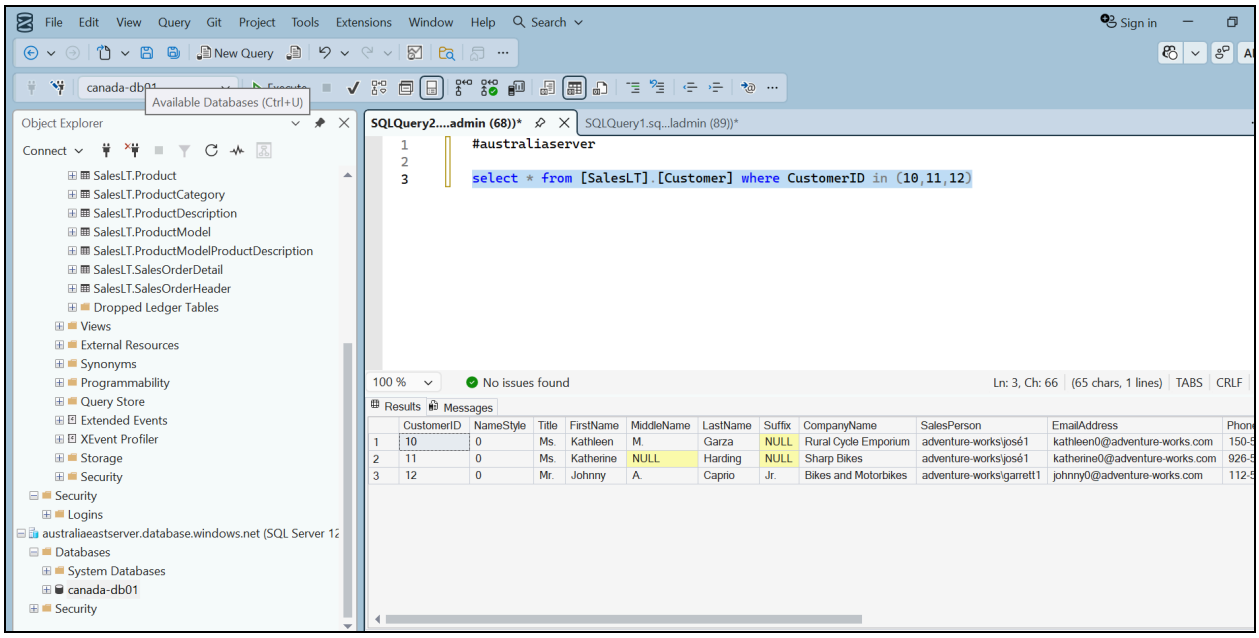


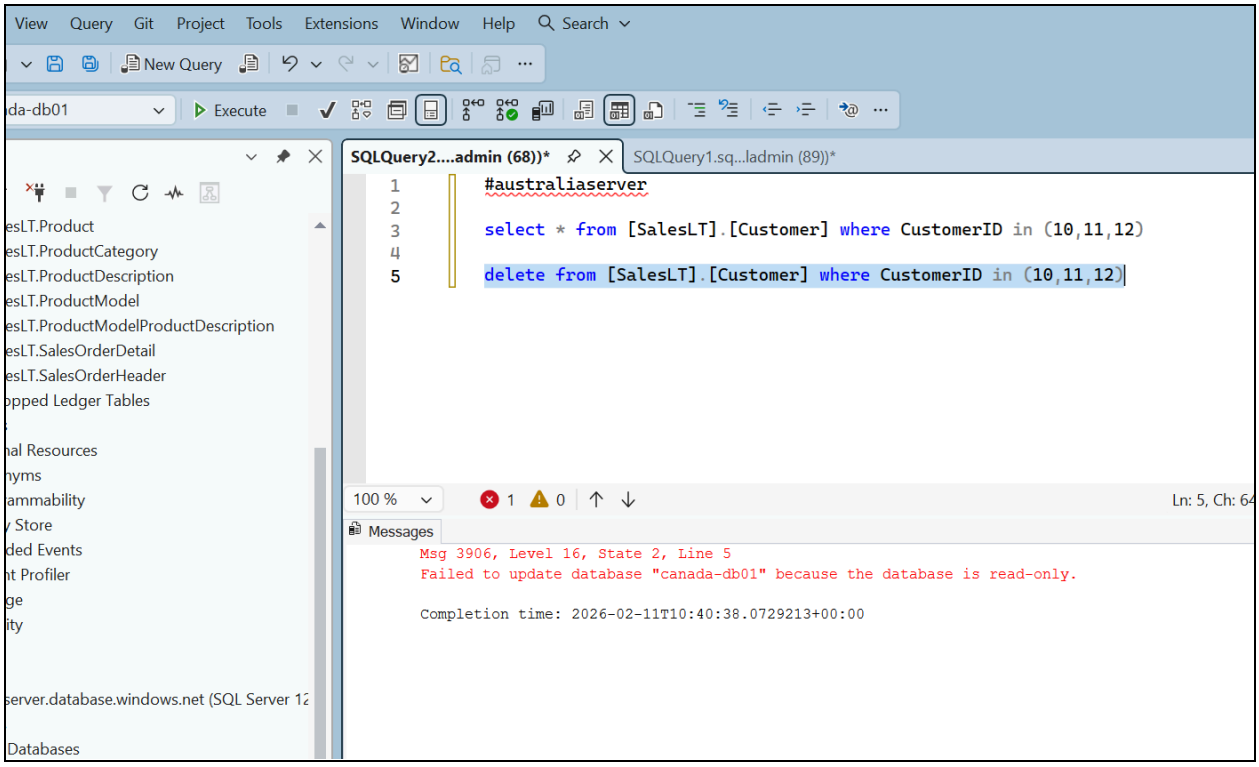
Fig (7) login to the secondary db using the SQL authentication.



fig(8) successfully connected to the secondary db.

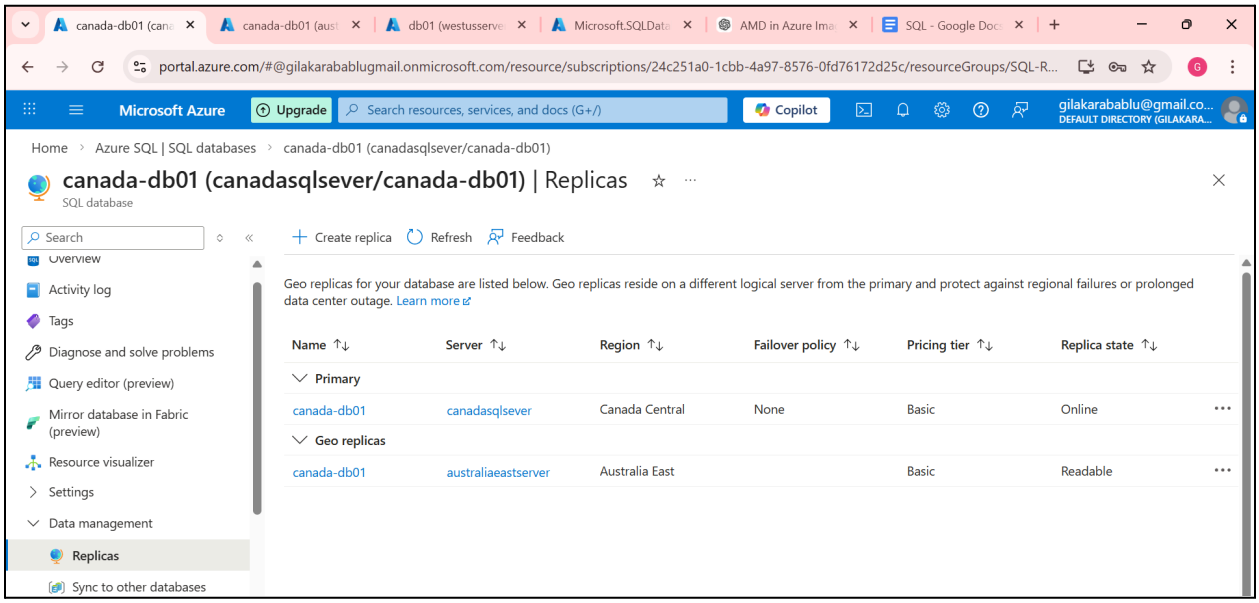
→ Now try to execute some commands in both databases.

- If we delete some records in the primary db, the changes are automatically updated in the secondary db also.
- They are always in sync and updated within milliseconds.
- But if we try to change the from the secondary db it shows error, since the secondary db has only read permission.
- If we want to update from secondary db then we have to perform the forced failover.



fig(9) showing error because the secondary db has only read permission.

→ Now let's perform the forced failover, so that the secondary db becomes the primary.



→ goto canada db > replicas> select the replica & forced failover.

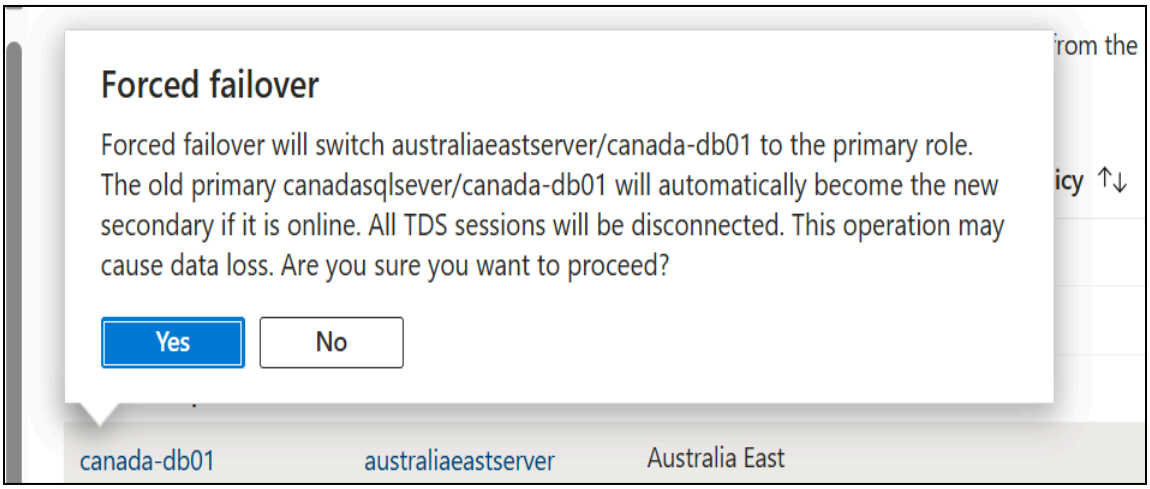
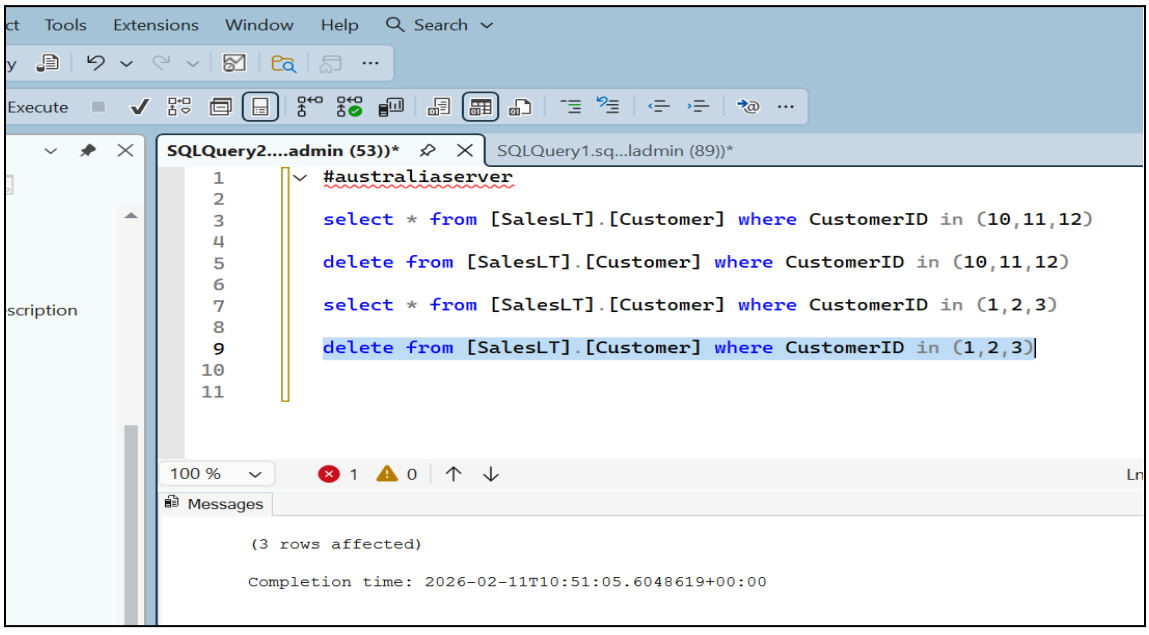
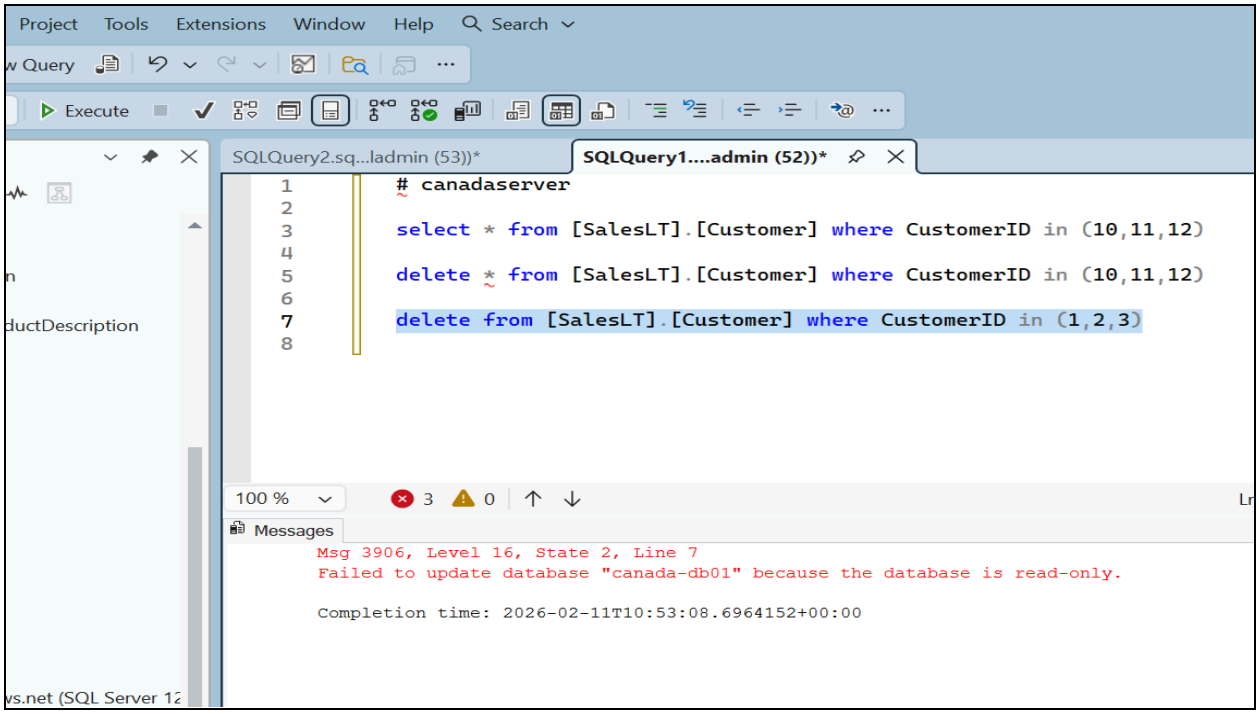


Fig (8&9) successfully forced failover.

→ Now we can execute the R/W queries in the secondary db and the primary db will have only read permission. Since we have forced failover of the database.

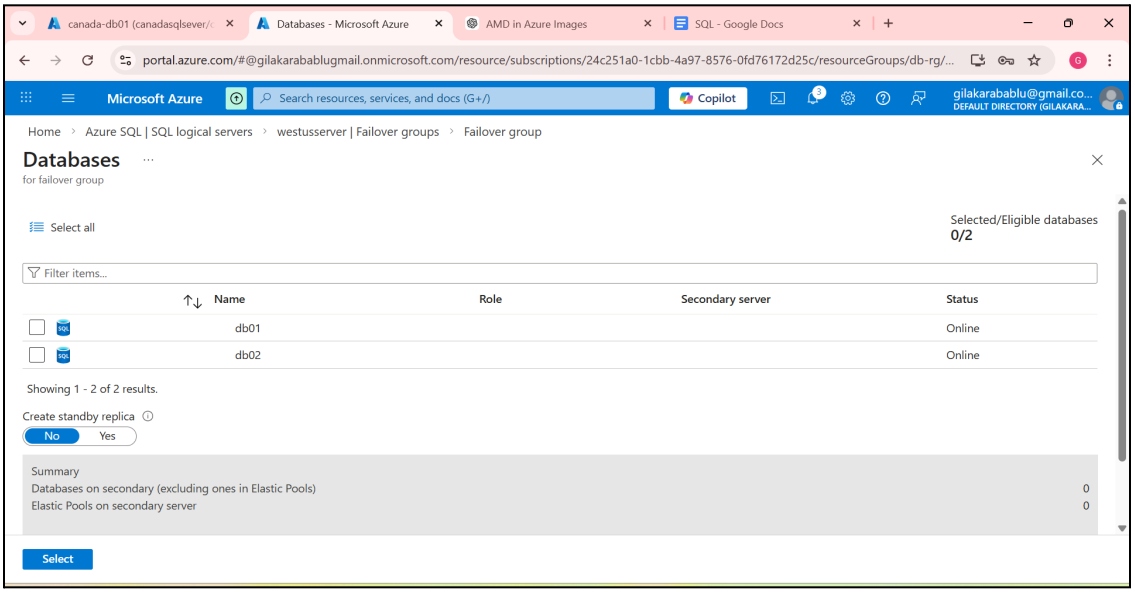


fig(10) Delete Query executed in secondary since it has R/W permissions.



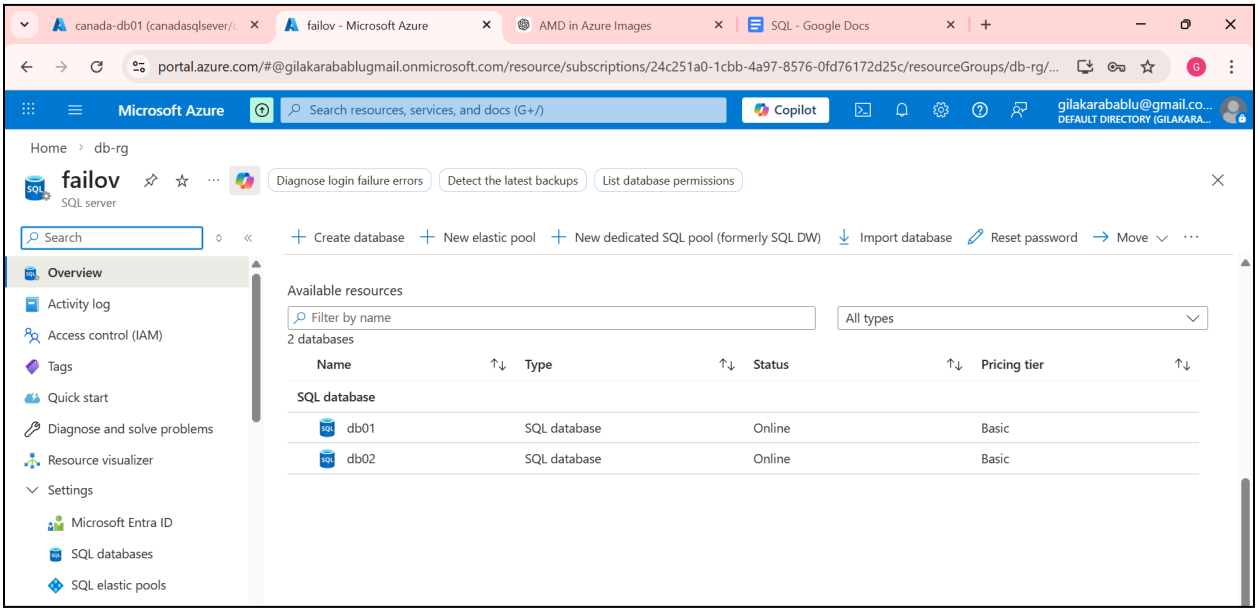
fig(11) showing error in primary db since it has only read permission.

→ Now create multiple db's in a server and perform "failover group".



fig(12) created two db's in westus server and added them in the failover group for replication.

→ In the failover group we can select the required number of db's from a server for replication to another server.
→ goto server > failover group > select the required number of db's.



fig(13) successfully completed the failover group.

→ Here, we replicated the db's from westus server in westus region to failov server in indonesia region.

□ Conclusion:

Azure SQL Database is a fully managed and secure cloud database service. It offers automatic backups, scaling, and high availability, making it suitable for modern applications in Azure.