TRAINING CONTENT

Linux Basics

YOUR NEXT DESTINATION

OF SOFTWARE OUTSOURCING

Lecture Outline

- Introduction of MySQL
- Relational and Nonrelational Database
- MySQL Installation
- MySQL Configuration
- MySQL Administration
- MySQL Backup and Restore
- Uninstall/Remove MySQL
- PostgreSQL
- MongoDB

Introduction of MySQL

What is MySQL

MySQL, the most popular Open-Source SQL database management system, is developed, distributed, and supported by Oracle Corporation.

Why is it used?

MySQL is a relational database management system based on SQL – Structured Query Language. The application is used for a wide range of purposes, including data warehousing, e-commerce, and logging applications. The most common use for mySQL however, is for the **purpose of a web database**.

Relational and Nonrelational Database

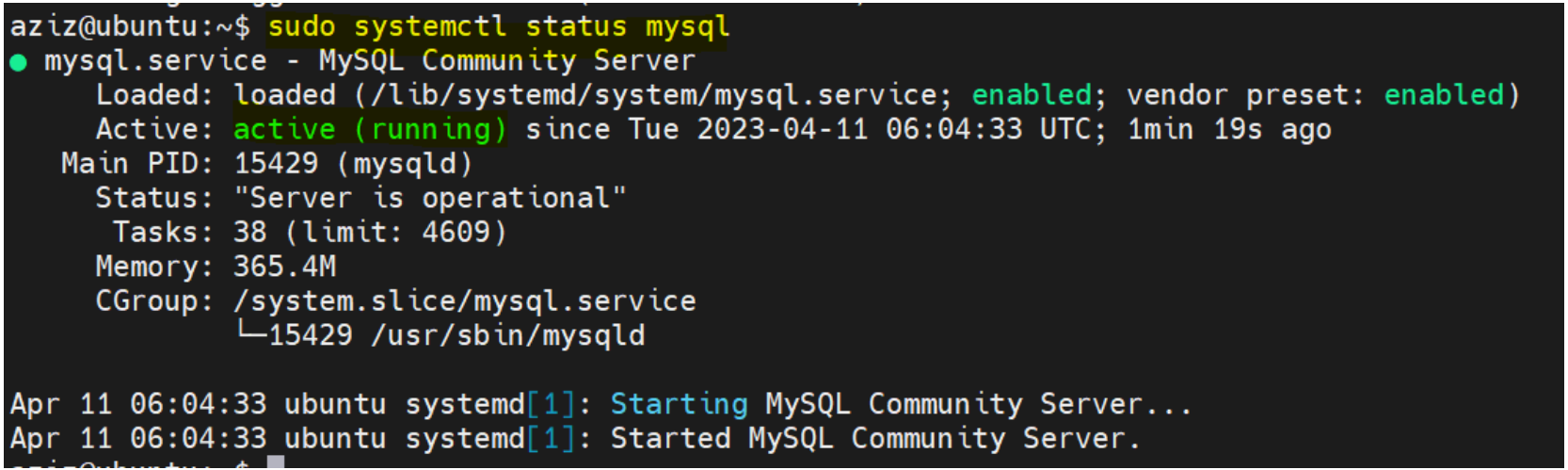
A **relational** database is structured, meaning the data is organized in tables. Many times, the data within these tables have relationships with one another, or dependencies. A **non-relational** database is **document-oriented**, meaning, all information gets stored in more of a laundry list order.

Popular examples of standard relational databases include **Microsoft SQL Server, Oracle Database, MySQL and IBM DB2**

NoSQL or non-relational databases **MongoDB, Apache Cassandra, Redis, Couchbase and Apache HBase**. They are best for Rapid Application Development. NoSQL is the best selection for flexible data storage with little to no structure limitations.

MySQL Installation

#To Install the MySQL server application.
$sudo apt install mysql-server -y
#To confirm the MySQL server is running and It should display a status of active
$sudo systemctl status mysql



MySQL Configuration

#Launch the mysql_secure_installation utility to set the root password and configure other default options.
$sudo mysql_secure_installation

##That will take input for following security options
Securing the MySQL server deployment.

Enter password for user root:
The 'validate_password' component is installed on the server.
The subsequent steps will run with the existing configuration
of the component.
Using existing password for root.

Estimated strength of the password: 100
Change the password for root ? ((Press y|Y for Yes, any other key for No) :

... skipping.

MySQL Configuration

By default, a MySQL installation has an anonymous user, allowing anyone to log into MySQL without having to have a user account created for them. This is intended only for testing, and to make the installation go a bit smoother. You should remove them before moving into a production environment.

Remove anonymous users? (Press y|Y for Yes, any other key for No) :

... skipping.

Normally, root should only be allowed to connect from 'localhost'. This ensures that someone cannot guess at the root password from the network.

Disallow root login remotely? (Press y|Y for Yes, any other key for No) :

... skipping.

MySQL Configuration

By default, MySQL comes with a database named 'test' that anyone can access. This is also intended only for testing, and should be removed before moving into a production environment.

Remove test database and access to it? (Press y|Y for Yes, any other key for No) :

... skipping.
Reloading the privilege tables will ensure that all changes made so far will take effect immediately.

Reload privilege tables now? (Press y|Y for Yes, any other key for No) :

... skipping.
All done!

MySQL Configuration

#To access MySQL remotely, ensure MySQL traffic is allowed through the ufw firewall. Add the following rule to open port 3306 on the firewall.
$ sudo ufw allow mysql
#To check the ufw status
$sudo ufw status

```
aziz@ubuntu:~$ sudo ufw status
Status: active

To                         Action      From
--                         ------      ----
3306/tcp                   ALLOW       Anywhere
3306/tcp (v6)              ALLOW       Anywhere (v6)
```

MySQL Configuration

#Log in to MySQL as the Root User
$sudo mysql -u root -p
#To confirm MySQL is operating correctly
>show databases;

```
aziz@ubuntu:~$ mysql -u root -p
Enter password:
Welcome to the MySQL monitor.  Commands end with ; or \g.
Your MySQL connection id is 15
Server version: 8.0.32-0ubuntu0.20.04.2 (Ubuntu)

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Type 'help;' or '\h' for help. Type '\c' to clear the current input statement.

mysql> SHOW DATABASES;
+--------------------+
| Database           |
+--------------------+
| information_schema |
| mysql              |
| performance_schema |
| sys                |
+--------------------+
4 rows in set (0.00 sec)
```

MySQL Administration

#Create a new database using the create database
>create database newdatabasename;
#To find out the name of the current database, use the select database command.
>select database ();
#switch to the database
>use databasename;
#To confirm the table exists
>show tables;
#To review the table structure and verify the list of fields
>describe newtablename;
#To retrieve data, use the select command
>select * from tablename;

MySQL Backup & Restore

The **mysqldump** utility is an effective tool to backup MySQL databases and transfer your MySQL database to another MySQL server. It is a set of SQL statements used to recreate the original database.

Syntax of the mysqldump command:
mysqldump -u [database_username] –p [database_password] [database_name] [tablename] > [database_backup_file.sql]

#Command to Take database backup
$sudo mysqldump -u root -p test > database_backup_file.sql

#To restore the database
$mysql -u root -p test < database_backup_file.sql

Uninstall/Remove MYSQL

#To Remove MySQL
$sudo apt-get remove --purge mysql*
#To Remove purge
>sudo apt-get purge mysql*
#To Autoremove and autoclean
$sudo apt-get autoremove
$sudo apt-get autoclean
#Remove database configure
$sudo apt-get remove dbconfig-mysql

PostgreSQL

->PostgreSQL, or Postgres, is a relational database management system that provides an implementation of the SQL querying language. It is a powerful, reliable, robust and open source object-relational database system.

#Install the Postgres package along with a -contrib package that adds some additional utilities and functionality

$sudo apt install postgresql postgresql-contrib

#To ensure service is running

$sudo systemctl start postgresql.service

->Postgres uses a concept called “roles” to handle authentication and authorization

#switch over to the postgres account

$sudo -i -u postgres

#you can access the Postgres prompt by running

$psql

#To exit out of the PostgreSQL prompt

$\q

MongoDB

->MongoDB is a popular NoSQL database that is open-source and document-oriented.'NoSQL' here implies that it is a non-relational database. The storage format in which the data is stored is known as BSON (Binary JavaScript Object Notation). It is a cloud-based developer data platform.

#Install the gnupg utility.
$sudo apt-get install gnupg
#Import the public MongoDB GPG signing key
$wget -qO - https://www.mongodb.org/static/pgp/server-6.0.asc | sudo apt-key add -
Add details about the official MongoDB repository to the list of Ubuntu packages
$echo "deb [arch=amd64,arm64] https://repo.mongodb.org/apt/ubuntu focal/mongodb-org/6.0 multiverse" | sudo tee /etc/apt/sources.list.d/mongodb-org-6.0.list
#Reload the systemctl daemon
$sudo systemctl daemon-reload
#Install the MongoDB packages
sudo apt-get install -y mongodb-org
#To ensure service is running
$sudo systemctl status mongodb

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Thank You

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