Overview

Database Management: A Simple Explanation
When we talk about database management, we're referring to the way we organize, store, and manage data in a structured way. Think of a database like a digital filing cabinet where you keep important documents. Just like you would categorize your files into folders for easy access, databases help us categorize and retrieve data efficiently. A Database Administrator (DBA) is like the librarian of this filing cabinet, ensuring everything is in order, secure, and accessible when needed.

For example, imagine you have a collection of recipes. If you store them in a notebook, it might be hard to find a specific recipe when you need it. But if you create a digital database with categories like "Desserts," "Main Dishes," and "Appetizers," you can quickly find what you're looking for. The DBA's job includes designing this structure, making sure the data is safe, and fixing any issues that arise, just like a librarian would help you find a book or fix a broken shelf.

The ability to respond quickly to system failures, corruption, and catastrophic events is a key part of any DBA's job. Crucial to this is the ability to recover data that has been lost, so you will learn to backup and recover databases and define backup and recovery policies and procedures through hands-on labs.

Security of data and databases is critical for any organization. To help ensure data is secure, you'll learn about database security and user management, including creating and resetting user passwords, creating groups, and more.

Ongoing monitoring and optimization of databases are essential tasks that enable DBAs to respond to issues before they become problems. Course topics include creating and keeping baselines, performance metrics, standards, and finally, monitoring RAM and disk usage, connections, and cache stats. You will learn about database optimization, including updating statistics, addressing slow queries, and creating indexes.

In this course, you'll explore some basic troubleshooting processes that help data engineers find frequently occurring issues, such as connectivity, login, configuration, and whether the instance is running.

Being able to automate processes is a skill that enables DBAs to make database administration easier. You can automate many functions, from managing alerts to generating and sending reports. You can create these automation tasks using standard Linux and Unix shell commands or cron jobs.

# A Day in the Life of a Database Administrator

Starting the day
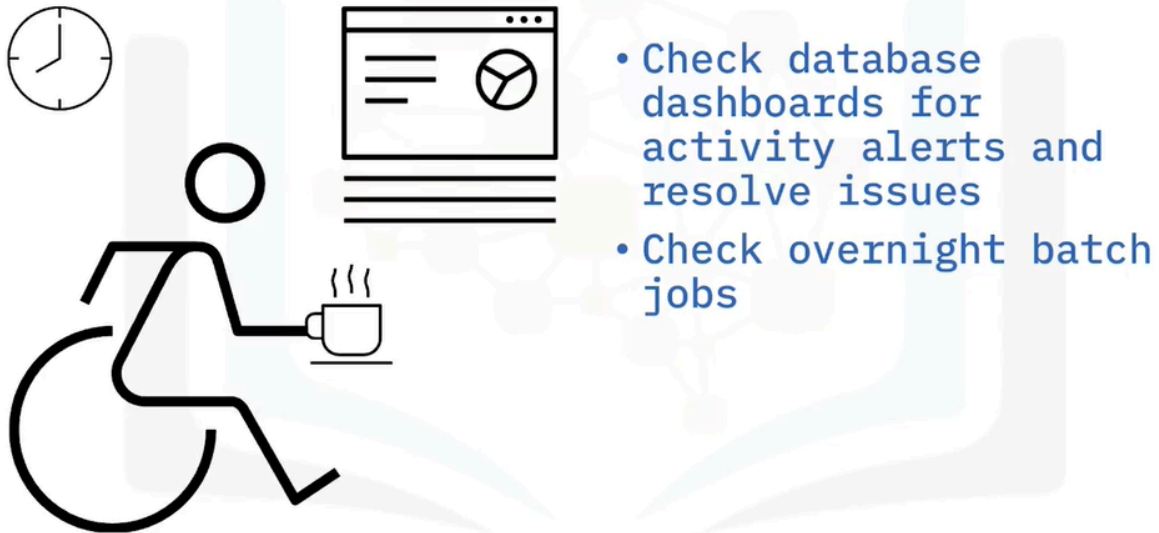
- Check database dashboards for activity alerts and resolve issues
- Check overnight batch jobs

- This is Rygel, a database administrator, or DBA. Grabbing a coffee, he starts his day by checking that the databases he is responsible for are all up and running with no errors. Rygel uses preconfigured dashboards to make sure he gets the most crucial information quickly and easily. Today's a good day – there's only one minor alert that Rygel resolves without issue. The next activity

of the day is to check that the scheduled overnight tasks ran. Rygel checks that the scheduled backups have completed and double checks the schedule for tonight.

Supporting users

- Check email
- Review support tickets
- Triage user requests
- Optimize queries
- Clarify requests and schema changes
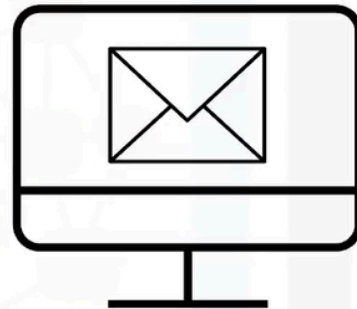
- Happy that the dashboards and scheduled backups haven't revealed any problems, Rygel checks his email. He's looking for user requests. Usually, these will arrive as support tickets from the self-service portal or the helpdesk. Today he finds four support tickets and an email from a developer in marketing with whom he has worked before, asking for a feature improvement. Rygel triages the support tickets and plans how he will respond to them. Some users are requesting assistance with slow-running queries, so Rygel reviews query plans and helps with some query optimization. The developer in marketing is requesting additional fields for a database that tracks the results of a marketing campaign. So Rygel discusses the changes required to the database schema with her and asks her to submit the request through the self-service portal to track and document the response.

Working with stakeholders

- Meeting with developers, data engineers, and data architects
- Stress test scenarios
- Determine appropriate server resources needed

- After a quick lunch, Rygel attends a planning meeting for a new database. Attendees include developers, data engineers, and data architects. He's working with them on a database design to ensure high read performance for a business intelligence workload. He'll make sure that the appropriate resources are allocated for future user base growth and develop a stress testing scenario to find out the maximum load the database can handle. DBAs like Rygel use analytics to determine appropriate server resources like storage space, RAM, processing power, and log file size.

Finishing the day

- Automate repeating tasks
- Respond to user requests
- Monitor database activities

- Rygel heads back to his desk to finish up his day. He spends some time configuring an alert to be sent to his mobile phone. Now he'll know immediately if the alert gets triggered. As he works, he keeps an eye on his email, watching for support tickets. A couple arrive, and Rygel deals with them swiftly. Just before packing his bag, Rygel makes some final checks – he reviews the dashboards and checks he has scheduled the overnight tasks correctly. Happy with a good day, Rygel heads home. Tomorrow is another day.

Summary

In this video, you learned that:

A typical day for a database administrator includes:
• Checking the state of the database
• Resolving issues
• Responding to support tickets
• Meeting with developers and other stakeholders
• Monitoring database activity