Microsoft SQL Server Training

Microsoft® SQL Server®

Pusat Geospatial Negara

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What to Cover

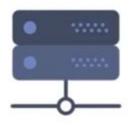|	
🛠	Installation
🗄	Data Storage
💾	Data Backup and Recovery
📄	Indexing
🎛	Monitoring
🚩	Security
🔧	Troubleshooting & Maintenance

Agenda

- Introduction to Database Administration
- Skill to Have
- Responsibilities
- Learning Path
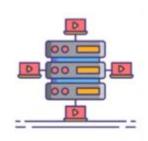
What is Data , DBMS and MSSQL

Database are used to store and manage large amounts of data. DBMS help in retrieving data and manipulating it and then representing the data.

Today, almost every organization has morphed itself into a data-driven organization.

This has a **direct impact** on organization's strategic, tactical and operational **business decisions**

What is a SQL Server application?

Microsoft SQL Server is a relational database management system developed by Microsoft. It is a software product with the primary function of storing and retrieving data as requested by other software applications

What is a SQL database administrator (dba)?

The primary responsibility of the dba is to manage databases, configure server, install application, control permissions, backup and restore databases, ensure security of server, provide high availability solutions for redundancy of data and much more

Installation

Editions:

- Express
  - Up to 10GB database size
  - 1.4 GB Memory limit
  - Single CPU
- Developer
  - All of enterprise
  - Not for production but for dev.
- Trial
  - Ent. Edition but limit to 2 months
- Azure
  - Cloud solution (future)
- Standard
  - For smaller scale app.
- Enterprise
  - For large scale app.
- Linux
  - Since ver. 2017
- Docker
  - Since ver. 2017

Components:

- Database Engine
- Analysis Service
  - 3 dimensional cube
- Integration Service (SSIS)
  - ETL
- Reporting Service
  - Show report on web
  - Pdf, excel
- Master Data Service
  - Reference data across db
- Machine Learning Service
  - In database
  - Standalone
  - R & Python (panda, pi)
- Management Studio (SSMS)
- Visual Studio

Version:

- 6.0
- **6.5 -> year 2000**
- 7.0
- 2000 (8.0)
- 2005 (9.0)
- 2008 (10.0)
- 2012 (11.0)
- 2014 (12.0)
- 2016 (13.0)
- 2017 (14.0)
- 2019 (15.0)
- 2022 (16.0)

Requirements

- 6 GB min Hard Disk

- Memory
    - 512 MB Express
    - 1 GB others
    - Recommended 1 GB express, 4 GB others

- OS
    - Windows server 2016+
    - Windows 10+ (dev, standard, express)
    - Linux
    - Docker

Storage

- File Types
    - .MDF – Main data file
    - .NDF – Secondary data File (optional)
    - .LDF – Transaction log file

- File Names
    - Logical
        - Used to refer to file in T-SQL statements
        - Must obey SQL Server object name rules
        - Must unique across database
    - Physical
        - Actual path of the file
    - Locations
        - When possible, separate the log file from data files and system database files from user database files
        - Files can be FAT or NTFS systems

- File Growth
    - For transaction log file, best practice is to limit growth increment to 1GB Max
    - You can specify a max size and a growth increment for data files
- File Groups
    - Used to manage data files based on location
    - One primary (default) file group which contains all objects no specifically designated to user-defined groups

- Master
  - List of user databases
- Model
  - When create db, copy dari model
- Msdb
  - indexing
- Tempdb
  - Temporary database
  - Temp table
  - Drop and create db every time restart service