Developing SQL Databases

Practice Labs™

Developing SQL Databases

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Lab Outline

The 70-762 Practice Lab will provide you with the necessary platform to gain hands on skills Microsoft SQL Server 2016.

By completing the lab tasks, you will improve your practical skills in designing and implementing database objects, implementing programmability objects, managing database concurrency and optimizing database objects and SQL infrastructure.

These same tasks will help you understand the objectives and competencies required by the Microsoft 70-762 Developing SQL Databases exam.

Outcomes

After completing this Practice Lab, students will be able to:

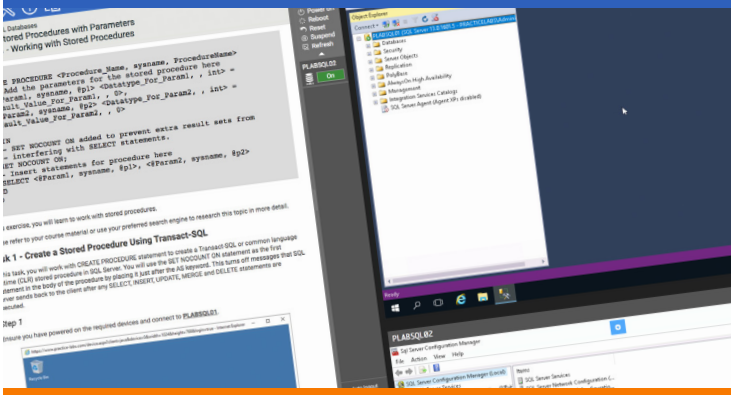
- Create tables and schemes
- Follow best practice procedures to create and optimize indexes
- Create and implement views
- Use constraints to enforce data integrity
- Implement stored procedures
- Create parameters for stored procedures
- Create and use triggers to manipulate data
- Optimize statistics and query plans
- Identify and troubleshoot locking issues
- Implement and perform monitoring to measure performance
- Implement memory-optimized tables

Course Code
70-762

Skill Level
Advanced

Released
March 2017

Duration
25 hours



Prerequisites

No prior hands-on experience is required to use or complete this Practice Lab. However, it would be beneficial to be familiar with the following concepts:

- Microsoft Windows operating systems
- Transact-SQL
- Relational database knowledge

Who is it For?

The 70-762 certificate is aimed at IT professionals seeing to advance their experience in SQL Server 2016 or developers looking to improve their hands-on skills in implementing a database.

Additional Info

This Practice Lab focuses on the practical aspects of the 70-762 exam objectives. It is therefore advised to refer to your own course materials to gain a deeper understanding of any theoretical aspects of the exam objectives.

Support 9am-5pm(GMT) : +44 (0) 203 588750
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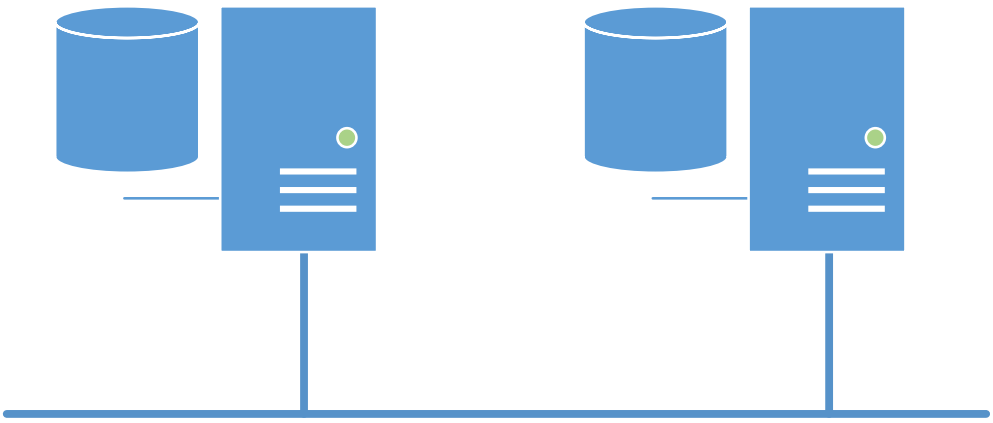
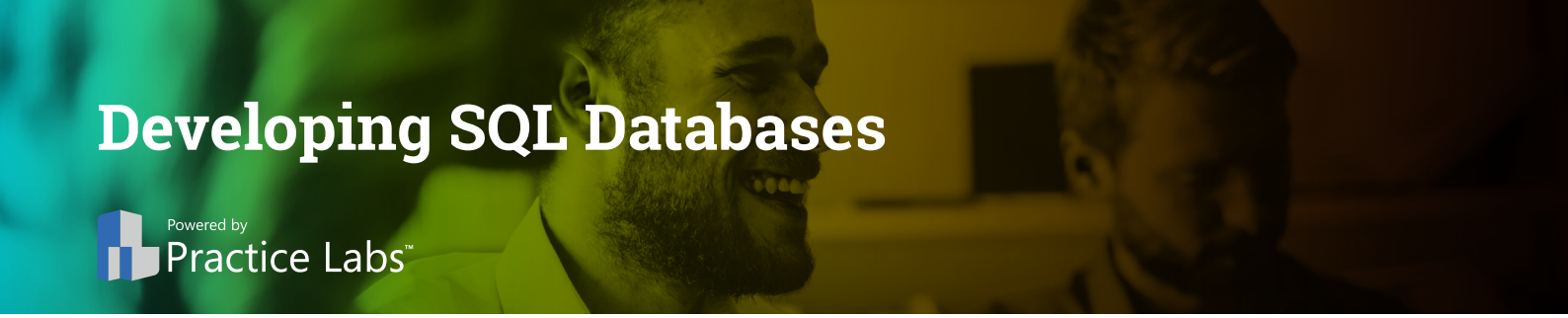
Lab Topologies

You will also have access to the following topologies:

PLABSQL01
(SQL Server 1)
192.168.0.1 /24

PLABSQL02
(SQL Server 2)
192.168.0.2 /24





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Modules and Exercises

Designing a Relational Database Schema

- Introduction
- Exercise 1 - Working with Table Designer
- Exercise 2 - Managing Tables
- Exercise 3 - Working with Schemas
- Exercise 4 - Managing Schemas
- Exercise 5 - Working with Normalization
- Summary

Creating Indexes

- Introduction
- Exercise 1 - Creating Index on Table
- Exercise 2 - Working with Key Columns
- Exercise 3 - Managing Non-Key Columns
- Summary

Best Practices in Index Creation

- Introduction
- Exercise 1 - Managing Clustered Indexes on Varchar Columns
- Exercise 2 - Managing Clustered and Nonclustered Indexes
- Summary

Creating and Implementing Views

- Introduction
- Exercise 1 - Working with Query and View Designer Tool
- Exercise 2 - Updating Data in Views
- Exercise 3 - Working with Partitioned Views
- Exercise 4 - Working with Indexed Views
- Summary

Creating Columnstore Indexes

- Introduction
- Exercise 1 - Working with Clustered Columnstore Indexes
- Exercise 2 - Managing Nonclustered Indexes on Clustered Columnstore indexes
- Exercise 3 - Working with Nonclustered Columnstore Indexes
- Summary

Maintaining Columnstore Indexes

- Introduction
- Exercise 1 - Working with Columnstore Indexes
- Summary

Creating Constraints

- Introduction
- Exercise 1 - Working with Primary Keys
- Exercise 2 - Working with Foreign Keys
- Exercise 3 - Working with Constraints
- Summary

Effects of Contraints on DML Statements

- Introduction
- Exercise 1 - Enforcing Data Integrity with Constraints
- Exercise 2 - Ignoring Constraints using BULK INSERT
- Summary

Creating Stored Procedures with Parameters

- Introduction
- Exercise 1 - Working with Stored Procedures
- Summary

Error Handling and Streamlining Stored Procedures

- Introduction
- Exercise 1 - Using Error Handling and Streamlining Methods in Stored Procedures
- Summary

Creating Triggers

- Introduction
- Exercise 1 - Working with DDL Triggers
- Exercise 2 - Working with DML Triggers
- Exercise 3 - Working with Logon Triggers
- Summary

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Creating User-Defined Functions

- Introduction
- Exercise 1 - Working with Scalar Functions
- Exercise 2 - Using Table-Valued Functions
- Summary

Impact of Transactions on DML Statements

- Introduction
- Exercise 1 - Demonstrating Impact of Transaction on DML Statements
- Summary

Implicit and Explicit Transactions - Creating Savepoints

- Introduction
- Exercise 1 - Analyzing Implicit Transaction on Transact-SQL Statements
- Exercise 2 - Creating an Explicit Transaction on Transact-SQL Statements
- Exercise 3 - Implementing Savepoints for Rolling Back Transactions
- Summary

Manage Isolation Levels

- Introduction
- Exercise 1 - Managing Concurrency with READ UNCOMMITTED
- Exercise 2 - Managing Concurrency with Repeatable Read
- Summary

Serializable and Snapshot

- Introduction
- Exercise 1 - Working with Serializable Isolation Level
- Exercise 2 - Working with Snapshot Isolation Level
- Summary

Identifying and Analyzing Locking Issues

- Introduction
- Exercise 1 - Working with SQL Server Locks
- Exercise 2 - Managing Deadlocks
- Summary

Implementing Memory-Optimized Tables and Native Stored Procedures

- Introduction
- Exercise 1 - Working with Memory-Optimized Tables
- Exercise 2 - Managing Natively Compiled Stored Procedures
- Summary

Optimizing Statistics

- Introduction
- Exercise 1 - Obtaining the Date of the Latest Statistics Update
- Exercise 2 - Updating the Table Statistics Manually
- Exercise 3 - Using FULLSCAN and NORECOMPUTE to Update Statistics
- Summary

Optimizing Indexes

- Introduction
- Exercise 1 - Querying Dynamic Management Objects to Verify Current Index Usage
- Exercise 2 - Identifying Missing Indexes Using Dynamic Management Objects
- Summary

Optimizing Query Plans Part 1

- Introduction
- Working with SQL Server Profiler
- Working with Query Store
- Working with Extended Events
- Summary

Optimizing Query Plans Part 2

- Introduction
- Working with Azure SQL database performance insight
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Monitoring Performance using SQL Trace and Extended Events

- Introduction
- Monitoring SQL Server database with Profiler tool
- Monitoring SQL Server database with Windows tools
- Monitoring SQL Server database with Microsoft Azure tool
- Monitoring SQL Server database with Extended Events
- Summary

Optimizing Performance for Database Instances Part 1

- Introduction
- Working with tempdb database
- Working with dynamic management views
- Working with memory manager
- Summary

Optimizing Performance for Database Instances Part 2

- Introduction
- Working with elastic scale pool for Azure SQL database
- Working with Azure SQL database query plans
- Summary

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