

# Course GWE20720A: Administering a Microsoft SQL Server 2000 Database

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## Introduction

This course provides students with the knowledge and skills required to install, configure, administer, and troubleshoot the client-server database management system of Microsoft SQL Server 2000. Course 2072 is a revision of Course 832, *System Administration for Microsoft SQL Server 7.0*. The course content is being revised to reflect changes in the product.

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## At Course Completion

At the end of the course, students will be able to:

- Describe SQL Server architecture.
- Plan for a SQL Server installation, and then install an instance of SQL Server.
- Manage files and databases, including determining resource requirements.
- Choose a login security method, configure login security, plan and implement database permissions, and describe how to help protect SQL Server in an enterprise network.
- Perform and automate administrative tasks and create custom administrative tools.
- Back up databases and implement a backup strategy.
- Restore databases.
- Monitor and optimize SQL Server performance.
- Transfer and migrate data into databases.
- Maintain the high availability of SQL Server.
- Describe how to replicate data from one SQL Server to another.

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## Microsoft Certification exams

This course will help the student prepare for the following Microsoft Certified Professional exam:

- [System Administration for Microsoft SQL Server 2000](#)

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## Prerequisites

Before attending this course, students must have:

- Experience using the Microsoft Windows 2000 operating system to:
  - Connect clients running Windows 2000 to networks and the Internet.
  - Configure the Windows 2000 environment.
  - Create and manage user accounts.
  - Manage access to resources by using groups.
  - Configure and manage disks and partitions, including disk striping and mirroring.
  - Manage data by using NTFS.
  - Implement Windows 2000 security.
  - Optimize performance in Windows 2000.
- An understanding of basic relational database concepts, including:
  - Logical and physical database design.
  - Data integrity concepts.
  - Relationships between tables and columns (primary key and foreign key, one-to-one, one-to-many, and many-to-many).
  - How data is stored in tables (rows and columns).

For students who do not meet these prerequisites, the following course provides students with the necessary knowledge and skills:

- *Designing Data Services and Data Models*
- Knowledge of basic Transact-SQL syntax (SELECT, INSERT, UPDATE, and DELETE statements).

For students who do not meet these prerequisites, the following course provides students with the necessary knowledge and skills:

- [Querying Microsoft SQL Server 2000](#)
- Familiarity with the role of the database administrator.

*The course materials, lectures, and lab exercises are in English. To benefit fully from the instruction, students need an understanding of the English language and completion of the prerequisites.*

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## Course Materials

The course materials are yours to keep. The student kit includes a comprehensive workbook and other necessary materials for this class.

The following software is provided for use in the classroom:

- Microsoft SQL Server 2000, Enterprise Edition Evaluation Copy

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## Course Outline

### Module 1: SQL Server Overview

The following topics are covered in this module:

- What Is SQL Server

- SQL Server Integration
- SQL Server Databases
- SQL Server Security
- Working with SQL Server

The following lab is covered in this module:

- SQL Server Overview

At the end of this module, you will be able to:

- Describe SQL Server 2000 and its supported operating system platforms.
- Describe SQL Server architecture.
- Describe SQL Server databases.
- Describe SQL Server security.
- Describe SQL Server querying, implementation, administration, and data warehousing activities, as well as client application design options.

### **Module 2: Planning to Install SQL Server**

The following topics are covered in this module:

- Hardware Installation Considerations
- SQL Server 2000 Editions
- Software Installation Considerations
- Methods of Installing SQL Server
- Verifying the Installation
- Configuring SQL Server Enterprise Manager
- Troubleshooting

The following lab is covered in this module:

- Installing SQL Server

At the end of this module, you will be able to:

- Determine hardware requirements for SQL Server 2000 and the SQL Server management tools.
- Describe the various SQL Server Editions.
- Describe the different types of licensing.
- Determine software installation options that are appropriate for your environment.
- Describe various methods of installing an instance SQL Server and install it by using SQL Server Setup.
- Verify the installation of SQL Server.
- Configure SQL Server Enterprise Manager.
- Troubleshoot the installation.

### **Module 3: Managing Database Files**

The following topics are covered in this module:

- Introduction to Data Structures
- Creating Databases
- Managing Databases
- Placing Database Files and Logs
- Optimizing the Database Using Hardware-based RAID

- Optimizing the Database Using Filegroups
- Optimizing the Database Using Filegroups with Hardware-based RAID
- Capacity Planning
- Performance Considerations

The following lab is covered in this module:

- Managing Database Files

At the end of this module, you will be able to:

- Describe how SQL Server stores data and handles transactions.
- Create a database, including specifying options during and after database creation.
- Grow, shrink, or delete a database.
- Determine the placement of database files and transaction logs for performance and fault tolerance.
- Optimize a database by using hardware-based RAID.
- Determine when and how to use filegroups to optimize a database.
- Optimize a database by using filegroups with hardware-based RAID.
- Estimate the amount of space that a database requires.

#### **Module 4: Managing Security**

The following topics are covered in this module:

- Implementing an Authentication Mode
- Assigning Logins to Users and Roles
- Assigning Permissions to Users and Roles
- Managing Security Within SQL Server
- Managing Application Security
- Managing SQL Server Security in the Enterprise

The following labs are covered in this module:

- Managing Security
- Managing Permissions
- Managing Application Security

At the end of this module, you will be able to:

- Implement Windows Authentication Mode and Mixed Authentication Mode.
- Assign login accounts to database user accounts and roles.
- Assign permissions to user accounts and roles.
- Manage security within SQL Server.
- Manage security with views and stored procedures.
- Create and use application roles to manage application security.
- Manage SQL Server security in the enterprise environment.

#### **Module 5: Performing Administrative Tasks**

The following topics are covered in this module:

- Configuration Tasks Routine SQL Server Administrative Tasks Automating Routine Maintenance Tasks Creating Alerts Troubleshooting SQL Server Automation Automating Multiserver Jobs

The following labs are covered in this module:

- Configuring SQL Server
- Creating Jobs and Operators
- Creating Alerts

At the end of this module, you will be able to:

- Perform common SQL Server configuration tasks.
- Describe how to upgrade SQL Server version 6.5 and SQL Server 7.0 to SQL Server 2000.
- Describe routine database administration tasks.
- Automate routine maintenance tasks by creating and scheduling jobs.
- Create alerts and operators.
- Troubleshoot automated jobs, alerts, or notifications.
- Automate administrative jobs in a multiserver environment.

### **Module 6: Backing Up Databases**

The following topics are covered in this module:

- Preventing Data Loss
- Setting and Changing a Database Recovery Model
- SQL Server Backup
- When to Back Up Databases
- Performing Backups
- Types of Backup Methods
- Planning a Backup Strategy
- Performance Considerations

The following lab is covered in this module:

- Backing Up Databases

At the end of this module, you will be able to:

- Create backup files and backup sets.
- Back up user and system databases by using Transact-SQL and SQL Server Enterprise Manager.
- Back up databases that are created on multiple files and filegroups.
- Apply the appropriate backup options to each of the different SQL Server 2000 backup methods.
- Use the BACKUP LOG statement to back up and clear transaction logs.
- Design an appropriate backup strategy.

### **Module 7: Restoring Databases**

The following topics are covered in this module:

- SQL Server Recovery Process
- Preparing to Restore a Database
- Restoring Backups
- Restoring Databases from Different Backup Types
- Restoring Damaged System Databases

The following lab is covered in this module:

- Restoring Databases

At the end of this module, you will be able to:

- Describe the SQL Server recovery process.
- Verify backups and perform specific tasks that enable the restore process.
- Use the RESTORE statement to get information about a backup file before you restore a database, file, or transaction log.
- Restore backups from different backup types and use the appropriate options.
- Restore damaged system databases.

### **Module 8: Monitoring SQL Server for Performance**

The following topics are covered in this module:

- Why to Monitor SQL Server
- Performance Monitoring and Tuning
- Tools for Monitoring SQL Server
- Common Monitoring and Tuning Tasks

The following lab is covered in this module:

- Monitoring SQL Server

At the end of this module, you will be able to:

- Describe the reasons why monitoring SQL Server 2000 is important.
- Develop a performance monitoring and tuning methodology.
- Describe the tools available for monitoring SQL Server.
- Perform common monitoring and tuning tasks by using counters and appropriate tools.

### **Module 9: Transferring Data**

The following topics are covered in this module:

- Introduction to Transferring Data
- Tools for Importing and Exporting Data in SQL Server
- Introduction to DTS
- Transforming Data with DTS

The following lab is covered in this module:

- Transferring Data

At the end of this module, you will be able to:

- Describe the rationale for, and the process of, importing, exporting, and transforming data.
- Describe the tools for importing and exporting data in SQL Server 2000.
- Transform data by using Data Transformation Services (DTS).
- Create and edit a DTS package by using the DTS Import and DTS Export Wizards.

### **Module 10: Maintaining High Availability**

The following topics are covered in this module:

- Introduction to Availability
- Increasing Availability Using Failover Clustering
- Standby Servers and Log Shipping

The following lab is covered in this module:

- Automating the Maintenance of a Standby Server

At the end of this module, you will be able to:

- Determine availability requirements and strategies for a Microsoft Windows Server System environment.
- Use SQL Server failover clustering.
- Configure a standby server and use log shipping to maintain its integrity.

### **Module 11: Introducing Replication**

The following topics are covered in this module:

- Introduction to Distributed Data
- Introduction to SQL Server Replication
- SQL Server Replication Agents
- SQL Server Replication Types
- Physical Replication Models

The following lab is covered in this module:

- Implementing Replication

At the end of this module, you will be able to:

- Describe the various methods to distribute data in SQL Server 2000.
- Explain the publisher-subscriber metaphor, including articles, publications, and subscriptions.
- Describe SQL Server replication agents.
- Explain the SQL Server replication types.
- Describe the physical replication models.

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