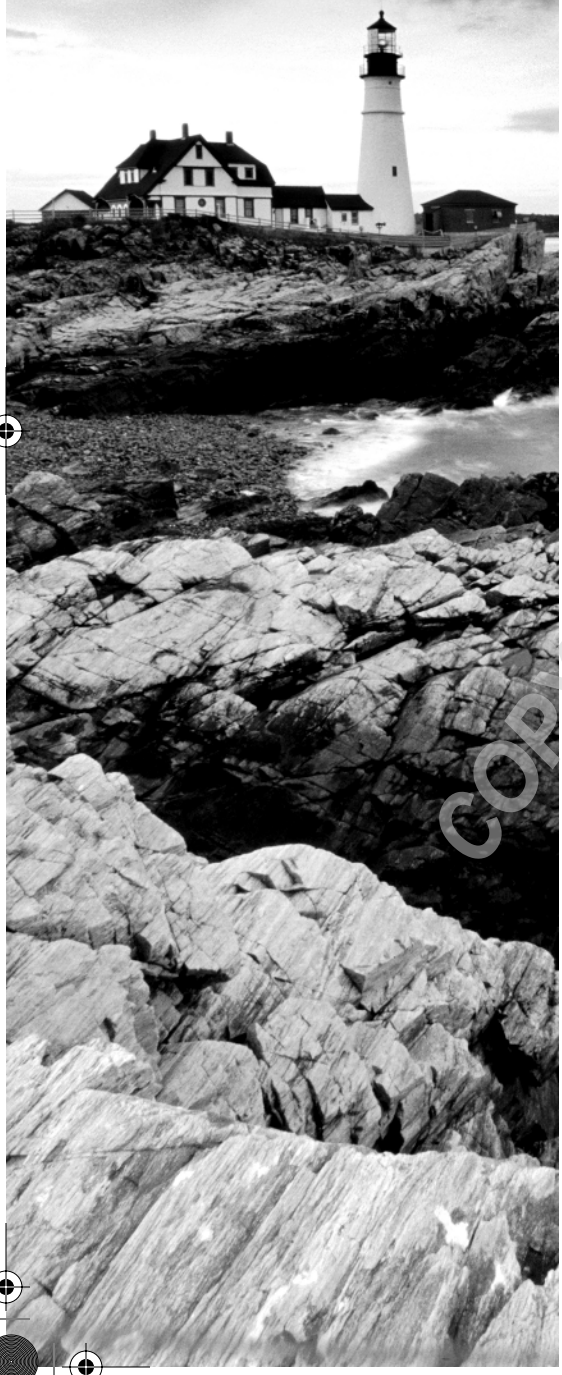
Chapter

1



Installing Microsoft SQL Server 2005

MICROSOFT EXAM OBJECTIVES COVERED IN THIS CHAPTER:

- ✓ **Verify prerequisites.**
- ✓ **Upgrade from an earlier version of SQL Server.**
- ✓ **Create an instance.**

Remember the first time you bought a bicycle? You probably just got a box full of bicycle parts from the store with a label on the front that read "some assembly required." If you're like most people, you probably set the instruction booklet somewhere on the floor and just started picking out parts that looked like they should fit together. In the end, you probably had something that didn't even remotely resemble the bicycle you saw on the showroom floor and an overpowering desire to read the assembly instructions.

SQL Server 2005 should have a label right on the box that says "some assembly required" just to remind you to read the instructions first, not last. Just like with the first bicycle you bought, with SQL Server if you read the instructions after the install, you will end up with a mess. This mess is not easy to clean up, though; in some instances, you may even need to reinstall SQL Server.

In this chapter, we will present the instructions for installing SQL Server 2005 so that you need do it only once. We'll start by covering the prerequisites, explaining the required hardware and software that need to be in place before you begin the install procedure. Then we'll move into installing SQL Server, covering each step of the Setup Wizard and pointing out topics that require special attention. Since you might be upgrading from a previous version of SQL Server, we'll also walk you through the upgrade process. Finally, since not all installs go perfectly, we'll provide some troubleshooting techniques to ensure that SQL Server gets up and running.

Meeting the Prerequisites

You will need a few pieces in place on your machine before you will be able to install SQL Server 2005, the first of which is Internet Explorer (IE) 6.0 Service Pack 1 (SP1) or newer. Many people see this requirement and instantly think SQL Server requires IE to serve data. That is not the case. The only parts of SQL Server 2005 that require IE are the Microsoft Management Console (discussed later in this book) and Books Online (BOL).

You must also be certain your machine meets the minimum hardware requirements before you can install SQL Server 2005. Otherwise, SQL Server may run very slowly, or not at all. Each edition of SQL Server has a different set of hardware requirements. Table 1.1 lists the hardware requirements for the Express Edition, Table 1.2 lists the Workgroup Edition requirements, and Table 1.3 lists the Standard Edition, Developer Edition, and Enterprise Edition requirements.

TABLE 1.1 Express Edition Requirements

Component	32-bit
Processor	600 megahertz (MHz) Pentium III–compatible or faster processor; 1 gigahertz (GHz) or faster processor recommended
Memory	192 megabytes (MB) of random access memory (RAM) or more; 512MB or more recommended
Disk drive	CD or DVD drive
Hard disk space	Approximately 350MB of available hard disk space for the recommended installation with approximately 425MB of additional space for SQL Server BOL, SQL Server Mobile BOL, and sample databases
Operating system	Windows XP with SP2 or newer; Windows 2000 Server with SP4 or newer; Windows Server 2003 Standard Edition, Enterprise Edition, or Datacenter Edition with SP1 or newer; Windows Small Business Server 2003 with SP1 or newer

TABLE 1.2 Workgroup Edition Requirements

Component	32-bit
Processor	600MHz Pentium III–compatible or faster processor; 1GHz or faster processor recommended
Memory	512MB of RAM or more; 1GB or more recommended
Disk drive	CD or DVD drive
Hard disk space	Approximately 350MB of available hard disk space for the recommended installation with approximately 425MB of additional space for SQL Server BOL, SQL Server Mobile BOL, and sample databases
Operating system	Microsoft Windows 2000 Server with SP4 or newer; Windows 2000 Professional Edition with SP4 or newer; Windows XP with SP2 or newer; Windows Server 2003 Enterprise Edition, Standard Edition, or Datacenter Edition with SP1 or newer; Windows Small Business Server 2003 with SP1 or newer

TABLE 1.3 Developer/Standard/Enterprise Edition Requirements

Component	32-bit	x64	Itanium
Processor	600MHz Pentium III–compatible or faster processor; 1GHz or faster processor recommended	1GHz AMD Opteron, AMD Athlon 64, Intel Xeon with Intel EM64T support, Intel Pentium IV with EM64T support processor	1GHz Itanium or faster processor
Memory	512MB of RAM or more; 1GB or more recommended	512MB of RAM or more; 1GB or more recommended	512MB of RAM or more; 1GB or more recommended
Disk drive	CD or DVD drive	CD or DVD drive	CD or DVD drive
Hard disk space	Approximately 350MB of available hard disk space for the recommended installation with approximately 425MB of additional space for SQL Server BOL, SQL Server Mobile BOL, and sample databases	Approximately 350MB of available hard disk space for the recommended installation with approximately 425MB of additional space for SQL Server BOL, SQL Server Mobile BOL, and sample databases	Approximately 350MB of available hard disk space for the recommended installation with approximately 425MB of additional space for SQL Server BOL, SQL Server Mobile BOL, and sample databases
Operating system	Microsoft Windows 2000 Server with SP4 or newer; Windows 2000 Professional Edition with SP4 or newer; Windows XP with SP2 or newer; Windows Server 2003 Enterprise Edition, Standard Edition, or Datacenter Edition with SP1 or newer; Windows Small Business Server 2003 with SP1 or newer	Microsoft Windows Server 2003 Standard x64 Edition, Enterprise x64 Edition, or Datacenter x64 Edition with SP1 or newer; Windows XP Professional x64 Edition or newer	Microsoft Windows Server 2003 Enterprise Edition or Datacenter Edition for Itanium-based systems with SP1 or newer

At this point you are probably wondering why there are so many versions of SQL Server 2005 and which one is right for you. The following discussion compares the versions and shows you what each edition does:

Express Edition Express Edition supports one central processing unit (CPU), supports up to 1GB of RAM, and has a maximum database size of 4GB. It does not have full 64-bit support, but it will run on 64-bit operating systems using the Windows-on-Windows (WOW) technology.

Workgroup Edition Workgroup Edition supports two CPUs, supports up to 3GB of RAM, and has no maximum database size limit. It does not have full 64-bit support, but it will run on 64-bit operating systems using the WOW technology. In addition, this edition provides backup log-shipping, full-text search, the SQL Server Agent scheduling service, and the Report Builder.

Standard Edition Standard Edition supports four CPUs, supports as much RAM as the operating system (OS) can support, and has no maximum database size limit. It has full 64-bit support. In addition to all the features that Workgroup Edition provides, Standard Edition has database mirroring, failover clustering, the Database Tuning Advisor, Notification Services, Integration Services with basic transforms, and Hypertext Transfer Protocol (HTTP) endpoints.

Enterprise/Developer Edition These two editions support as many CPUs as the OS allows, support as much RAM as the OS can support, and have no maximum database size limit. They have full 64-bit support. In addition to all the features that the Standard Edition and Workgroup Edition provide, these editions offer partitioning, parallel index operations, indexed views, online indexing and restoration, fast recovery, Integration Services advanced transforms, Oracle replication, the scale-out of report servers, and data-driven subscriptions (for Reporting Services).

Now you have the hardware and OS in place, but you have still more to consider before you can install SQL Server.

Preparing to Install

Before you actually install SQL Server, which you'll do in Exercise 1.1, you'll need to understand a few topics, so in this section we'll discuss some of the decisions you need to make before installing.

Choosing Default Instances or Named Instances

One of the first choices you need to make is whether this SQL Server is the default instance or a *named instance*. That may seem a bit confusing if you are new to SQL Server; *named instances* are essentially like running multiple SQL Servers on one machine. The most common time to run multiple instances is when you need to run multiple versions of SQL Server but you have limited hardware resources. By using this method you can have SQL Server 2005 running as a named instance and SQL Server 7.0 or 2000 running as the default instance. Your client machines will see two distinct SQL Servers on the network, even though they are both running on the same machine.

The default instance is selected by default (no pun intended) and should be left that way for the first installation of SQL Server on a machine. Subsequent installations on the same machine can be given installation names of up to 16 characters. Clients will then use this new name to refer to the new instance.

Choosing Service Accounts

When you first turn on your Windows machine and try to use it, you are presented with a dialog box that asks you for a username and password. That username and password give you access to the machine (and the network) with whatever privileges your administrator has seen fit to assign. Many services, such as programs running in the background, require a user account just like you do. This special user account, called a *service account*, gives the service access to the machine and network with the privileges it requires to get its work done.

The SQL Server services require a user account to run, so you need to pick one of three types, as shown in Table 1.4.

TABLE 1.4 Service Account Comparison

Type	Limitations	Advantages
Built-in system account	You will not be able to communicate with other SQL Servers over the network.	Easy to set up since you don't need to create a user account
Local user account	You will not be able to communicate with other SQL Servers over the network.	Allows you to control the service permissions without allowing network access
Domain user account	None, but slightly more difficult to configure than the other two because a network administrator must create and configure the accounts.	Allows you to communicate fully with other network machines, including SQL Servers and e-mail servers

If you opt to use a user account (local or domain), you must first create it using the appropriate tool for your operating system. If you create only one account to be used by both SQL Server and SQL Server Agent services (discussed later in this book), then you must add the user account to the Administrators local group; otherwise, replication (also discussed later in this book) will not function properly. If you decide you want greater control over the security on your network, then you can add two separate accounts, one for the SQL Server service and one for the SQL Server Agent service. A good reason to do this is that only the SQL Server Agent service really requires administrative authority; the other can get by just fine as a standard user.

Selecting an Authentication Mode

Another important decision is which *authentication mode* to use. Chapter 6 discusses authentication modes in detail, but it is good to know a little about them for setup purposes. To access SQL Server, your users need to log in to the server. And to log in to the server, they need

an account. The type of account they use depends upon the authentication mode that is set. If you select Windows Authentication Mode, then only clients that have an Active Directory account will be able to access the system. If you have other clients (like Novell or Unix), then you should select Mixed Mode.

You can change the authentication mode at any time after installation; in other words, if you choose the wrong one for your needs, it is OK.

Choosing a Collation Setting

In versions of SQL Server prior to SQL Server 2000, it was necessary to choose a character set, a sort order, and a Unicode collation setting. In SQL Server 2005, these three entities have been combined to form the *collation setting*. You can choose from two collation settings: SQL Collation and Windows Collation.

SQL Collation is for backward compatibility with older versions of SQL Server and does not control Unicode character storage. If you need to replicate with older versions of SQL Server or you will be switching between SQL Server 2005 and SQL Server 7.0 and older, then you should use SQL Collation. If you are installing SQL Server 2005 on a machine with an older version of SQL installed, then the setup program will detect the necessary collation for you; otherwise, you need to select the proper collation.

Windows Collation uses the collation (code page, sort order, and so on) of the underlying operating system and controls Unicode and non-Unicode sorting and storage. If you choose Windows Collation, then you have two more issues to worry about: the collation designator and the sort order.

Selecting a Collation Designator

As you read this book, you see the characters as lines, curves, and various shapes. If you read Cyrillic, then you see different shapes for the characters than someone reading German or English. Computers need to read and interpret characters just like we do; the only problem is that computers don't see them as various shapes—they see them as different combinations of 1s and 0s. It makes sense then that if your computer is storing German data, it must store different characters, or combinations of 1s and 0s, than an English server stores. How these characters are stored is controlled by the *collation designator*.

If you decide to use Windows Collation, then it is best to use the collation of the underlying operating system; for example, if you are running a German server, then you will most likely choose a German collation designator. The easiest way to find your collation designator is to look in the Control Panel under the regional options; you should use the locale displayed there as your collation designator. The most common selection is Latin1_General.

Selecting a Sort Order

All the data you are storing on your server must be sorted from time to time, usually during queries or indexing (discussed later in this book). We sort it because looking at a mass of unsorted data is hard on the brain, whereas looking at a nicely ordered report of data is pleasing to the

eye. The *sort order* defines how SQL sorts and compares your data during queries or indexing. This sort order is the second part of the collation setting.

Several sort options are available. The default sort order is case, accent, kana, and width insensitive. This means SQL Server will not pay attention to case or special character marks when sorting, when indexing, or when performing queries. Some options can change this behavior, and if you are familiar with previous versions of SQL Server, then you will want to pay attention because they have changed:

Binary Using the default sort order, SQL Server will view characters as characters; by using binary, SQL Server will view characters as binary representations. This is the fastest sort order available, but it is case, accent, and kana sensitive.

Binary code point This works much the same as binary sorting but has some additional functionality. This sort order uses Unicode code points when sorting, which allows SQL Server to sort on the locale as well as the data. This means English data would be sorted separately from Japanese data stored as Unicode. This too is case, accent, and kana sensitive.

Case sensitive This simply tells SQL Server to use dictionary sort order and pay attention to case.

Accent sensitive This tells SQL Server to use dictionary order and pay attention to accent marks.

Kana sensitive This tells SQL Server to use dictionary order and pay attention to kana marks, which are used in many Asian languages.

Width sensitive This tells SQL Server to treat single-byte characters and double-byte characters as different characters.

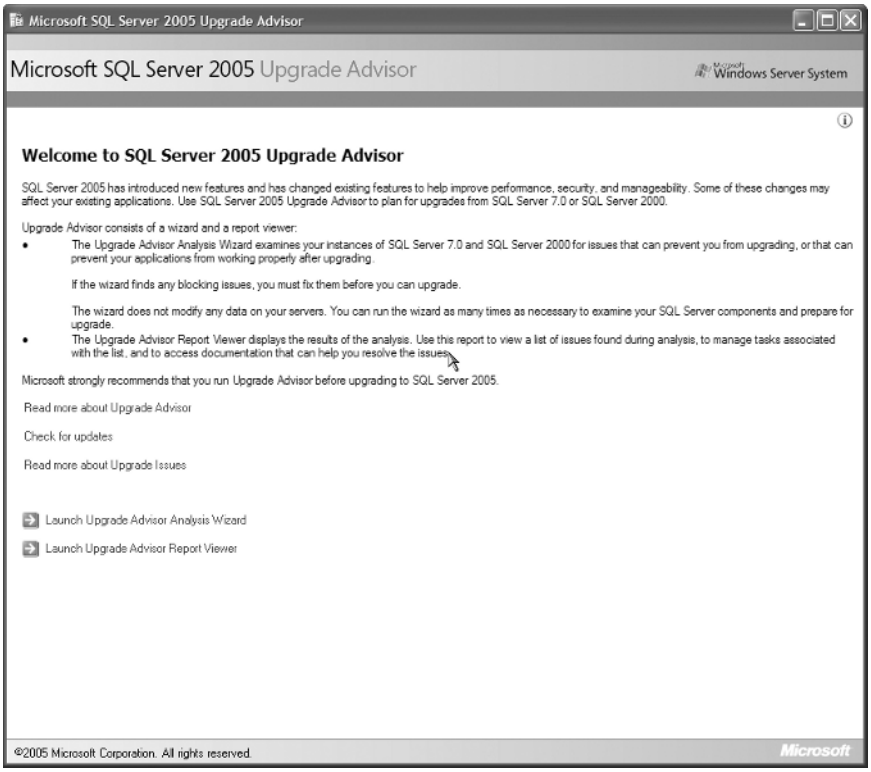
Here's the catch: once you have installed SQL Server, you cannot change the collation setting. To change it, you must reinstall SQL Server and rebuild all your databases. So, choose wisely; it is usually best to use the default sort setting of case insensitivity and build sensitivity into your applications if you need it.

Upgrading from a Previous Version

You can directly upgrade to SQL Server 2005 from SQL Server 2000 SP3 or SQL Server 7.0 SP4. Most of the upgrade operations are handled during setup, so you don't need to run any special wizard or installation program. To make sure you are completely prepared, though, you need to run the Upgrade Advisor.

To use the Upgrade Advisor, you first need to install the .NET Framework 2.0 and then install the Upgrade Advisor. The first time you run the Upgrade Advisor, you should run the Analysis Wizard, which will analyze various parts of your existing SQL Server installation and let you know whether they are ready for upgrade (see Figure 1.1).

FIGURE 1.1 The Upgrade Advisor welcome screen

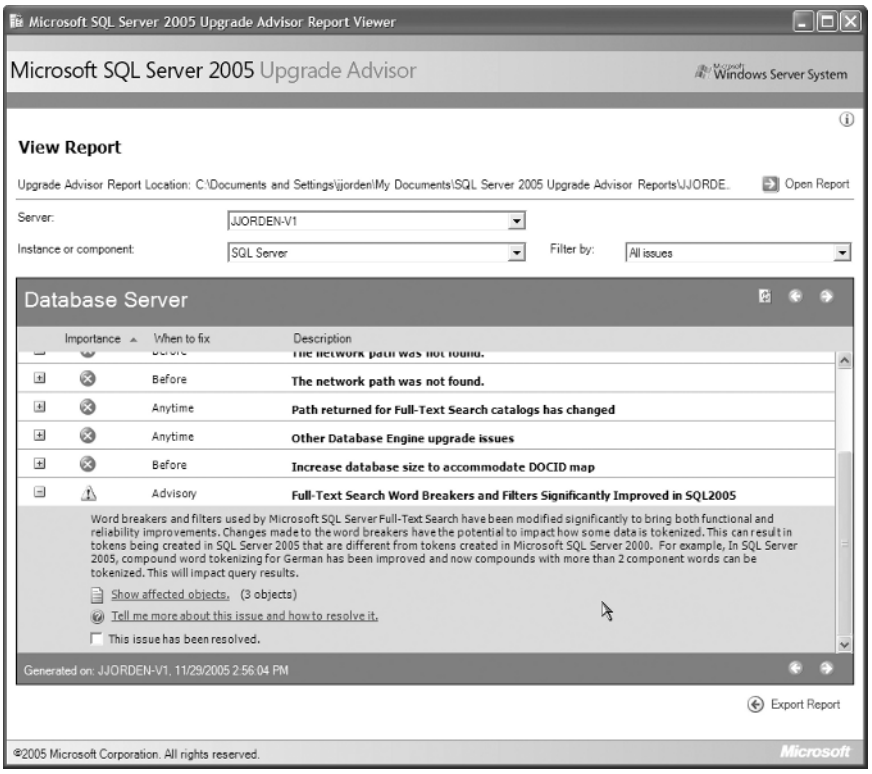


Specifically, the Analysis Wizard checks the following:

- Database engine
- Analysis Services
- Notification Services
- Reporting Services
- Data Transformation Services (now called SQL Server Integration Services, or SSIS)

The wizard generates a report based on its findings, which you can view using the Upgrade Advisor Report Viewer (see Figure 1.2). Anything marked with a green icon is ready to upgrade. A yellow icon indicates a potential problem that can usually be fixed after the upgrade is complete. Anything marked with a red icon needs to be fixed before an upgrade can take place.

FIGURE 1.2 The Upgrade Advisor Report Viewer shows you potential problems to fix before upgrading.



Once you've made sure your system meets all the requirements and you make all the necessary decisions about setup, you are ready to install SQL Server 2005.

Installing SQL Server 2005

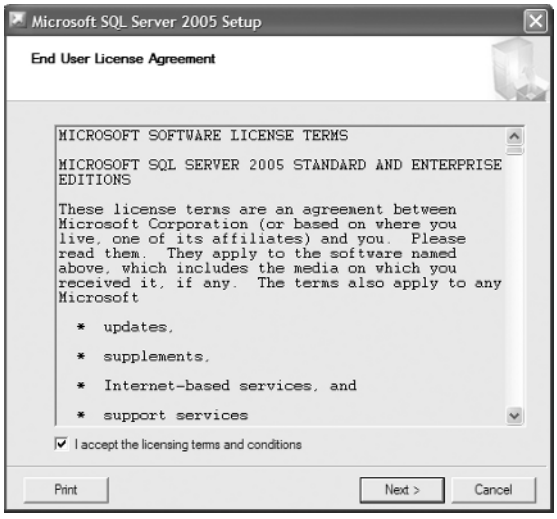
Now you are ready to install SQL Server 2005 on your own machine. Follow the steps in Exercise 1.1 to do so (these steps are for installing the Standard Edition, but the steps are similar for all editions).

EXERCISE 1.1

Installing SQL Server 2005

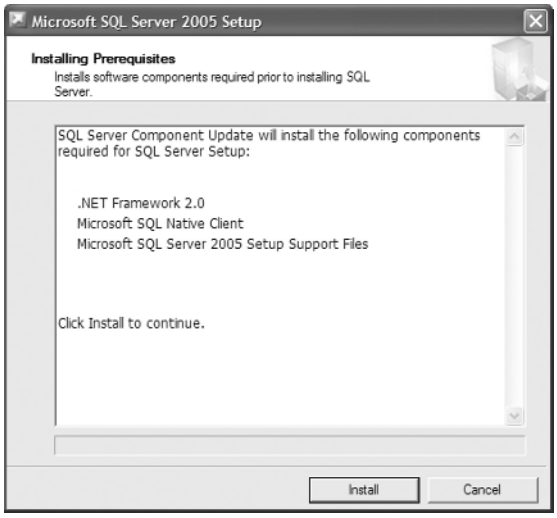
1. Create a user account named SqlServer, and make it a member of the Administrators local group. You can perform this task using one of these tools: on a Windows member server or on Windows XP use Computer Management, and on a Windows domain controller use Active Directory Users and Computers.
2. Insert the SQL Server CD, and wait for the automenu to open.
3. Under Install, click Server Components, Tools, Books Online, and Samples.

4. You then will be asked to read and agree with the end user license agreement (EULA); check the box to agree, and click Next.



EXERCISE 1.1 *(continued)*

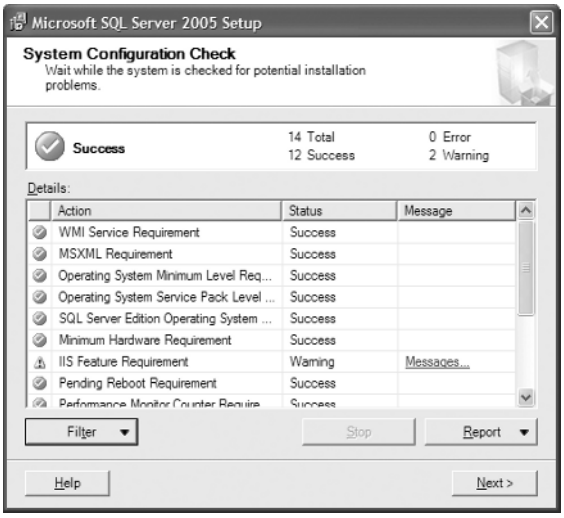
5. If your machine does not have all the prerequisites installed, the setup will install them for you at this time. Click Install if you are asked to do so. When complete, click Next.



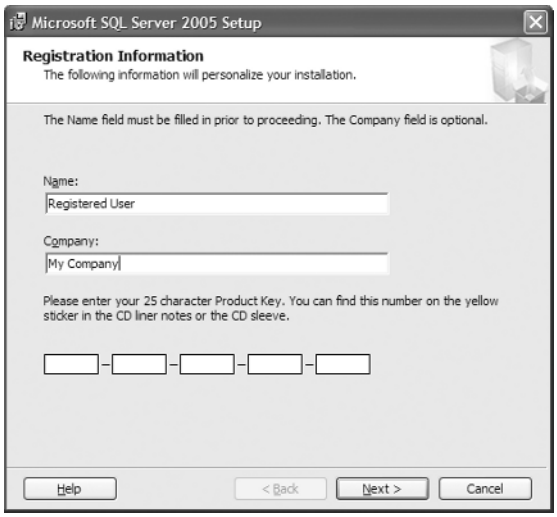
6. Next you will see a screen telling you that the setup is inspecting your system's configuration again, and then the welcome screen appears. Click Next to continue.

EXERCISE 1.1 *(continued)*

7. Another, more in-depth, system configuration screen appears letting you know whether any configuration settings will prevent SQL Server from being installed. Errors (marked with a red icon) need to be repaired before you can continue. Warnings (yellow icon) can optionally be repaired and will not prevent SQL Server from installing. Once you have made any needed changes, click Next.

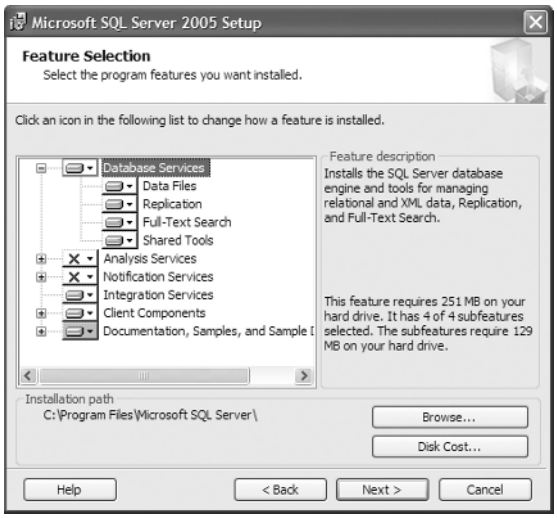


8. After a few configuration setting screens, you will be asked for your product key. Enter it, and click Next.

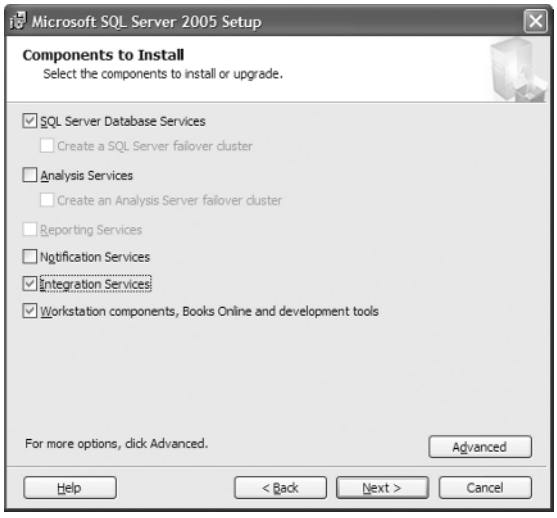


EXERCISE 1.1 *(continued)*

9. On the next screen, you need to select the components you want to install. Click the Advanced button to view the advanced options for the setup.

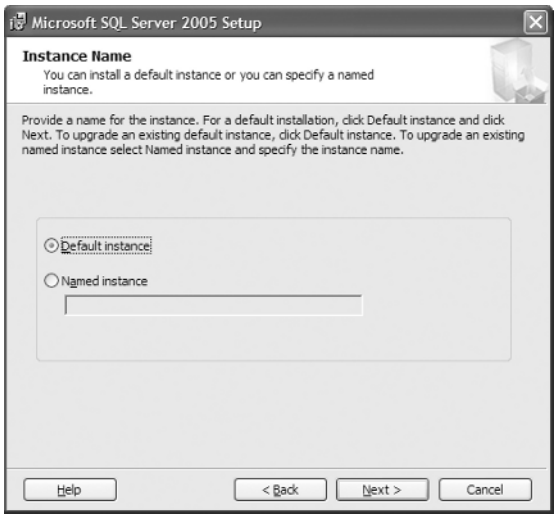


10. Click the Back button to return to the basic options screen, and check the boxes next to SQL Server Database Services, Integration Services, and Workstation Components, Books Online, and Development Tools. Then click Next.

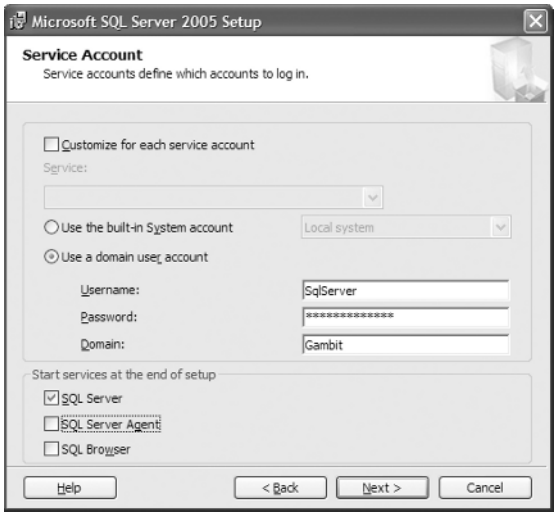


EXERCISE 1.1 *(continued)*

11. On the Instance Name screen, choose Default Instance, and click Next (you'll install a named instance in the next exercise).



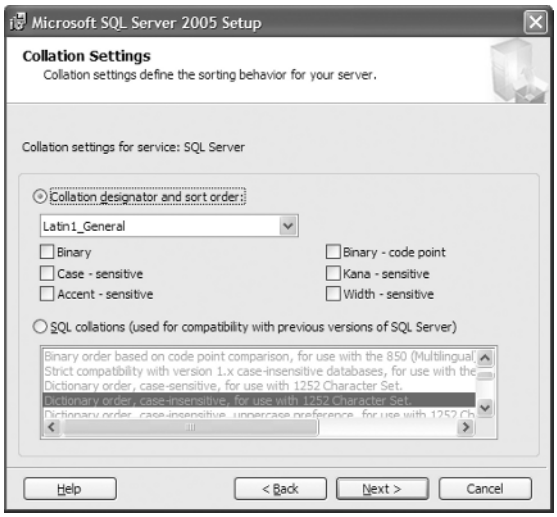
12. On the next screen, enter the account information for the service account you created in step 1. You will be using the same account for each service in this exercise. When finished, click Next.



EXERCISE 1.1 *(continued)*

13. On the Authentication Mode screen, select Mixed Mode, enter a password for the sa account, and click Next.

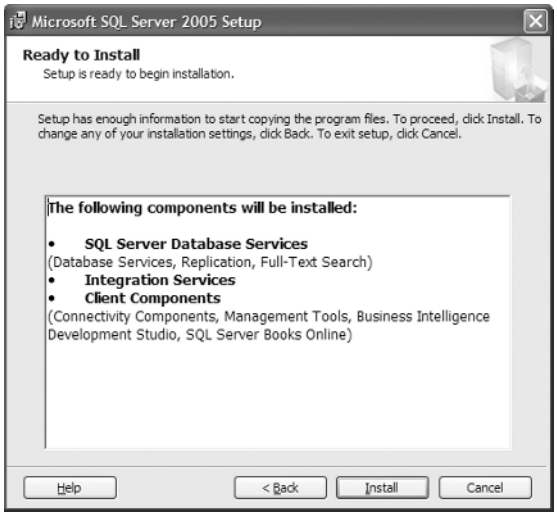
14. Select the Latin1_General collation designator on the next screen, and click Next.



EXERCISE 1.1 *(continued)*

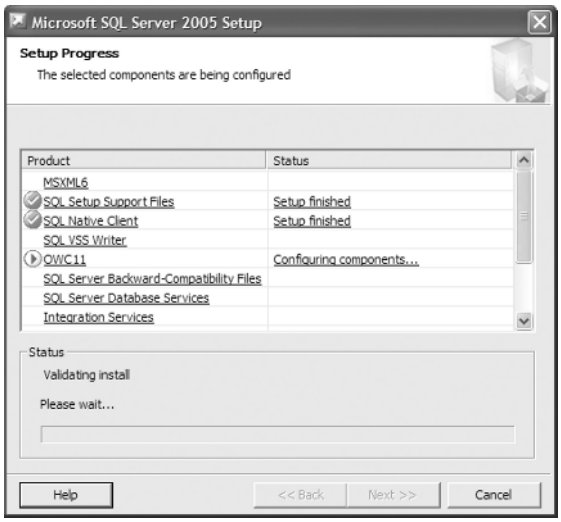
15. On the following screen, you can select to send error and feature usage information directly to Microsoft. This setting is entirely up to you, but you will not be checking it here. So, leave the defaults, and click Next.

16. On the Ready to Install screen, you can review your settings and then click Install.

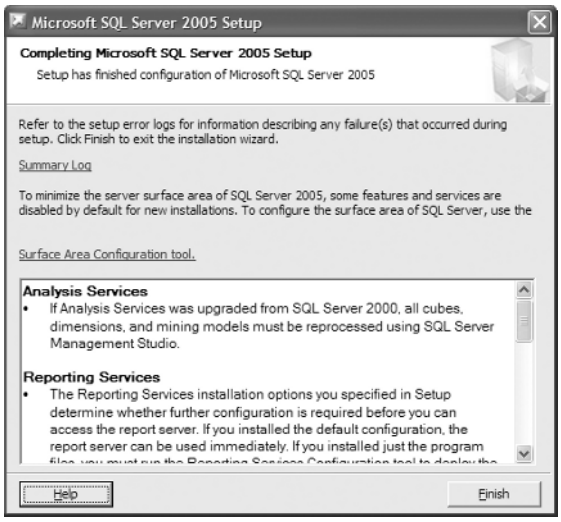


EXERCISE 1.1 *(continued)*

17. The setup progress appears during the install process. When the setup is finished (which may take several minutes), click Next.



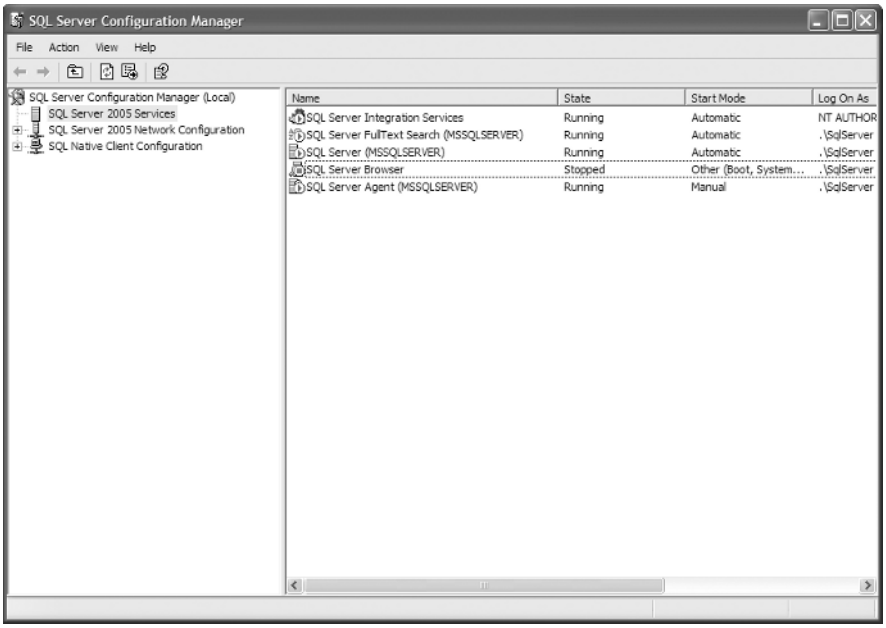
18. The final screen gives you an installation report, letting you know whether any errors occurred and reminding you of any post-installation steps to take. Click Finish to complete your install.



19. Reboot your system if requested to do so.

Now that you have SQL installed, you should make sure it is running. Go to Start ➢ All Programs ➢ Microsoft SQL Server 2005 ➢ Configuration Tools ➢ SQL Server Configuration Manager. Select SQL Server 2005 Services, and check the icons. If the icon next to SQL Server (MSSQLServer) service is green, then your installation is a success (see Figure 1.3).

FIGURE 1.3 Check the SQL Server Configuration Manager to see whether your services are running after install.



Installing a Second Instance

Because SQL Server 2005 has the capability of running multiple instances of itself on the same machine, it is a good idea to try installing more than one instance. In Exercise 1.2, you will create a second instance of SQL Server on the same machine using a different sort order.

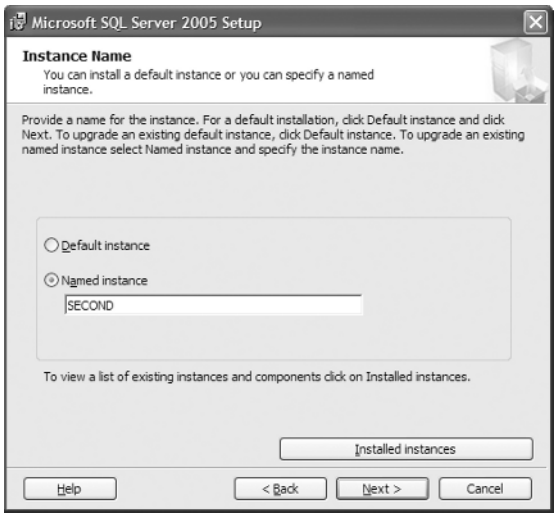
EXERCISE 1.2

Installing a Named Instance of SQL Server 2005

1. Insert the SQL Server 2005 CD, and wait for the automenu to open.
2. Under Install, click Server Components, Tools, Books Online, and Samples.

EXERCISE 1.2 *(continued)*

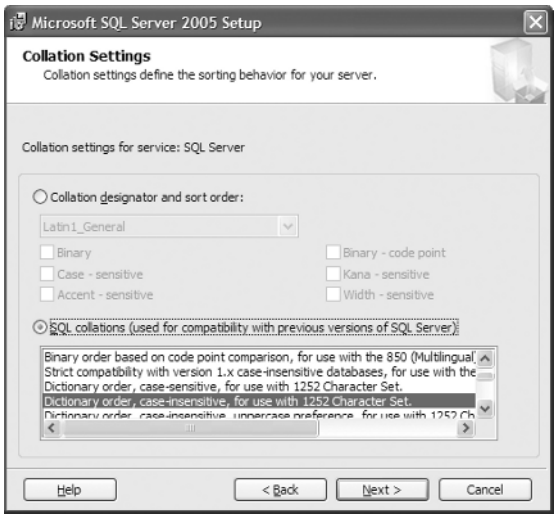
3. You then will be asked to read and agree with the EULA; check the box to agree, and click Next.
4. Next you should see a screen telling you that the setup is inspecting your system's configuration again, and then the welcome screen appears. Click Next to continue.
5. Another, more in-depth, system configuration screen appears letting you know whether any configuration settings will prevent SQL Server from being installed. Errors (marked with a red icon) need to be repaired before you can continue. Warnings (yellow icon) can optionally be repaired and will not prevent SQL Server from installing. Once you have made any needed changes, click Next.
6. Check the box next to SQL Server Database Services, and click Next.
7. On the Instance Name screen, choose Named Instance, enter **SECOND** in the text box, and click Next.



8. On the next screen, enter the account information for the service account you created in step 1 of Exercise 1.1. You will use the same account for each service in this exercise. When finished, click Next.
9. On the Authentication Mode screen, select Mixed Mode, enter a password for the sa account, and click Next.

EXERCISE 1.2 *(continued)*

10. Select the Dictionary Order, Case-Insensitive, for Use with 1252 Character Set option in the SQL Collations list, and click Next.



11. On the following screen, you can select to send error and feature usage information directly to Microsoft. This setting is entirely up to you, but you will not be checking it here. So, leave the defaults, and click Next.

12. On the Ready to Install screen, you can review your settings and then click Install.

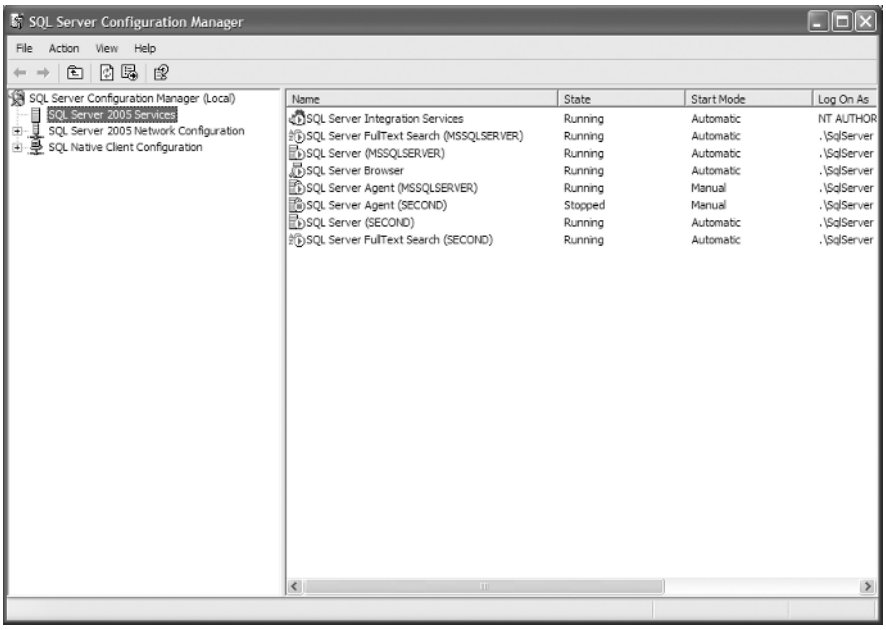
13. The setup progress appears during the install process. When the setup is finished (which may take several minutes), click Next.

14. The final screen gives you an installation report, letting you know whether any errors occurred and reminding you of any post-installation steps to take. Click Finish to complete your install.

15. Reboot your system if requested to do so.

You can now test the second instance of SQL Server using the same method for testing the default instance. Go to Start ➢ All Programs ➢ Microsoft SQL Server 2005 ➢ Configuration Tools ➢ SQL Server Configuration Manager. Select SQL Server 2005 Services, and refer to the icons. If the icon next to SQL Server (Second) instance is green, then your installation is a success (see Figure 1.4).

FIGURE 1.4 Check the SQL Server Configuration Manager to see whether your services are running for the SECOND instance.



Troubleshooting the Installation

If it turns out that your install failed, you can take a few steps to troubleshoot it. The first place to check when you have problems is in the Windows Event Viewer. SQL will log any problems it encounters in the Application log, so check there first. If you find a problem, then you can take the error number and some of the text of the message and look them up on the Microsoft support website (`http://support.microsoft.com/support`) or in TechNet.

If you do not find the source of your ailments in the Event Viewer, then navigate to *X*`:\Program Files\Microsoft SQL Server\90\Setup Bootstrap\LOG`, open the `Summary.txt` file, and check for error messages. If that doesn't help, then open the `SQLSetup`*xxxx*`.cab` file. If that CAB file does not exist, then open the `SQLSetup`*xxxx*`_`*ComputerName*`_Core.log` file. If you saw an error during the graphical portion of the setup process, you can also check the `SQLSetup`*xxxx*`_`*ComputerName*`_WI.log` file. Also, you can check the `SQLSetup`*xxxx*`_`*ComputerName*`_SQL.log` file. In any of these `SQLSetup`*xxxx* files, you can perform a search for the phrase *UE 3*, which is short for Return Value 3, which means an error occurred.

Summary

This chapter explained the ins and outs of the installation process. First you learned the prerequisites of each of the five editions of SQL Server. Those editions are:

- Express
- Workgroup
- Standard
- Enterprise
- Developer

After learning the prerequisites you found out that there are some decisions to make before running the installation. First you need to decide whether to install a named instance or a default instance. If you already have a default instance of SQL Server installed on the machine then you must install a named instance.

Next you learned that you need to choose the right service accounts for the services to run under. Service accounts allow services to log on as a Windows user and inherit all of that users permissions on the machine and the network.

You also discovered that you need to choose the right authentication mode, which dictates how users log in to the SQL Server instance. Windows Only mode only allows users with Windows accounts to access SQL Server while Mixed Mode allows access to users with Windows accounts and SQL Server accounts.

You also learned about choosing the right collation setting. The collation setting tells SQL Server how to store characters in tables. Each language has an collation setting that works best.

Next you installed a default instance and a second instance of SQL Server 2005 on your system. Finally you learned how to troubleshoot setup if anything goes awry.

Exam Essentials

Know the prerequisites. Know the system prerequisites, how much memory you need, how fast a processor you need, and which operating system version is best.

Understand the Upgrade Advisor. Know how to use the Upgrade Advisor and how to read the report it produces. You especially need to know when an upgrade is going to fail based on the Upgrade Advisor's report.

Review Questions

1. You have a machine that has an 800MHz Pentium III processor with 256MB of RAM and a 400GB hard drive running Windows Server 2000 SP4. Which editions of SQL Server 2005 can you install? (Choose all that apply.)
   - **A.** Express Edition
   - **B.** Workgroup Edition
   - **C.** Standard Edition
   - **D.** Enterprise Edition
   - **E.** Developer Edition

2. One of your third-party applications has been certified to run on SQL Server 2000 but not 2005. Your company has just bought a new application that requires SQL Server 2005 to run. How can you run both of these applications with minimal overhead?
   - **A.** Buy a second server, and install SQL Server 2005 on the new machine.
   - **B.** You can't run both applications; you will have to wait until the older application is certified to run on SQL Server 2005.
   - **C.** Install SQL Server 2005 as a named instance, and configure your new application to use the new instance.
   - **D.** Install SQL Server 2005 as the default instance, and configure your new application to use the new instance.

3. You are installing a new SQL Server 2005 instance on a machine in a small peer-to-peer network. You will not be performing replication, so SQL Server will not need to communicate with other servers over the network. You need to be able to change the service account's password every six months per company policy. Which service account type should you use?
   - **A.** Built-in system account
   - **B.** Local system account
   - **C.** Domain account

4. One of the databases you will be using on your new SQL Server holds data in several different languages, including U.S. English, German, and Italian. When your users search the data, they may be looking for information in any of the available languages. You want to be able to sort through data as quickly as possible, and you are not concerned with sensitivity. Which sort order is best?
   - **A.** Binary
   - **B.** Binary code point
   - **C.** Binary without the case-sensitivity option
   - **D.** Binary code point without the case-sensitivity option

5. You have a machine that has a 3.2GHz Pentium Xeon processor with 4GB of RAM and a 320GB hard drive running Windows 2003 Enterprise Edition. Which editions of SQL Server 2005 can you install? (Choose all that apply.)
   - **A.** Express Edition
   - **B.** Workgroup Edition
   - **C.** Standard Edition
   - **D.** Enterprise Edition
   - **E.** Developer Edition

6. Your company has decided it is time to upgrade to SQL Server 2005. You currently run SQL Server 7.0 SP3. What do you need to do before you can upgrade?
   - **A.** Nothing; you can upgrade directly to SQL Server 2005.
   - **B.** Upgrade to SQL Server 2000, and then you can upgrade to SQL Server 2005.
   - **C.** Upgrade to SQL Server 2000, install SQL Server 2000 SP3, and then upgrade to SQL Server 2005.
   - **D.** Install SQL Server 7.0 SP 4, and then upgrade to SQL Server 2005.

7. When you run the Upgrade Advisor, you get a report with a warning telling you "Full-Text Search Word Breakers and Filters Significantly Improved in SQL2005." What do you need to do before upgrading?
   - **A.** Uninstall full-text search on your machine, and rerun the Upgrade Advisor.
   - **B.** Nothing; you can install without modification.
   - **C.** Uninstall full-text search, and do not rerun the Upgrade Advisor.
   - **D.** Run the Upgrade Advisor with the `/NoFTSCheck` option.

8. You are installing a new SQL Server 2005 instance on a machine in a large network with several Active Directory domains across the country. You need to replicate data between several SQL Servers. Which service account type should you use?
   - **A.** Built-in system account
   - **B.** Local system account
   - **C.** Domain account

9. You have a wide variety of clients on your network that need access to SQL Server. Many of these run Unix with Samba, which allows them to use an Active Directory account to access resources on the Windows domain. Several others use Mac clients with the AppleTalk protocol for accessing the network. The remaining clients are Windows 98 and XP Professional clients. Which authentication mode setting should you select when installing SQL Server?
   - **A.** Windows Authentication Mode
   - **B.** Mixed Mode

10. You have a machine that has a 1GHz AMD Opteron processor with 512MB of RAM and a 400GB hard drive running Windows 2003 Standard x64 Edition. Management wants to make sure the new software will take full advantage of the hardware. Which editions of SQL Server 2005 can you install? (Choose all that apply.)

A. Express Edition

B. Workgroup Edition

C. Standard Edition

D. Enterprise Edition

11. You are going to upgrade to SQL Server 2005, and you want to employ a two-node failover cluster for high availability. What version of SQL Server can you use? (Choose all that apply.)

A. Express Edition

B. Workgroup Edition

C. Standard Edition

D. Enterprise Edition

12. You are going to upgrade to SQL Server 2005. Your company has several Oracle servers, and you need to be able to synchronize the data between your SQL Server and Oracle databases using replication. What version of SQL Server can you use? (Choose all that apply.)

A. Express Edition

B. Workgroup Edition

C. Standard Edition

D. Enterprise Edition

13. One of the databases you will be using on your new SQL Server holds data in several different languages, including U.S. English, German, and Italian. Users will primarily search for data in their own language but occasionally search for data in other languages. You want to be able to sort through data as quickly as possible, and you are not concerned with sensitivity. Which sort order is best?

A. Binary

B. Binary code point

C. Binary without the case-sensitivity option

D. Binary code point without the case-sensitivity option

14. Your company has an Active Directory domain with primarily Windows XP and Windows 2000 Professional clients, all of which have Active Directory accounts. You have a few Unix clients that do not have Active Directory accounts. Only your Windows-based clients will need access to your SQL Server. Which authentication mode setting should you select when installing SQL Server?

A. Windows Authentication Mode

B. Mixed Mode

15. When installing SQL Server 2005, you meant to use the default SQL Collation setting (the Dictionary Order, Case-Insensitive, for Use with 1252 Character Set option); instead, you chose the case-sensitive version by accident. What should you do to switch to the correct character set?
    A. Change the character set using SQL Server Configuration Manager.
    B. Run the `sp_change_collation` system stored procedure.
    C. Reinstall SQL Server 2005 with the correct sort order and collation.
    D. Run the `sp_change_sort` system stored procedure.

16. Your installation of SQL Server 2005 has failed. Where is the first place you should look to find clues about the cause?
    A. The System log in the Event Viewer
    B. The `Summary.txt` file
    C. The `SQLSetup`*xxxx*`_`*ComputerName*`_Core.log` file
    D. The Application log in the Event Viewer

17. You are going to upgrade to SQL Server 2005, and you want to use full-text search for many of your applications. What version of SQL Server can you use? (Choose all that apply.)
    A. Express Edition
    B. Workgroup Edition
    C. Standard Edition
    D. Enterprise Edition

18. You are installing a new SQL Server 2005 instance on a machine in a small network. This is the only SQL Server on the network, and you want to make administration as simple as possible. Which service account type should you use?
    A. Built-in system account
    B. Local system account
    C. Domain account

19. You are installing a new server with SQL Server 2005. Your sister company runs SQL Server 7.0 SP4. You need to replicate data between the two servers regularly. What collation setting should you use?
    A. Windows Collation
    B. SQL Collation

20. Your installation of SQL Server has failed, giving you a graphical error message, which you wrote down and misplaced. Can you find the error message again?
    A. Graphical error messages are not recorded during setup.
    B. Graphical error messages are recorded in the `Summary.txt` file.
    C. Graphical error messages are recorded in the `SQLSetup`*xxxx*`_`*ComputerName*`_Core.log` file.
    D. Graphical error messages are recorded in the `SQLSetup`*xxxx*`_`*ComputerName*`_WI.log` file.

Answers to Review Questions

1. A. The only edition that can run reliably on this machine is the Express Edition, which requires a minimum of 192MB RAM.

2. C. The option with the least administrative overhead and lowest cost is to install 2005 as a named instance. You can't install it as the default instance without uninstalling SQL Server 2000 first.

3. B. You can't use a domain account because there is no domain, and you can't change the password for the built-in system account, so the only choice here is a local system account.

4. A. Because your users might be looking for data in any language, you do not need the language-specific capability provided by binary code point. With both binary sort orders, case sensitivity is mandatory and cannot be shut off.

5. A, B, C, D, E. This machine can easily handle any edition of SQL Server 2005.

6. D. You can upgrade to SQL Server 2005 from SQL Server 7.0 SP 4 but not from SQL Server 7.0 SP3.

7. B. Most warnings will not prevent you from upgrading to SQL Server, and the "Full-Text Search Word Breakers and Filters Significantly Improved in SQL2005" message is just informing you that full-text search will work a little differently after the upgrade. Also, the `/NoFTSCheck` option doesn't exist.

8. C. You must use a domain account because it is the only type that will allow SQL Server to communicate with other servers over the network.

9. B. Your Mac clients will not be able to access SQL Server when you select Windows Authentication Mode because they do not have Windows domain accounts, so you need to select Mixed Mode.

10. C, D. Although Workgroup Edition and Express Edition will run on a 64-bit machine, they run in 32-bit mode only using the WOW technology. So, only Standard Edition, Enterprise Edition, and Developer Edition will take full advantage of the hardware.

11. C, D. Only Standard Edition and Enterprise Edition support failover clustering, and Standard Edition will support a maximum of two nodes on the cluster.

12. D. Enterprise Edition is the only edition that supports Oracle replication.

13. B. Because your users are primarily looking for data in their own language, then it is best to use the language-specific capability provided by binary code point. With both binary sort orders, case sensitivity is mandatory and cannot be shut off.

14. A. Because all the clients that need access to your SQL Server have Active Directory accounts, you should select Windows Authentication Mode.

15. C. The only way to change the sort order and collation is to reinstall SQL Server. Neither `sp_change_collation` nor `sp_change_sort` exist.

16. D. The first place to look for clues is in the Application log because all the steps taken by the setup process are logged there.

17. B, C, D. Only Workgroup Edition, Standard Edition, and Enterprise Edition support full-text search.

18. A. The built-in system account is the easiest to maintain because you do not need to control the password for it (in fact, you can't). Also, you do not need to communicate with other servers over the network, so a domain account is unnecessary.

19. B. To replicate with versions of SQL Server older than 2000, you need to select the SQL Collation setting.

20. D. Graphical error messages are all logged in the `SQLSetupxxxx_ComputerName_WI.log` file.