

REVIEW LESSON

MTA Course: Web Development Fundamentals
Lesson name: Web Development Fundamentals 2.6
Topic: Manage data connections and databases.
File name: WebDevFund_RL_2.6

Lesson Objective:

2.6: Manage data connections and databases. *This objective may include but is not limited to:* database connections; connection objects; connection pools; transaction objects.

Preparation details

Prerequisite student experiences and knowledge

This MTA Certification Exam Review lesson is written for students who have learned about Web design and Web application programming. Students who do not have the prerequisite knowledge and experiences cited in the objective will find additional learning opportunities using resources such as those listed in the Microsoft® resources and Web links at the end of this review lesson.

Students should know about using Web controls to update data and how to manage database connections in a Web application.

Instructor preparation activities

For this lesson, you will need a computer with Microsoft Office 2007®, and Microsoft Visual Studio 2008® attached to a liquid crystal display (LCD) projector to display and review the attached Microsoft PowerPoint® document.

Resources, software, and additional files needed for this lesson:

- WebDevFund_PPT_2.6
- WebDevFund_SA_2.6
- A Windows®-based PC with installed Web development software. Examples include Visual Studio 2008, or
 - Microsoft Visual Basic 2008®, Express Edition
(<http://www.microsoft.com/express/downloads/#2008-Visual-Basic>)

- Microsoft Visual C# 2008®, Express Edition
(<http://www.microsoft.com/express/downloads/#2008-Visual-CS>)
- Microsoft Visual Web Developer 2008, Express Edition
(<http://www.microsoft.com/express/downloads/#2008-Visual-Web-Developer>)

Teaching Guide

Essential Vocabulary:

database connection—an active link to a database that lets you read and write data and create Structured Query Language (SQL) objects in the database (subject to the permissions you have in the database).

connection object—provides the capability to move data between a data store and your application.

connection pooling—the process of managing connections as shared resources that can be doled out from a pool of recently used connections. Connection pooling takes advantage of the fact that many different parts of most applications require connections for a short amount of time, as well as the fact that building and tearing down connections is an inherently expensive operation. Connection pooling is a method of reusing connections.

transaction object—allows multiple tasks to be bound together. For example, imagine that an ASP.NET page performs two tasks. First, it creates a new table in a database. Next, it calls a specialized object to collect, format, and insert data into the new table. These two tasks are related, even interdependent, such that you want to avoid creating a new table unless you can fill it with data. Executing both tasks within the scope of a single transaction enforces the connection between them. If the second task fails, the first task is rolled back to a point before the new table was created.

Lesson Sequence

Activating prior knowledge/lesson staging (10-15 minutes)

Warm-up Activity—“Data, Data, Data”

1. Discuss briefly with the class the rationale for linking to data from a website. It would be useful to define the role a database plays in that case.
2. Review the topics of data binding from Lesson 2.5. Instruct students to review the “storyboard” they created in Lesson 2.5.
3. Now, discuss the next phase of accessing data in a database: creating data connections, connection objects, connection pools, and transaction objects.

Lesson activity (20-30 minutes)

1. Using the WebDevFund_PPT_2.6 PowerPoint presentation, review the concepts for this lesson.
2. Distribute Student Activity WebDevFund_SA_2.6.
 - a. Students will demonstrate how a data-aware control is created and then linked to the database.
3. Discuss the key objectives of the review assignment.

Assessment/lesson reflection (10 minutes)

1. Review these concepts with the questions on the last slide of the presentation.
2. Wrap up and provide homework/enrichment opportunities.

Microsoft resources and Web links

Students who wish to explore this lesson topic further may visit the following links:

Video lessons and references on data-binding controls and database access:

<http://www.asp.net/learn/videos/video-49.aspx>

<http://www.asp.net/learn/videos/video-267.aspx>

Microsoft ASP.NET:

<http://www.asp.net>

Pooling in the Microsoft Data Access Components:

[http://msdn.microsoft.com/en-us/library/ms810829\(v=MSDN.10\).aspx](http://msdn.microsoft.com/en-us/library/ms810829(v=MSDN.10).aspx)

Database Connections:

[http://msdn.microsoft.com/en-us/library/ms171962\(v=VS.80\).aspx](http://msdn.microsoft.com/en-us/library/ms171962(v=VS.80).aspx)

Suggested best practices:

- It may be beneficial to display code examples using the LCD projector for each of the major concepts, particularly when the vocabulary is being reviewed. Randomly choose students to demonstrate the concepts to the class.
- The last portion of the Student Activity Worksheet can be assigned as homework as appropriate for further review.