REVIEW LESSON

MTA Course: Web Development Fundamentals
Lesson name: Web Development Fundamentals 2.2
Topic: Distinguish between DataSet and DataReader objects.
File name: WebDevFund_RL_2.2

Lesson Objective:

2.2: Distinguish between DataSet and DataReader objects. *This objective may include but is not limited to:* the ability to choose the proper data object to use based on application requirements/design.

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 a basic understanding of data access and understanding of what data object is best suited for managing data 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 Microsoft PowerPoint® document.

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

- WebDevFund_PPT_2.2
- WebDevFund_SA_2.2

- 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:

DataSet— a memory-resident representation of data that provides a consistent relational programming model regardless of the source of the data it contains. A DataSet represents a complete set of data including the tables that contain, order, and constrain the data, as well as the relationships between the tables. The tables within the DataSet are represented by DataTable objects. *Note*: Because DataSets may store a large amount of data in memory, they are often very resource intensive, and should be used wisely within an application.

DataReader—a lightweight, high-performance data access object used for read-only access. In Web pages that only need to read data, and do not need to write to a database, a DataReader is often recommended, as it provides much better performance than some of the other data access objects available within the .NET framework, such as a DataSet.

data binding— the process of establishing a connection between an ASP.NET Web page control and a data source. Controls can be bound to a wide range of data sources including DataTables, DataSets, and arrays. Data binding can be configured as either one-way or two-way. Two-way data binding allows the connected data source to be updated when the data in the control is modified, while one-way only allows the control receive the data from the data source.

Lesson Sequence

Activating prior knowledge/lesson staging (5–10 minutes)

Warm-up activity—"What is a data object?"

1. Prompt a discussion about data binding.
2. Have students produce examples of a Web page needing to access data.
3. Discuss the benefits of dynamically reading and writing data.
4. Contrast what a Web page used to be, to what they are capable of now as a result of more sophisticated methods for data linking in Web pages.

5. Briefly discuss the role of data objects as related to processing information in Web applications.

Lesson activity (30 minutes)

1. Using the PowerPoint presentation WebDevFund_PPT_2.2, review the concepts for this lesson.
2. Distribute Student Activity Worksheet WebDevFund_SA_2.2.
   a. Students will demonstrate the use of data objects and create code examples that illustrate the appropriate use of these objects in each scenario.
3. Discuss the key objectives of the review assignment.

Assessment/lesson reflection (10 minutes)

1. Pose various scenarios for working with data and ask students to identify and justify which data object would be best (e.g., if you were only reading data, use DataReader because it is faster).
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:

Web references on DataSet and DataReader:
http://msdn.microsoft.com/en-us/library/haa3afyz.aspx
http://msdn.microsoft.com/en-us/library/system.data.dataset.aspx
http://msdn.microsoft.com/en-us/magazine/cc188717.aspx#S4

Microsoft ASP.NET:
http://www.asp.net

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. It may also be advantageous to have students complete this activity in small groups.