

## REVIEW LESSON

MTA Course: 10754 Microsoft .NET Fundamentals

Lesson name: Microsoft .NET Fundamentals 2.6

Topic: Understand generics (One 50-minute class period)

File name: 10754\_Msft.NET\_RL\_2.6

### Lesson Objective

**2.6:** Understand generics. *This objective may include but is not limited to:* understanding generics infrastructure, generic interfaces, generic delegates, contra variant and covariant generic type arguments, generic methods, verifiability, and constraints.

### Preparation Details

#### Prerequisite student experiences and knowledge:

This MTA Certification Exam Review lesson is written for students who have learned about application programming with the Microsoft® .NET Framework. 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 “Resources” section at the end of this review lesson. Specifically, students should have a working understanding of collections.

#### Instructor preparation activities:

- None

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

- 10754\_Msft.NET\_PPT\_2.6
- Students will need access to <http://msdn.microsoft.com/en-us/library/6sh2ey19.aspx>.
- Microsoft Visual Studio® 2010; students may also use Microsoft Visual C#® 2010 Express or Microsoft Visual Basic® 2010 Express, available free at <http://www.microsoft.com/express/Windows/>.

## **Teaching Guide**

### **Essential Vocabulary**

**casting**—informing the compiler explicitly that you intend to make a type conversion; a cast may result in data loss.

**contra variant**—within the type system of a programming language, a typing rule or a type conversion operator that reverses the ordering of types from more generic to more specific.

**covariant type parameter**—within the type system of a programming language, a typing rule or a type conversion operator that preserves the ordering of types from more specific to more generic.

**generic**—a type that uses a placeholder or template to allow a specific type to be identified at run time.

**generic collection**—a collection type that uses generics to provide strongly typed storage and retrieval of objects.

**generic type parameter**—the placeholder or template that a generic type uses; indicated with angle brackets.

## **Lesson Sequence**

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

1. As indicated on the “Anticipatory Set” slide in the Microsoft PowerPoint® presentation, direct students to discuss the code sample in pairs.
2. Lead a discussion of the students’ responses.
3. Point out that the type of conversion in the last line of the code sample is casting. For additional information, see <http://msdn.microsoft.com/en-us/library/ms173105.aspx>.

### **Lesson activity (20–25 minutes):**

1. Use the presentation to review the purpose and use of generics in the .NET Framework.

### **Assessment/lesson reflection (20minutes):**

1. Direct the students to create the example application from the instructions available at <http://msdn.microsoft.com/en-us/library/6sh2ey19.aspx>.

**Resources:**

- **MSDN®: Overview of Generics in the .NET Framework**  
*<http://msdn.microsoft.com/en-us/library/ms172193.aspx>*
- **MSDN: Generics in the .NET Framework**  
*<http://msdn.microsoft.com/en-us/library/ms172192.aspx>*
- **MSDN: List<T> Class**  
*<http://msdn.microsoft.com/en-us/library/6sh2ey19.aspx>*