

TRAINER PREPARATION GUIDE 1.7A: WORK WITH XNA

Lesson Objective 1.7:

Work with XNA®. *Topics:* understanding the architecture of an XNA game; using built-in XNA tools.

Required materials to teach this lesson:

1. A workstation with Windows 7®, Windows Vista®, or Windows XP®
2. Microsoft Visual Studio® or Visual C# Express® (2008 or 2010)
3. XNA Game Studio 2.0, 3.0, 3.1, or 4.0
4. 98-374-ENU-1.7A-LP
5. 98-374-ENU-1.7A-IC
6. 98-374-ENU-1.7A-IC_Key
7. 98-374-ENU-1.7A-PC

Preparation tasks

Technical preparation activities:

1. Install Visual Studio Express C# and XNA as follows:
 - a. Windows XP users: Download Visual C# 2010 Express and XNA Game Studio 4.0 separately at App Hub (<http://create.msdn.com/en-US/>).
 - b. Windows Vista or Windows 7 users: Download Windows Phone 7 Developer Tools (<http://go.microsoft.com/fwlink/?LinkID=189554>) which includes Visual C# 2010 Express and XNA Game Studio 4.0.
2. **Vocabulary:**
 - constructor:** a function provided by a class in C++ and some other object-oriented languages to instantiate an object; that is, to name it and initialize it. The constructor function has the same name as the class.
 - content pipeline:** a set of processes used to manage a game's art and data assets when the game is built.
 - Integrated Development Environment (IDE):** a system for supporting the process of writing software. Such a system may include a syntax-directed editor, graphical tools for program entry, and integrated support for compiling and running the program and relating compilation errors back to the source.
 - Microsoft Cross-Platform Audio Creation Tool (XACT):** a system for creating, organizing, and playing audio.
 - Microsoft Visual Studio®:** an integrated development environment for use with the Microsoft .NET Framework.
 - namespace:** a directory of classes that can be used in a program.
 - Software Development Kit (SDK):** software provided by a hardware or software vendor to enable other developers to create software for their products.
 - XNA Game Studio:** a framework of code and a runtime environment for game development.

3. **Additional readings and resources:**

MSDN®:

XNA Game Studio: <http://msdn.microsoft.com/en-us/library/cc178930.aspx>

Other resources (books, e-reference):

Miles, Rob. Microsoft XNA Game Studio 4.0: Learn Programming Now! (Redmond: Microsoft Press, 2011)

Instructor computer setup:

1. None

Instructional preparation activities:

1. Students should be familiar with: using Visual Studio to code, debug, run, and compile a program; writing basic object-oriented programs using the C# language; and writing basic XNA programs that use the *Initialize*, *Update*, and *Draw* methods.
2. Review the instructor notes in the notes panes of the Microsoft PowerPoint® presentation slide deck.
3. Make student documents available as needed.

Lesson sequence (50 minutes)

Activating prior knowledge/lesson staging (5 minutes):

Draw a picture to represent the relationship between C# and XNA. Explain the relationship. Example:

- Pictures will vary.
- C# is the programming language in which XNA libraries of code are written. XNA is C# code designed for making games.

Guiding questions:

1. **How is an XNA game structured?** There are five methods provided in an XNA game skeleton: *Initialize*, *LoadContent*, *UnloadContent*, *Update*, and *Draw*. They are intended to be overridden. A solution in Visual Studio contains a project which contains properties, references, content references, a game icon, a game thumbnail image, a *Game1* class, a *Program* class, and a Content project folder.
2. **How are built-in XNA tools used?** XACT is used to create, organize, and play audio. The XACT Auditioning Utility is used to test XACT-created audio projects. The XNA Game Studio Device Center is used to communicate with certain devices, like an Xbox 360®. The XNA Framework Remote Performance Monitor provides diagnostics and instrumentation for the XNA framework. The XNA Game Studio command prompt allows users to execute commands using the command line.

Lesson activity (40 minutes):

1. Teacher instruction (15 minutes)
 - a. Use the included PowerPoint® presentation to review how to work with XNA.
 - b. Refer to examples throughout the lesson and elicit student ideas and experiences on how to structure an XNA game and how to use the associated built-in tools.

2. In-class activity (20 minutes)
 - a. Students are to complete 98-374-ENU-1.7A-IC.
3. Post-class Activity (5 minutes)
 - a. Provide instruction for the Post-class Activity as needed. Establish a completion date.

Lesson review (5 minutes):

1. Discuss the guiding questions.
2. Instruct students to write and submit any questions they have or any topics about which they would like more assistance.
3. After class, look through the student responses and follow up with any student requiring additional help.