

TRAINER PREPARATION GUIDE 1.7B: WORK WITH XNA

Lesson Objective 1.7:

Work with XNA®. *Topics:* work with XNA hierarchy (initialization, update loop, drawing).

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-1.7B-LP
5. 98-374-ENU-1.7B-IC
6. 98-374-ENU-1.7B-IC_Key
7. 98-374-ENU-1.7B-PC

Preparation tasks

Technical preparation activities:

1. Install Visual Studio Express C# and XNA
 - 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 Microsoft Visual Studio C# 2010 Express and XNA Game Studio 4.0.

2. Vocabulary:

Draw: a method that displays the game graphics.

Initialize: a method that controls the starting values of game data.

game loop: the update and draw cycle.

Update: a method that performs the game logic, such as updating the location of an image.

XNA Game Studio: a Microsoft® framework of code and a run-time 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):

How is the game loop (update and draw) similar to how the brain and muscles interact to create movement? The human brain (update) thinks of a command, and the body (draw) executes it so that the action is visible.

Guiding questions:

1. **What is the purpose of the *Initialize*, *Update*, and *Draw* methods?** The *Initialize* method is called once at the beginning of a game and is responsible for game setup before the first call of the game loop, update and draw. The *Update* method executes the game logic, such as updating the position of a character. The *Draw* method is used to draw each frame of the game.
2. **How do the *Update* and *Draw* methods work together to form the game loop?** The *Update* and *Draw* methods are called once every 60 seconds for a default XNA game. For example, *Update* will update variable values and *Draw* will use those values to display an image in the game window.

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 examples of code that would belong in the *Update* and *Draw* methods.
 - c. Show actual XNA code that would illustrate the different methods.
 - d. Instructions for the in-class activity are found in the presentation. Students should use the In-class Activity document provided.
2. In-class activity (20 minutes)
 - a. Students are to complete 98-374-ENU-1.7B-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. Discuss the results of the in-class activity.
3. Instruct students to write and submit any questions they have or any topics about which they would like more assistance.
4. After class, look through the student responses and follow up with any student requiring additional help.