# Programming with Visual Basic .NET

GUI

Week # 11

Tariq Ibn Aziz

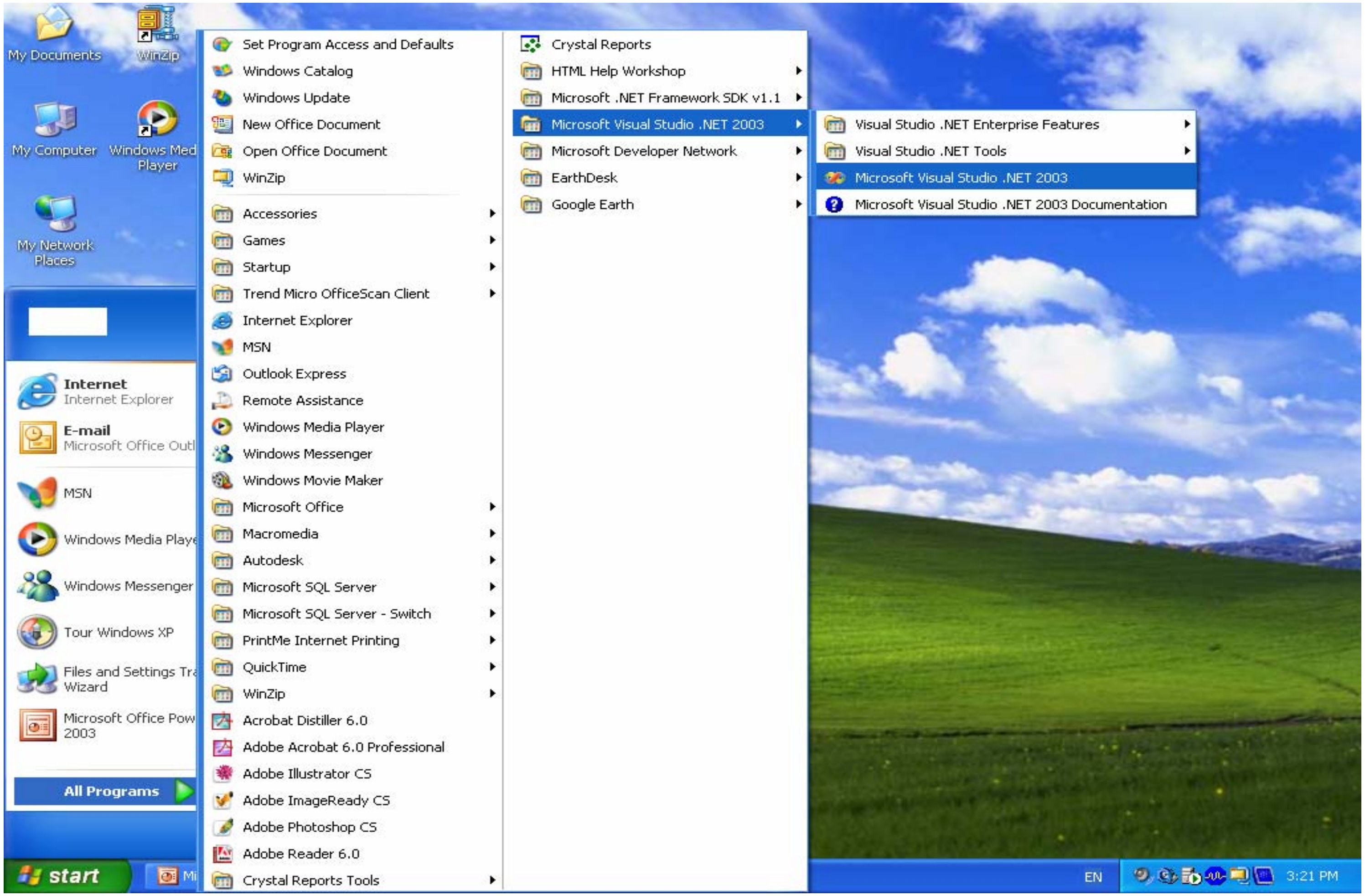
# Graphical User Interface Overview

- “GUI” stands for “Graphical User Interface”, which provides a way for the user to interact with our program. Nowadays GUI refers to a rectangular area of the screen called a window in which several different kinds of user interface objects appear, such as buttons, text boxes, labels, picture boxes, etc.
- Designing the GUI means determining which GUI objects may be used to provide the best interface to our program, and how best to present them to the user. We want our programs to be user-friendly, which means they should be intuitive and easy-to-use and understand.
- We must also “hook-up” our GUI objects to their underlying code.

# Microsoft Visual Studio .NET Development Environment

- Thus far in the course, we’ve been using Notepad to type our Visual Basic source code along with the vbc command to compile our code into executable machine code to get an .exe program we can run.
- Now we’ll use the Microsoft Visual Studio .NET Development Environment, which is an integrated environment in which we can create and edit source code, design our graphical user interface forms, and run our executable code.

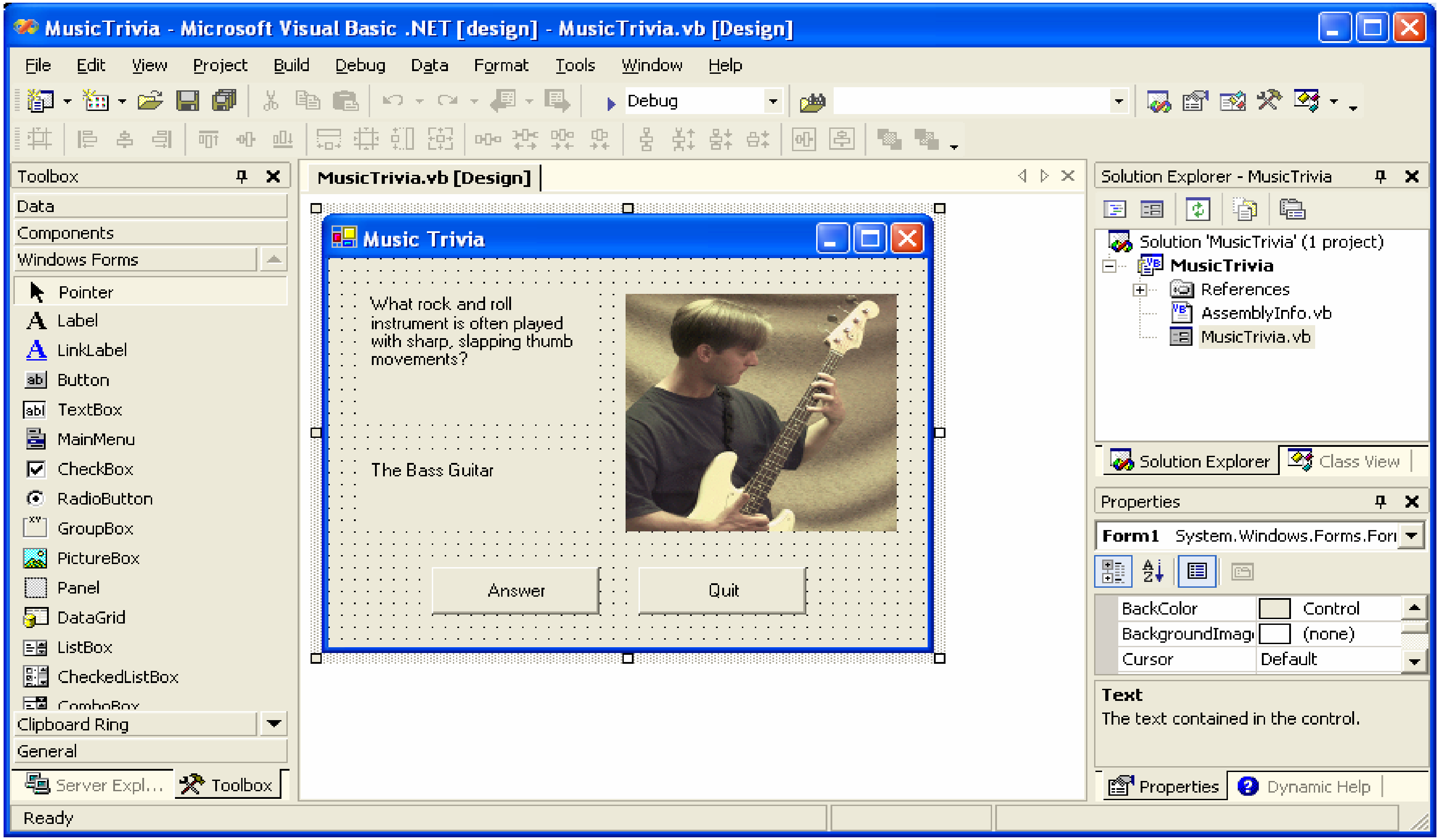
# Starting Visual Studio .NET



# Solutions, Projects, Files

- A Solution file (*.sln) may contain information about multiple related projects.  A Project file (*.vbproj) may contain information about multiple related source files and/or components.  A single Visual Basic source file has the extension .vb.
- For this course, our solutions are so simple that they will contain a single project, so you can either double-click on the solution file or the project file to launch the Visual Studio .NET program.

# MS Visual Studio .NET



MusicTrivia - Microsoft Visual Basic .NET [design] - MusicTrivia.vb [Design]

MusicTrivia.vb [Design]

Music Trivia

What rock and roll instrument is often played with sharp, slapping thumb movements?

The Bass Guitar

Solution 'MusicTrivia' (1 project)
MusicTrivia
References
AssemblyInfo.vb
MusicTrivia.vb

Form1 System.Windows.Forms.Forı

| | |
|---|---|
| BackColor | ☐ Control |
| BackgroundImagı | ☐ (none) |
| Cursor | Default |

**Text**
The text contained in the control.

Ready

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# MS Visual Studio .NET

- The following are some of the most important parts of the MS Visual Studio .NET development environment:

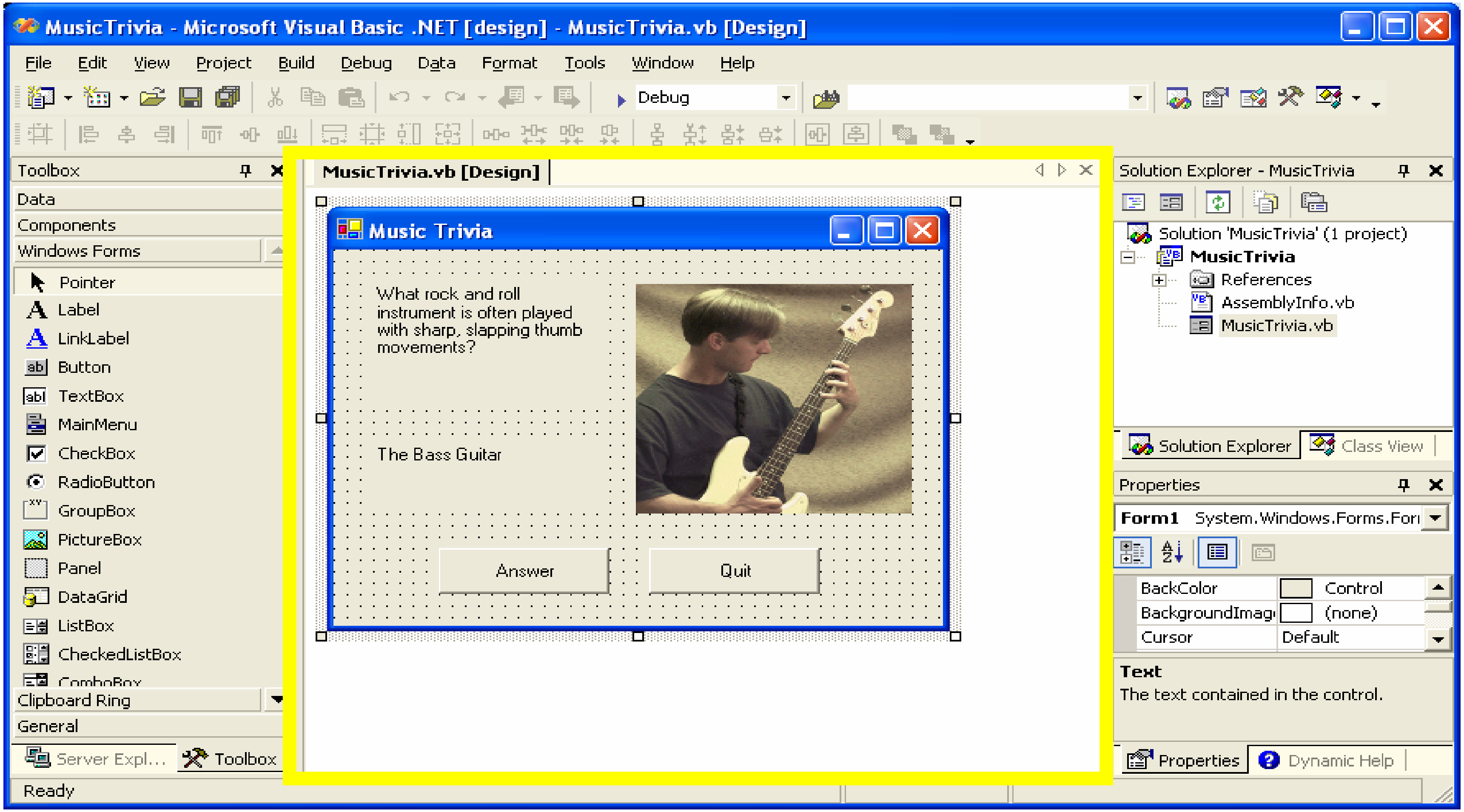
- Windows Forms Designer
- Toolbox
- Solution Explorer
- Properties Window
- Output Window

# Windows Forms Designer

- This is the main area in the middle of the Visual Studio .NET window. It is a multi-tabbed area where the programmer can create the forms (windows) that make up his graphical user interface. Source code may also be displayed in this area on a separate tab.

- Note: Double-clicking on a GUI object in the Windows Forms Designer window will take you to its corresponding event-handler procedure in the source code.

# Windows Forms Designer



What rock and roll instrument is often played with sharp, slapping thumb movements?

The Bass Guitar

Form1 System.Windows.Forms.Form

| | |
|---|---|
| BackColor | Control |
| BackgroundImage | (none) |
| Cursor | Default |

**Text**
The text contained in the control.

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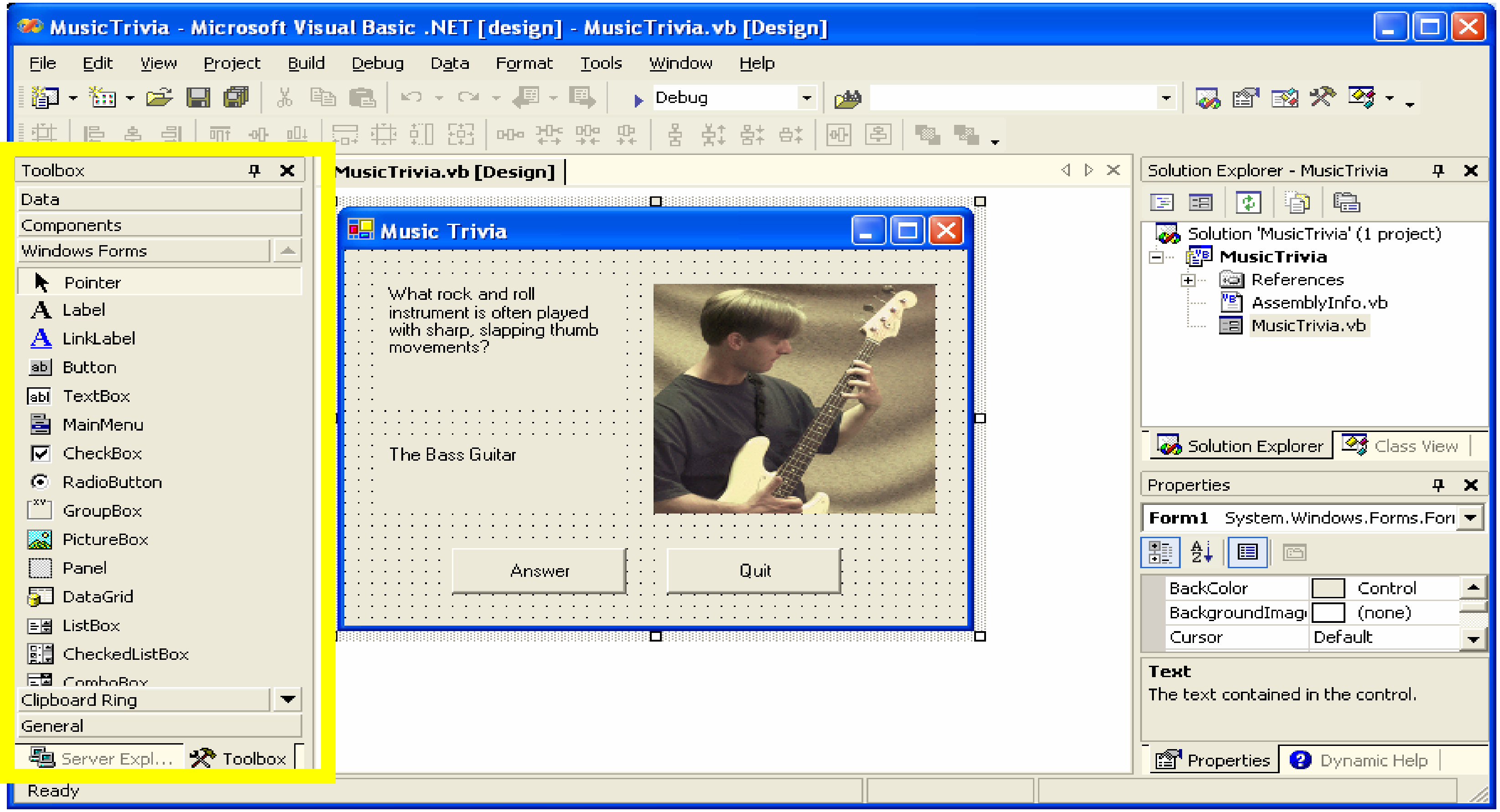
# Toolbox

- The toolbox is a collection of GUI objects that you can drag and drop on your form. For example, if you want a to add a button to your form, click Button in the toolbox, drag, and drop on your form.  Repeat to add another button, etc.

# Toolbox



What rock and roll instrument is often played with sharp, slapping thumb movements?

The Bass Guitar

Properties

Form1 System.Windows.Forms.Form

| | |
|---|---|
| BackColor | Control |
| BackgroundImage | (none) |
| Cursor | Default |

**Text**
The text contained in the control.

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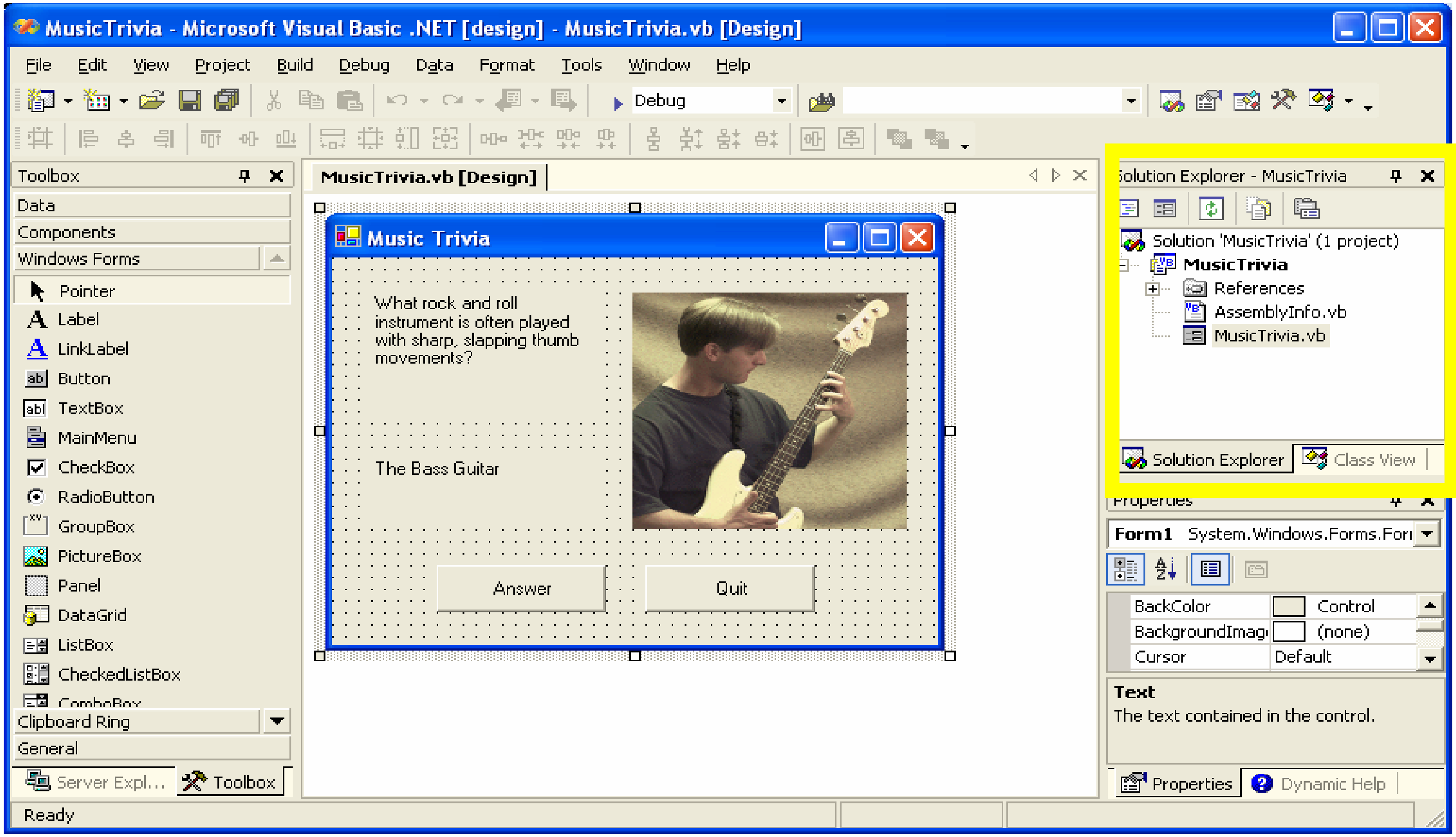
# Solution Explorer

- The Solution Explorer window displays your projects and their corresponding files and components.  It’s like a table of contents.  If you don’t see it, select View, Solution Explorer to open the window. Double-click on the form icon in the Solution Explorer window to make the corresponding form appear in the Windows Forms Designer window.

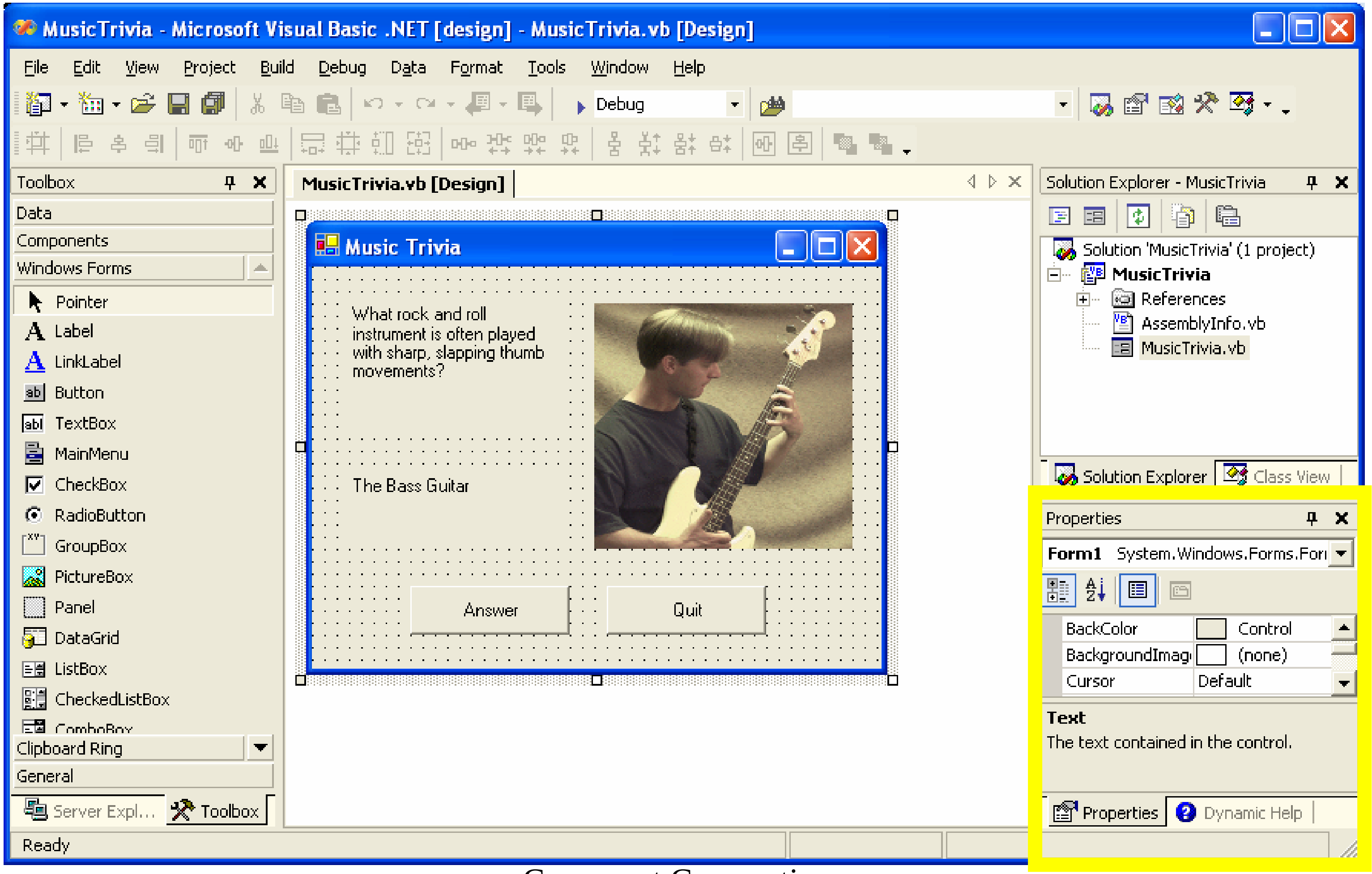
# Solution Explorer



# Properties Window

- The Properties window displays a list of the properties of the currently-selected GUI object. It also allows the programmer to change or set the properties of GUI objects at design time.
- To set the property of an object, first select the object. For example, select the Button1 object. We can define the text that appears on the button by setting its text property. For example, scroll the Properties Window to locate the text property. Change “Button1” to “OK”, then press Enter. The button then changes from displaying “Button1”, and now reads “OK”.

# Properties Window



What rock and roll instrument is often played with sharp, slapping thumb movements?

The Bass Guitar

Form1 System.Windows.Forms.For

| | |
|---|---|
| BackColor | Control |
| BackgroundImag | (none) |
| Cursor | Default |

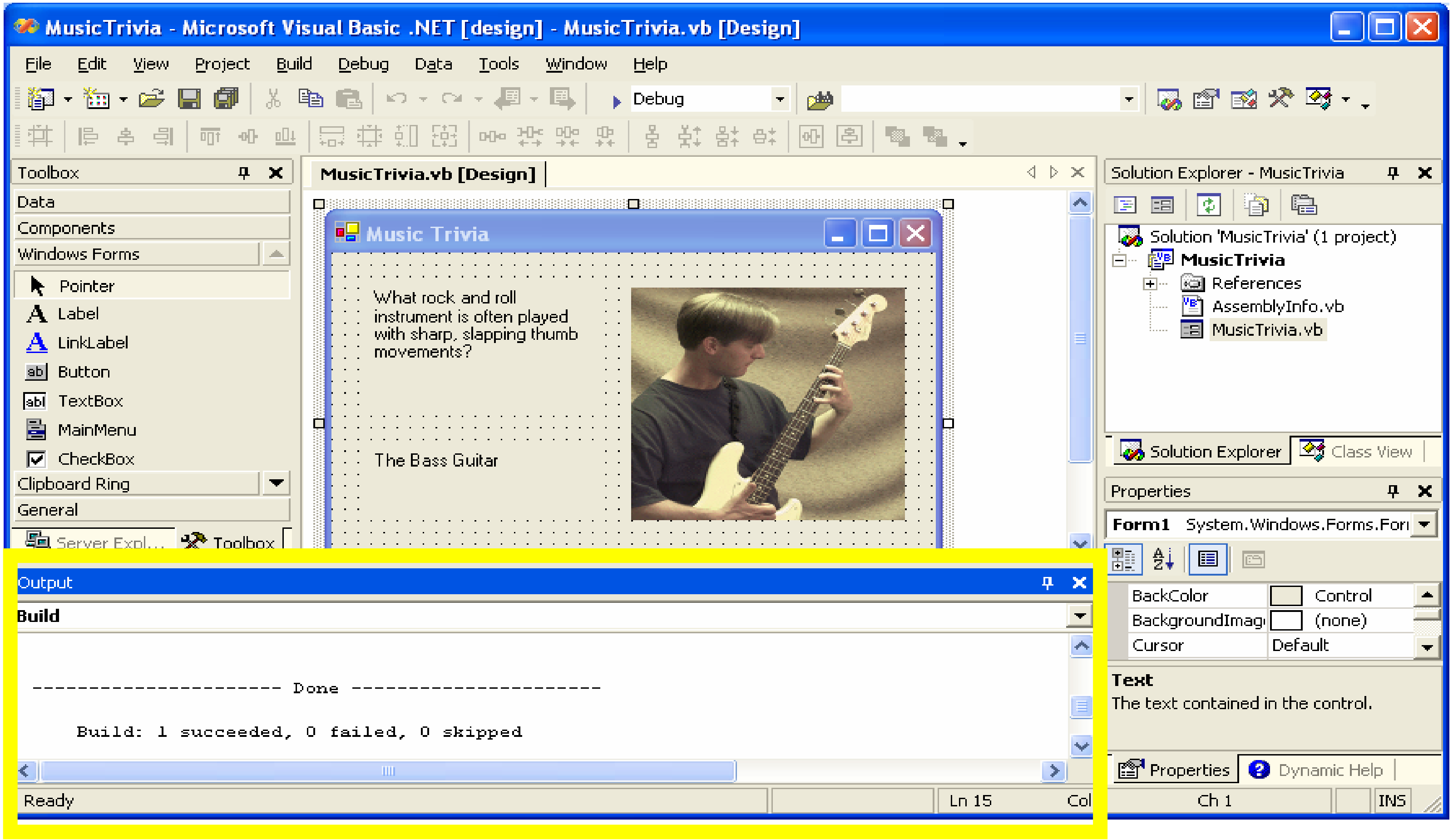
**Text**

The text contained in the control.

# Output Window

- The Output window, usually located at the bottom of the main Visual Studio .NET window, is where the Visual Studio displays text output to the programmer.
- For example, when you build (i.e. compile) your program, the output window displays any error messages that might occur, and hopefully eventually displays a “success” message, e.g. “Build succeeded… 0 errors”

# Output Window



What rock and roll instrument is often played with sharp, slapping thumb movements?

The Bass Guitar

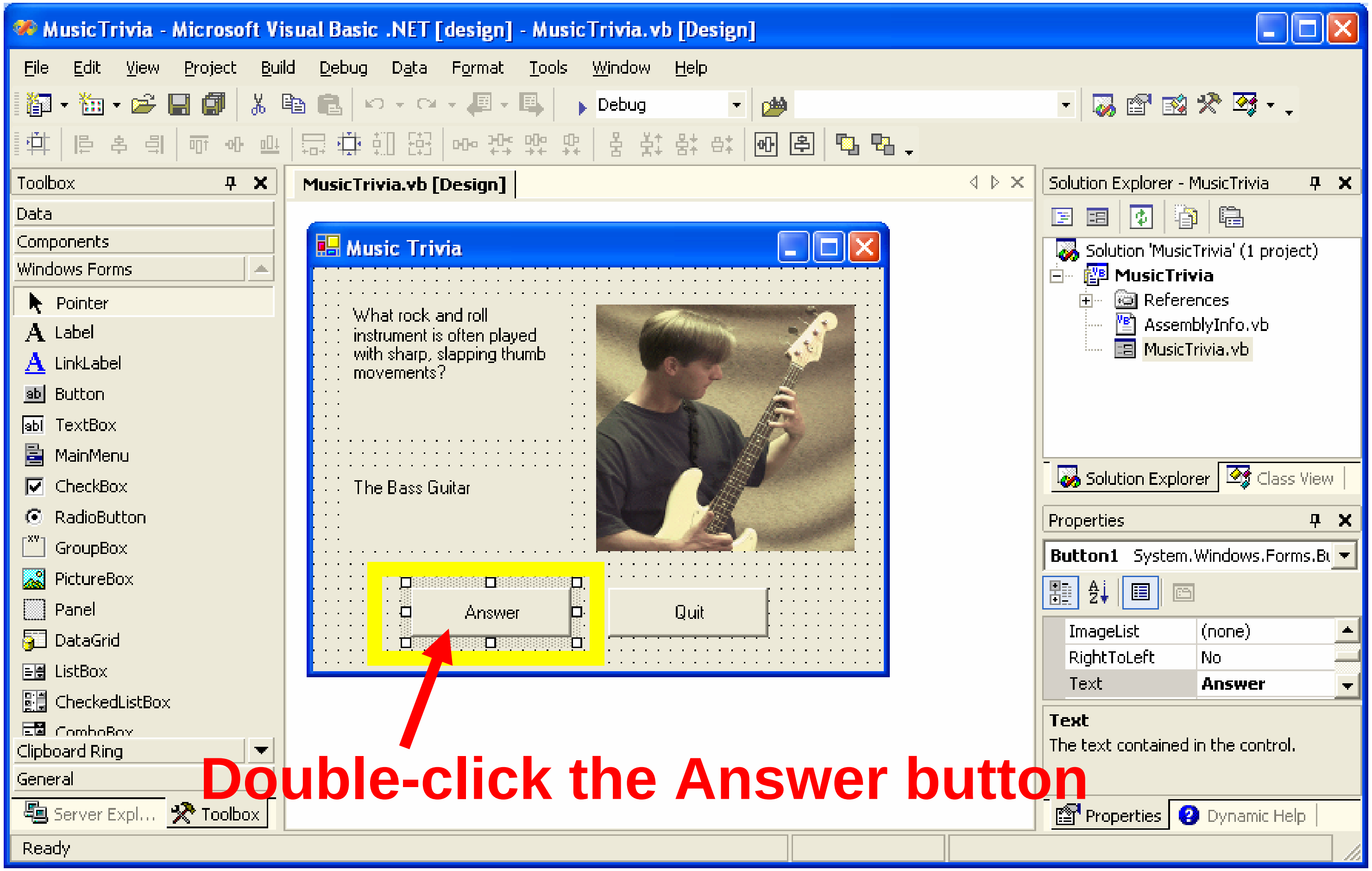
**Text**
The text contained in the control.

```
---------------------- Done ----------------------

    Build: 1 succeeded, 0 failed, 0 skipped
```

# Example – Chapter 1 from book

- Refer to the example from chapter 1 in the book.  When we double-click on the Answer button in the Windows Forms Designer window, we end up editing code for the *Button1_click* event procedure.  The *Button1_click* event procedure is a piece of code that is called whenever the user clicks on button1 at runtime.  This is where we write code that will be executed at runtime whenever the user clicks the button.  In this example, we display the answer (in *Label2*) and the picture (in *PictureBox1*) by setting their corresponding *Visible* properties to *True*.

# Example – Ch. 1



What rock and roll instrument is often played with sharp, slapping thumb movements?

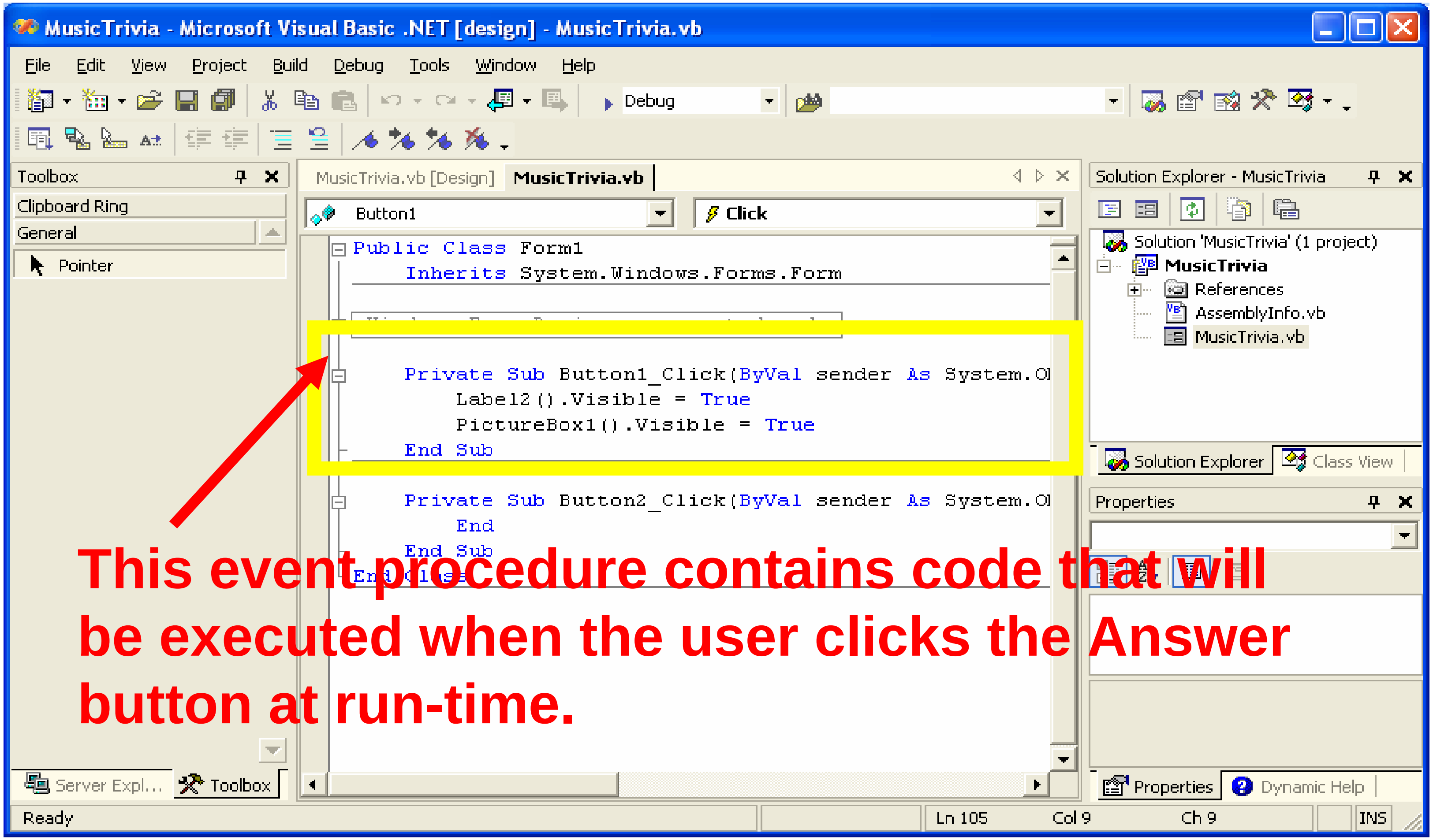
The Bass Guitar

| | |
|---|---|
| ImageList | (none) |
| RightToLeft | No |
| Text | Answer |

**Text**
The text contained in the control.

Double-click the Answer button

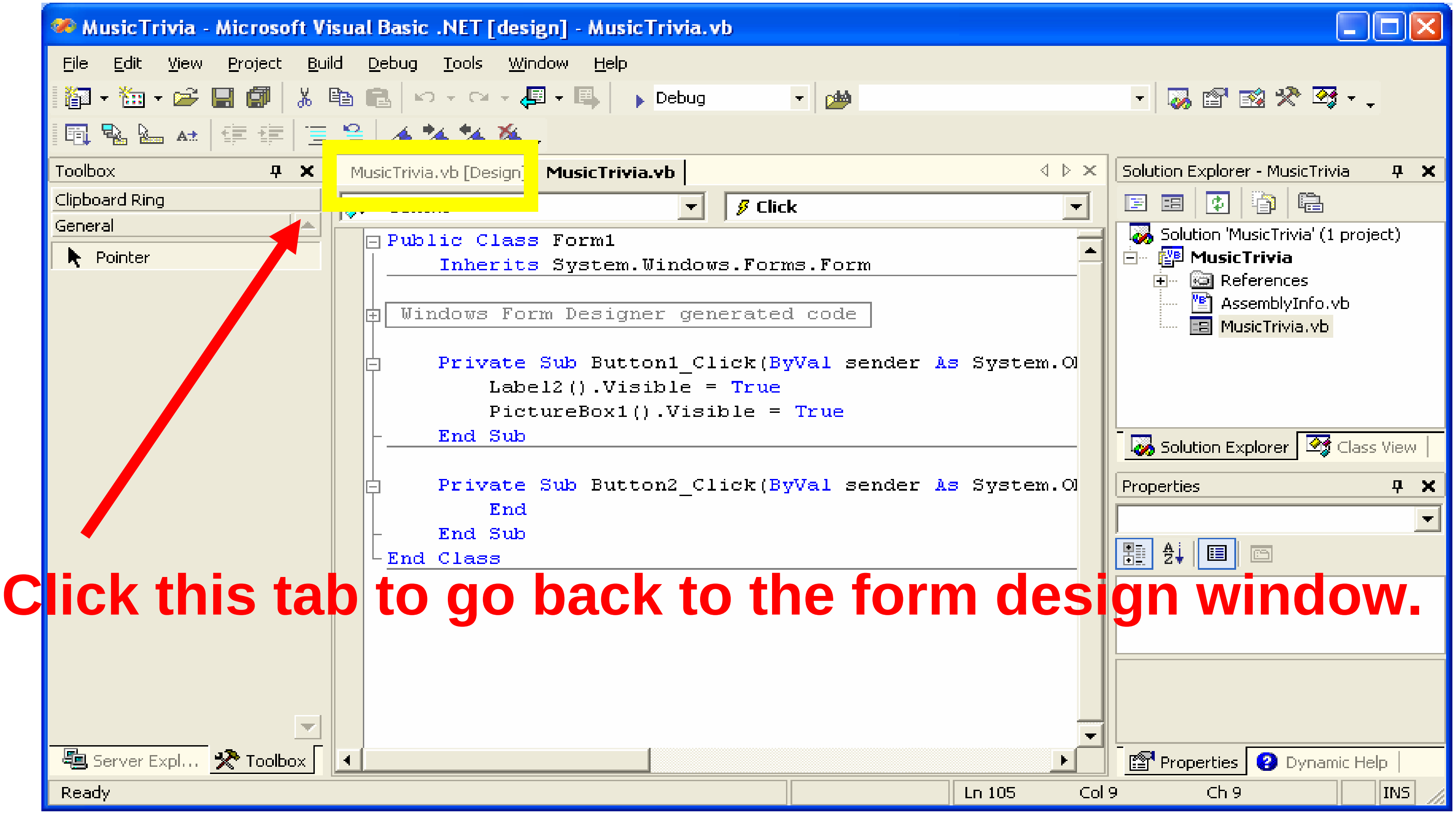
# Example – Ch. 1



```
Public Class Form1
    Inherits System.Windows.Forms.Form

 Windows Form Designer generated code

    Private Sub Button1_Click(ByVal sender As System.Ol
        Label2().Visible = True
        PictureBox1().Visible = True
    End Sub

    Private Sub Button2_Click(ByVal sender As System.Ol
        End
    End Sub
End Class
```

**This event procedure contains code that will be executed when the user clicks the Answer button at run-time.**

# How To Go Back to Form



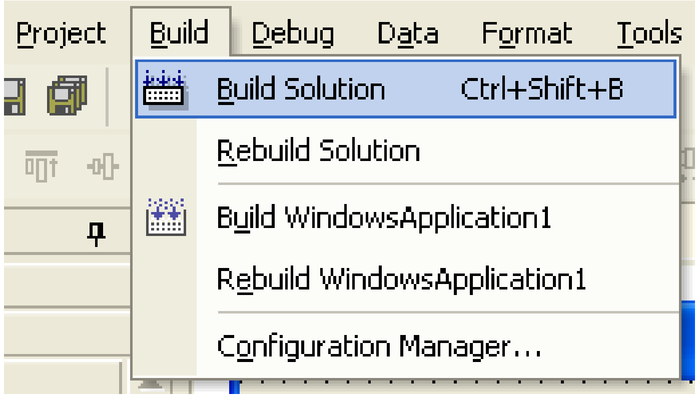
```
Public Class Form1
    Inherits System.Windows.Forms.Form

 Windows Form Designer generated code 

    Private Sub Button1_Click(ByVal sender As System.O
        Label2().Visible = True
        PictureBox1().Visible = True
    End Sub

    Private Sub Button2_Click(ByVal sender As System.O
        End
    End Sub
End Class
```

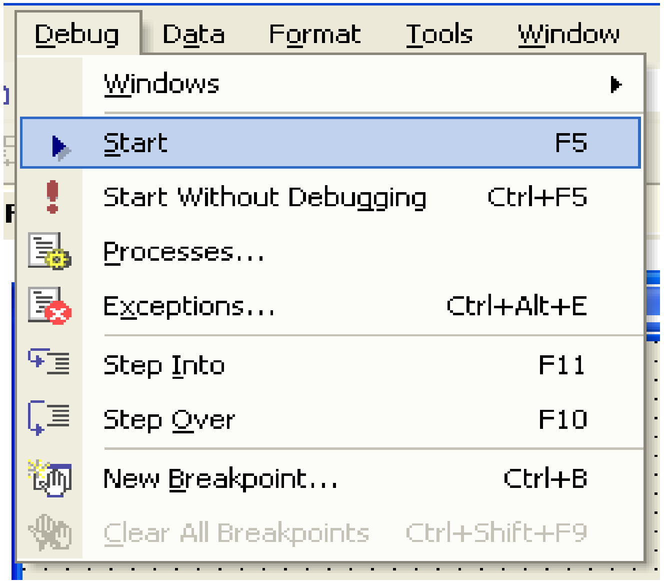
Click this tab to go back to the form design window.

# Building and Running a Program

- To build (or compile) a program, select Build Solution from the Build menu.

- To run a program, select Start from the Debug menu, or simply click the Start (Play) button on the standard toolbar. Note: You must login as “student” (password = “computer”) to use this feature.


Project
Build
Debug
Data
Format
Tools
Build Solution Ctrl+Shift+B
Rebuild Solution
Build WindowsApplication1
Rebuild WindowsApplication1
Configuration Manager...


Debug
Data
Format
Tools
Window
Windows
Start F5
Start Without Debugging Ctrl+F5
Processes...
Exceptions... Ctrl+Alt+E
Step Into F11
Step Over F10
New Breakpoint... Ctrl+B
Clear All Breakpoints Ctrl+Shift+F9