1

Starting Strong with Visual C# 2005 Express Edition

Okay, so the title of this chapter may be a little over the top. But to be honest, the Visual C# 2005 Express Edition, from now on referred to as C# Express, rocks as a starting development environment. If you are just starting out in developing, you don't realize how lucky you are to start with an environment such as C# Express, which really tries to walk you through getting into programming fairly gently. In the old days, just a few years ago (back when I had hair), you were handed an editor such as Notepad.exe and given-command line programs to compile and run your applications. That has all changed.

For C# being such a powerful language, Microsoft has worked hard to make the development environment that you use to create computer programs, even for seasoned developers, as painless as possible. Before, when developing with a lower-level language, such as C or Assembly, you had to put up with cryptic tools that were quite cumbersome to use for developing software. When you used the language, such as Visual Basic, the tools got easier, but then you had to put up with a less robust (i.e., less efficient) language. Now, with the .NET development languages, you get the best of both worlds. You will read more about programming languages in general and the differences between them in Chapter 2, "Programming 101: A Quick Discussion."

This chapter starts off the book by walking you through installing C# Express for the first time, along with SQL Server Express, which is the database component that you will mainly use with C# Express. In addition, this chapter will also

- ❑ Talk about differences between C# the language and C# Express.
- ❑ Discuss what it means to use an integrated development environment (IDE)?
- ❑ Give you an overview of C# Express development environment.
- ❑ Take a look at how C# Express structures solutions and projects and what the difference is between them.

What Is Microsoft Visual C# 2005 Express?

While I will be getting deeper into the various terminology and discussing what programming is in the next chapter, now is a good time to clear up a couple of items about C# Express. First, what exactly is C# Express? Exactly what is the difference between C#, the programming language, and C# Express?

The Differences between C# and C# Express

C# Express is actually what is called an *IDE*, or *integrated development environment*. What this means in plain English, or whatever language you are reading this in is that C# Express is a set of tools, including a special text editor that enables you to write computer programs in C#, the software development language. It also handles other necessary tasks such as building your application to either test for errors or release for people to use.

Microsoft wanted to come up with a way to get those who are not yet C# developers interested in programming, such as hobbyists and students. Prior to this, you could create your C# applications a couple different ways:

- ❑ **Use a simple note pad or third-party editor, and then use the command-line compiler.** Really, only long-time hardcore developers use this method, where you need no support for development and want to struggle through compiling the programs yourself.
- ❑ **Use Visual Studio .NET to development and maintain your C# code and application.** This is the preferred method if you can afford Visual Studio.

Now Microsoft has created the Express series to give you experience with developing using the last method but with pared-down features. The full-blown versions of Visual Studio contain supersets of commands found in the Express versions.

Members of the Express Series

In an effort to expose new developers of all kinds to their different products, Microsoft has created the Express series. The following products are part of this series and can be downloaded from the Web at http://lab.msdn.microsoft.com/express/default.aspx or, as with Microsoft Visual C# 2005 Express, can be found on the CD in the back of this book.

Besides C# Express, other products in the series include:

- ❑ Visual Basic 2005 Express
- ❑ Visual C++ 2005 Express
- ❑ Visual J# 2005 Express
- ❑ Web Dev 2005 Express
- ❑ SQL Server 2005 Express

The first three in this list are additional programming languages. Web Dev Express introduces you to Web development with ASP.NET and can be used with each of the four languages in the Express series. SQL Server Express is a scaled-down version of SQL Server, which is a database management system.

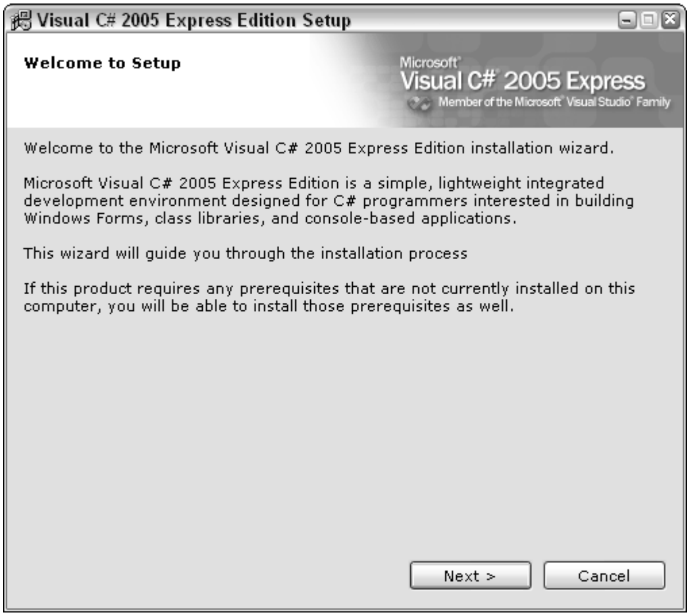
Since SQL Server Express is distributed with C# Express, and the other languages, all of Part III, “Using Data in Applications” features SQL Server in this book.

Before getting into what is included in the C# Express development environment, you need to install the product on your system. This is the purpose of this first Try It Out.

Try It Out Installing Microsoft Visual C# Express

Taking the CD that came with the book:

1. Place the CD in the CD-ROM drive. An installation window appears, giving you the choice to install Microsoft C# 2005 Express.
2. Click Microsoft C# 2005 Express. The installation program begins, displaying a welcome page, as shown in Figure 1-1.



Visual C# 2005 Express Edition Setup

Welcome to Setup

Welcome to the Microsoft Visual C# 2005 Express Edition installation wizard.

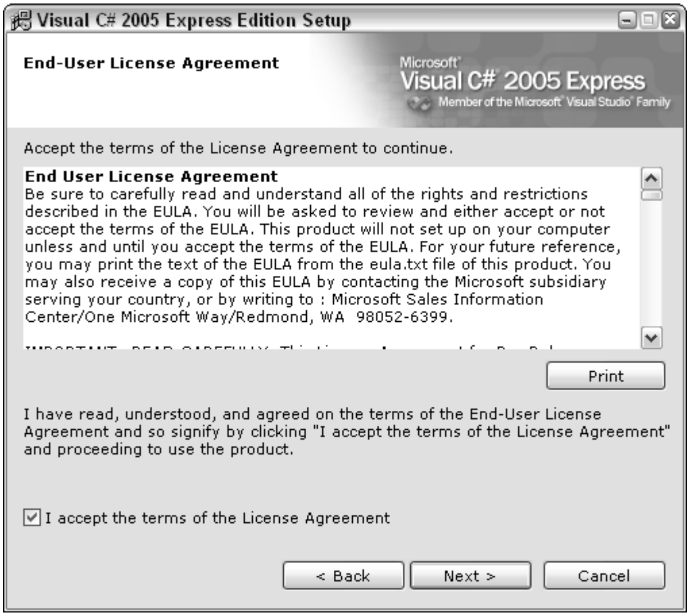
Microsoft Visual C# 2005 Express Edition is a simple, lightweight integrated development environment designed for C# programmers interested in building Windows Forms, class libraries, and console-based applications.

This wizard will guide you through the installation process

If this product requires any prerequisites that are not currently installed on this computer, you will be able to install those prerequisites as well.

Figure 1-1

3. Click Next. The next page displays the EULA, or End User License Agreement.
4. After thoroughly reading the EULA (of course), place a check mark in the check box that reads “I accept the terms of the License Agreement,” as displayed in Figure 1-2.
5. Click Next to continue the setup. You now have the option of installing SQL Server Express and the MSDN (Microsoft Developer Network) Express Library.
6. Place a check mark next to the additional two products, as shown in Figure 1-3.


Visual C# 2005 Express Edition Setup
Microsoft
Visual C# 2005 Express
Member of the Microsoft Visual Studio Family
Print
< Back
Next >
Cancel

End-User License Agreement

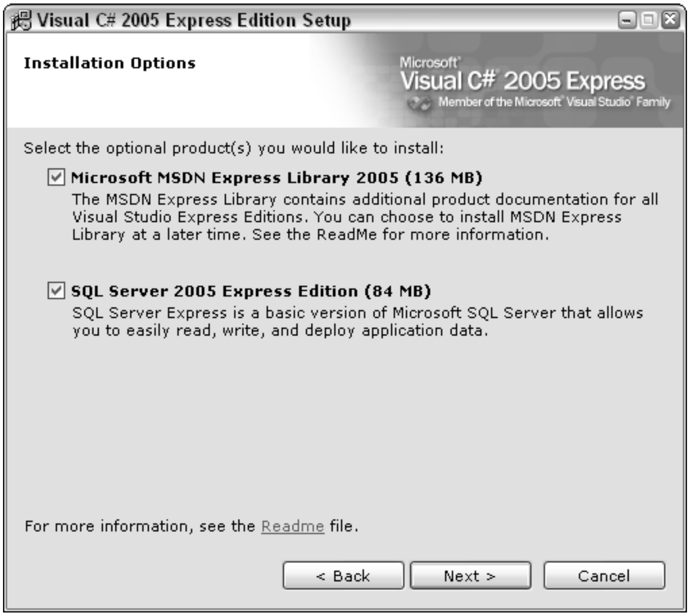
Accept the terms of the License Agreement to continue.

End User License Agreement
Be sure to carefully read and understand all of the rights and restrictions described in the EULA. You will be asked to review and either accept or not accept the terms of the EULA. This product will not set up on your computer unless and until you accept the terms of the EULA. For your future reference, you may print the text of the EULA from the eula.txt file of this product. You may also receive a copy of this EULA by contacting the Microsoft subsidiary serving your country, or by writing to : Microsoft Sales Information Center/One Microsoft Way/Redmond, WA 98052-6399.

I have read, understood, and agreed on the terms of the End-User License Agreement and so signify by clicking "I accept the terms of the License Agreement" and proceeding to use the product.

☑ I accept the terms of the License Agreement

Figure 1-2


Visual C# 2005 Express Edition Setup
Microsoft
Visual C# 2005 Express
Member of the Microsoft Visual Studio Family
< Back
Next >
Cancel

Installation Options

Select the optional product(s) you would like to install:

☑ **Microsoft MSDN Express Library 2005 (136 MB)**
The MSDN Express Library contains additional product documentation for all Visual Studio Express Editions. You can choose to install MSDN Express Library at a later time. See the ReadMe for more information.

☑ **SQL Server 2005 Express Edition (84 MB)**
SQL Server Express is a basic version of Microsoft SQL Server that allows you to easily read, write, and deploy application data.

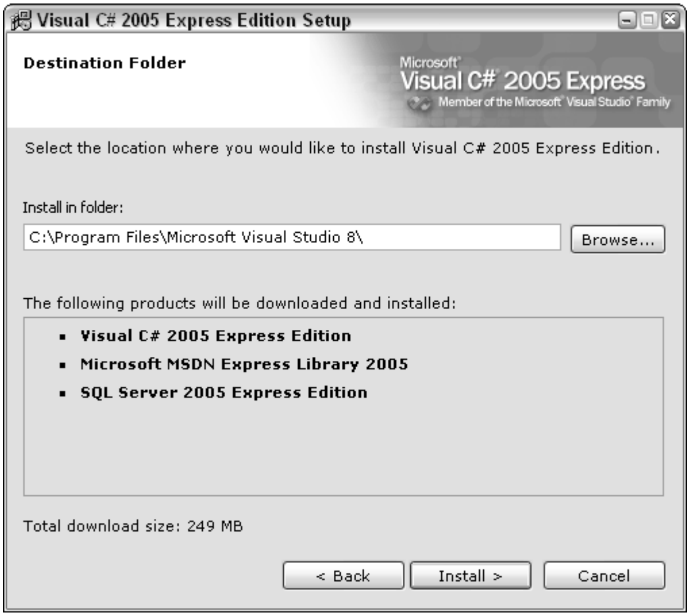
For more information, see the Readme file.

Figure 1-3

In addition to the products covered in the Express version of MSDN, MSDN contains a ton of articles and information for all the various Microsoft developer products, including an extensive knowledge base. So, in addition to installing the MSDN library version here for the Express products, check out the MSDN home page online at http://msdn.microsoft.com/. For the library area, go to http://msdn.microsoft.com/library/default.asp, where you can search the knowledge base for any issues and problems that come up.

If you have never loaded any software that required it before, you may have to load .NET Framework 2.0 as well.

7. Click Next to continue the setup. The next page, shown in Figure 1-4, displays where the C# Express applications will be installed.



Visual C# 2005 Express Edition Setup

Destination Folder

Select the location where you would like to install Visual C# 2005 Express Edition.

Install in folder:

C:\Program Files\Microsoft Visual Studio 8\

The following products will be downloaded and installed:

- **Visual C# 2005 Express Edition**
- **Microsoft MSDN Express Library 2005**
- **SQL Server 2005 Express Edition**

Total download size: 249 MB

Figure 1-4

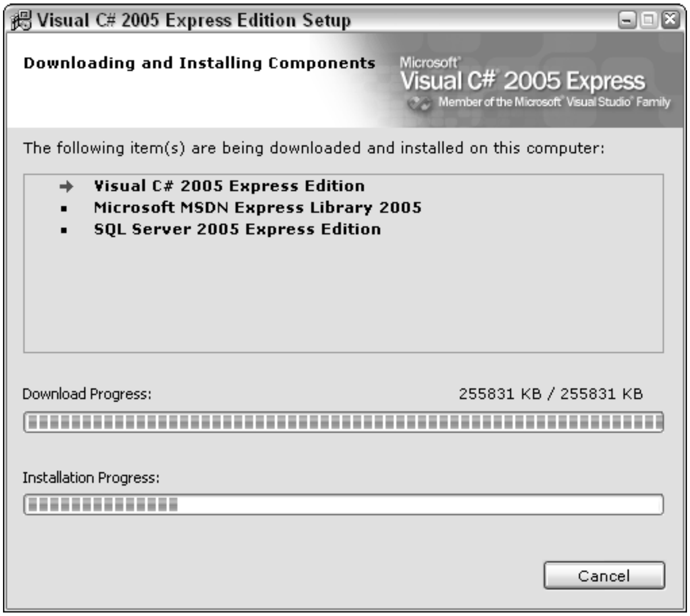
8. Click Install if you are OK with the default location; otherwise, click Browse and select where you want them placed. The installation program now sets up your three products, as shown in Figure 1-5.

   The success page shown in Figure 1-6 appears. Setup is now complete.

9. Click Exit to close the setup dialog box.

C# Express has now been installed.

You can now choose Program Files → Visual C# 2005 Express from the Windows Start menu to see the starting page for Visual C# Express, as shown in Figure 1-7.


Visual C# 2005 Express Edition Setup
Microsoft
Visual C# 2005 Express
Member of the Microsoft Visual Studio Family
Cancel

Downloading and Installing Components

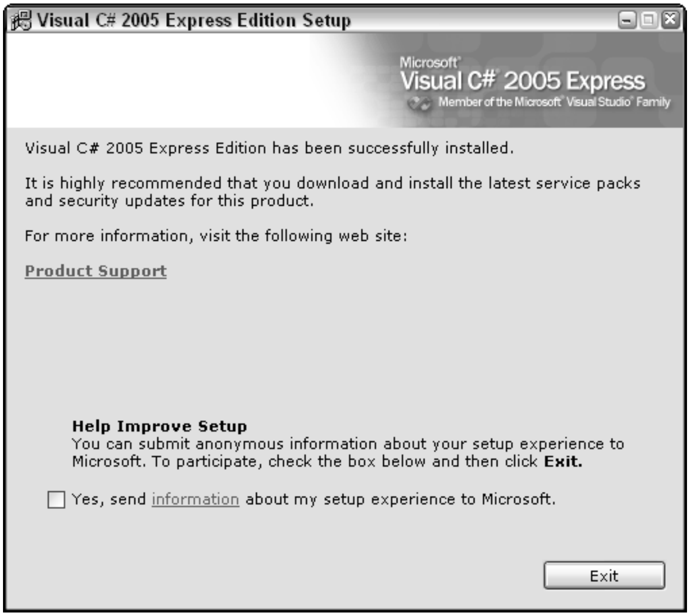
The following item(s) are being downloaded and installed on this computer:

- **Visual C# 2005 Express Edition**
- **Microsoft MSDN Express Library 2005**
- **SQL Server 2005 Express Edition**

Download Progress: 255831 KB / 255831 KB

Installation Progress:

Figure 1-5


Visual C# 2005 Express Edition Setup
Microsoft
Visual C# 2005 Express
Member of the Microsoft Visual Studio Family
Exit

Visual C# 2005 Express Edition has been successfully installed.

It is highly recommended that you download and install the latest service packs and security updates for this product.

For more information, visit the following web site:

Product Support

Help Improve Setup
You can submit anonymous information about your setup experience to Microsoft. To participate, check the box below and then click **Exit.**

□ Yes, send information about my setup experience to Microsoft.

Figure 1-6

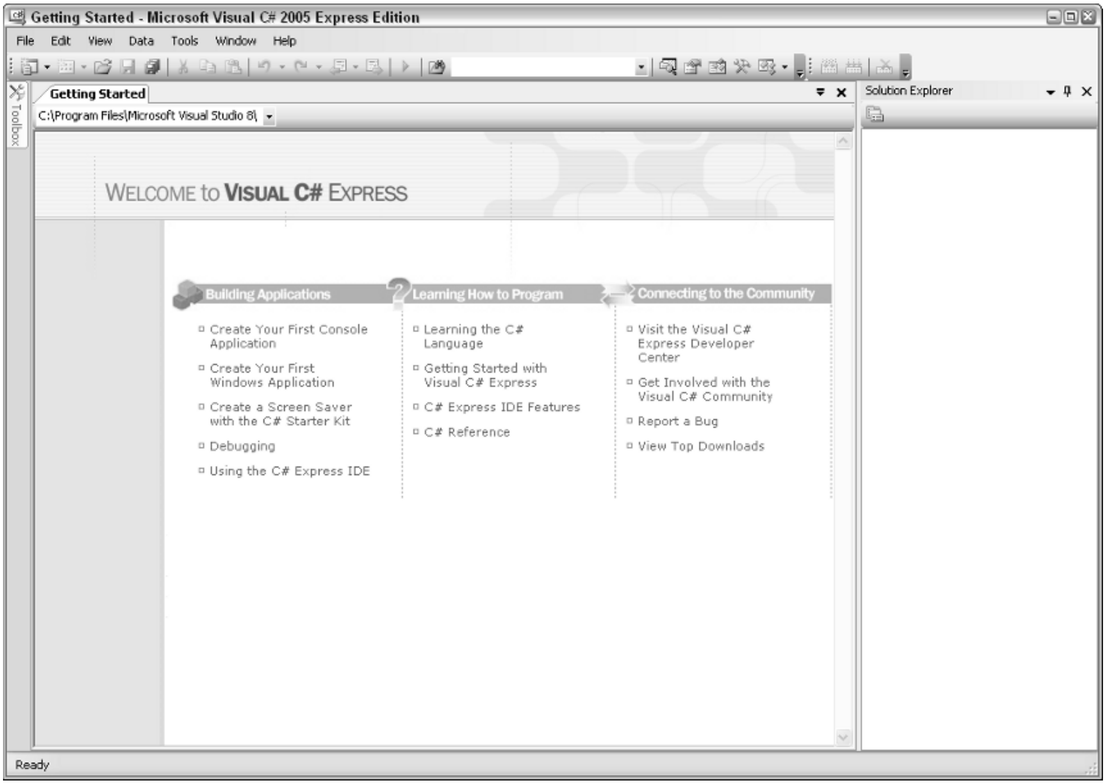

Getting Started - Microsoft Visual C# 2005 Express Edition
File Edit View Data Tools Window Help
Toolbox
Getting Started
C:\Program Files\Microsoft Visual Studio 8\
Solution Explorer
WELCOME to VISUAL C# EXPRESS
Building Applications
Create Your First Console Application
Create Your First Windows Application
Create a Screen Saver with the C# Starter Kit
Debugging
Using the C# Express IDE
Learning How to Program
Learning the C# Language
Getting Started with Visual C# Express
C# Express IDE Features
C# Reference
Connecting to the Community
Visit the Visual C# Express Developer Center
Get Involved with the Visual C# Community
Report a Bug
View Top Downloads
Ready

Figure 1-7

The following sections explain some of features of the C# Express development environment that you will be using first, along with some of the tools included.

Overview of C# Express Development Environment

The C# Express development environment takes almost as much time to learn as the C# language itself. OK, not really, but there are a lot of tools that can make your development experience more enjoyable and give you more control as you are creating applications. The first page to go over is the start page that appears when you first open the C# Express IDE. Herein lies a good question — what the heck is the IDE?

What Is the IDE (Integrated Development Environment)?

The Integrated Development Environment (IDE) is just what it sounds like: a development environment that includes an editor for writing your code, as well as integrated tools for managing your software projects.

When you write the commands for creating your application, called code, errors will invariably occur. These errors are called bugs. Some of the tools included help you with "debugging" your code. Other tools help you tie in data to your applications and organize your code projects

The section "Tools of the C# Express IDE" coming up in the chapter goes into further detail on what is included in the IDE. First, check out the information on the C# Express Start Page.

Taking a Look at the C# Express Start Page

Remember that C# Express was created to help new developers get comfortable creating applications. When you first go into the full version of Visual Studio .NET, you are placed in its IDE without much explanation. This can be confusing for new and experienced developers alike.

Microsoft has tried to alleviate some of the confusion by including help for new developers, as well as links for getting answers to issues that you may have. Looking at the Start page back in Figure 1-7, note that the page is broken up into three categories: Building Applications, Learning How to Program, and Connecting to the Community.

Getting Started

This category focuses on what it takes to create a project using C# Express. It doesn't really cover what goes into programming itself but rather what it takes to manage the code files and others. Here is the list of help topics covered, as seen under the Buildings Applications category:

- ❑ **Create Your First Console Application.** Console applications are a type of computer program that does not have any kind of user interface (e.g., forms) and performs specified tasks such as downloading data (taking information from the Web) or uploading data (putting information up on the web). Another example may be a print server, which sends documents to a printer without any user intervention.
- ❑ **Create Your First Windows Application.** Windows applications include forms for inputting data and prompting users. These can be tied to a database for managing data such as is used in accounting software or a mailing list. Video games are another example of Windows applications where you will create forms as a user interface.
- ❑ **Create a Screen Saver Project.** To help you get started in programming in C# using C# Express, Microsoft included a project template that helps you create a screen saver that can be used on your computer.

A project template is a project that has been started for you, to give you a jump start in writing the particular type of project, including various files needed for that type of project. A number of project templates are available; the first three are those just mentioned in the list. The other topic, Class Library, is discussed in Chapter 2.

- ❑ **Debugging.** This help topic takes you through the various ways to debug your project as you are building it. It points out the major tools to debug your project and how to use them. This topic is discussed in greater detail in Chapter 6, "Debugging Applications in C# Express."
- ❑ **Using the C# Express IDE.** This topic points out various tools included in the C# Express IDE — much like this chapter does in the "Tools of the C# Express IDE" section

Please note that these options don't cover everything that you can do with C#—a notable exclusion being ASP.NET code. The C# Express Environment gets you started using C# the language, but it doesn't provide all the possibilities for C#.

Learning How to Program

Whereas the previous category points out various features in the C# Express, this category on the Start page presents information on the C# language itself, as well as displaying additional features of C# Express.

Remember the distinction: C# is the language; C# Express is the set of tools created to help you write programs using the C# language.

Topics are as follows:

- ❑ **Learning the C# Language.** Just as the title says, this topic discusses getting going in the C# language, including structures of your programs and statements that you can use.
- ❑ **Getting Started with C# Express.** This topic overlaps other topics and also refers to other topics within this one. The topic discusses how C# is different from other programming languages, as well as how to get started creating your first C# application.
- ❑ **C# Express IDE Features.** The topic discusses various IDE features available to help you write and compile your C# applications.

After writing your code, C# Express compiles the code from the syntax that you understand to a language closer to what the computer understands. Compilers and compiled languages are discussed further in Chapter 2, "Programming 101: A Quick Discussion."

- ❑ **C# Reference.** This handy help topic contains a reference to the various commands (statements) within the C# programming language.

To be honest, I wouldn't recommend looking through this reference just yet. While the other topics use fairly easy to understand prose, the last just spits out the definitions of what the statements are. While this is great after you have been using the development language for a while and want to quickly find out a definition or syntax (various ways to write a particular programming statement), trying to take it all in when you are just starting out developing can be pretty intimidating. I would save this last topic for after you have read at least half of this book.

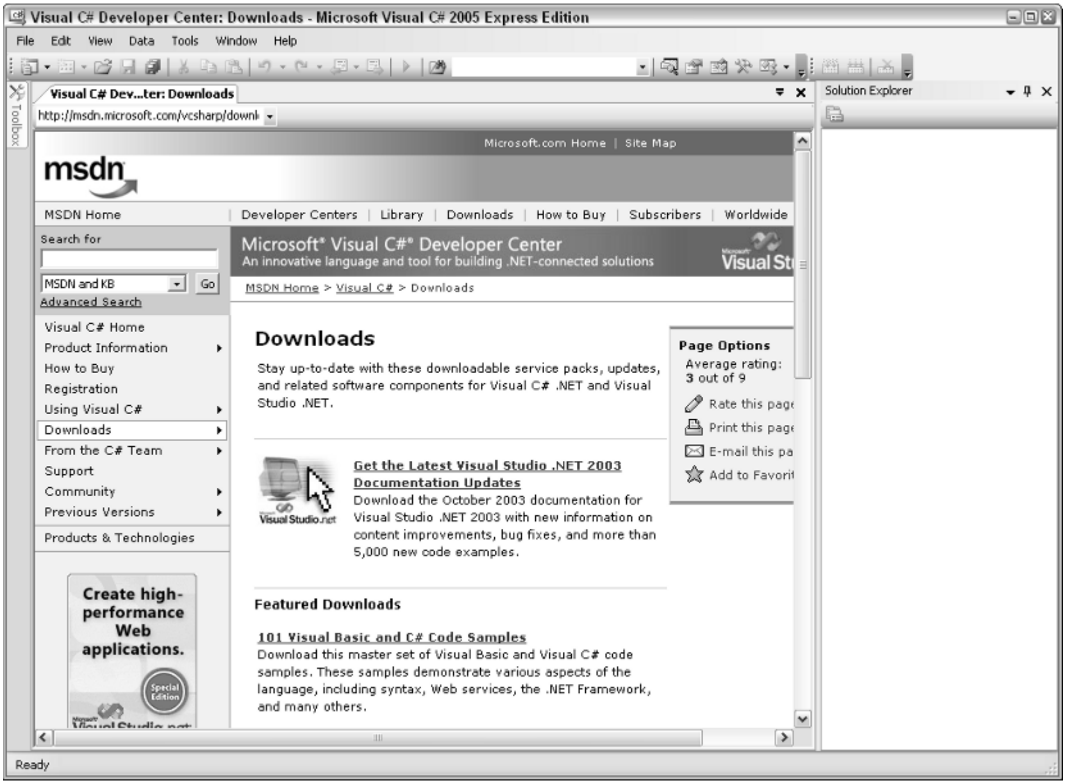
Connecting to the Community

While the last two categories of the Start page have been help topics that display static text to explain various parts of C# and C# Express, this section contains links to other Web sites that help support your coding. All of these links take you to sites under the MSDN (Microsoft Developer Network) main Web site.

- ❑ **Visit the Visual C# Express Developer Center.** This link takes you to the main Visual C# developer page and is loaded with great information. However, as with the last topic, I would hold off going to these links until you feel comfortable "speaking C#."

- **Get Involved with the Visual C# Community.** As you start developing in C# and are finding yourself running up against a wall as far as coming up with the proper commands, this link is a great resource. This link takes you to a number of newsgroups available on the MSDN site. Take advantage of them, but remember that most of the contributors are pretty advanced developers and may not have the patience to help you all the way through a solution. That being said, the majority of them are excited to help out new programmers, also called newbies. If you let them know you are new, often they will write the code themselves and send it to you. Another good suggestion is to read a bit and search for your topic in earlier posts before posting, because posting a topic that has already been amply addressed can sometimes annoy people.
- **Report a Bug.** Clicking this link takes you to the MSDN Product Feedback Center. Always looking to improve their products, Microsoft is constantly seeking feedback from users and developer on their products, so don't hesitate to go here if you have an issue with the product.
- **View Top Downloads.** Another very useful link, this one takes you to an MSDN page, shown in Figure 1-8, where you can download various examples and utilities.

  Remember that this one is for both new and advanced developers, so you need to check the overview of the download to find the sophistication of the coding you want. Unfortunately, they are not labeled as such, and you can find yourself being quickly overwhelmed.


Visual C# Developer Center: Downloads - Microsoft Visual C# 2005 Express Edition
File Edit View Data Tools Window Help
Toolbox
Visual C# Dev...ter: Downloads
http://msdn.microsoft.com/vcsharp/downl
Solution Explorer
Microsoft.com Home | Site Map
msdn
MSDN Home
Developer Centers | Library | Downloads | How to Buy | Subscribers | Worldwide
Search for
MSDN and KB
Go
Advanced Search
Microsoft® Visual C#® Developer Center
An innovative language and tool for building .NET-connected solutions
Visual St
MSDN Home > Visual C# > Downloads
Visual C# Home
Product Information
How to Buy
Registration
Using Visual C#
Downloads
From the C# Team
Support
Community
Previous Versions
Products & Technologies
Create high-performance Web applications.
Special Edition
Page Options
Average rating: 3 out of 9
Rate this page
Print this page
E-mail this pa
Add to Favorit
Visual Studio.net
Ready

Downloads

Stay up-to-date with these downloadable service packs, updates, and related software components for Visual C# .NET and Visual Studio .NET.

Get the Latest Visual Studio .NET 2003 Documentation Updates

Download the October 2003 documentation for Visual Studio .NET 2003 with new information on content improvements, bug fixes, and more than 5,000 new code examples.

Featured Downloads

101 Visual Basic and C# Code Samples

Download this master set of Visual Basic and Visual C# code samples. These samples demonstrate various aspects of the language, including syntax, Web services, the .NET Framework, and many others.

Figure 1-8

When you click a link and want to get back to the main start page, whether it is one of the help topics or a third category link, you can right-click and choose Back, as shown here in Figure 1-9.

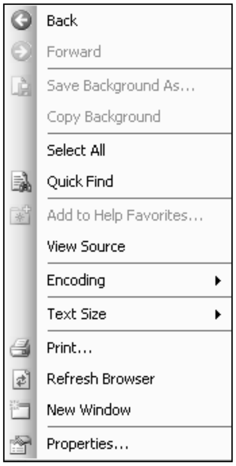


Figure 1-9

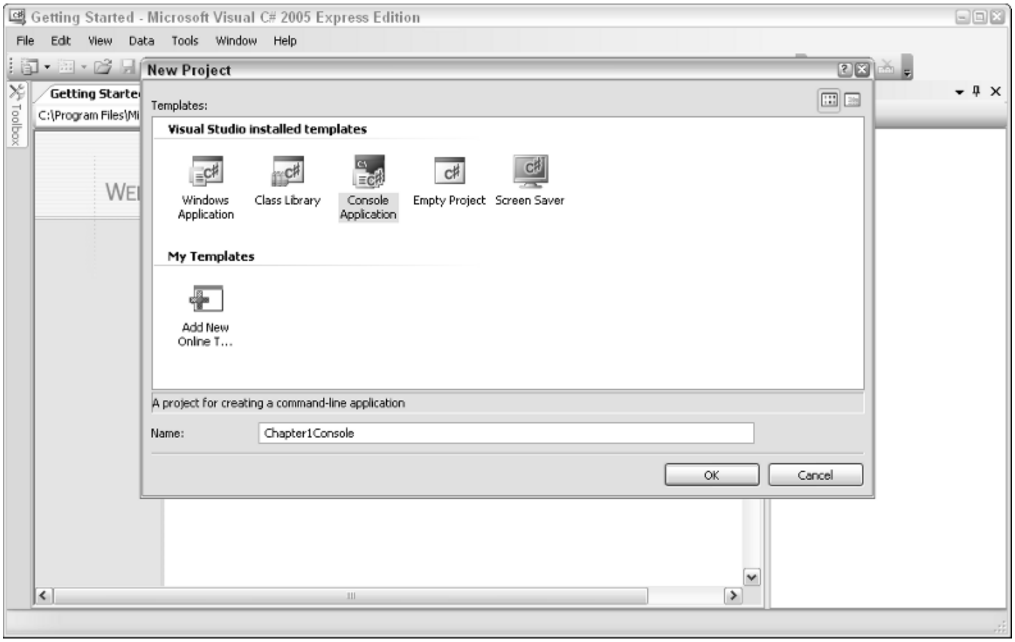
Besides the newsgroups and Web sites displayed in the Connecting to the Community category on the start page, a number of Web sites are dedicated to supporting C# and .NET developers. Two of the most active are www.GotDotNet.com and www.DotNetJunkies.com. (I happened to write a column for DotNetJunkies.com called "The First Hit," where I discuss various issues that you as a beginning developer face in the .NET world of programming.)

Before jumping in to the different C# Express IDE tools, you need to create your first C# project so that you have more of an idea of what you are doing when you finally get to work with the tools.

Try It Out Creating Your First C# Project

1. Choose Program Files → Visual C# 2005 Express from the Windows Start menu. The IDE opens, and the Start Page is displayed.
2. Select New → Project from the Files menu. The New Project dialog box appears, giving you a choice of templates.
3. Highlight Console Application. Remember that this type of application doesn't have any forms or interface. It is also the easiest to start with.
4. Type in the name of the project you want to create. For this Try It Out, Chapter1Console was used, as shown in Figure 1-10.
5. Click OK. Your project is now created, as shown in Figure 1-11.

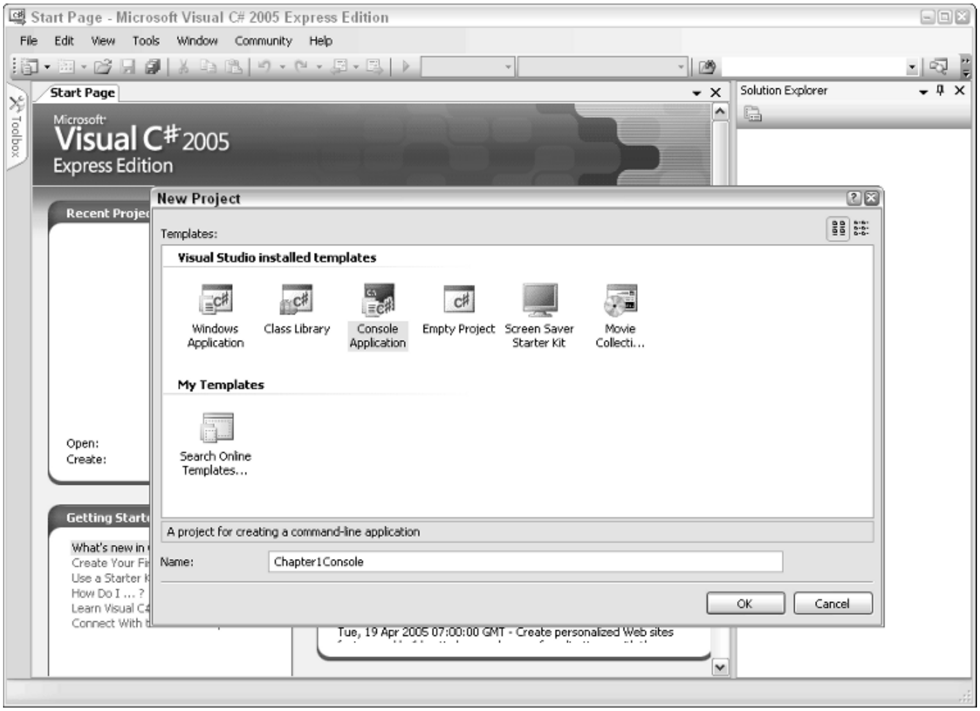
Alright! You have now created your first project. Notice I didn't say application, because this project really doesn't do anything. Before you add code to this, take a look at some of the tools available in the C# Express IDE.



A project for creating a command-line application

Name: Chapter1Console

Figure 1-10



A project for creating a command-line application

Name: Chapter1Console

Tue, 19 Apr 2005 07:00:00 GMT - Create personalized Web sites

Figure 1-11

Tools of the C# Express IDE

In addition to the tools in Figure 1-11, I will introduce other tools throughout the rest of the book as needed. For starters, you can see some of those tools in the following list:

- **Main Editor.** This tool is the one you will likely use the most when you are working with your C# Express projects, because you use it to edit the code and the majority of projects are made up of code files. You can see from the tabs at the top of the editor that you can have more than one code file open at the same time. And, in fact, you can display different types of files in the main editor page, as shown here with Program.cs and the Getting Started page.

  When you have another file, such as a Windows form, note that you can have both the form and code files open at the same time. As shown in Figure 1-11, the editor actually helps you control your program when formatting your code. This will become more apparent as you perform more extensive coding.

  Files are loaded as you double-click on them in the Solution Explorer. You use the Main Editor tool to edit both forms that you can drag and drop to design and code files.

- **Solution Explorer.** The Solution Explorer helps you to organize your projects by putting your files in the order C# Express thinks they should be in for the project type you are creating. For example, look at the Solution Explorer located left of the main editor in Figure 1-11. You will see an entry called References. If you click on the plus sign, you will see the files located under that "node" of the solution tree, as shown in Figure 1-12.

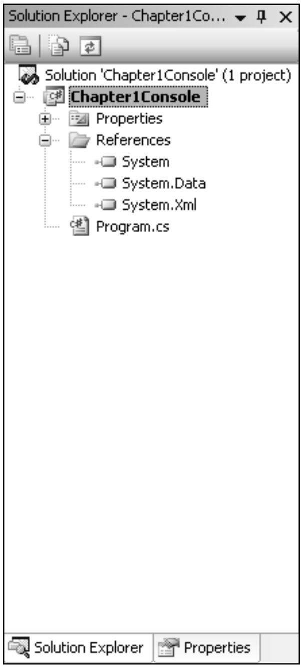


Figure 1-12

You can see the files that are referenced listed in Figure 1-12. These files are called .NET assemblies and contain classes that you will use to create your application. .NET assemblies and classes are both discussed further in Chapter 4, “Introducing .NET.”

The following are additional tools that are not displayed but are used throughout the book:

- **Toolbox:** This pane contains controls that you add to your forms, and changes based on what type of applications you create.
- **Data Sources:** This tool helps you maintain and work with data in your application.
- **Console**: This is where you display output in both console applications and when debugging your applications.
- **Properties:** You use this tool to set various properties of different objects you will use in your projects. An example of an object could be the text of a label control, used to display literal values.

Note that some of the tools and their panes will appear as needed depending on where you are in the IDE. Now it’s time to discuss how C# Express applications are structured in more depth.

Structure of C# Express Solutions and Projects

It can be kind of confusing as various terms are being whipped around. A couple of those terms are *solution* versus *project.* Are they the same? The answer is not really, but they can be. How is that for a definitive answer?

When you create a new project, a solution is created for you automatically. You can have multiple projects in a single solution. In fact, you can even have different types of projects, including different languages. For example: If I had a developer friend who has developed a useful tool that I want to include in my application, and it was created using Visual Basic .NET, I could still use it in my solution by creating a reference to it. I also could edit the code if needed by adding the existing project to the current solution. (For the majority of this book you will be using a single solution containing a single project.)

To finish off this chapter, you will add a line of code that performs the classic task of displaying the phrase “Hello World.” The exact syntax that you are writing will actually be discussed later; I just want you to have the satisfying experience of creating and running an application.

Try It Out Completing the First C# Express Project

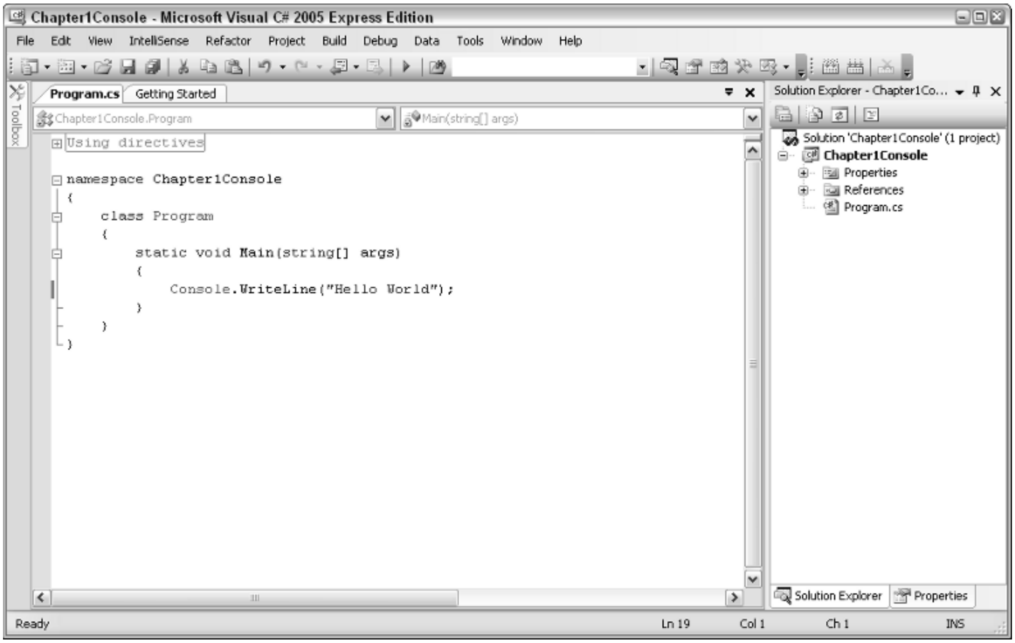
With the project you created in the first Try It Out:

1. Place the cursor between the opening and closing brackets, under the line of code that starts with the word “static.”

2. Type the command:

```
Console.WriteLine("Hello World");
```

The editor then changes the colors of the words appropriately. Editing your applications is discussed further in Chapter 3, "Quick Start Creating Your First C# Express Windows Project." The IDE then looks something like Figure 1-13.


Chapter1Console - Microsoft Visual C# 2005 Express Edition
File Edit View IntelliSense Refactor Project Build Debug Data Tools Window Help
Toolbox
Program.cs
Getting Started
Chapter1Console.Program
Main(string[] args)
Solution Explorer - Chapter1Co...
Solution 'Chapter1Console' (1 project)
Chapter1Console
Properties
References
Program.cs
Solution Explorer
Properties
Ready
Ln 19
Col 1
Ch 1
INS

```
Using directives

namespace Chapter1Console
{
    class Program
    {
        static void Main(string[] args)
        {
            Console.WriteLine("Hello World");
        }
    }
}
```

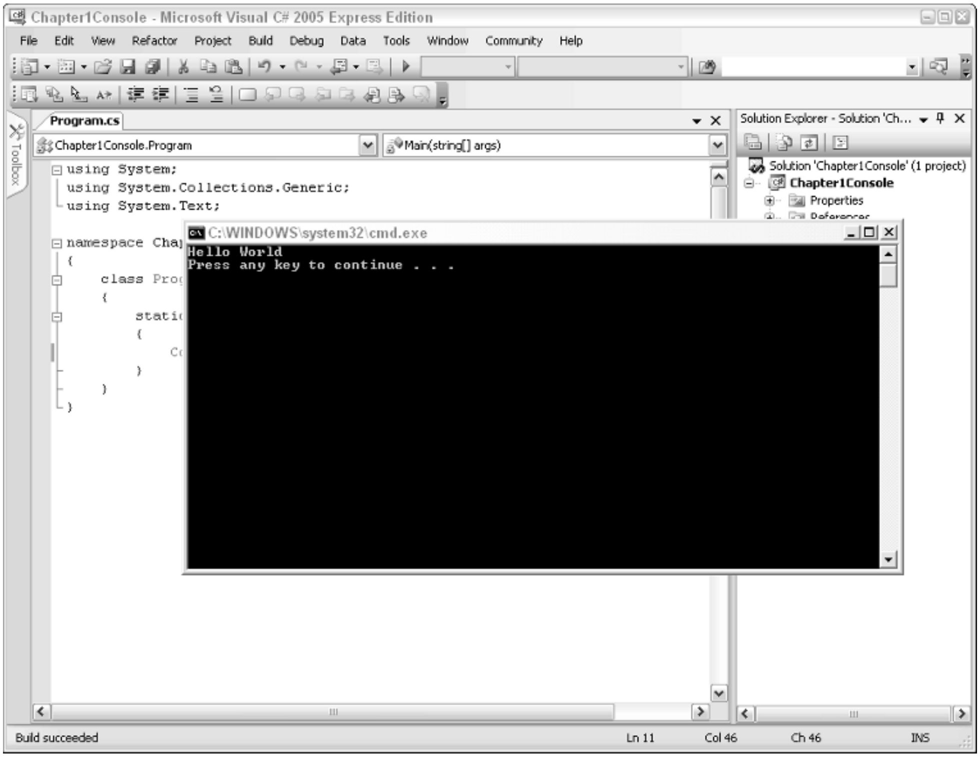
Figure 1-13

You have actually completed your first C# console application. Now you just have to build and compile it.

3. Select Debug → Start. This builds, compiles, and runs your application. Alternatively, you can press F5.

Now the Console window appears in the lower left corner of the IDE with the words "Hello World" displayed, as shown in Figure 1-14.

There you have it, your first application. Now it may not seem like much, but it is a start. What you did was tell the computer to print (`WriteLine`) the words "Hello World" into the Console window.


Chapter1Console - Microsoft Visual C# 2005 Express Edition
File Edit View Refactor Project Build Debug Data Tools Window Community Help
Program.cs
Chapter1Console.Program
Main(string[] args)
Toolbox
Solution Explorer - Solution 'Ch...
Solution 'Chapter1Console' (1 project)
Chapter1Console
Properties
References
C:\WINDOWS\system32\cmd.exe
Build succeeded
Ln 11
Col 46
Ch 46
INS

```
using System;
using System.Collections.Generic;
using System.Text;

namespace Cha
{
    class Pro
    {
        stati
        {
            C
        }
    }
}
```

```
Hello World
Press any key to continue . . .
```

Figure 1-14

Summary

Microsoft Visual C# 2005 Express is one of a series of applications created to introduce you to the world of programming. You have now installed the C# Express IDE onto your system, and even know what the initials "IDE" stands for. You have also learned that with C# Express you can create different types of applications depending on which template you use.

When you first open C# Express, you are taken to the Getting Started page, which has three categories of help, as well as links to other Web sites with additional articles and downloads.

In C# Express, you create projects, which are part of an overall solution. You can manage your project using the Solution Explorer and edit code using the Main Editor window. In this chapter you created your first console application. Then you built, compiled, and ran it, displaying information in the Console window.

Exercises

1. What is the difference between Visual C# and Visual C# Express?
2. What are the three categories on the C# Express start page?
3. What does the acronym IDE stand for?
4. Name three of the tools available in the C# Express IDE.
5. What is the difference between a console application and Windows application?