

# Introduction

Welcome to *Learn ASP.NET 4.0, C# and Visual Studio 2010 Essential Skills with The Smart Method*. This book has been designed to enable students to master essential ASP.NET skills by self-study. The book is equally useful as courseware in the classroom.

Smart Method publications are continually evolving as we discover better ways of explaining or teaching the concepts presented.

## Feedback

At The Smart Method we love feedback – be it positive or negative. If you have any suggestions for improvements to future versions of this book, or if you find content or typographical errors, the author would always love to hear from you via e-mail to:

[feedback@LearnASP4.com](mailto:feedback@LearnASP4.com)

Future editions will always incorporate your feedback so that there are never any known errors at time of publication.

If you have any difficulty understanding or completing a lesson, or if you feel that anything could have been more clearly explained, we'd also love to hear from you. We've made hundreds of detail improvements to our books based upon reader's feedback and continue to chase the impossible goal of 100% perfection!

## Downloading the sample files

In order to use this book it is sometimes necessary to download sample files from the Internet. The sample files are available from:

<http://www.LearnASP4.com>

Type the above URL into your web browser and you'll see the link to the sample files at the top of the home page.

## Problem resolution

If you encounter any problem downloading or using the sample files please send an e-mail to:

[feedback@LearnASP4.com](mailto:feedback@LearnASP4.com)

We'll do everything possible to quickly resolve the problem.

# Typographical Conventions Used In This Book

This guide consistently uses typographical conventions to differentiate parts of the text.

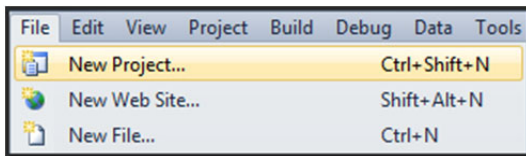
When you see this	Here's what it means
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Right-click on *My Project* in the Solution Explorer and then click *Build* from the shortcut menu.

Italics are used to refer to text that appears in a menu, a dialog, or elsewhere within the Visual Studio application.

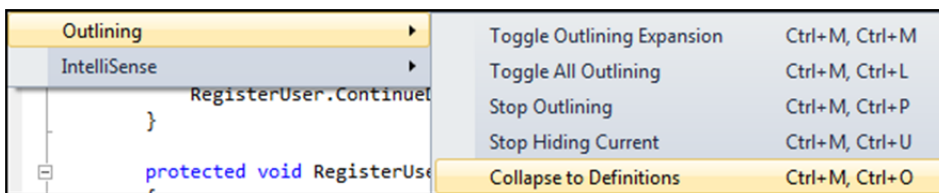
At times, italics may also be used for emphasis or distinction.

Click File→New Project...



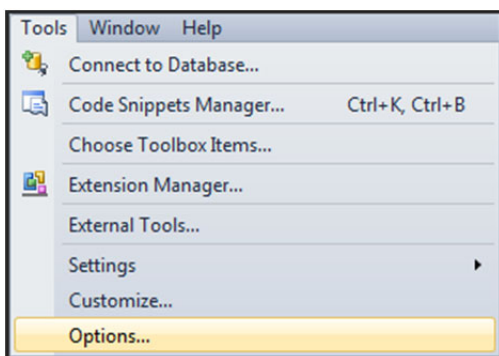
Click on the *File* menu and choose *New Project...* from the drop-down menu.

Click Edit→Outlining→Collapse To Definitions.



Click on the *Edit* menu and look for the *Outlining* sub-menu. Click the *Outlining* menu and then click on *Collapse to Definitions*.

Click Tools→Options...→Formatting→Server tag→Assembly definition.



This is a more involved example.

1. Click the *Tools* menu, and then click the *Options...* button.

A new dialog pops up.

2. Click on the *Formatting* group in the *Options* dialog.

3. Drop down the *Server Tag* list and click *Assembly definition*.

Type **int X**; on the next line.

Whenever you are asked to actually type something on the keyboard it is shown in bold faced text.

Press <Ctrl> + <Z>.

You should hold down the **Ctrl** key and then press the **Z** key.



When a lesson tells you to click a button, an image of the relevant button will often be shown either in the page margin or within the text itself.

## note

If you switch to *Design* view and click on the properties of an object in the *Properties* window, you'll notice a short description of the property...

If you want to read through the book as quickly as possible, notes which usually expand a little on the lesson text, may be ignored.

## important

Do not click the Delete button at this point as to do so would erase the entire table.

Whenever something can easily go wrong, or when the subject text is particularly important, you will see the *important* sidebar.

You should always read important sidebars.

## tip

### Moving between tabs using the keyboard

You can also use <Ctrl>+<Tab> on the keyboard to cycle through all of the tabs you have open.

Tips add to the lesson text by showing you shortcuts or time-saving techniques relevant to the lesson.

The bold text at the top of the tip box enables you to establish whether the tip is appropriate to your needs without reading all of the text.

In this example you may not be interested in keyboard shortcuts so you do not need to read further.

## anecdote

I worked on an ASP.NET project for a gaming company a couple of years ago...

Sometimes I add an anecdote gathered over the years from my work or from other areas of my experience.

If you simply want to learn ASP.NET as quickly as possible, ignore anecdotes.

## trivia

### The Mosaic browser

Before 1993, the Internet was very different to the way it is today...

Sometimes I indulge myself by adding a little piece of trivia in the context of the skill being taught.

Just like my anecdotes you can ignore these if you want to. They won't help you to learn ASP.NET any better!

If you are not completing the course incrementally use the sample file: **Lesson 5-1** to begin this lesson.

When there is a sample file (or files) to accompany a session, the file name will be shown in a folder icon.

You can download the lesson or file from: [www.Learnasp4.com](http://www.Learnasp4.com). Detailed instructions are given in: *Lesson 1-3: Set up the development environment*.

# Putting the Smart Method to Work

## Visual Studio version and service pack

This edition was written using *Visual Web Developer 2010 Express Service Pack 1* running under the *Microsoft Windows 7 Service Pack 1* operating system. You'll discover how to confirm that your computer is running these versions during *Lesson 1-2: Check your Visual Studio and Windows version*.

If you are using an earlier operating system (for example Windows XP or Windows Vista) this book will be equally relevant, but you may notice small differences in the appearance of some of the screen grabs in the book. This will only occur when describing an operating system (rather than a Visual Studio) feature.

This book is written purely for Visual Studio 2010 Express and, due to changes in this version, some features may not be available in earlier or later versions (such as 2005 and 2008).

## Sessions and lessons

The book is arranged into Sessions and Lessons. In a *Smart Method* course a Session would generally last for between forty-five and ninety minutes. Each Session would represent a continuous period of interactive instruction followed by a coffee break of ten or fifteen minutes.

When this book is used for self-instruction I recommend that you do the same. You'll learn better if you lock yourself away, switch off your telephone and complete the whole session without interruption. The memory process is associative, and each lesson within each session is very closely coupled (contextually) with the others. By learning the whole session in one sitting, you'll store all of that information in the same part of your memory and should find it easier to recall later.

The experience of being able to remember all of the words of a song as soon as somebody has got you "started" with the first line is an example of the memory's associative system of data storage.

It is highly recommend that you do take a break between sessions and spend it relaxing rather than catching up on your e-mails. This gives your brain a little idle time to do some data sorting and storage.

## Read the book from beginning to end

Many books consist of disassociated self-contained chapters, often all written by different authors. This approach works well for pure reference books (such as encyclopedias). The problem with this approach is that there's no concept of building knowledge upon assumed prior knowledge, so the text is either confusing or unduly verbose as instructions for the same skill are repeated in many parts of the book.

This book is more effective as a learning tool because it takes a holistic approach. You will learn ASP.NET 4.0 in the same way you would be taught during one of our *Smart Method* courses.

In our classroom courses it's often the case that a delegate turns up late. One golden rule is that we can't begin until everybody is present, as each hands-on lesson builds upon skills taught in the previous lesson.

I strongly recommend that you read the book from beginning to end in the order in which it is written. Because of the unique presentational style, you'll hardly waste any time reading about things that you already know and even the most advanced ASP.NET developer will find some nugget of extremely useful information in every session.

## How this book avoids wasting your time

Nobody has things just as he would like them. The thing to do is to make a success with what material I have.

*Dr. Frank Crane (1861–1928), American clergyman and journalist*

The only material available to me in teaching you ASP.NET is the written word and sample files. I'd rather have you sitting next to me in a classroom, but Frank Crane would have told me to stop complaining and use the tools I have in the most effective way.

Over the years I have read many hundreds of computer text books. Most of my time was wasted. The main problem with most books is having to wade through thousands of words just to learn one important technique. Not reading everything could mean missing that one essential insight.

This book utilizes some of the tried and tested techniques developed after teaching vast numbers of people during many years of delivering *Smart Method* classroom courses.

As you'll see in this section, many presentational methods are used to help you to avoid reading about things you already know, or things that are of little interest.

## Why our classroom courses work so well

In our classroom courses we don't waste time teaching skills that the delegates already know. If it is clear that the delegate already understands a skill no time is wasted explaining it, but if the delegate has difficulty, more information is given until success is demonstrated.

Another key to learning effectively is to teach only the best way to accomplish a task. For example, you can comment code by typing two forward slashes or you can click the shortcut buttons on the toolbar. Because typing forward slashes is the easiest, fastest and most intuitive method, only this is practised in the classroom. In the book we do mention the alternatives, but only in a sidebar.

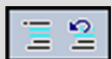
## How this book mimics our classroom technique

Here's a lesson step:

### tip

#### Comment shortcuts using the toolbar

You can quickly comment and uncomment code using the comment buttons on the toolbar:



#### 1 Add a basic comment.

1. Add a new line before:

```
return RoundNumber(FirstNumber + SecondNumber);
```

2. Add a comment with the code:

```
//Add FirstNumber and SecondNumber
```

You'll see that the comment is shown in green.

If you already know how to add a comment, read only the line: *Add a basic comment* and just do it. Don't waste your time reading anything else.

Read the smaller print only when the information is new to you.

If you're in a hurry to learn only the essentials, as fast as possible, don't bother with the sidebars unless they are labeled **important**.

Read the sidebars only when you want not to miss anything and have the time and interest.

## Avoiding repetition

2 Open the code-behind file of *default.aspx*.

You learned how to do this in: *Lesson 1-7: Manage a project with the Solution Explorer*.

In this book (and in our classroom courses) we do not wish to waste your time with reiteration.

In a classroom course, a delegate will sometimes forget something that has already been covered that day. The instructor must then try to get the student to remember and drop little hints reminding them about how they completed the task earlier.

This isn't possible in a book, so I've made extensive use of cross references in the text pointing you back to the lesson in which the relevant skill was learned. The cross references also help when you use this book as a reference work but have forgotten the more basic skills needed to complete each step.

## Use of American English

American English (rather than British English) spelling has been used throughout. This is because the help system and screen elements all use American English spelling, making the use of British English confusing.

Examples of differences are the British English spelling: *Colour* and *Dialogue* as opposed to the American English spelling: *Color* and *Dialog*.

Because this book is available worldwide, much care has been taken to avoid any country-specific terminology. For example, in most of the English speaking world, apart from North America, the symbol # is referred to as the **hash sign**, so the term *hash* is used throughout this book.

## First page of a session

1/ The first page begins with a quotation, often from an era before the age of the computer, that is particularly pertinent to the session material. As well as being fun, this helps us to remember that all of the real-world problems we solve with technology have been around for a long time.

3/ The session objectives formally state the precise skills that you will learn in the session.

At the end of the session you should re-visit the objectives and not progress to the next session until you can honestly agree that you have achieved them.

In a *Smart Method* course we never progress to the next session until all delegates are completely confident that they have achieved the previous session's objectives.

**1**

### Session One: The Sample Database

*As a general rule the most successful man in life is the man who has the best information.*  
Benjamin Disraeli, British Politician (1804-1881)

By the end of this book you will have constructed a professional-grade Access application. The more of application you could deliver to a corporate client with confidence, or sell as a stand-alone mass-market application.

You will write every line of code and construct every query, form and report to construct this application and before we begin adding details there's quite a lot of groundwork to do.

In order to progress quickly we've provided a simple relational database populated with some sample data to work with.

In this session you'll begin by examining the sample database and the tables and relationships within it. You may pick up one or two useful database design principles as well as a thorough understanding of the data structure.

You'll then devise the bare bones of the application by building a general-purpose query that can be used to underpin forms and reports along with a simple wizard-generated form and report to get things started.

In future sessions you will build upon this foundation by incrementally adding all of the advanced features needed to produce a polished application.

#### Session Objectives

By the end of this session you will be able to-

- Understand the sample database
- Understand table design rules
- Create a general-purpose query to underpin forms and reports
- Create a prototype form using a wizard
- Optimize a form for keyboard input
- Create a simple report using a wizard

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2/ In the next few paragraphs we *informally* summarise why the session is important and the benefits that can be gained.

This is important because without motivation adults do not learn. For adults, learning is a means to an end and not an end in itself.

The aim of the introduction is to motivate your retention of the skills that will be taught in the following session by allowing you to preview the relevance of the material that will be presented. This may subconsciously put your brain into "must remember this" mode—assuming, of course, that the introduction convinces you that the skills will be useful to you!

## Every lesson is presented on two facing pages

Pray this day, on one side of one sheet of paper, explain how the Royal Navy is prepared to meet the coming conflict.

*Winston Churchill, Letter to the Admiralty, Sep 1, 1939*

Winston Churchill was well aware of the power of brevity. The discipline of condensing thoughts into one side of a single sheet of A4 paper resulted in the efficient transfer of information.

A tenet of our teaching system is that every lesson is presented on *two* facing sheets of A4. We've had to double Churchill's rule as they didn't have to contend with screen grabs in 1939!

If we can't teach an essential concept in two pages of A4 we know that the subject matter needs to be broken into two smaller lessons.

Tips, important information and notes appear in sidebars.

Each step is numbered and begins with the thing you need to do in bold type. Sometimes this is all you need to read to accomplish the task.

Step notes sometimes provide precise instructions on how to progress if the one-line description is inadequate. Notes often also include interesting information about the current task.

If you are not working through the course sequentially, a file is available on our web site that contains the starting point for every lesson. The file name you need to download is stated in the file icon at bottom left of every lesson page.

Learn Access VBA 2003 with The Smart Method

### Lesson 1-1: Understand the sample database

The sample database will manage a collection of films. The schema incorporates some of The Smart Method's preferred naming conventions and design rules.

- 1 Create a new folder for your application on the C:\ drive called C:\FilmLibrary.
- 2 Download the FilmLibrary-Session1.zip file from [http://www.thesmartmethod.com/Access\\_VBA\\_Sample\\_Files](http://www.thesmartmethod.com/Access_VBA_Sample_Files) save it to this location, unzip it and then re-name it FilmLibrary.mdb.
- 3 Open the FilmLibrary.mdb database.
- 4 Select Tools→Relationships from the main menu to view the schema.

The schema is displayed.

- 5 Understand the table relationships. Note the relationships between the tables. It is often useful to read the relationships to a client from the schema to ensure that they are correct. For example:
  - “One film may have one and only one director but a director may direct many films.” (A one to many relationship).
  - “One film may have many actors and one actor may perform in many films.” (A many to many relationship).
- 6 Understand the relationship types. Right-click on the relationship between the Film and Director tables and choose Edit Relationship... from the shortcut menu. The Edit Relationship dialogue is displayed.

**tip**  
**Some of The Smart Method's rules for table names and relationships:**

- 1/ Table names are always in the singular and never in the plural.
- 2/ The primary key is always meaningless (ie autonumber data type) and is named using the syntax: <table name> + <ID>
- 3/ Foreign keys always have exactly the same name as the related Primary key (for example the primary key MediaID in the Media table is also called MediaID in the Film table.
- 5/ The link table in a many-to-many relationship is always named with the names of the tables on either side of the many to many relationship (for example the FilmActor table links the Film and Actor tables).

All of these rules (and others) are listed in Appendix A: The Rules.

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## Learning by participation

Tell me, and I will forget. Show me, and I may remember. Involve me, and I will understand.

*Confucius (551-479 BC)*

Confucius would probably have agreed that the best way to teach IT skills is hands-on (actively) and not hands-off (passively). This is another of the principal tenets of the *Smart Method* teaching system. Research has backed up the assertion that you will learn more material, learn more quickly, and understand more of what you learn, if you learn using active, rather than passive methods.

For this reason pure theory pages are kept to an absolute minimum with most theory woven into the hands-on sessions either within the text or in sidebars. This echoes the teaching method in Smart Method courses, where snippets of pertinent theory are woven into the lessons themselves so that interest and attention is maintained by hands-on involvement, but all necessary theory is still covered.

**important**

Amateur database designers often leave their databases open to corruption by not enforcing referential integrity between their tables.

The usual excuse for not enforcing referential integrity is that it will stop users entering incomplete records (for example users may wish to create a Film record when the Director name is not known).

The simple solution to this problem is to make sure that the default value of the foreign key within the parent table (the DirectorID field within the Film table) is always Null (Null means the absence of any value at all). It will then be possible to create Film records when the Director is not known.

Session One: The Sample Database

**Edit Relationships**

Table/Query: Director    Related Table/Query: Film

DirectorID    DirectorID

Enforce Referential Integrity

Cascade Update Related Fields

Cascade Delete Related Records

Relationship Type: One-To-Many

7 **Understand when to use Cascade Delete.**

Close the Edit Relationships dialogue. Right-click on the relationship between the Film and FilmActor tables and choose Edit Relationship... from the shortcut menu. The Edit Relationship dialogue is displayed.

**Edit Relationships**

Table/Query: Film    Related Table/Query: FilmActor

FilmID    FilmID

Enforce Referential Integrity

Cascade Update Related Fields

Cascade Delete Related Records

Relationship Type: One-To-Many

Note that the Cascade Delete Related Records check box is checked.

This is one of the rare examples when Cascade Delete Related Records makes sense because we would want to automatically delete the association between a film and it's actors in the event that the user wanted to delete a film record.

**note**

You might wonder what would happen if you checked the Cascade Update Related Fields check box.

If you follow our design rules all primary keys will be meaningless (see tip sidebar and Appendix A: The Rules).

Amateur database designers (and even ones that have simply read the wrong books!) often create meaningful primary keys causing all sorts of problems.

Cascade Update Related Fields is simply a work around for one of the problems caused by breaking this design rule – the case when a meaningful primary key must be changed and propagated throughout the entire database.

In a properly designed database you'll never have to use this option.

Screen grabs are provided in-line with the text when they can explain what you need to do more clearly than words alone.

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