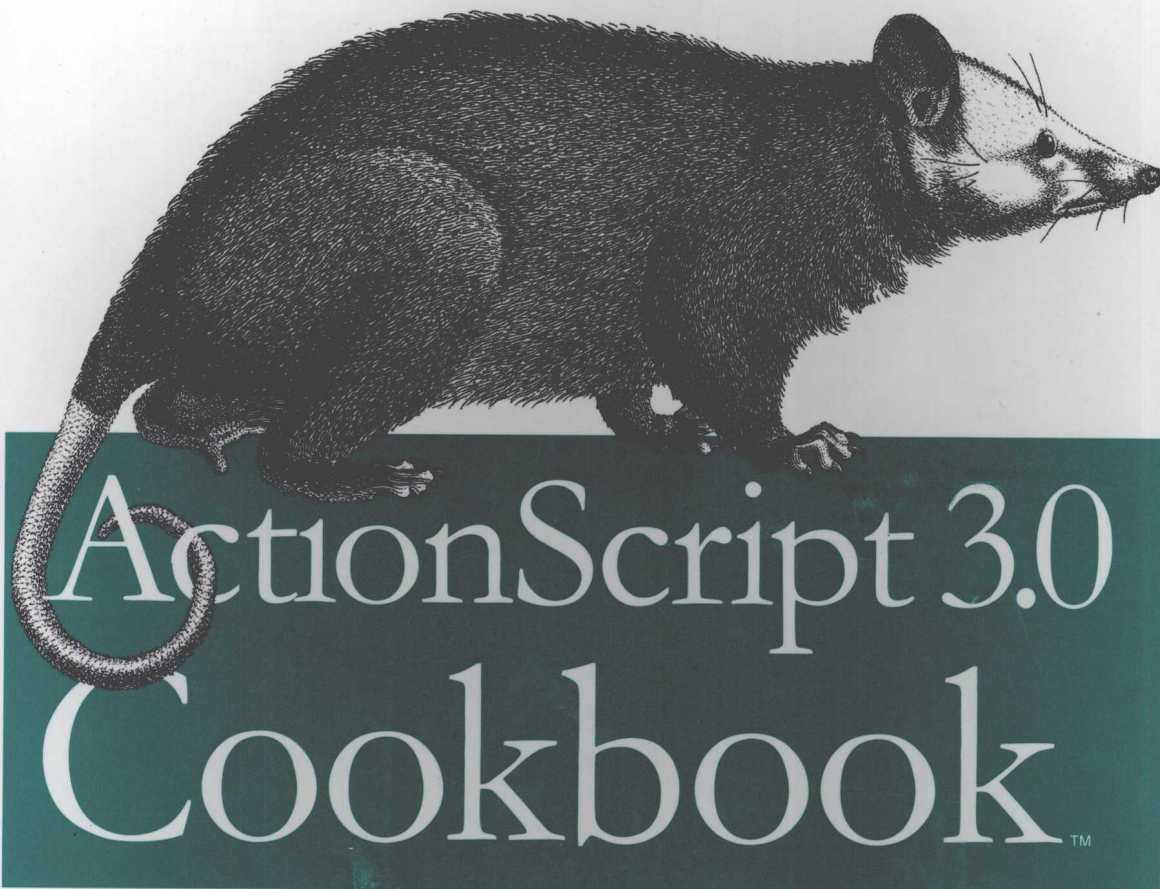


ActionScript 3.0 Cookbook (影印版)



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# ActionScript 3.0 Cookbook™ (影印版)

## ActionScript 3.0 Cookbook™

*Joey Lott, Darron Schall, and Keith Peters*

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# Preface

The *ActionScript 3.0 Cookbook* is written with all levels of ActionScript developers in mind—people like you who want practical solutions to common problems. Keep this book next to your computer to tackle programming challenges. It is filled with exciting yet accessible and practical examples, solutions, and insights into the situations that Flash and ActionScript developers are sure to encounter.

The book is in the style of the classic O'Reilly Cookbook series format, in which each recipe presents the problem, the solution, and a discussion of the solution. You can quickly locate the recipe that most closely matches your situation and get the solution without having to read the whole book to understand the underlying code. The Discussion sections of each recipe offer a deeper analysis of how the solution works and possible design choices and ramifications. So you get the best of both worlds—quick and easy access to the answers you want and deeper insights into the nature of both the problem and the solution. The *ActionScript 3.0 Cookbook* helps you develop your understanding of concepts by applying them in real situations.

## What's Not in This Book

This book contains a lot of information on a wide range of topics. It covers the gamut of client-side ActionScript. Every recipe is presented in the context of an applied solution or example. Although the book discusses some minimal theory, it is not intended as an introduction to any of these subjects. There are many good books, references, and documents that discuss ActionScript in a comprehensive fashion. The *ActionScript 3.0 Cookbook* is not designed to be that sort of book. It is intentionally designed in a particular format to help you with solutions to specific problems.

## Compatibility

As the title of the book says, this is the *ActionScript 3.0 Cookbook*. As such, all of the code examples in this book are based on ActionScript 3.0 and only compatible work



with products that support ActionScript 3.0. Flex 2.0 and Flash 9 allow you to author ActionScript 3.0 content. Flash Player 9 supports ActionScript 3.0. If you are using a product that does not support ActionScript 3.0, then the code in this book is not likely to work.

## Flash Platform Naming Conventions

ActionScript 3.0 is an important part of the Flash Platform. The Flash Platform is inclusive of many related technologies centering on the Flash Player. There are so many Flash Platform technologies these days that it can be difficult to keep track of all of them. To further complicate matters, many of the terminology are used very informally, generically, and even incorrectly by many developers. Although we don't take a harsh view of such informal use of terminology, we do want to be as clear and precise as possible when discussing these technologies throughout this book; therefore, we use terminology in very specific ways. Table P-1 lists the terms we use and their meanings.

*Table P-1. Flash naming conventions used in this book*

Name	Meaning
Flex framework	The library of ActionScript classes that ship as part of the Flex SDK and Flex Builder.
Flex Builder	The Adobe IDE for authoring Flex applications.
Flex SDK	The compiler and Flex framework used to author Flex applications without Flex Builder.
Flex	A technology used to author SWF files from MXML documents and ActionScript files. Unless a version number follows, all mentions of Flex in this book refer to Flex 2.0.
Flash Player	The deployment platform for SWF files published from Flash or Flex. Unless a version number follows, all mentions of Flash Player in this book refer to Flash Player 9.
Flash	The authoring tool used to author SWF files. Unless a version number follows, all mentions of Flash in this book refer to Flash 9.

## The Code

This book contains a lot of ActionScript 3.0 (or more colloquially, code). Many recipes offer suggested custom classes that we have found to be invaluable. We trust you will find them useful as well.

You can download the complete ActionScript 3.0 libraries from <http://www.rightactionscript.com/ascb>. Once you've downloaded the library files, you'll need to add them to the classpath for your projects. Directions for setting your ActionScript 3.0 classpath are also found on that web site.

## Audience for This Book

Is this book for you? We surely hope it is. But to be sure, let's review the prerequisites and summary of the goals of this book.

### What You'll Need to Know

We assume you are already familiar with the product or products you are using to author Flash Player content. This book won't discuss Flex SDK, Flex Builder, or Flash basics. If you don't yet know how to compile a basic project or how to deploy a project, then you'll probably get the most from this book if you first learn the basics of working with the product or products you're using.

You'll also want to learn programming basics before reading this book. Although we talk about a lot of basic programming concepts in the context of how to solve specific problems (e.g., how to loop through the elements of an array) you won't find a step-by-step tutorial in this book with regard to basic programming skills.

### Who This Book Is For

This book is for all ActionScript 3.0 developers. We hope there's something in this book for everyone: from novice to expert. If you want to quickly find a solution, this is the perfect book for you.

### Who This Book Isn't For

This book discusses ActionScript 3.0, which is a language that runs within Flash Player. For the most part, this book does not discuss server-side solutions or other client-side languages in detail. For example, although this book does discuss the ActionScript code for working with Flash Remoting (a technology for making remote procedure calls) complete with examples, it does not explain how to write the corresponding server-side code (e.g., a ColdFusion component). Likewise, this book discusses how to use ActionScript to call JavaScript functions, yet we don't explain how to write JavaScript. If you are looking for an ActionScript 3.0 book, then this is it; but if you're looking for a book that discusses non-ActionScript topics in detail, this isn't the book you're looking for.

## How This Book Is Organized

This book consists of the following chapters and appendix.

Chapter 1, *ActionScript Basics*

Basic programming tasks such as looping statements, timers, etc.

Chapter 2, *Custom Classes*

Writing custom classes for use with ActionScript 3.0.

Chapter 3, *Runtime Environment*

Getting information about the system, device, and player version in use, as well as security functions.

Chapter 4, *Numbers and Math*

Working with numbers in ActionScript, including parsing numbers from strings, converting numbers to formatted strings, and using different bases for numbers.

Chapter 5, *Arrays*

Working with indexed collections of data called arrays: from adding and removing elements to sorting.

Chapter 6, *Display List*

Using display objects to display visual data on the screen.

Chapter 7, *Drawing and Masking*

Programmatic drawing and masking using ActionScript.

Chapter 8, *Bitmaps*

Working with low-level bitmap data.

Chapter 9, *Text*

Everything text, from displaying text to loading text to formatting text.

Chapter 10, *Filters and Transforms*

Applying effects to display objects by using transforms (color and geometric) and filters such as drop shadows, bevels, and even emboss and edge detection effects.

Chapter 11, *Programmatic Animation*

Animating display objects using ActionScript.

Chapter 12, *Strings*

Working with string data: from finding substrings to working with Unicode.

Chapter 13, *Regular Expressions*

Using native regular expressions to match patterns in strings.

Chapter 14, *Dates and Times*

Working with dates and times, including converting between timezones, using timers, and formatting dates.

Chapter 15, *Programming Sound*

Working with audio, including loading MP3s, reading ID3 tags, and displaying sound waves.

Chapter 16, *Video*

Programming for Flash video.

Chapter 17, *Storing Persistent Data*

Using shared objects to store data on the client computer.

Chapter 18, *Communicating with Other Movies*

Using local connections to communicate between content running in Flash Player instance on the same computer.

Chapter 19, *Sending and Loading Data*

Enabling two-way communication with a web server and the Flash Player.

Chapter 20, *XML*

Working with XML using the E4X support in Flash Player.

Chapter 21, *Web Services and Flash Remoting*

Working with remote procedure calls using web services and Flash Remoting technologies.

Chapter 22, *Building Integrated Applications*

Using the native Flash Player programming interface for integrating Flash Player content with the host application, such as calling JavaScript functions from ActionScript or calling ActionScript functions from JavaScript.

Chapter 23, *File Management*

Uploading and downloading files.

Chapter 24, *Socket Programming*

Working with XML and binary sockets for low-latency applications.

Appendix, *Unicode Escape Sequences for Latin 1 Characters*

This appendix lists the characters in the Latin 1 character repertoire, with Unicode equivalents in the range of U+0000 to U+00FF (that is, C0 Controls, Basic Latin, C1 Controls, and Latin 1 Supplemental).

## How to Use This Book

Think of this book like a friend and a counselor. Don't put it on a shelf. Keep it on your desk where you can consult it often. When you are uncertain as to how something works or how to approach a specific programming issue pick up the book and flip to the relevant recipe(s). We have written this book in a format so that you can get answers to specific questions quickly. And since it's a book you don't ever have to worry that it will laugh at you for asking questions. No question is too big or too small.

Although you can read the book from cover to cover, we encourage you to use this book when you need an answer. Rather than teaching you a bunch of theory, this book intends to help you solve problems and accomplish tasks. This book is meant for field work, not the research lab.

# Conventions Used in This Book

The following typographical conventions are used in this book:

## *Plain text*

Indicates menu titles, menu options, menu buttons, and keyboard accelerators (such as Alt and Ctrl).

## *Italic*

Indicates new terms, URLs, email addresses, filenames, file extensions, pathnames, directories, and Unix utilities.

## Constant width

Indicates commands, options, switches, variables, attributes, keys, functions, types, classes, namespaces, methods, modules, properties, parameters, values, objects, events, event handlers, XML tags, HTML tags, macros, the contents of files, or the output from commands.

## Constant width bold

Shows commands or other text that should be typed literally by the user.

## Constant width *italic*

Shows text that should be replaced with user-supplied values.

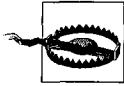
When referring to properties and methods of objects and classes, the following conventions are used:

- Class-level constants are shown with the both the class name and property in constant width because they should both be entered verbatim. For example, `Event.COMPLETE`.
- Instance-level properties are shown with the class or object instance in *constant width italic* because they should be replaced by a specific instance. The property itself is shown in constant width and should be entered as shown. For example, `Button.enabled`.
- Method and function names, and the class or object to which they pertain, are always shown in italics and followed by parentheses, as in `BitmapData.clone()`. Refer to the online help to know whether to include the class name literally (i.e., if it is a so-called static method), as in `String.fromCharCode()`, or replace it with an instance name, such as `exampleBitmap.clone()`.
- For brevity, we often omit the class name when discussing a property or method of a class. For example, if discussing the `htmlText` property of the `TextField` class, when we say “set the `htmlText` property,” you should infer from context that we mean, “set the `exampleTextField.htmlText` property, where `exampleTextField` is the identifier for your particular text field.”

In addition, the following formats are used to grab your attention and relieve the tedium of what could otherwise be monotonous reading:



This icon signifies a tip, suggestion, or general advice.



This icon indicates a warning or caution.

## Using Code Examples

*ActionScript 3.0 Cookbook* is here to help you get your job done. In general, you may use the code in this book in your programs and documentation. You do not need to contact us for permission unless you're reproducing a significant portion of the code. For example, writing a program that uses several chunks of code from this book does not require permission. Selling or distributing a CD-ROM of examples from O'Reilly books *does* require permission. Answering a question by citing this book and quoting example code does not require permission. Incorporating a significant amount of example code from this book into your product's documentation *does* require permission.

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### *Problem*

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### *Solution*

The Solution is easy to understand and implement.

### Discussion

The Discussion clarifies and explains the context of the Problem and the Solution. It also contains sample code to show you how to get the job done. Best of all, all of the sample code you see in an O'Reilly Cookbook can be downloaded from the book's web site, at <http://www.oreilly.com/catalog/actscpt3ckbk>.

### See Also

The See Also section directs you to additional information related to the topic covered in the recipe. You'll find pointers to other recipes in the book, to other books (including non-O'Reilly titles), web sites, and more.

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## About the Tech Reviewers

**Stacey Mulcahy** is a Flex and Flash developer who once had a torrid love affair with Macromedia Director. When she's not building Rich Internet Applications that even designers like, she can be found showing others how to do the same thing as a Flash instructor. She rants more than raves on her Flash-centric blog: *<http://www.bitchwhocodes.com>*.

**Sam Robbins** has been working with Flash and ActionScript for more than six years and has been experimenting with Flex for almost two. During that time, most of his efforts have been in developing Rich Internet Applications. Sam also started a subgroup of the Boston Flash Platform User Group (BFPUG), which examines design patterns on a monthly basis. In his spare time he tries to update his blog (*<http://pixelconsumption.com>*), plays Xbox, and cuts his lawn. He lives in Massachusetts with his fiancée Andrea.

**Steven Schelter** is a software developer currently employed at Schematic. He's fluent in various front- and backend scripting languages and applications, but his primary concentration is ActionScript development. Steven was pulled into interactive media industry from Flash's appeal as a tool to merge his eye for design with his background in math and logistics. Other interests include 3D modeling, artificial intelligence, and user interactivity.

**Roger Braunstein** is a developer and designer living in Brooklyn. He is obsessed with beautiful code, motion design, graphics programming, and video games. He also cultivates an interest in cooking, photography, biking, and 8-bit music. One day he hopes to have a real web site at *<http://www.partlyhuman.com>*.

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# Acknowledgments

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## Joey Lott

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## Darron Schall

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