Chapter 1

Programming Foundations:
How To Make A Video Game

Congratulations on picking up this book! Video game design is one of the most interesting and creative things you can do with a computer. You’re about to embark on a remarkable journey, and this book will guide you every step of the way.

So how do you make a video game? Although there are probably as many ways to make games as there are readers of this book, a good place to start is with a technology called Flash and ActionScript. Not only is it easy to learn how to make games with these technologies, but you can also use them to produce games of great complexity and professional quality if you have the time and imagination. You can also publish your games for desktop computers, laptops, the Internet, mobile phones, and tablets without having to learn any additional skills. And all the skills you’ll acquire while making games with Flash and ActionScript can be directly applied to game design using other technologies if you want to take your learning further.

Learning game design with Flash and ActionScript is really a two-step process.

- You need to learn how to make graphics and illustrations for your games. This is commonly done with graphic design software such as Adobe Photoshop, Illustrator, Flash Professional, or open source software such as GIMP (GNU Image Manipulation Program).
- You also need to learn a programming language called ActionScript. A programming language is a kind of language, similar to English, that we humans use to communicate with computers.
When you’ve created you graphics and programmed your game, the underlying technology, which you will learn all about in this book, then puts it all together to make your game work.

There are two common ways to make games with Flash and ActionScript.

- You can use software called Flash Professional, which is made by Adobe. This software allows you to create all the visual graphics for your game and perform all the computer programming using only one piece of software.

- The second approach is to create the graphics for your game using any graphic design or illustration software you like, and then use a computer programming code editor, such as Flash Builder or Flash Develop to program the ActionScript code to make your game work.

This book takes the second approach. It’s much more flexible because it allows you to choose any graphic design or programming software you’re comfortable using. It also means that the skills you learn won’t be tied to any particular version of Adobe’s Flash Professional software, which is subject to frequent change, and it frees you from the considerable cost of buying or upgrading it, which can be a significant barrier for someone just starting out in game design. It used to be that the only way to make Flash games was with Adobe’s Flash Professional software, but this is fortunately no longer the case. There are now far more flexible tools available for making Flash games, and this book will show you how to use them.

Tens of thousands of people around the world have made a career out of designing games with Flash. With this book and a little bit of practice, you could become one of them.

**Basic requirements**

Surprisingly, video game design can be a relatively low-tech affair. Here’s the basic equipment you’ll need to make use of this book.

1. **A computer**

   You need a reasonably up-to-date computer, either running Windows or the latest version of Mac OS X.

2. **Graphic design software**

   You need graphic design software, such as Photoshop, Photoshop Elements, Illustrator, or the free, open source GIMP. Photoshop is the most widely used graphic design software on the planet, so it’s extremely useful to learn how to use it; however, it’s very expensive. You can download Photoshop from Adobe’s website at

   www.adobe.com/products/photoshop.html

   You could also make all your game graphics using Adobe Illustrator, and indeed most of the game graphics in this book were created using it. It’s unfortunately also quite expensive, but it’s definitively worth making the long term investment of purchasing it and learning how to use it if you’re serious about game design because it’s probably the overall best illustration software available. You can find Adobe Illustrator at