Table of Contents

Chapter 0

(Yes, we're programmers)

Getting to know (and love) AGS

Introduction

AGS, or Adventure Game Studio, is a feature-rich application that allows you to create point-and-click adventure games. If you remember games from the late 1980s and early 1990s like *King's Quest*, *Quest for Glory*, *Monkey Island*, and *Maniac Mansion* (just to name a few) then you know the types of games we're talking about. AGS provides you with an simple, intuitive interface that you can use to create games just like those, and, with enough creativity, you can use AGS to make games that equal (if not surpass) those professional quality games!

AGS was created by Chris Jones in 1997 as "Adventure Creator." Back then, Adventure Creator was an MS-DOS-based program, it didn't have mouse support and it only allowed very primitive graphics. Step by step, little by little, Adventure Creator evolved from this initial, featureless program into Adventure Game Studio, which now supports high-res graphics, its games can run on multiple operating systems, it has fully integrated sound and video, and it can support thousands of sprites, hundreds of rooms, unlimited characters, and even customized mouse cursors, GUIs, and other interface elements. Plus, AGS has an extremely active user community, so help, criticism, and play testers are never more than a forum post away. And Chris Jones still supports AGS and provides updates and patches to it on a regular basis.

How much does AGS cost? That's the best part. It's FREE! Isn't that the best kind of hobby to get into? Even if you decide to write a commercial game for profit, AGS is still free*!

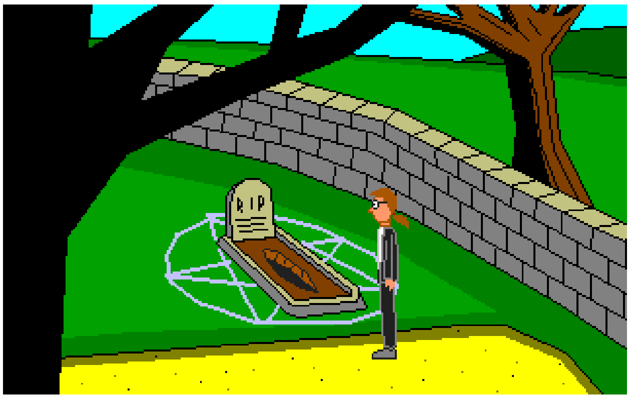
* AGS itself is 100% free, but some of the internal pieces of AGS (like the MP3 decoder, the graphics and sound subsystems, some of the fonts that AGS uses, etc.) weren't written by Chris Jones, and therefore have their own license agreements that you would need to consider if you released your game for profit. For more information you can visit the AGS license page at http://adventuregamestudio.co.uk/aclegal.htm)

Hundreds, if not thousands, of games have been created with AGS over the years, and they range from very amateur games on the low end, to professional quality commercial games on the high end. Here are just a few examples of games that were made using AGS:

Trilby's Notes

Trilby's Notes (http://www.fullyramblomatic.com/notes) was created by Ben Croshaw, aka Yahtzee, and is part of a series of adventure games, collectively known as "Chzo Mythos." The series consists of four games, with Trilby's Notes being the third installment. Unlike most games written with AGS, Trilby's Notes is unique in that the player doesn't use a mouse to control the game. Instead, the action is controlled much like the early Sierra games, where the player moves the character with the arrow keys and types commands he or she wishes the character to perform.

Reality on the Norm series



Easily the largest series of games written with AGS, Reality on the Norm (RoN) (http://www.realityonthenorm.info) is a collaborative collection of games where anyone can create a game and add it to the series. The series takes place in a fictional place called Reality on the Norm, and the series has several recurring characters and themes. The first game was called "Lunchtime of the Damned" (created by none other than Ben Croshaw) and it was about a young kid named

Davy Jones and his zombie. Since that first game, no less than 90 games have been created in the RoN universe, written and created by dozens of people, and characters ranging from Death to Bill Cosby to David Hasselhoff to Commander Keen have visited RoN.

AGDI Games

As you can imagine, the quality of games written with AGS varies widely from game to game. Few, however, have the same feel as a professionally written game (which is to be expected, since most AGS users don't have the same production budget as a professional game company!). Games from AGDI (Anonymous Game Developers Interactive) break that typical mold, however. AGDI (http://www.agdinteractive.com) is a group of individuals who are "determined to revive the adventure game genre." They make beautifully crafted adventure games, containing stunning artwork, professional quality music, and talented voice acting. AGDI has released three remakes of classic Sierra games: *King's Quest I*, *Kings Quest II*, and *Quest for Glory II*. These games are truly works of art and are just as much fun to play as their original counterparts were. Each game stays true to the original classic, but adds new plot elements, puzzles, and in some cases even new characters to meet. AGDI even got Josh Mandel, the voice of King Graham in the original King's Quest games from Sierra, to reprise his role as King Graham in both of their remakes. AGDI also has made an original game called *Al Emmo and the Lost Dutchman's Mine*. All these games were created using AGS.

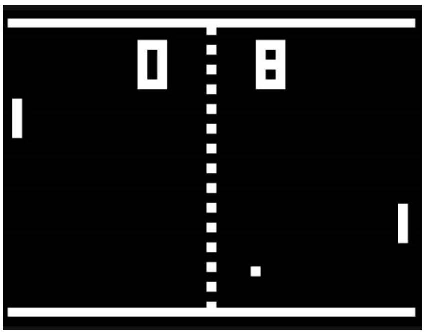
History of the Adventure Game

Video Games

Before there were adventure games, people entertained themselves by drawing on cave walls and playing drums by the campfire. Shortly after this, someone invented a computer and decided that it might be fun to play games on it.

Computer Space was the first commercial video game, released in 1971, and boy was it a doozy. It was a coin-operated machine that housed a 15-inch, black-and-white television and four input buttons. You dropped in a quarter, and then you had 90 seconds of riveting gameplay where you controlled your spaceship around the screen and tried to shoot as many UFOs as you could, gaining a point for each UFO you hit. After the 90 seconds was up, if you had a a bigger score than the UFOs did, the game would give you an additional 90 seconds and then you would start again. Fun! Just make sure you didn't hit more than 9 UFOs, because if you did your score would reset back to 0 (counting to 10 was HARD). Gameplay would continue like this forever, or until you got tired and had to go back to hunting and gathering.

Games got a bit more exciting in 1972 with the release of everyone's favorite computer tennis game, *Pong*. This game was based on the Magnavox Odyssey console, which, unlike *Computer Space* before it, was a console game that people could buy and play at home on their own TVs. *Pong* connected to a television and had two paddles for input. The graphics were made up of a line drawn vertically down the center of the screen, two smaller vertical lines on the left and right sides of the screen, and a dot which represented a ball (graphics artists had it easy back then). There were two sets of numbers at the top of the screen for the players' scores. The "ball" moved around and the players would bat it back and forth and hope the other player missed it, in which case a point would be awarded. Simple? Yes. Popular? Very!



This was basically the only choice of computer games at the time. These games were considered "fun" at the time, although there wasn't much *interaction* to them. There were no characters to speak of, little or no story, and certainly no real challenge aside from being able to press some buttons. But things were about to change.

The First Adventure Game

Will Crowther, it could be argued, was the father of the Adventure Game. In 1975, while working as a computer programmer for Bolt Beranek and Newman, he decided he would write a computer game for his two daughters. Crowther called his game *Collosal Cave*, and it was based on his adventures exploring Mammoth Cave in Kentucky. The game, by today's standards, was very primitive and simple, consisting only of a textual interface and input system, where the player would type commands into the computer and read the result on the screen. Since he designed *Collosal Cave* for his young daughters, and also wanted it to appeal to the general population (not just computer geeks), he programmed it to understand the commands entered by the user in a “natural language” kind of way. The player could instruct the game to do things by using 1- or 2-word commands. For example, if a player wanted to go north to the next section of the cave, she could simply type “go north” and the program would understand and process the request (alternatively, she could type “walk north” or “go up”). A player who wanted to look at the wall could type “examine wall.”

The game was passed from person to person throughout the fledgling Internet (which at that time consisted of only a handful of computers—nothing like the gargantuan network we know and love today), until it became fairly ubiquitous among computer geeks. After all, people were hungry for a little computer entertainment, since programs then usually consisted of cryptic user interfaces that were difficult to understand (NLS, anyone?) and computer games were practically unheard of.

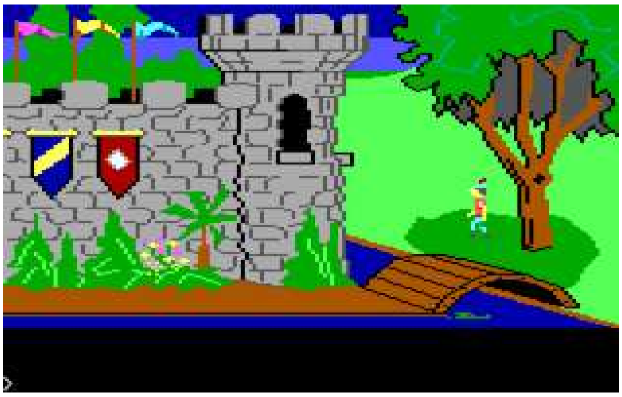
The next year, in 1976, a guy by the name of Don Woods found the game on one of the computers at Stanford Unversity and, after corresponding with Crowther, greatly expanded the game. Later that same year, it was ported from FORTRAN to C and and distributed by DECUS (Digital Equipment Corporation User Group) as *Colossal Cave Adventure*, or simply, *Adventure*.

Voila! The *Adventure* Game was born!

A couple of years after *Adventure*, four programmers at MIT took this idea of an “interactive fiction” adventure game and developed a game similar in design called *Dungeon*. At least, that was what they had planned on calling it. The game ended up being called *Zork*, a name which was used at the time to refer generically to an unfinished program. The name kinda stuck, and in 1979 they founded a company called Infocom and published the game as *Zork I: The Great Underground Empire* in 1980. Infocom later went on to publish many more text adventure games throughout the 1980s, including no less than 10 additional games in the Zork series.

Text adventures were all well and good, but eventually computer processors got faster and computer video got more advanced. Text adventures advanced a bit in the early 80s to the point where the player was presented with a static “background” image, and some text that accompanied the image. In 1980, the newly-founded On-Line Systems (later to become Sierra On-Line) released just such a game called *Mystery House*, and later that same year they produced the first color adventure game, *Wizard and the Princess*. These games were still basically text adventure games, however. Even though there were graphics, the graphics didn't animate, and the player had no real interaction with the graphical environment. It was more of a supplement to the text, not the other way around.

This changed in 1984 when Sierra On-Line released the very first truly *graphical* adventure game: *King's Quest: Quest for the Crown*. For the first time, a player could control the character on the screen in a (pseudo) 3D environment (at least, it was marketed that way, as a "3D Animated Adventure"). In *King's Quest*, the player takes the role of Sir Graham, who is sent by the King of Daventry to recover the kingdom's three most precious magical items: the Magic Mirror that forsees the future, the Magic Shield of invincibility, and the Magic Chest that is always filled with gold. Along the way, Graham meets with several characters from fairy tales (Rumplestiltskin, a dragon, and the witch from Hansel and Gretel, to name a few) and in the end, Sir Graham inherits the crown to become King Graham, and ends up being the protagonist in two of the seven subsequent *King's Quest* adventures. *King's Quest* was not an instant success; however, it did well enough that Sierra released a sequel just a year later and the graphical adventure game genre took off. They subsequently created classics like *Police Quest*, *Space Quest*, *Quest for Glory*, and *Leisure Suit Larry*, among others.



These text-based adventure games soon evolved into mouse-controlled games, where, for example, the player didn't have to type commands like "open the door" but could instead use the mouse to click on the door to open it. Sierra created games like this, as did Lucasfilm, George Lucas' movie production company. Lucasfilm teamed up with Atari to produce games under the *Lucasfilm Games* label, which eventually became *LucasArts*. They created very successful, well-known adventure games like *Maniac Mansion*, *The Secret of Monkey Island*, and *Indiana Jones and the Fate of Atlantis*, which all used this more updated mouse-based interface.

About This Book

This book aims to teach you how to write an adventure game using AGS, from stem to stern, using a game that we designed and wrote specifically for the purpose of this book. The game you'll be writing in this book is called "Foxy's Quest" and through it, we try to walk you through each aspect of a typical adventure game, using hands-on examples and screenshots along the way so you won't get lost. The book is designed as a self-paced tutorial, which you should read sequentially, starting at Chapter 1 and working your way all the way through. After you've read the whole book and you've done all the examples we present to you, you'll be well-prepared to tackle your own adventure game!

Much of the process of making an AGS game involves dealing with the graphical user interface of the AGS Editor, with all of its menus, buttons, and panels. However, a significant portion of the process involves writing script code to tell AGS how to handle situations and events that come up in your game. For this reason, we'll teach you how to write code using AGS's scripting language. If you've never done any programming before, don't worry. We don't assume that you have any programming experience. However, if you do have some experience, especially with C, C++, or C#, then learning the AGS scripting syntax will be a piece of cake.

With a little determination and motivation, you will be on your way to your own adventure game in just a short time. So sit back, grab a computer, and follow along with us on your AGS journey!

Book Conventions

We will be using certain syntax and conventions throughout this book to make it easier to read.

- Anything that relates to AGS script (source code and function names) will be printed in a fixed-width typeface similar to this:

  ```
  // Say hello to everyone.
  Display("Hello to everyone");
  ```

- Anything that you should click on in the AGS editor will be in bold and will look like the following:

  Click the **Change...** button to change the background...

- Any folder names or file names will be italicized as in the following two examples::

  click **Create sub-folder** and call this folder *FoxyMonk*.
  There you will see a property called `StartingRoom`
  Or, ...find the file called *simple_bg.bmp*...

- Every once in a while we'll have some rather useless information that's not good enough for *Jeopardy*, but could be useful to some of you. We'll put this information into a side note.

Side Note: This is what a side note would look like.

- And finally, for things that we're not sure what to do with, we'll italicize them. Oh, and then we'll make them bold and underline them too. Oh, Oh, and we'll put them in quotes and use fixed-width typeface! Kind of like:
  If you've ever read the book that was later made into a movie that is also a keyword in a programming language and a newspaper article, called ***“Main”***, you'd understand what we mean.

About The Game We're Going to Make

Some of you (ok all of you) will think that our game doesn't make sense. Well, it all depends on what sense you want to make. Making sense is only important for your nose. Otherwise it would be your hands or eyes. But whatever you decide, it should make sense to you, and that it does.

System Requirements

The version of AGS that we will be using throughout this book is 3.2.1 which is the latest version while we’re writing this, so everything here will work if you are using that version of the editor. You may use the newest version available even if it’s newer than our version, and we’ll promise not to hunt you down and pour hot sauce in your eyes, but some of the features of your fancy new version might be different from ours. So you’ve been warned. Beware. (We might decide to use Heinz 57 instead.)

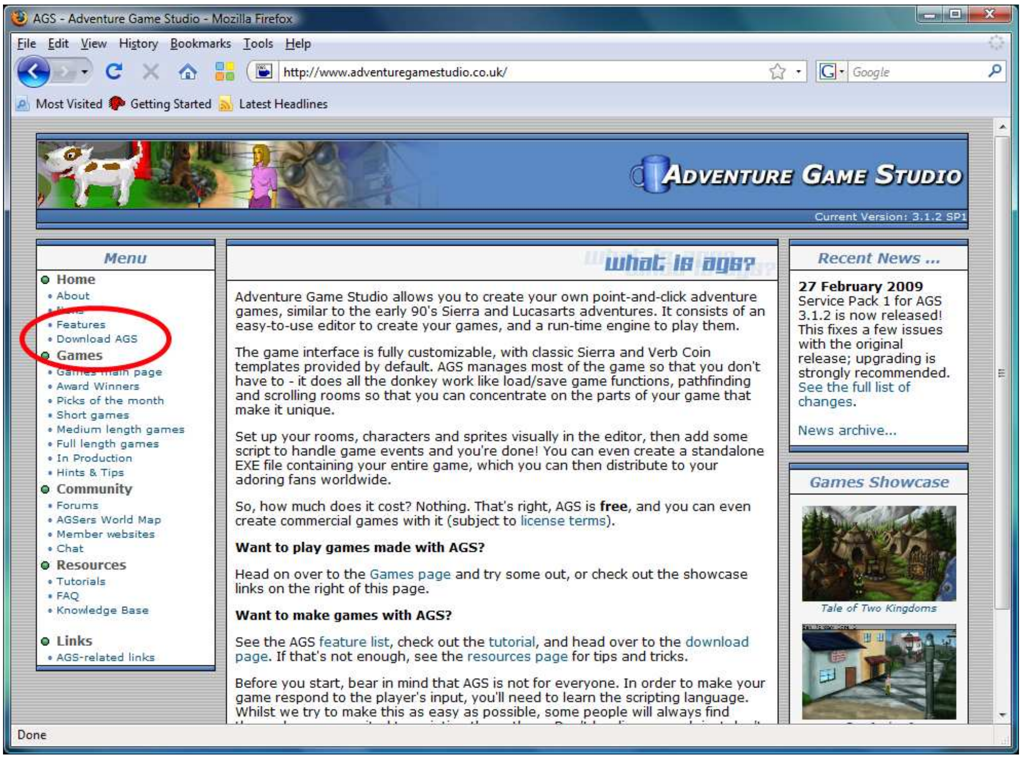
AGS Editor will run on Windows 2000, XP, Vista, or Windows 7 and requires the .NET Framework 2.0 or later. If you don’t know what .NET Framework is, then you most likely don’t need to worry about it, since you’re system probably has it installed anyway (it comes preinstalled with Windows Vista and Windows 7).

The games that you create using AGS have a different set of requirements (which makes sense when you think about it, since the game is a different program from the editor that you used to create the game). AGS games will run on Windows of course (.NET Framwork is not required for the games themselves), and they will also run on other systems as well, like Linux and Mac OS X with a little tweaking. We’ll get into that in more detail in Part 2 of the book, so hang tight.

Installing AGS

Installing the AGS Editor is a simple matter of downloading it from http://www.adventuregamestudio.co.uk/. Click on the download link (see Figure

0.1) and get the latest installer. Double-click the installer and follow the instructions. If you have any problems then you might be missing the .NET Framework. If you don't have the .NET Framework for some reason, then run a Windows Update on your computer by going to http://update.microsoft.com. There you should see an option to install .NET Framework. If you don't see it there, then you probably have it or you're running Windows ME or something ridiculous. (UPGRADE NOW!) You can also check your Add/Remove Programs under Control Panel for .NET Framework. If you're running Windows Vista or Windows 7, then you should already have the .NET Framework installed.



Adventure Game Studio allows you to create your own point-and-click adventure games, similar to the early 90's Sierra and Lucasarts adventures. It consists of an easy-to-use editor to create your games, and a run-time engine to play them.

The game interface is fully customizable, with classic Sierra and Verb Coin templates provided by default. AGS manages most of the game so that you don't have to - it does all the donkey work like load/save game functions, pathfinding and scrolling rooms so that you can concentrate on the parts of your game that make it unique.

Set up your rooms, characters and sprites visually in the editor, then add some script to handle game events and you're done! You can even create a standalone EXE file containing your entire game, which you can then distribute to your adoring fans worldwide.

So, how much does it cost? Nothing. That's right, AGS is **free**, and you can even create commercial games with it (subject to license terms).

Want to play games made with AGS?

Head on over to the Games page and try some out, or check out the showcase links on the right of this page.

Want to make games with AGS?

See the AGS feature list, check out the tutorial, and head over to the download page. If that's not enough, see the resources page for tips and tricks.

Before you start, bear in mind that AGS is not for everyone. In order to make your game respond to the player's input, you'll need to learn the scripting language. Whilst we try to make this as easy as possible, some people will always find

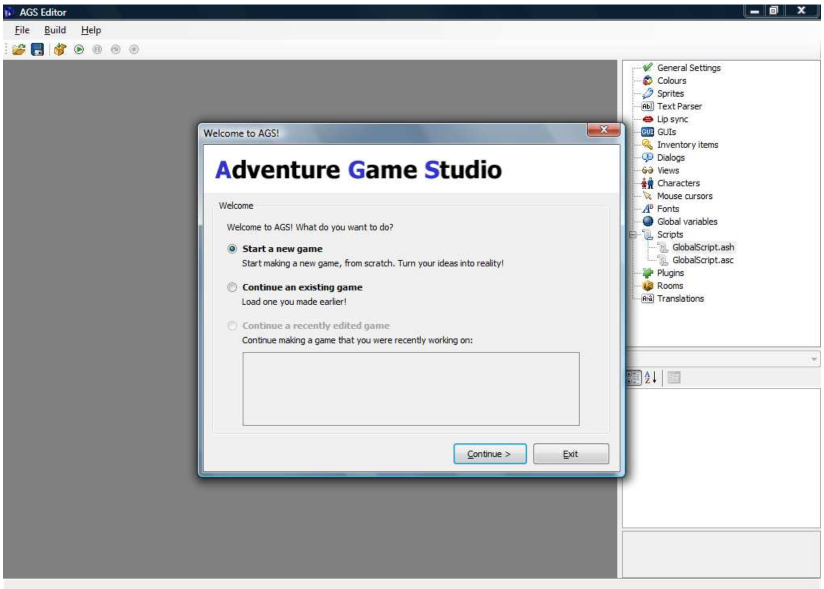
27 February 2009
Service Pack 1 for AGS 3.1.2 is now released! This fixes a few issues with the original release; upgrading is strongly recommended. See the full list of changes.

News archive...

Figure 0.1: The AGS Website. The download link is circled in red.

Creating Your First Game

After successfully installing the AGS Editor, you should be able to easily find it in you Windows Start menu.   Running the editor will show an AGS splash screen and then the IDE appears as in Figure 0.2.



Welcome to AGS!

Adventure Game Studio

Welcome

Welcome to AGS! What do you want to do?

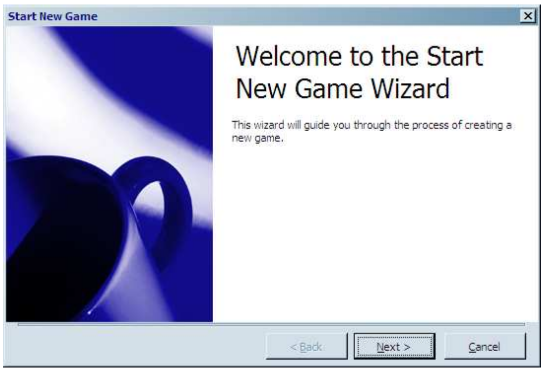
● **Start a new game**
Start making a new game, from scratch. Turn your ideas into reality!

○ **Continue an existing game**
Load one you made earlier!

○ **Continue a recently edited game**
Continue making a game that you were recently working on:

Figure 0.2: AGS IDE

You should see three options in the wizard that pops up. More than likely you don’t already have any games to open (otherwise you wouldn’t need this book). Choose the default option to start a new game and click the **Continue** button. The Start New Game wizard will now guide you (Figure 0.3). After clicking **Next**, you should see three templates to choose from (Figure 0.4).

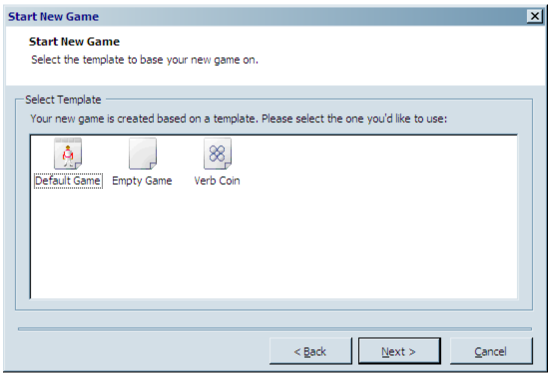


Start New Game

Welcome to the Start New Game Wizard

This wizard will guide you through the process of creating a new game.

Figure 0.3: Start New Game wizard



Start New Game

Start New Game

Select the template to base your new game on.

Select Template

Your new game is created based on a template. Please select the one you'd like to use:

Figure 0.4: Start New Game wizard

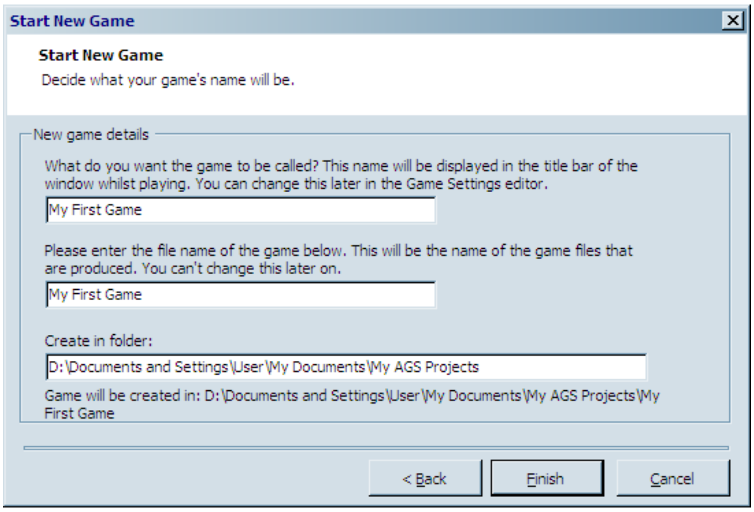
New games created with AGS are always based on templates. Templates are basically skeletons for games. You choose your skeleton and build around it.

- **Default Game** is the easiest one to get started with. Choosing this template will create a game that provides you with some default graphics, such as an example character, as well as graphics for the default icons and buttons. It will also include some actions like **Save**, **Restart**, and **Quit**. This is the template we'll be using in this book.
- **Empty Game** will create a game that contains no graphics, GUIs, sounds, rooms, scripts, etc. It basically gives you nothing, in case you just want to create a brand new game entirely from scratch. Since we want the graphics and GUIs and extra goodies that are in the **Default Game** template, and since the process of creating graphics isn't the focus of this book anyway, we won't be using this template at all.
- **Verb Coin** allows you to create a game with a different interface than the one in the default template. Verb coin can be interesting to work with, but we will not be talking about it in this book.

Side Note: If you'd like to know more about verb coin you can create a game with the Verb Coin template and try it out. The Verb Coin template attempts to emulate the interface style used by some of the LucasArts games, like *Full Throttle* and *The Curse of Monkey Island*, as opposed to the default icon-based interface that AGS uses, which is based on the Sierra On-Line adventures like *King's Quest V*, *Police Quest 3*, and *Freddy Pharkas, Frontier Pharmacist*, to name a few.

Side Note: It's important to note that AGS doesn't limit you to creating games that only use the default interface or the Verb Coin interface, despite the fact that these are the only template you can choose from. Part of what makes AGS so compelling is the fact that you can customize almost every aspect of the game, including the interface, graphics, and sound. So, if you want a game that has a particular interface that's not in the templates, just go ahead and create your game using the Default template, and then you can tweak it and change it however you want. Just about every type of adventure game interface has been done with AGS, from the LucasArts SCUMM interface used in *The Secret of Monkey Island* and *Maniac Mansion*, to the text-based interface used in the early Sierra adventures; from the interface in *Myst* to the type of interface in games from the Adventure Company. It can all be done with AGS, but you might have to customize things a little using the know-how you gain from this book.

Choose the **Default Game** template and click **Next**. Something like Figure 0.5 should appear. Here you should give your game a name. You can change this later though if you don't like it. You'll also need to give it a file name to use and a folder to put your game in. Typically, your file name and the name of your game will be the same. We're calling our game "My First Game" for now.



Start New Game

Start New Game

Decide what your game's name will be.

New game details

What do you want the game to be called? This name will be displayed in the title bar of the window whilst playing. You can change this later in the Game Settings editor.

My First Game

Please enter the file name of the game below. This will be the name of the game files that are produced. You can't change this later on.

My First Game

Create in folder:

D:\Documents and Settings\User\My Documents\My AGS Projects

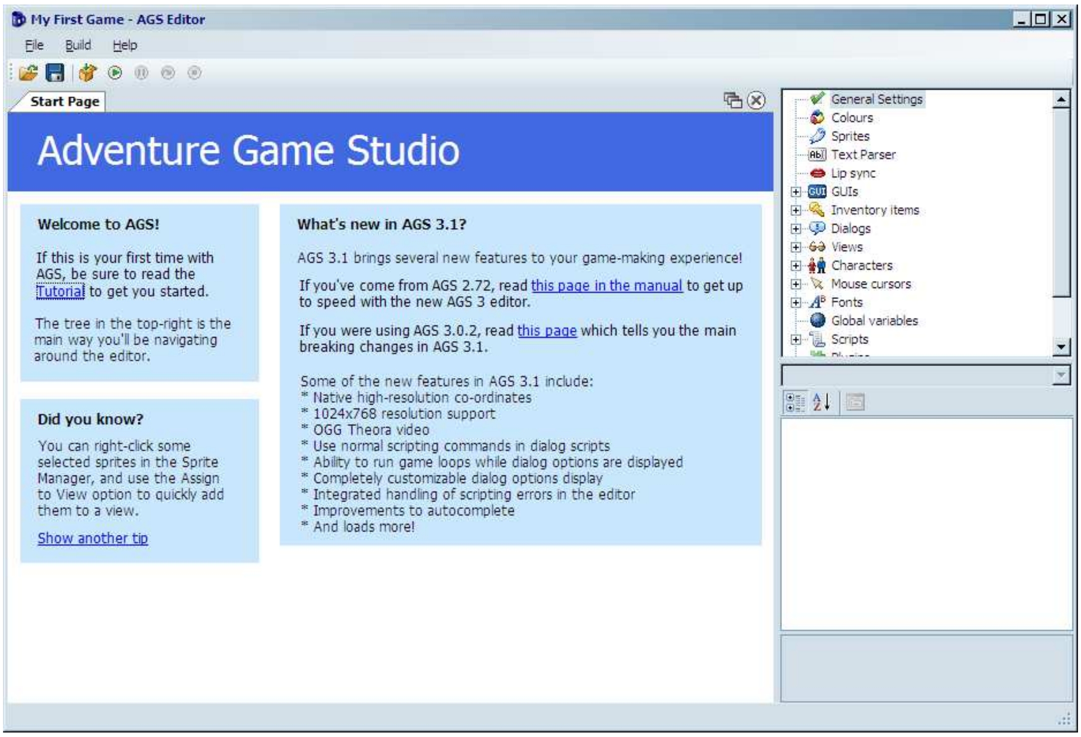
Game will be created in: D:\Documents and Settings\User\My Documents\My AGS Projects\My First Game

Figure 0.5: New game information

And now for the final click. Yes, click **Finish**. Congratulations, you've created your first AGS game. It doesn't do much right now, but believe it or not, your first game is actually playable right now!

Running Your Game

Let’s see what this game can do. You should see a window similar to the one in Figure 0.6. We’ll discuss the editor interface in a moment, but for now let’s run this game we just created. Click on the circle with the green arrow in it. It looks like Figure 0.7.



Adventure Game Studio

Welcome to AGS!

If this is your first time with AGS, be sure to read the Tutorial to get you started.

The tree in the top-right is the main way you'll be navigating around the editor.

Did you know?

You can right-click some selected sprites in the Sprite Manager, and use the Assign to View option to quickly add them to a view.

Show another tip

What's new in AGS 3.1?

AGS 3.1 brings several new features to your game-making experience!

If you've come from AGS 2.72, read this page in the manual to get up to speed with the new AGS 3 editor.

If you were using AGS 3.0.2, read this page which tells you the main breaking changes in AGS 3.1.

Some of the new features in AGS 3.1 include:
* Native high-resolution co-ordinates
* 1024x768 resolution support
* OGG Theora video
* Use normal scripting commands in dialog scripts
* Ability to run game loops while dialog options are displayed
* Completely customizable dialog options display
* Integrated handling of scripting errors in the editor
* Improvements to autocomplete
* And loads more!

Figure 0.6: The editor

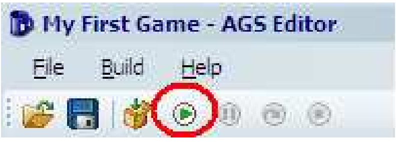


Figure 0.7: The Run button

You’ll see some dialog boxes pop up and then, Voila! You have your first Adventure Game running. The game doesn’t do much yet, but as you’ll see, there is already a lot of functionality built in for you. You will see the main character wearing a white suit and the mouse cursor will look like a walking man (Figure 0.8). This walking man cursor is used to make the main character walk around the screen. Try clicking around the screen now and the character will walk to wherever you clicked. Move your mouse cursor to the top of the screen and an in-game menu will pop up (Figure 0.9).

Side Note: You might be wondering why the game is running inside a tiny little window instead of full screen. This is because we ran the game in *Debug Mode* (by clicking the green button in Figure 0.7) which will always run in a window. *Debug Mode* is the mode you'll be running in while you are designing your game, and the thought is, while you're creating your game you don't need to see it in full screen all the time. Your users, though, will be able to run the game in all its full screen glory when you distribute it. There are times when you might want to run your game in full screen mode even while you're designing it, and you can do this at any time by clicking the **Build** menu, then clicking **Run without debugger** (or by pressing **Ctrl+F5**).

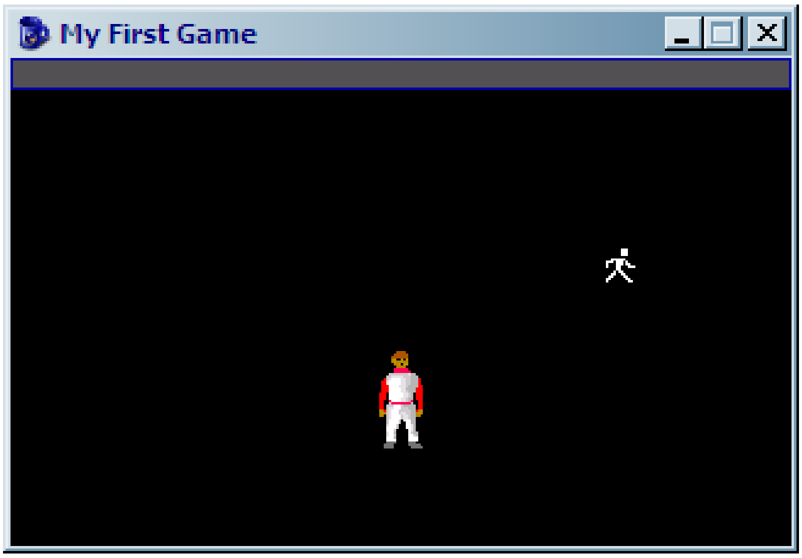


Figure 0.8: Your first game

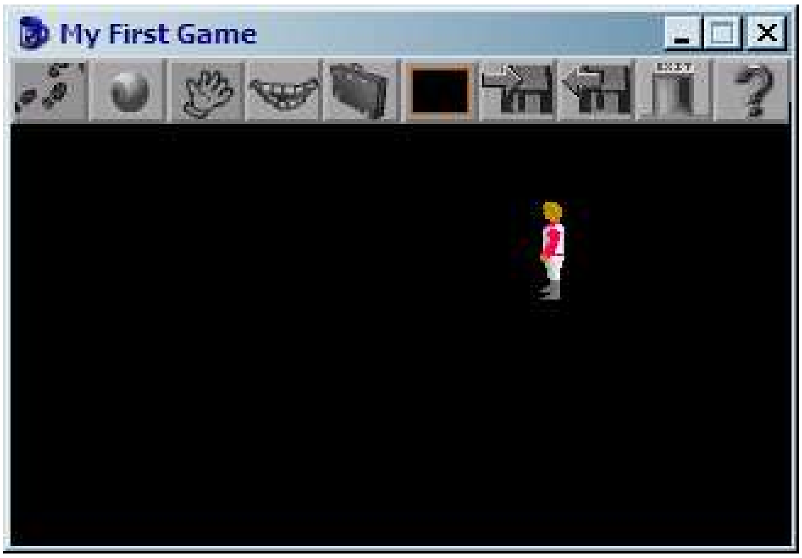


Figure 0.9: In game menu

The first four icons on the left are used to change what action is to be done on an object or character. From left to right, the actions are **walk**, **look**, **touch** or **interact**, and **talk**. Clicking one of these icons will change the mouse cursor to match the action. Try each one of these actions on the main character and you can see how they work. Click the **eyeball** icon, for example, and your mouse cursor will change into an eyeball. Then if you click the **eyeball** on the main character you will see a message that says, “Damn, I’m looking good!” Each of the other two icons will display messages as well. As an alternative to using this menu bar to switch between actions, you can also use the right mouse button while playing to cycle through all the mouse actions that are available.

Continuing from left to right, the next icon is a **suitcase**. Clicking this icon will bring up a screen that shows the player’s inventory of items. We haven’t given the character any items yet, so his inventory is empty at the moment, so if you opened the inventory, just click the **OK** button to close it. The next icon in the menu bar is a **black box**. This is there to show the most recently selected inventory item. If no item is selected, or you have nothing, then it will remain a black box. The next two icons are the **save** and **restore** features of the game. These actually work and you can try saving and restoring the game if you like (you know, in case you made a lot of progress through your black screen and want to save). If you click **save**, you can enter a file name and save the game. You can also delete previously saved games. Clicking **restore** will show a menu of previous games that you can choose to load. The next icon is self explanatory: **Exit** (I wonder what that does). And finally, the last item brings up an in-game control panel. I know it looks like a question mark, but no, it’s not HELP. As you can see in Figure 0.10, you can save and load games, restart, quit and change other options from that question mark.

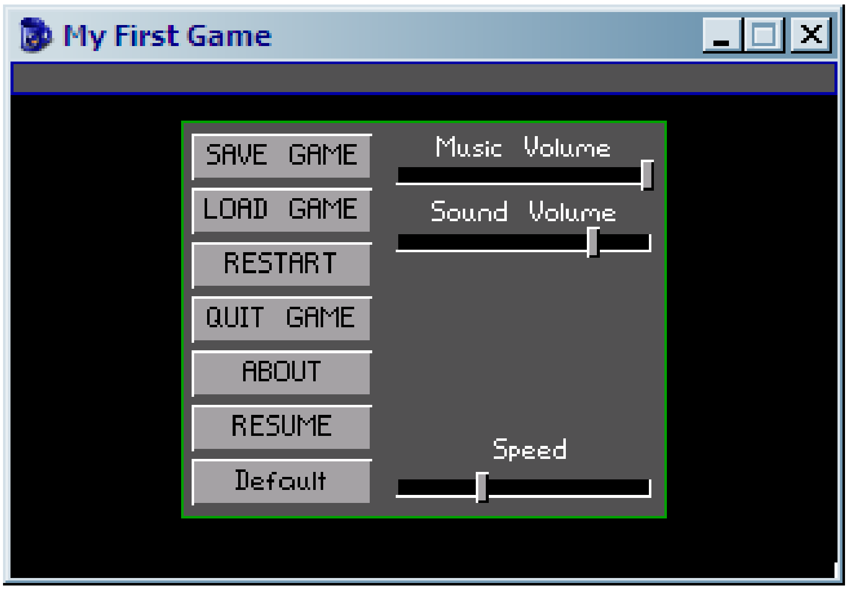


Figure 0.10: In game control panel

Well ok then. That's how you make a game and run it. Thanks for buying our book. Please be sure to check out our other wonderful products. For the rest of the book, we will recite all the words to "3,890 Bottles of Beer on the Wall."

Long Beer Song

3,890 bottles of beer on the wallllll, 3,890 bottles of beeeeer.
You take one down. Pass it around. 3,889 bottles of beer on the wall.
3,889 bottles of beer on the wallllll, 3,889 bottles of beeeeer.
You take one down. Pass it around. 3,888 bottles of beer on the wall.
3,888 bottles of beer on the wallllll, 3,888 bottles of beeeeer.
You take one down. Pass it around. 3,887 bottles of beer on the wall.
3,887 bottles of beer on the wallllll, 3,887 bottles of beeeeer.
You take one down. Pass it around. 3,886 bottles of beer on the wall.
3,886 bottles of beer on the wallllll, 3,886 bottles of beeeeer.
You take one down. Pass it around. 3,885 bottles of beer on the wall.
3,885 bottles of beer on the wallllll, 3,885 bottles of beeeeer.
You take one down. Pass it around. 3,884 bottles of beer on the wall.
3,884 bottles of beer on the wallllll, 3,884 bottles of beeeeer.
You take one down. Pass it around. 3,883 bottles of beer on the wall.
3,883 bottles of beer on the wallllll, 3,883 bottles of beeeeer.
You take one down. Pass it around. 3,882 bottles of beer on the wall.
3,882 bottles of beer on the wallllll, 3,882 bottles of beeeeer.
You take one down. Pass it around. 3,881 bottles of beer on the wall.
3,881 bottles of beer on the wallllll, 3,881 bottles of beeeeer.
You take one down. Pass it around. 3,880 bottles of beer on the wall.
3,880 bottles of beer on the wallllll, 3,880 bottles of beeeeer.
You take one down. Pass it around. 3,879 bottles of beer on the wall.
3,879 bottles of beer on the wallllll, 3,879 bottles of beeeeer.
You take one down. Pass it around. 3,878 bottles of beer on the wall.
3,878 bottles of beer on the wallllll, 3,878 bottles of beeeeer.
You take one down. Pass it around. 3,877 bottles of beer on the wall.
3,877 bottles of beer on the wallllll, 3,877 bottles of beeeeer.
You take one down. Pass it around. 3,876 bottles of beer on the wall.
3,876 bottles of beer on the wallllll, 3,876 bottles of beeeeer.
You take one down. Pass it around. 3,875 bottles of beer on the wall.
3,875 bottles of beer on the wallllll, 3,875 bottles of beeeeer.
You take one down. Pass it around. 3,874 bottles of beer on the wall.
3,874 bottles of beer on the wallllll, 3,874 bottles of beeeeer.
You take one down. Pass it around. 3,873 bottles of beer on the wall.
3,873 bottles of beer on the wallllll, 3,873 bottles of beeeeer.
You take one down. Pass it around. 3,872 bottles of beer on the wall.
3,872 bottles of beer on the wallllll, 3,872 bottles of beeeeer.
You take one down. Pass it around. 3,871 bottles of beer on the wall.
3,871 bottles of beer on the wallllll, 3,871 bottles of beeeeer.
You take one down. Pass it around. 3,870 bottles of beer on the wall.
3,870 bottles of beer on the wallllll, 3,870 bottles of beeeeer.
You take one down. Pass it around. 3,869 bottles of beer on the wall.

You didn’t think we were serious, did you?

Summary

Let's review the important points we discussed in this chapter:

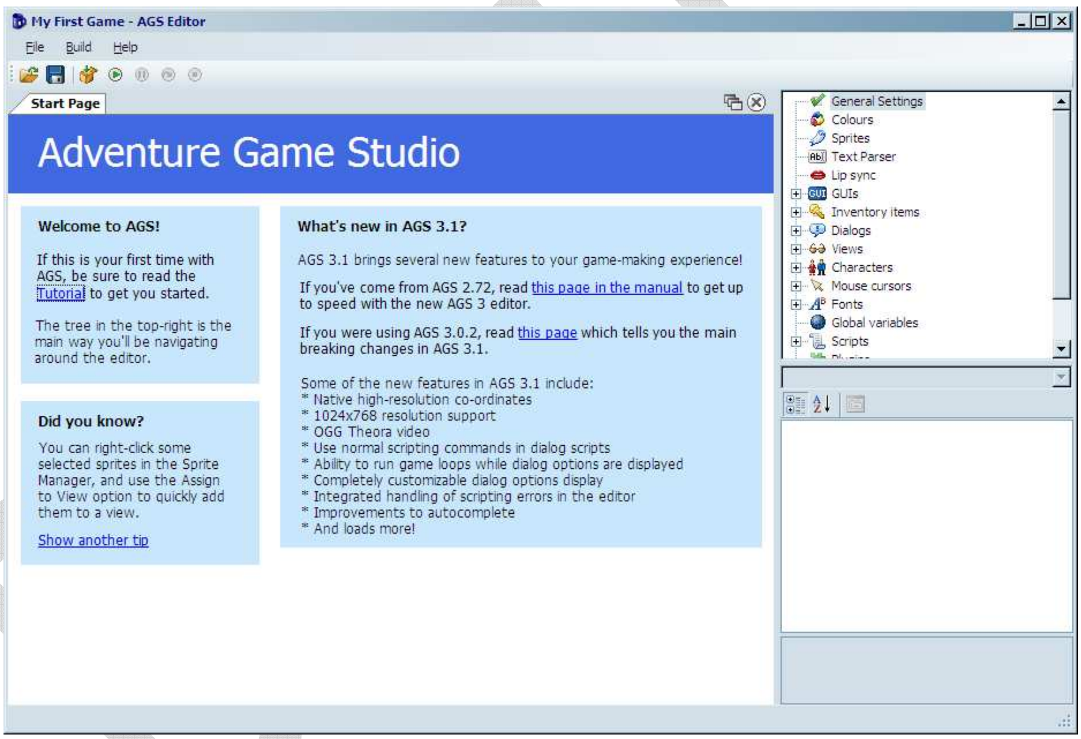
- **Adventure Game History** We discussed a little about what adventure games are and where they came from.
- **AGS is cool** 'Nuff said.
- **First Game** We created our first game with AGS. Although it doesn't do much yet, you'll be adding to it throughout the rest of the book. We created the game using the Default template, which gives us basic functionality, like a main character, a simple room to walk around in, a mouse cursor with several different action modes, save/restore functionality, and a basic GUI syste

Chapter 1

The AGS Editor

The Editor

Just in case you missed the last screenshot of the editor, here it is again. (I know I hate it when I have to flip back in a book!).



Adventure Game Studio

Welcome to AGS!

If this is your first time with AGS, be sure to read the Tutorial to get you started.

The tree in the top-right is the main way you'll be navigating around the editor.

Did you know?

You can right-click some selected sprites in the Sprite Manager, and use the Assign to View option to quickly add them to a view.

Show another tip

What's new in AGS 3.1?

AGS 3.1 brings several new features to your game-making experience!

If you've come from AGS 2.72, read this page in the manual to get up to speed with the new AGS 3 editor.

If you were using AGS 3.0.2, read this page which tells you the main breaking changes in AGS 3.1.

Some of the new features in AGS 3.1 include:
* Native high-resolution co-ordinates
* 1024x768 resolution support
* OGG Theora video
* Use normal scripting commands in dialog scripts
* Ability to run game loops while dialog options are displayed
* Completely customizable dialog options display
* Integrated handling of scripting errors in the editor
* Improvements to autocomplete
* And loads more!

Figure 1.1: The editor

The editor consists of three main parts. The big part in the middle, the Document Pane, is where you do all of your, um…, editing. The section on the top-right shows a tree that looks much like Figure 1.2. This tree, called the Project Tree, allows you to open different editing panes. Go ahead and get familiar with it by double-clicking the options. You'll be using it a lot.

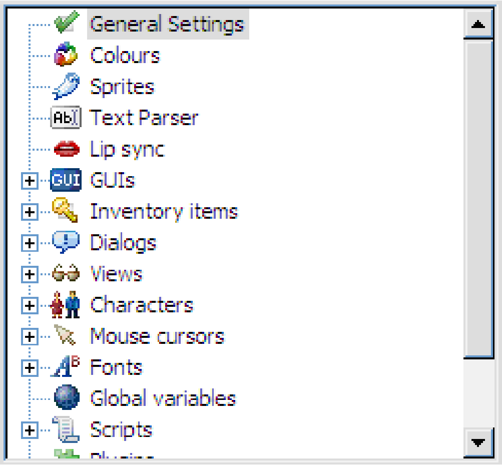
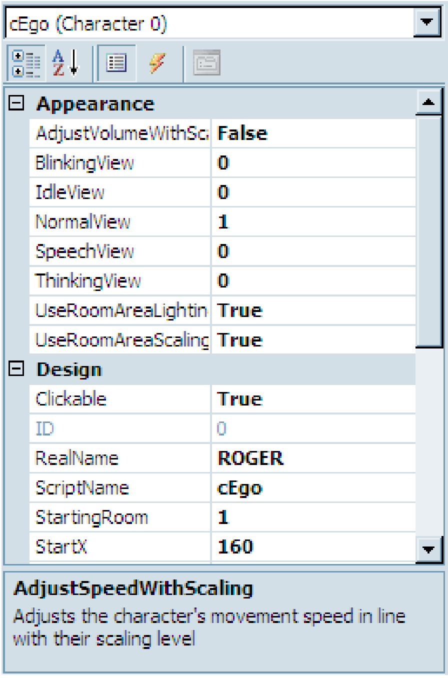


Figure 1.2: The Project Tree

The bottom-right pane will show different things depending on what you're working on. It is called the Properties Pane, and allows you to change detailed attributes of whatever object you are currently editing. Sounds like fun? Well it is! Figure 1.3 shows an example of what the Properties Pane looks like when editing a character. If you'd like to see it for yourself, expand the **Characters** item in the Project Tree and double-click **cEgo**. In fact, double-click everything and look at the properties that come up. More about this later.



cEgo (Character 0)

Appearance	
AdjustVolumeWithSc	**False**
BlinkingView	**0**
IdleView	**0**
NormalView	**1**
SpeechView	**0**
ThinkingView	**0**
UseRoomAreaLightin	**True**
UseRoomAreaScalinc	**True**
Design	
Clickable	**True**
ID	0
RealName	**ROGER**
ScriptName	**cEgo**
StartingRoom	**1**
StartX	**160**

AdjustSpeedWithScaling
Adjusts the character's movement speed in line with their scaling level

Figure 1.3: The Properties Pane

Let’s talk a bit about the different types of editing panes that you can use within AGS. We won’t go into too much detail here, but just enough so you get familiar with what AGS can allow you to do within your game.

General Settings

In the Project Tree, scroll all the way to the top and double-click on the item labeled **General Settings**. This opens the General Settings editor in the Document Pane, which allows you to specify some of the basic settings for your game like the resolution at which your game will run, the name of your game, the maximum score the player can achieve, as well as letting you put information about who created the game. There are lots of options here and we’ll delve into most of the options in Chapter 6.

Colors

The Colors editor lets you define colors within your game. For the most part, you won’t be using this editor too much if you selected a 16-bit or 32-bit color palette in the General Settings, but it can be useful for using colors within the AGS scripting engine. (If that last sentence didn’t make any sense to you, don’t worry about it for now; more will become clear later when we talk about colors in more detail in Chapter xyz.)

Sprites

Sprites are simply images within the game. The character you saw in the default game, for example, is a sprite. In fact, since the main character animates, it is actually composed of several sprites that play much like the frames of animation in a cartoon. The Sprites editor is where you go to manage all of the sprites in your game. Double-click on **Sprites** in the Project Tree, and you’ll see several sprites appear in the Document Pane. This isn’t all of the sprites, however. Notice that a new tree appears in the Document Pane, with the word *Main* at the top. Expand this tree and click on the **Defaults** folder. This is where you’ll see the sprites that make up the character, as well as the sprites for all of the icons in the menu bar that we mentioned earlier. The Sprites editor lets you import new sprites into your game and organize them into folders. We’ll be using sprites throughout the entire book, so you’ll get very familiar with the Sprite editor.

Text Parser

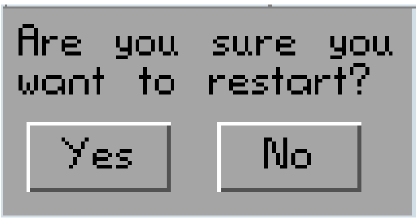
Do you remember the old games from Sierra like *Police Quest* and *King’s Quest* where you had to type commands that you wanted the character to do and the computer would respond with ambiguous answers like, “You’re not close enough?” Well, if you want to recreate games like those then the Text Parser is your friend. Since the game we’re creating in this book is not a text-style game, we will only briefly mention it in chapter xyz.

Lip Sync

AGS syncs with the lips and the lip syncing is the thing for AGS without lips. If your adventure game shows a close-up portrait of the characters' faces when they are speaking, then you can use the Lip Sync editor to try to closely match the text that the characters are saying to their mouth movements. Although this is a fairly rudimentary feature, it does the job quite nicely and it can really make a character look like he is speaking.

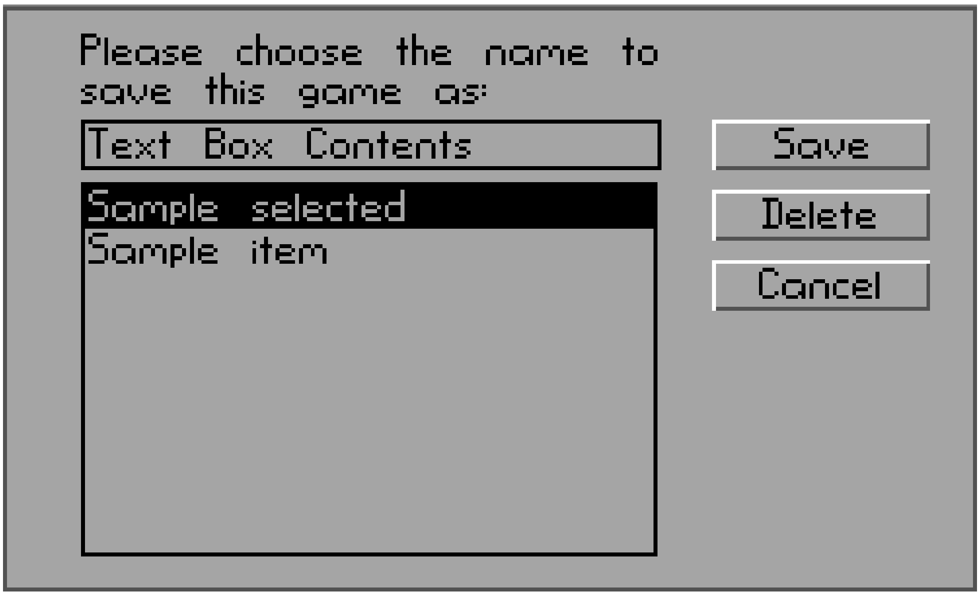
GUIs

A GUI is a Graphical User Interface. GUIs allow a user to interact with the game in some way. It can allow you, as the game creator, to get information from the player of your game by asking questions (Figure 1.4), getting input from the keyboard (Figure 1.5), or allowing the player to change game settings (Figure 1.6). AGS lets you make GUIs for all these purposes and more. You can even make GUIs to interact with characters. You'll have to wait until you get to Chapter xyz for more on this. (NOT KIDDING. NO PEEKING AHEAD!)



Are you sure you want to restart?

Figure 1.4: Question GUI



Please choose the name to save this game as:

Text Box Contents

Sample selected
Sample item

Figure 1.5: Input GUI

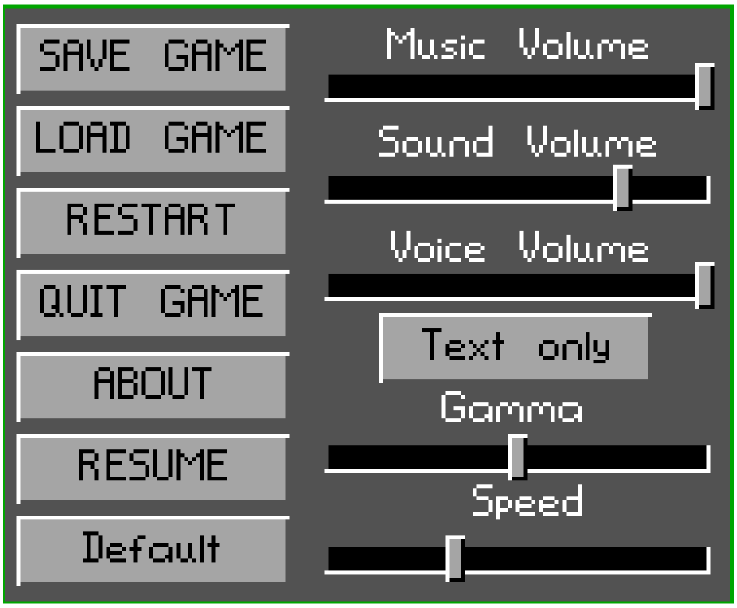


Figure 1.6: Settings GUI

Inventory Items

Inventory items are used extensively in most adventure games. Usually the main character collects items during the game to use at specific points in the game. This is the editor to use to create all these items. Go ahead a look at the default items that are in there now. You'll soon get very familiar with this editor.

Dialogs

The Dialogs editor allows you to create interactive conversations that can take place between characters. You can develop question and answer interactions between characters and have the game proceed differently depending on the answers the player chooses. This is actually a lot of fun. We'll see more of this in Chapter xyz.

Views

A view is simply a collection of animations. Any animation that you use in your game will be represented by a view. For example, the animation that you see when your main character is walking comes from a view, as does the animation that you see if a cup falls off of a table and smashes on the ground. Go ahead and double-click on **VIEW1** and take a look at the editing pane. This is the default view for the main character's walking animation. Since animations are an integral part of an adventure game, making views is going to be one of the most important parts of creating your game. We'll delve extensively into views in Chapter 2.

Characters

The Characters editor is where you create the characters that are in the game. Not only is the main character created here, but any character that the main character interacts with would be here as well. The Character editor allows you to specify attributes of each character; including which room the character starts in, which views are used to represent the character, the speed at which the character walks around on the screen, and other such things.

Mouse Cursors

AGS allows you to make many differently shaped mouse cursors to use throughout the game. If you look at the first four cursors in the Project Tree, you will notice that they are the ones that appear in the sample game you created earlier. The mouse cursors you create here can be a single image, or they can be associated with a view, which allows your mouse cursors to animate. You'll learn more about cursors in Chapter xyz.

Fonts

AGS lets you use different fonts to represent text in your game. However, you cannot use a font without first importing it into the Fonts editor. The Fonts editor supports true type fonts (TTF) as well as SCI (Sierra Creative Interpreter) fonts, which are fonts used in the old Sierra games like *King's Quest* and *Space Quest*. More about this when we talk about GUIs later.

Global variables

Global variables are associated with scripting (If you don't know what a script is, look at the next section real quick and come back here). Variables are objects that you use in scripts that hold values. Normal (non-global) variables can only be used within a specific script file or room. A global variable, however, can be used in any script. This editor is a place to define your global variables for use within your game. If this is all foreign to you, don't worry about it now. You'll pick all this up as we go along.

Scripts

Scripts are, more or less, instructions that you give AGS to tell it to do specific tasks. It's basically the nuts and bolts of your game. There are certain things you will want to do within your game that you just can't do with any of the other editors in AGS, and scripting allows you to do those things. You will quickly find out that scripting is a very important part of creating adventure games. Go ahead and double-click a few scripts and get a feel for what they look like, but know that we will be including scripting all throughout this book and you'll get familiar with it soon enough, so don't let it scare you right now.

Plugins

Plugins are extensions to AGS that give it extra functionality. They can be written by anyone and distributed to be used in making games. Plugins are not necessary to create a game and are beyond the scope of this book.

Rooms

Rooms are very, very important. Think of it this way: There would be NO game if there was not at least one room and one character. A room is where the action takes place in your game. Don’t let the word “room” confuse you—a room is anywhere action takes place in your game, regardless of whether it’s a typical room with four walls, a floor, and a ceiling. A forest, for example, can be a room, and a meadow could also be a room. A room in AGS will contain the background graphic, any objects that are in the room, the room script, and other room goodies like regions, hotspots, walkable areas, edges, and walk-behinds. There is one room already created in the default game. Open the Rooms item in the Project Tree, then expand the item labeled **“1:.”** This is the default room. Double-click **Edit room** to see the graphics (just a black background here). Double-click **Room script** to see the script file. There’s not much to see here now, but this will grow as we add things to our room later on.

Translations

Je ne sais pas ce que c'est. Was? Verstehest du nicht? That’s why you need translations. If you’re going to make your game to be played by people who speak different languages, you’ll want to use the Translations editor. This allows the text in your game to be translated into different languages. Chapter xyz will tell you more about this.

Summary

This chapter focused on the AGS Editor, a very import piece of AGS:

- **AGS Editor Components** The AGS Editor is made up of three main parts: the Document Pane, the Project Tree, and the Properties Window. The Project Tree gives you access to all of the components in your game.

Chapter 2

Sprites, Views, and Characters

A quick revisit of what sprites, views, and characters are is in order here. Sprites are simply images within the game. Because a character animates, it usually takes several sprites to make up a character. Views are, simply put, collections of sprites that make up animations. So basically, characters are made up of views which in turn are made up of sprites.

Side Note: You can find the graphics for the following examples on http://www.ensadi.com/book/sprites.php

Sprites

The first step in creating a character is to draw some sprites. Our character is going to be a fox in a monk outfit with angel wings. (hmm. SOMEONE was drunk!) Find the file named *foxy_monk.bmp* to follow along. Figure 2.1 shows a quick snapshot of the file. I know you can't tell that it's a fox. So what!? If you want to create your own sprites, then go for it. We'll wait…

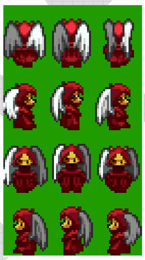


Figure 2.1: Foxy Monk Sprites

As you can see, there are 12 sprites in this file. They each take up the same amount of space to make importing them easier, but that is not necessary. Most of the time, an artist will put many individual sprites into one image file to reduce the number of files needed to create the game, making each sprite the same width and height. That way, the sprites can be aligned in a tiled pattern, as in our example above.

Once you have your sprites saved in a file, the next step will be importing them into your game. Open the Sprites editor by double-clicking **Sprites** in the Project Tree. You will see two panes open up in the editing area (Figure 2.2). On the left is a list of folders that contain sprites. This is simply a way for you to organize the sprites within your editor. For example, you might want to have all of the sprites associated with a character in a folder with the same name as that character. Your final game could easily contain hundreds, if not thousands, of sprites, and getting into this habit of organizing your sprites will make it easier to find and manipulate sprites later.

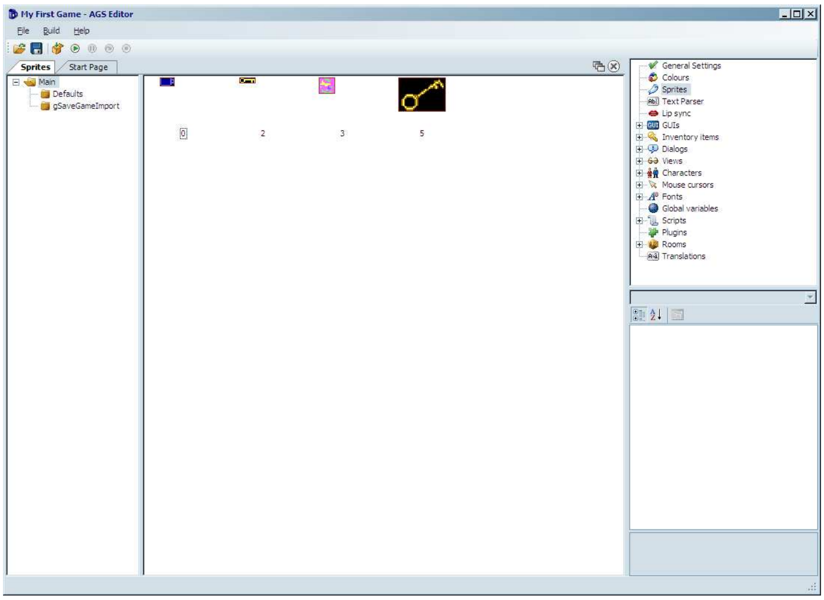
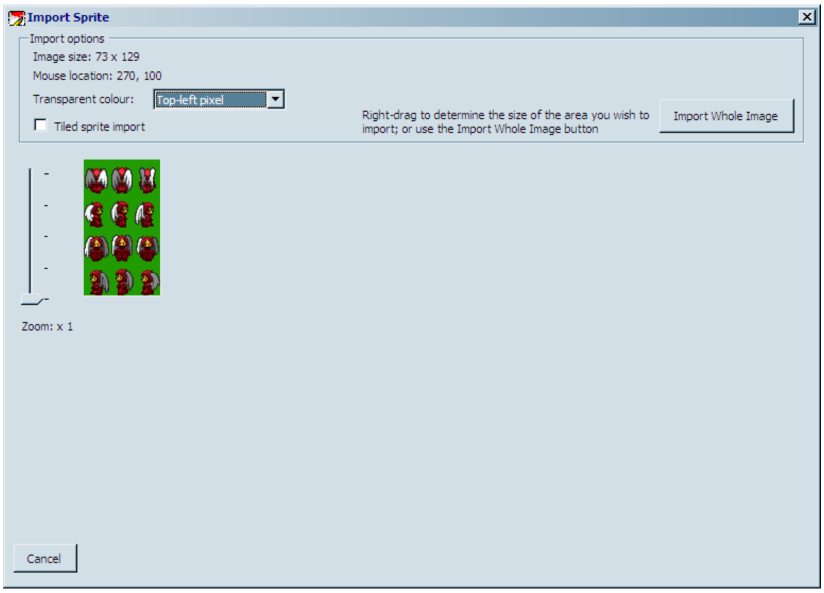


Figure 2.2: Sprites Editor

Let’s create a folder to contain all of our sprites for Foxy Monk. First, right-click on the **Main** folder on the left editing pane and click **Create sub-folder** and call this folder *FoxyMonk*. The right editing pane will now be empty since there are no sprites in this folder (duh!). Let’s fix that by adding a few sprites.

To start importing your sprites, **right-click** in the right editing pane and choose **Import new sprite from file…** This will bring up the good ol’ Windows file open dialog. Find your file and **double-click** it. You should then see the Import Sprite window open as in Figure 2.3.



Import Sprite

Import options

Image size: 73 x 129

Mouse location: 270, 100

Transparent colour: Top-left pixel

☐ Tiled sprite import

Right-drag to determine the size of the area you wish to import; or use the Import Whole Image button

Zoom: x 1

Figure 2.3: Import Sprites Window

As you can see, AGS loaded your file and is ready to import the sprites. Let's tell it how we want the file divided up. Use the zoom slider to make the picture bigger so you can see it easier. Hold the mouse at the top-left corner of the picture. Click and hold the **right** mouse button. (notice right **NOT** left and it's **bold**!). Drag the mouse down and to the right until the first image is highlighted as in Figure 2.4. Note that in this case, the mouse location needs to end up at position (24,32) because that's the size of each of our sprites (you can see your mouse location by looking at the upper left section of the Import Sprite window). Release the mouse button and the highlight rectangle will remain at that size. This tells AGS how big your sprite is. Notice now that as you move your mouse around on the sprite, the highlight rectangle follows your movements. Move the mouse pointer to the upper left-hand corner and the highlight will cover the first sprite. Click the **left** mouse button and your first sprite is imported! Feels good on the inside, doesn't it? Well good. Now all we have to do is repeat the above steps 11 more times to import the rest of the sprites for Foxy Monk. (sigh) If only there was a better way…

Well there is! But first let's delete the sprite you just imported (it will be easier this way, trust me). Click on the newly imported sprite and hit the **delete** key and click **Yes** when asked to confirm.

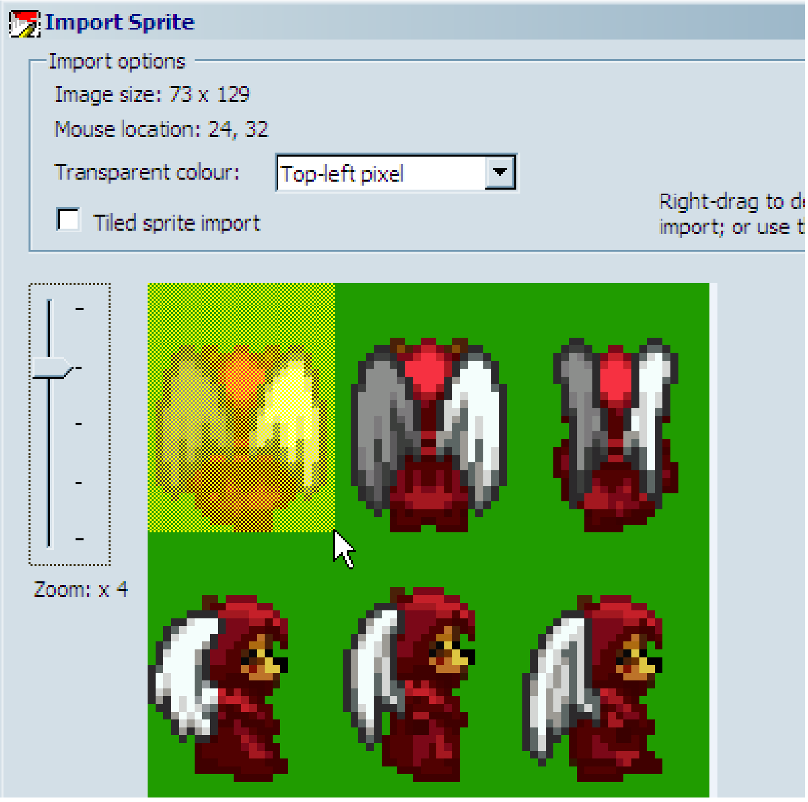


Image size: 73 x 129

Mouse location: 24, 32

Transparent colour: Top-left pixel

□ Tiled sprite import

Zoom: x 4

Figure 2.4: Highlighting a Sprite to Import

Let’s start the process again, and this time we’ll use the fact that the sprites are tiled to our advantage. **Right-click** the middle pane and choose **New sprite using last sprite…**. This option will open up the last file so you don’t have to hunt for it again. Zoom in if you like, but make sure that the entire image stays visible (this will be important in just a second). Hover your mouse over the picture. Notice that AGS remembered the size of the highlight from your last import. Click the **Tiled sprite import** checkbox above the zoom slider. Tiled sprite import allows you to select all the sprites that you want to import at once, as long as they are all the same size. Move the mouse pointer to the top-left corner of the image and **left** click. You should see a blue outline around the first sprite. As you move the mouse, AGS will draw a grid around the sprites in your image. Move the mouse down to the lower-right corner and you should see the blue outline encapsulate each sprite perfectly as in Figure 2.5. Click the mouse again and all your sprites should now be imported! Yay!

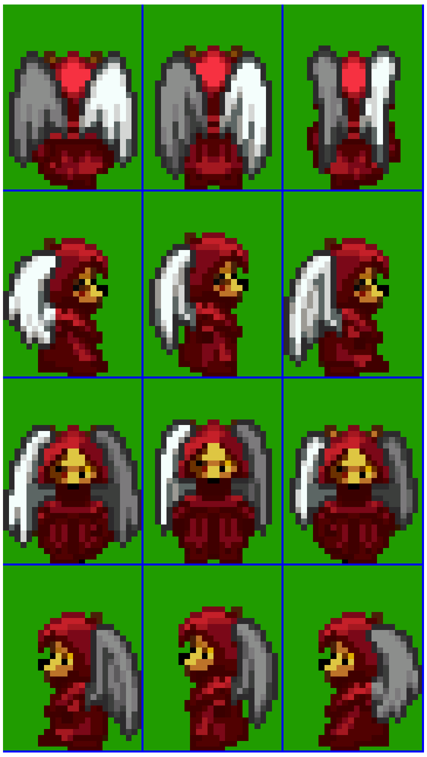


Figure 2.5: Tiled Import

One other thing to note. Did you notice that our sprites have a green background? This green area won't be drawn when the game is played, thanks to something called *transparency*. The Import Sprite dialog has a drop-down box called *Transparent colour*. This allows you to tell AGS what the transparent color is in your sprite. Any pixel that is the same color as the transparent color will be invisible when you play your game. If this wasn't set correctly in our sprite, Foxy Monk would always have a green rectangle behind her (Figure 2.6).

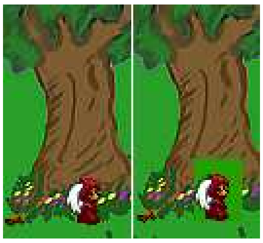


Figure 2.6: On the left, the Foxy Monk sprite has proper transparency. On the right, transparency is not correct and you can see a green box around the sprite.

Views

Now that we have the sprites imported for our character, we need to create a View for the character. We told you earlier that a view is a collection of sprites that make up an animation. We lied (sorry!). A view is actually a collection of loops, and a loop is a collection of sprites. Put another way, a loop is an animation, and a view is a collection of animations. To understand this, let’s use our Foxy Monk as an example. In our image, we had 12 sprites. The first 3 images show Foxy Monk walking away from us, the second 3 show her walking to the right, the next 3 show her walking towards us, and the last 3 show her walking to the left. Each of these directions (up, down, left, and right) is a separate animation (loop), and they will all be contained in a single view that represents Foxy Monk walking (Figure 2.7).

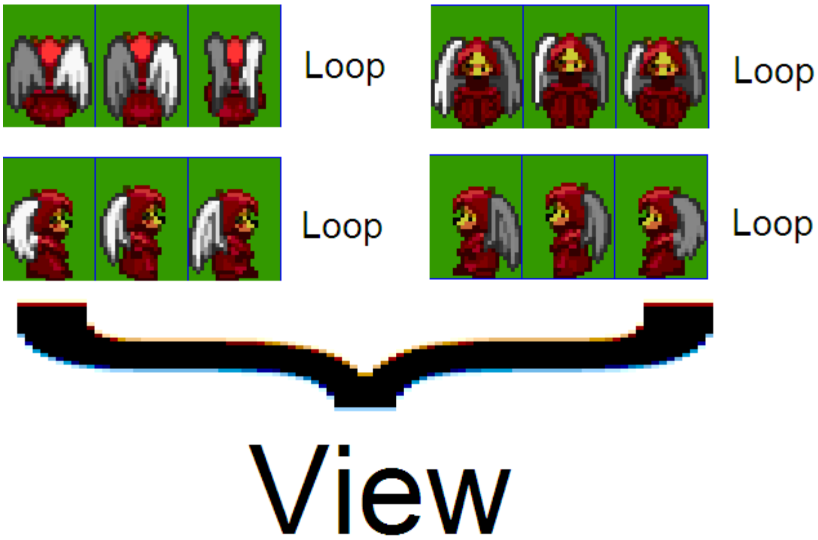


Figure 2.7: Foxy's View

In AGS, the 4 loops that are associated with Foxy Monk walking will all reside in the same View. So later, when we assign this view to Foxy Monk, AGS will automatically know to use loop 0 when she's walking down, loop 1 when she's walking to the left, loop 2 when she's walking to the right, and (you guessed it) loop 3 when she's walking up. In case you're wondering how AGS knows that those loop numbers go with those directions, it's something that's built into AGS. The first 8 loops have special purposes in AGS. Loop 0 is *always* the loop for down, loop 1 is *always* the loop for left, etc. The list of loops and the associated directions is listed in Figure 2.8. The first four loops (loops 0 – 3) are required; if your view does not contain at least four loops, AGS will create them for you automatically. However, the rest of the loops are optional; that is, you don't have to create loop 4 if you don't want to have a separate animation for your character walking down and to the right. In this case, AGS will make an educated guess as to which of the four “cardinal” directions to apply to your character when he is walking in a direction that is not explicitly up, down, left, or right. None of the loops after loop 7 have any special meaning in AGS.

Loop	Direction
0	Down
1	Left
2	Right
3	Up
4	Down-right (diagonal)
5	Up-right (diagonal)
6	Down-left (diagonal)
7	Up-left (diagonal)

Figure 2.8: Loops and their directions

Let's create the view shown in Figure 2.7. Expand **Views** under the Project Tree. If you created the default game and have been following along, you will already have two views listed there (VIEW1 and VIEW2). We could change one of those views to suit our needs, but for purposes of demonstration let's go ahead and make a new one. Right-click on **Views** in the Project Tree, select **New View** from the popup menu, and name the view `vFMNormal`. Whoa! That's a weird name. What the heck does `vFMNormal` mean, anyway? Well, as a general rule, you can name things in AGS whatever you want, but if you follow some simple nomenclature it will make your life much easier when your game gets larger. In this case, our view name begins with a lowercase "**v**." This stands for "view" and is there just so that we immediately know just from looking at the name that `vFMNormal` is a view. The "**FM**" part of the name stands for Foxy Monk, and "**Normal**" means that this is Foxy Monk's normal view. (We'll talk about what a normal view is in the next section.)

Side Note: You might be wondering why we're making such a big deal about how things are named within AGS. After all, why name a view starting with a lowercase "v" when it's obvious that the view is a view, since it's in the Views section of the Project Tree? This is a good question, and if we always dealt with our views and other things solely from the Project Tree then we might not need to be picky about the names. But, as you'll find out later, we will be using many of the names we create when we talk about scripting, and we won't want to have to refer back to the Project Tree to remember what we named our stuff. If we're always consistent with the way we name things, then a name like vFMNormal will actually be much easier to remember than if we'd named the view Banana or something arbitrary!

Ok, we've created a view, now what? If you've been paying attention you should be able to answer this question yourself. We need to create our four loops! Open `vFMNormal` view if it isn't already and notice that there are no loops created yet (Figure 2.9).

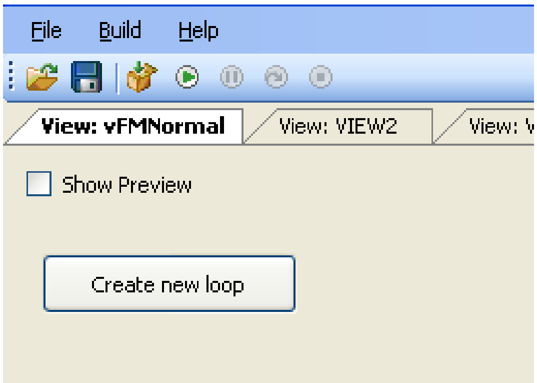


Figure 2.9: Our new view with no loops or sprites

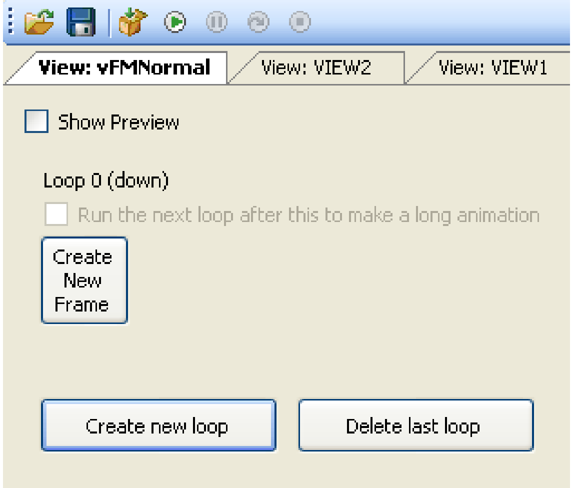
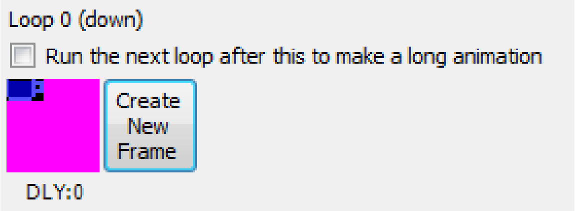


Figure 2.10: Our new view with one loop. It doesn't have any sprites assigned to it yet.

Let's fix that now. Click the **Create new loop** button and Loop 0 will be created as in Figure 2.10. There are three buttons here: **Create New Frame**, **Create new loop**, and **Delete last loop**. These should be self-explanatory, but just in case, we'll discuss each of them. Click the **Create new loop** button. A second loop will appear called (Loop 1). Now click **Delete last loop** to delete it. This is how you would create and delete loops from within the view editor. Go ahead and click **Create new loop** three times to get our four main loops. Now we'll assign sprites to Loop 0. Click the **Create New Frame** button under Loop 0, and you'll see a blue cup sprite appear (Figure 2.11). The blue cup is the default sprite that AGS uses when it knows a sprite should be there but you haven't told it which sprite to use yet. Double-click the blue cup and AGS will bring up a dialog box to let you choose a sprite to use. Click the *FoxyMonk* folder on the left, and choose the first of the three sprites that shows Foxy Monk walking down. Click **Use this sprite** (Figure 2.12). The blue cup has been replaced by Foxy Monk. Rock on! Since we have three sprites for Foxy Monk walking down, this loop will need to have three frames. Click **Create New Frame** and watch closely at what happens. Now, instead of a blue cup appearing, AGS is smart and it automatically selected the *next sprite* in the animation. Click **Create New Frame** again and it will get the third frame. How does AGS know which sprite to use when you create a new frame? Well, it doesn't really. AGS just selected the next sprite in our list of sprites. Since we imported all the Foxy Monk sprites at the same time, the next sprite in our list was the next sprite in the animation. This is common enough that AGS automatically selects the next sprite for you. This is also why it's always a good idea for your sprite file to have the images in the right order and not strewn about every which way.


Loop 0 (down)

□ Run the next loop after this to make a long animation

Figure 2.11: The default Blue Cup appears when AGS doesn't know which sprite to use

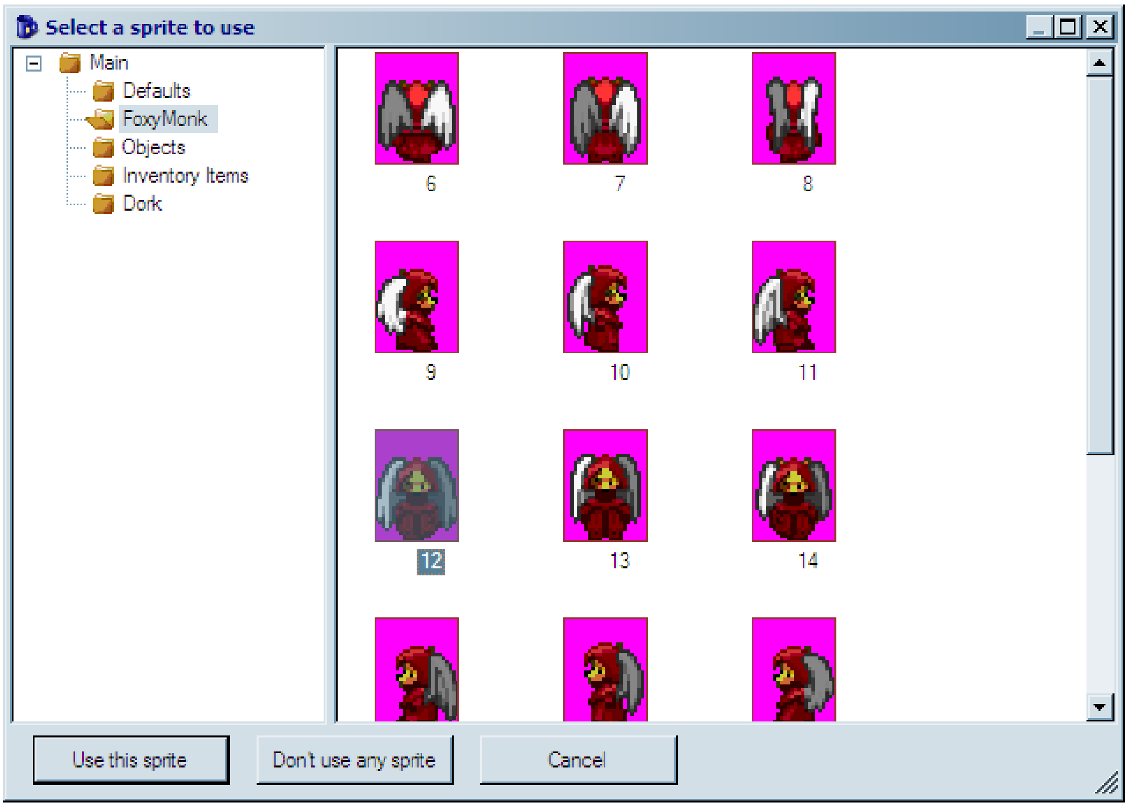
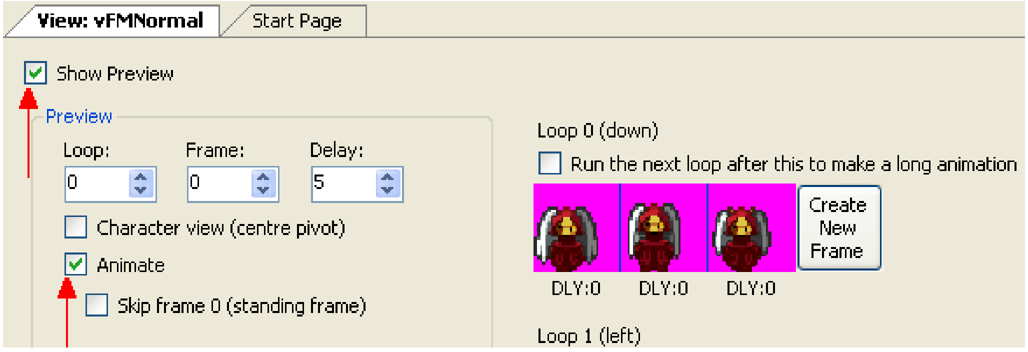


Figure 2.12: Choose the first down facing sprite

Now that we have three frames of animation for loop 0, it would be nice to see what the animation looks like. The view editor provides a nice way for you to preview the animation without having to run the game. To see the loop animated, click the **Show Preview** checkbox above Loop 0, and then click **Animate** from amongst the new checkboxes that appeared. Aww, look. Foxy Monk is walking, ain't she just precious? Wittle Foxy-woxy Monky-wunky is just da cutest wittle thing! Errr.. ahem...


View: vFMNormal | Start Page

☑ Show Preview

Preview

Loop: 0 Frame: 0 Delay: 5

□ Character view (centre pivot)

☑ Animate

□ Skip frame 0 (standing frame)

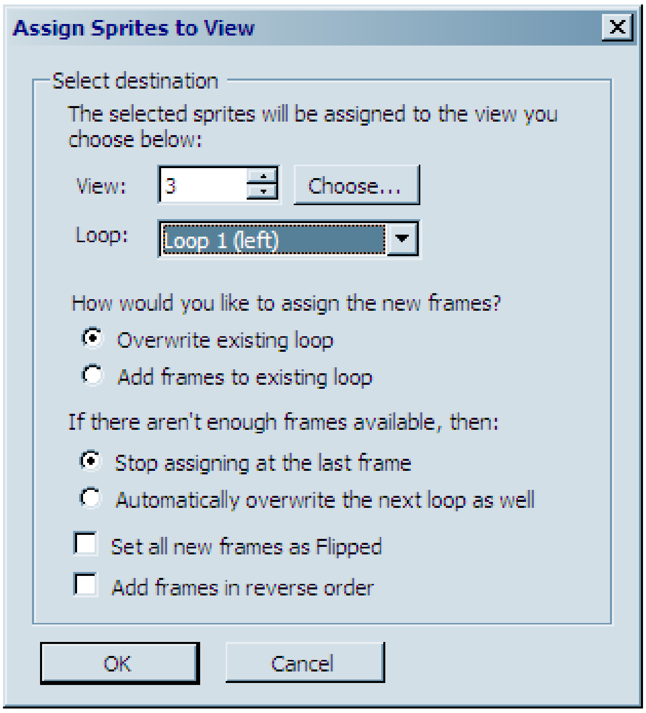
Loop 0 (down)

□ Run the next loop after this to make a long animation

Figure 2.13: The Show Preview and Animate checkboxes

What we just walked through was one way to create a loop and assign it to a view. Let's look at another (easier) way to do the other three. This time, choose **Sprites** from the Project Tree to bring up the Sprite editor. Click the *FoxyMonk* folder so we can see Foxy Monk's sprites. Let's select all the sprites that will make up Loop 1 (left). Find the three frames that show Foxy Monk walking to the left. Click the first of those three sprites, hold down the shift key, and click the last one. This will highlight all three sprites of her walking to the left. Now **right-click** on any of those three sprites and click **Assign to View**. You will see the Assign Sprites to View window, as shown in Figure 2.14. Under View, choose the view to which you want to assign this animation (view number 3 in our case). (Alternatively, you can click the Choose button and select the view that way, but if you know the view number you can just type it in.) For Loop, choose Loop 1 (left). The next question it asks is, “How would you like to assign the new frames?” Select Overwrite existing loop, since our loop is empty anyway. Leave the default options for everything else and click **OK**. A dialog box will appear that says “The selected sprites were assigned successfully.” Click **OK**. Now, go back to your view, and you'll see Loop 1 populated with Foxy Monk walking left!

Repeat the above steps to create Loops 2 and 3 for Foxy Monk walking right and up, respectively. You view should end up looking like Figure 2.15 when you finish.


Assign Sprites to View

Select destination

The selected sprites will be assigned to the view you choose below:

View: 3

Loop: Loop 1 (left)

How would you like to assign the new frames?

● Overwrite existing loop

○ Add frames to existing loop

If there aren't enough frames available, then:

● Stop assigning at the last frame

○ Automatically overwrite the next loop as well

□ Set all new frames as Flipped

□ Add frames in reverse order

Figure 2.14: Assign to View dialog

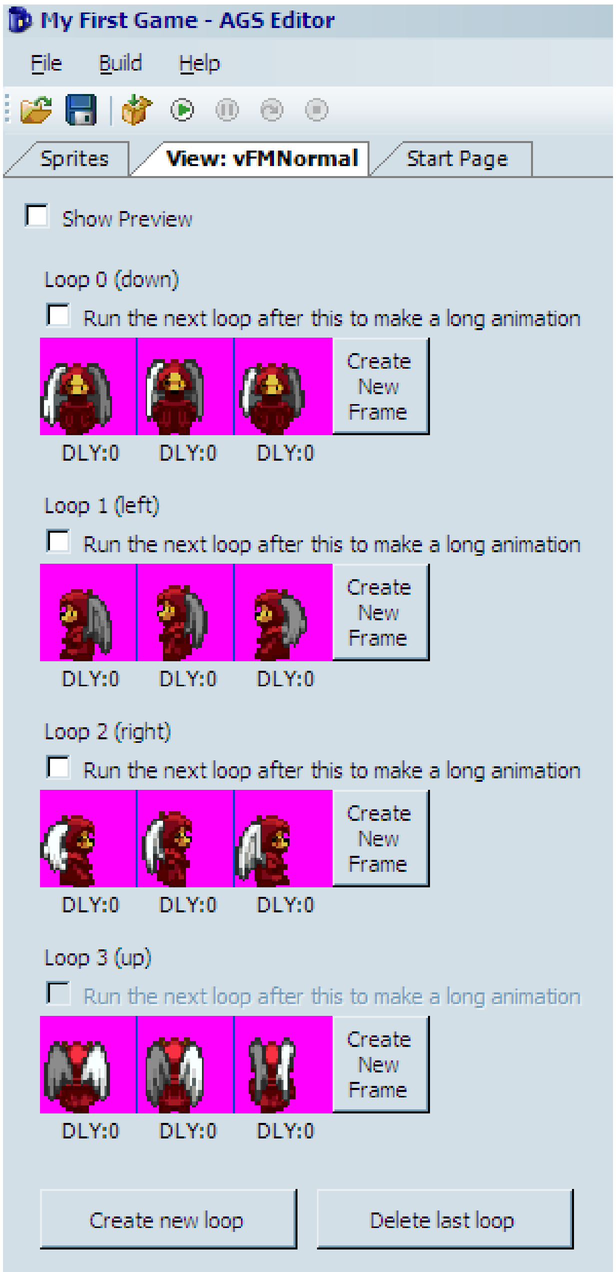


Figure 2.15: Foxy Monk's Normal View

Characters

Now that we have a view for Foxy Monk, we should be able to easily create a character of her. Start by right-clicking on **Characters** in the Project Tree and selecting **New character**. This will create a new item in the tree called "`1: cChar1`." Ick! What a horrible name. Let's give our character a proper name. Click on `cChar1` in the tree to select it. Remember when we talked about the

Properties Pane? We'll get to use it now to set up our new character. Look at the Properties Pane and find the section called `Design`. In this section you should find two important properties: `RealName` and `ScriptName`. `RealName` is the actual name you want to give to your character. As you can see, the real name of the character right now is "New character." Double-click on `RealName` and Type in `Foxy Monk`, and then hit Enter. Now isn't that better? Let's turn our attention to the `ScriptName` field now. The script name is the name that you will be using to refer to your character when writing scripts. In other words, this is the name that AGS will use to refer to the character. AGS assigned the name `cChar1` to it by default. The lowercase **c** in this case stands for "character" and is there to let you know that this is a script name for a character when you're scripting later. (Remember we did something similar with a view in the previous section.) Double-click on `ScriptName` and type in **cFoxyMonk** and then hit Enter. Please note that this name shouldn't have spaces. And that's all there is to naming a character.

Side Note: For you programmers, the script name is the variable name.

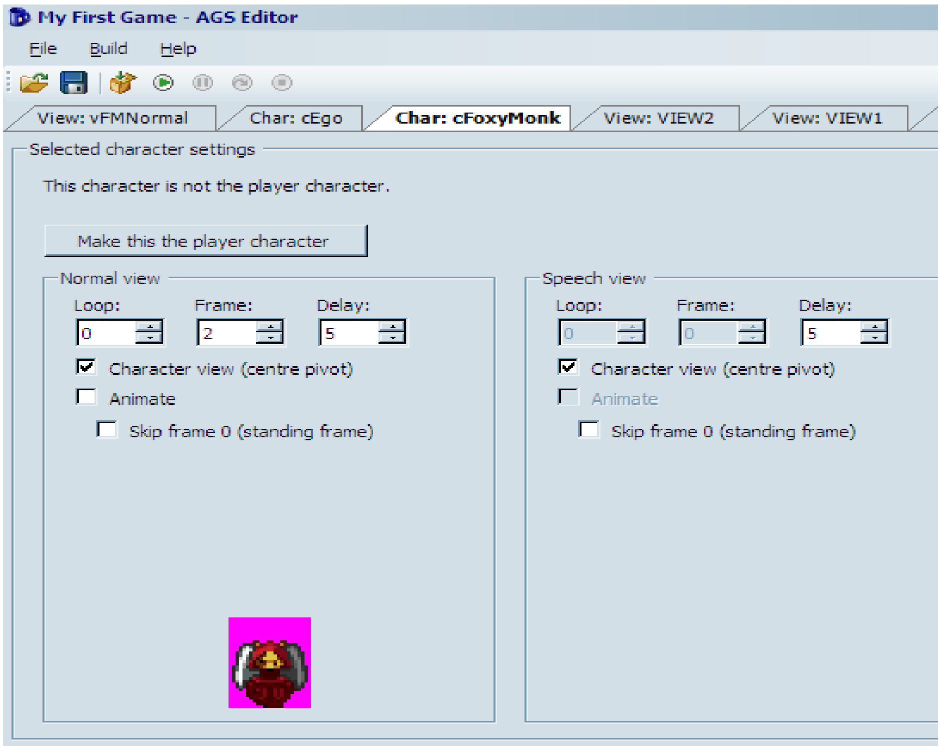
Now that your character has a name, we need to give it a face. Well, a view actually. Find the section in the Properties Pane named `Appearance`. Under this section you should find 5 types of views: `BlinkingView`, `IdleView`, `NormalView`, `SpeechView`, and `ThinkingView`. The names of these views should give you a hint as to what they're for.

- The blinking view is the animation that is displayed when the character blinks.
- The idle view is the animation for the character when it's just standing there doing nothing. This view is activated after a certain amount of time passes without doing anything (we'll talk about this later).
- The normal view is, well, the normal view. This is the view that the character will have when he's standing or walking, and is the most used view. We created this view earlier in this chapter.
- The speech view is the animation used when the character is talking.
- The thinking view can be used to make the character look like he's thinking about something.

AGS automatically uses the right view when the character is doing each of these actions, so you don't have to think about it. For example, if you have a view assigned for the speech view, then AGS will automatically switch the character's view to the speech view when he is talking, and switches back to the normal view when he's done.

What is most important for us is the normal view. We want Foxy Monk to look like the view we just created when she's standing and walking. AGS assigned

View 1 to Foxy Monk by default but that's not the one we want. Double-click `NormalView` in the Properties Pane and type in **3**, and then hit Enter (view 3 was the view we created in the last section, remember?). Now if you look at the Editing Pane you should see Foxy Monk appear as in Figure 2.16.



Selected character settings

This character is not the player character.

Make this the player character

Normal view

Loop: 0 Frame: 2 Delay: 5

☑ Character view (centre pivot)

□ Animate

□ Skip frame 0 (standing frame)

Speech view

Loop: 0 Frame: 0 Delay: 5

☑ Character view (centre pivot)

□ Animate

□ Skip frame 0 (standing frame)

Figure 2.16: Foxy Monk's Character

Let's play around in the Editing Pane and watch Foxy Monk in action. Start by clicking the **Animate** checkbox. You should see Foxy Monk start walking. Neat huh? Click the **up** or **down** arrow under Loop and you should see Foxy Monk change directions. There should be 4 loops that you can cycle through. Also, note that the Frame box continuously changes as Foxy Monk walks. Let me know when you're done playing with that…

Ok, so we have a character and she walks. I'd say it's about time to see this character in action. Go ahead and run the game now. Seriously! Don't read anymore until you run the game.

Oh no! Where's Foxy Monk? Don't panic. Now, I know we haven't talked about rooms yet, but in order to see Foxy appear in the game, we have to move her to the first room in the game; the room that the default white-suit character is currently occupying. By the way, his name is Roger, if you haven't already figured that out. Go back to the Properties Pane and find the `Design` section. There you will see a property called `StartingRoom`. Change this property to 1 and run the game again. Voila! Foxy is here! And so is the default guy, errr, I mean Roger. Now click somewhere to move her around. Oh, wait wait wait. She's not moving. Roger is. Back to the drawing board!

Let's talk about a little more terminology. Right now, since Roger is the main character (that is, the character the player is controlling), he is referred to as a PC (or a player character). (I know, he looks nothing like John Hodgman but believe me, he's still a PC.) Player characters are any characters that the player controls. This is opposed to NPCs, or non-player characters, which are characters that are entirely computer-controlled. At the moment Foxy is an NPC, but we want her to be the PC. Did you notice that large button labeled "Make this the player character" back in the editing pane (Figure 2.16)? Click this button to make Foxy Monk the main character. Now she will replace Roger as the character that you play. So now, Foxy is a PC and Roger has turned into a NPC. While we're at it, let's go ahead and take Roger out of the game completely. Double-click on **cEgo** (yes, that's his script name) under Characters in the Project Tree and change his starting room to 0. Room 0 can always be used to make a character disappear, as long as it's not the main character. Now run the game again. Foxy Monk should appear all by herself and you should be able to move her around the whole screen.

> **Side Note:** If you're wondering about all this business about Roger and cEgo, and why the default main character is named that, here's a little back story. Chris Jones, the creator of AGS, is (obviously) a big adventure game fan, and one of his favorite adventure games is Sierra On-Line's *Space Quest*. The main character in that game was named Roger Wilco, who was a janitor on board a space vessel who eventually became captain of his own ship. Anyway, Chris paid homage to *Space Quest* by making the default character in AGS Roger Wilco. So, why is Roger's script name cEgo? Well, EGO was the internal script name that Sierra used for the main characters in its early games, and so that tradition made its way into AGS in the form of cEgo.

Let's explore a few other character options. I don't know about you, but to me, Foxy was moving a bit too slowly around the screen. Double-click on Foxy's character in the Project Tree and go back to the Properties Pane. Find the `MovementSpeed` option under the `Movement` setting and increase it from 3 to 6. Run the game now and see if you like her speed better. I'm not so happy with the position she's at when the game starts. I think I'd like her to start in the upper left-hand corner. Find the `StartX` and `StartY` options under the `Design` section and change them to 30 and 50 respectively. Run the game now and Foxy will start her adventures at the top and to the left. Woohoo!

Summary

In this chapter, we learned about how to create your first character, and along the way we learned about sprites and views.

- **Sprites** Sprites are the individual graphics that are in your game; for example, the animations that are associated to a character are each made up of one or more sprites. Sprites aren't just for animations, though. A button's image is a sprite, and so is the mouse cursor image. Sprites are imported and managed through the Sprites editor in the Project Tree.
- **Views** Views are collections of animations. An individual animation is called a Loop. Views are made up of one or more Loops. Loops that contain grapes, apples, and oranges are called Fruit Loops.
- **Characters** Your game has to contain at least one character, and most games will have many more than that. Characters that the player controls are called Player Characters (PCs), and characters that are computer-controlled are called Non-Player Characters (NPCs). We’ll be creating an NPC for our game in a later chapter.

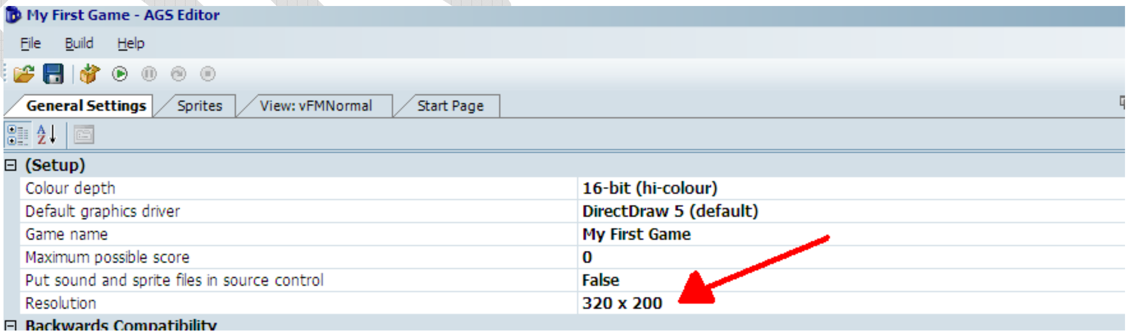
Chapter 3

Rooms and Events

A game with no room is like a forest with no trees. Now that we got the philosophy out of the way, let’s give our friend Foxy Monk a better place to play than a black screen. Like we said before, a room in AGS will contain the background graphic, any objects that are in the room, the room script, and many other things.

Simple Backgrounds

The black background for room 1 was good enough to get our character walking around. But let’s add some color to the room and give Foxy Monk a place where she can frolic in some grass. If you want to make your own background, then go ahead. Otherwise find the file called *simple_bg.bmp*. This file will contain a nice little tree and a small pond. The file is 320 pixels wide and 200 pixels high. “Hmmm…Where did they get those number from?” you might be asking yourself. Well, let’s take a little detour and explain that. Do you remember the General Settings option in the Project Tree? It’s all the way at the top. If you double-click that, the General Settings editor should open up and you should see that the default game’s Resolution option is set to 320x200. So we made our background image that size in order to fit perfectly in the room. Now that you understand that, let’s go ahead and put that image into the game as room 1’s background.



(Setup)

Colour depth	16-bit (hi-colour)
Default graphics driver	DirectDraw 5 (default)
Game name	My First Game
Maximum possible score	0
Put sound and sprite files in source control	False
Resolution	320 x 200

Backwards Compatibility

Figure 3.1: General Settings and Game Resolution

Open the room editor and edit room 1 by expanding the Rooms node in the Project Tree and double-clicking on **Edit Room** under the **1: node**. Room 1’s editor should be in the Editing Pane now and you should be looking at our famous black background. Changing the background is so easy that you’re going to laugh at me when I tell you. Click the **Change…** button at the top of the edit screen. (Figure 3.2).

Side Note: This would be a good time to learn how to name your rooms. Click on 1: under Rooms in the Project Tree. Now look at the Properties Pane and change the Description option to something descriptive. We're going to name room 1 Pond.

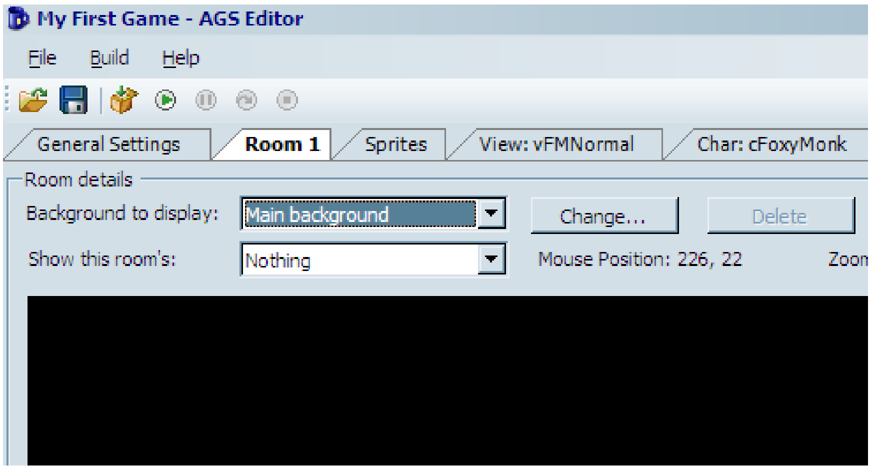
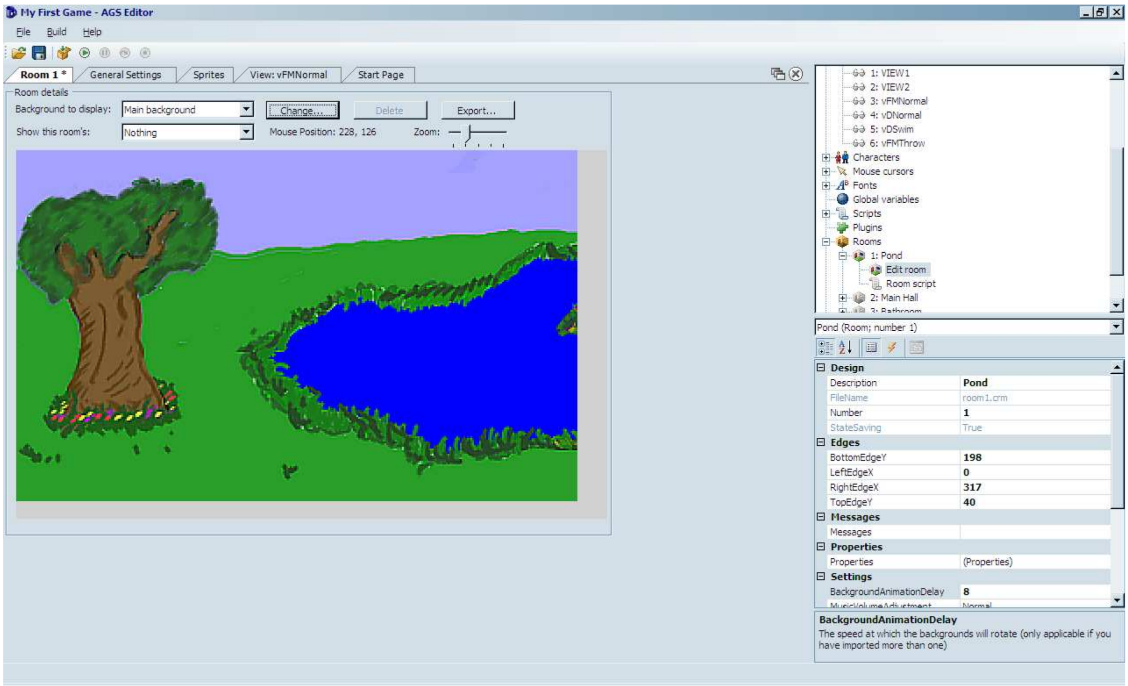


Figure 3.2: The Change... Button for Room 1

A File Chooser window should pop up. Navigate to the file *simple_bg.bmp* and choose it, then click **Open**. You should see the black background turn into your new Tree-Pond-Grass background. And yes, that's what I want to call it. Press **F5** now to run the game and have Foxy run amok around our beautiful scenery. Click on different parts of the screen to have Foxy walk around. Ok, ok, so you may have noticed that Foxy is walking on everything! I mean, not only is she walking on the grass where she's supposed to walk, but she can walk on the water, on the tree, even in the sky! Not only that, but when you start the game, she's up in the tree. Well, we'll fix that in a little while. For now though, as an exercise, why don't you change Foxy's starting position so she's on the grass somewhere. As a hint, go to the room editor and move your mouse around the background. You should notice that the Mouse Position coordinates, which are under the **Change** button you clicked earlier, are changing. Choose a nice place to start Foxy (we're choosing 110,167) and set her starting coordinates. If you don't remember how to do it, look at the previous chapter.



Background to display: Main background

Show this room's: Nothing

Mouse Position: 228, 126

Zoom:

Pond (Room; number 1)

Design	
Description	**Pond**
FileName	room1.crm
Number	**1**
StateSaving	True
Edges	
BottomEdgeY	**198**
LeftEdgeX	**0**
RightEdgeX	**317**
TopEdgeY	**40**
Messages	
Messages	
Properties	
Properties	(Properties)
Settings	
BackgroundAnimationDelay	**8**
MusicVolumeAdjustment	Normal

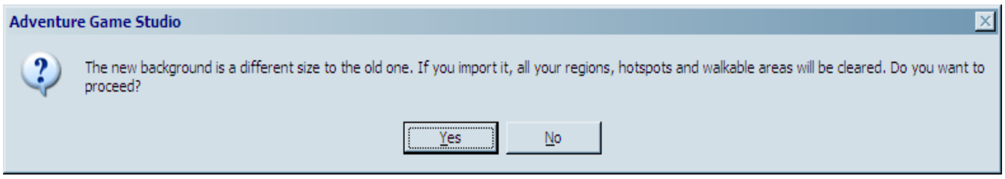
BackgroundAnimationDelay
The speed at which the backgrounds will rotate (only applicable if you have imported more than one)

Figure 3.3: Tree-Pond-Grass background

Scrolling Backgrounds

Before we fix the problem of Foxy walking everywhere she's not supposed to, let's do a couple more things first. As we said earlier, we imported a background that was exactly the same size as game's resolution (320x200 in this case). This is fine and dandy, and it means that the player will be able to see the entire background all the time. What would happen, you might wonder, if we used an image for the background that was bigger than the game's resolution? That is, instead of a background of 320x200, what if we used one that was 721x200 for example? We're glad you asked! We just happen to have a file of that size. Let's load it up and test it out!

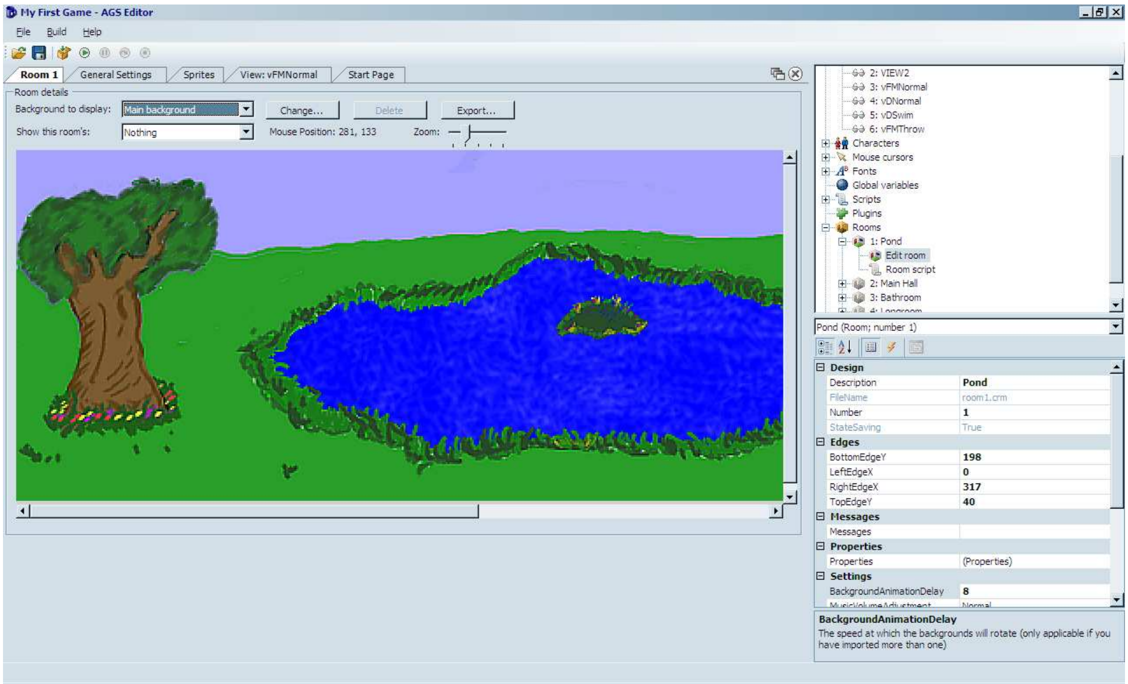
Quit out of the game if it's still running, and go back to the room editor. We're going to change the background that we just imported to a bigger one so we can see what happens. Click on the **Change** button again, and this time when the file dialog opens, choose the file *scrolling_bg.bmp*. After you click **Open**, you'll get a warning message like the one in Figure 3.4, letting you know that this new background image is a different size than the one you're currently using. If we'd done a lot of work with our room, like adding regions or hotspots or something, then changing a background like this would clear all of those areas, which is basically what this message box is telling you. This new background does cause us to have to redo the walkable area in this room, which we'll do in just a minute. Click **Yes** on the dialog box.


Adventure Game Studio

The new background is a different size to the old one. If you import it, all your regions, hotspots and walkable areas will be cleared. Do you want to proceed?

Figure 3.4: Warning Message

Our new room's background looks very similar to the one we just loaded, but with one important difference: there are scrollbars around the image now! Scroll to the right a bit and you can see more of the background. Now let's fix that walkable area issue. Our default room actually had a walkable area, which is what allowed Foxy to walk around the screen, and importing this new background cleared that walkable area, which keeps Foxy from being able to move! We'll get to more about walkable areas later, but for now let's put back the walkable area in this new background.



Background to display: Main background

Show this room's: Nothing

Mouse Position: 281, 133

Zoom:

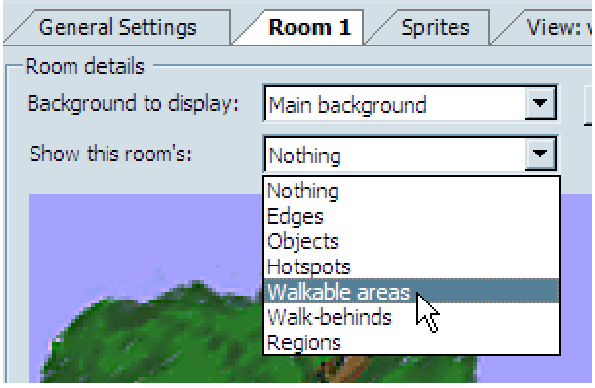
Pond (Room; number 1)

Design	
Description	Pond
FileName	room1.crm
Number	1
StateSaving	True
Edges	
BottomEdgeY	198
LeftEdgeX	0
RightEdgeX	317
TopEdgeY	40
Messages	
Messages	
Properties	
Properties	(Properties)
Settings	
BackgroundAnimationDelay	8
MusicVolumeAdjustment	Normal

BackgroundAnimationDelay
The speed at which the backgrounds will rotate (only applicable if you have imported more than one)

Figure 3.5: Scrolling Tree-Pond-Grass background

Look at the room editor, just above the background image, where it says **Show this room's**. Click the drop-down box next to that and select **Walkable areas** (Figure 3.6). Now, click on the **Fill** tool at the top of the screen (circled in red in Figure 3.7) and then click anywhere on the background. This will turn the background blue. Don't worry about what this is yet, we'll talk about this more later in this chapter.



Background to display: Main background

Show this room's: Nothing

Figure 3.6: Choose Walkable areas from the Dropdown box

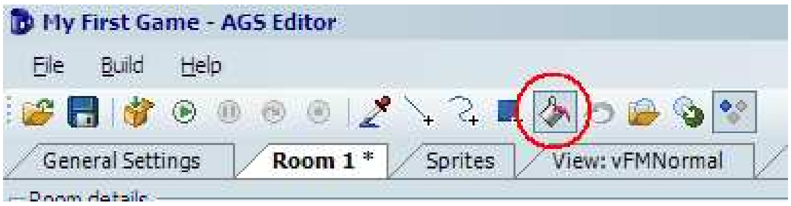


Figure 3.7: The Fill Tool

Ok, now that we've fixed the walkable area, run the game again by pressing **F5**. Now click close to the right side of the screen to have Foxy walk there. When she gets about halfway across the screen, the background will start to scroll!

Animating Backgrounds

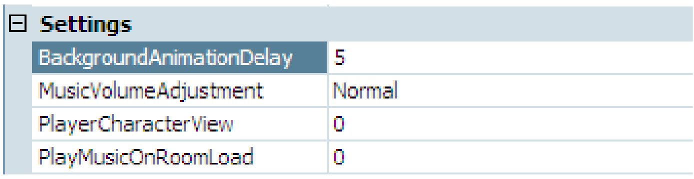
Let's do one more cool thing with backgrounds before we move on. As you might have guessed for this section's title, we're going to add animation in the background. And what better to animate than the pond. Normally, when one is taking a long stroll by a water pond, with a windowless shed and a tree in the park, one would notice that the water ripples ever so slightly as the wind whispers around it.

To make an animating background, you need to simply copy your background image for each frame of animation you want and change the parts of each image that should be animated (in our case, the pond). AGS allows you to have up to 5 frames of animation that make up your animating background. We've already created 5 background images for you that show the animating water (aren't we nice?). In each image, the water in the pond is slightly different so, when they are animated it will look like the water is rippling or waving.

Ok then! Let's ripple us some water.

Quit the game and go back to the room editor and edit room 1 by double-clicking it. If your room is still blue from the last section, click the drop-down box next to **Show this room's,** and select **Nothing** (see Figure 3.6) to get rid of the blue-ness. Click the **Change...** button to change the background and choose the file named *RipplePond1.bmp*. You should see some white show up in the pond. This will be the first image that we're going to add to the background to create the ripple effect. To add the other 4 images, open the drop-down box next to **Background to display:** (this will say "Main background") and choose **Import new background**. Say **Yes** to the popup and choose the file *RipplePond2.bmp*. Do this 3 more times choosing the next RipplePond files in the series. Ta da! You have an animating background.

Run the game by pressing **F5**. When Foxy shows up to the tree-pond-windowless-shed park now, she'll be able to enjoy a nice ripply pond to stroll next to (or even into!). But hang on a minute. We think the water is moving just a bit too fast. With that speed, we'd have to make the tree sway back and forth too. We're too lazy for that, so let's just slow the water down. Look at the properties pane and find the `Settings` section. You'll see a setting called `BackgroundAnimationDelay` (Figure 3.8). Change this setting from 5 to 8. (We played with it and thought 8 looked best. You can do whatever delay you like).



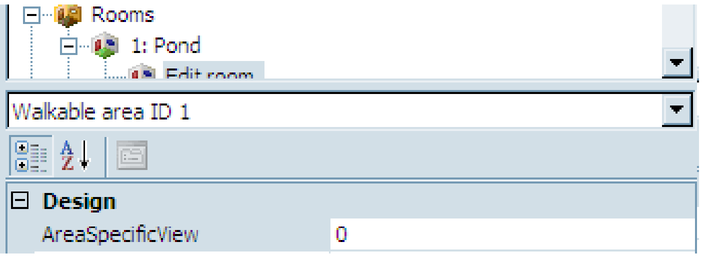
⊟ Settings	
BackgroundAnimationDelay	5
MusicVolumeAdjustment	Normal
PlayerCharacterView	0
PlayMusicOnRoomLoad	0

Figure 3.8: Background Animation Delay

Walkable Areas

That's right ladies and gentlemen; it's time to make sure Foxy Monk doesn't walk on things that she shouldn't walk on. Walkable areas in AGS are special areas that are drawn onto the background where characters are allowed to walk. AGS allows you to have up to 15 different walkable areas that you can turn on and off at will. As you should already know, there is one walkable area that was automatically created for you when the game was created. We played a little bit with this area before (when it disappeared on us) by putting it back to allow Foxy to walk again. Now we're going to fine tune this walkable area so Foxy only walks where she's supposed to.

Now let's see; people don't normally walk on the sides of houses and on the sky, right? We'll go with that for now. Look at the room editor, just above the background image, where it says **Show this room's**. Click the drop-down box next to that and select **Walkable areas** (Figure 3.6). Now, click on the Fill tool at the top of the screen (circled in red in Figure 3.7) and then **RIGHT-CLICK** anywhere on the background. This will turn off the blue color. Notice that before, we LEFT-CLICKED to create the blue color. So, you should right-click to get rid of a walkable area, and left-click to create one. If you look between the Properties Pane and the Project Tree, you will notice a drop down box that says "Walkable area ID 1." This tells us that we're currently editing the first walkable area, which happens to be the default one.



AreaSpecificView 0

Figure 3.9: Walkable area ID location

Now comes the fun part. We have to create a new walkable area that makes more sense. Choose the **Freehand** tool from the toolbar (Highlighted in Figure 3.10). Now we're going to see how good you are at free-hand tracing around the picture. Start anywhere you like and trace around the shack, right at the horizon, around the bolder (we don't want Foxy walking on that because she's a bit clumsy and could trip and fall), and around the base of the tree so that Foxy doesn't trample the flowers, and around the pond because Foxy is a fox and not a duck.

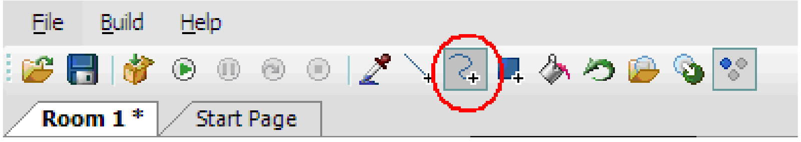


Figure 3.10: Freehand Tool

When you're done, it should look something like Figure 3.11.

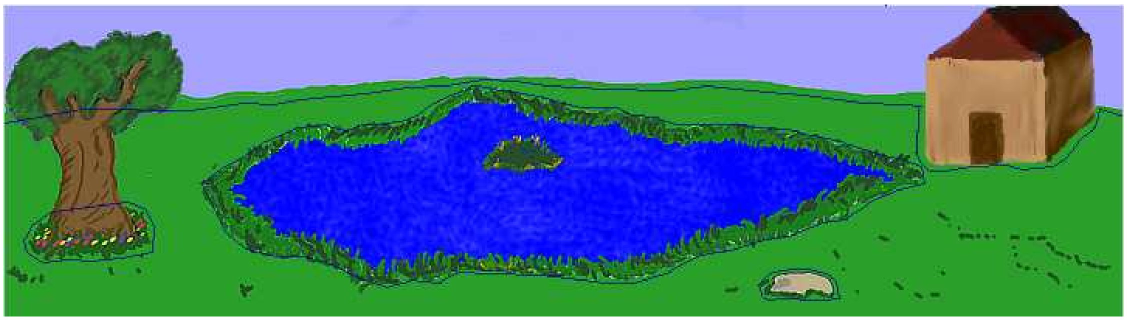


Figure 3.11: Freehand Tracing (blue line)

Choose the **Fill** tool from the toolbar and click anywhere Foxy is ALLOWED to walk. You should have something that looks like Figure 3.12. The blue (not including the water) is Walkable Area 1 and will be the only place that Foxy can walk. If your blue covers more area, then undo and check your edges. You might not have closed your line somewhere. Notice that we left a bit of an edge around everything so that Foxy doesn't go right up to something and smack right into it. Also notice that I didn't trace around the tree itself. This does mean that Foxy will still be able to walk right onto it, but that's ok for now (we have plans for that tree). Ok now for the fun part:

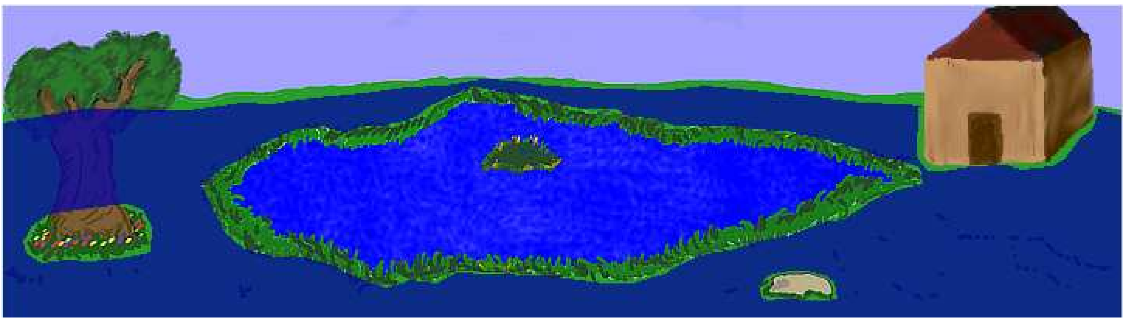


Figure 3.12: Completed Walkable Area

Run the game and walk around. You'll find that you will not be able to walk anywhere that is not blue (of course, you can't see the blue areas in the actual game!). In fact, click on one side of the shack and wait for Foxy to get there. Then click on the opposite side of the shack. You'll see that Foxy is now smart enough to go around the shack to her new destination. Now to take care of that whole walk-on-the-tree-trunk business…

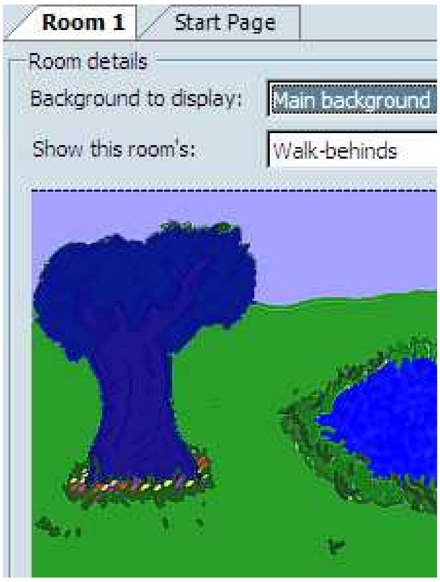
Walk-Behinds

Foxy shouldn't be able to walk *on* the tree, but she should be able to walk *behind* it. That's where walk-behind areas come in. Walk-behind areas in AGS give your game an illusion of depth by allowing characters and objects to appear to walk behind sections of your background. Since we want Foxy to be able to walk behind the tree, we have to allow her to walk across that area (which is why we kept the walkable area on top of the tree in the last section), but we need to create a walk-behind area so that Foxy will disappear when she walks behind the tree. Let's do that now.

First, select **Walk-behinds** from the drop down box that says **Show this room's**. Now, trace the tree just like you traced the walkable area in the last section. You'll need to be a little more precise here so zoom in as far as you can to make the outline of the tree follow as closely as possible to the picture.

Side Note: If you want more control over drawing the walkable areas or walk-behind areas of your room than AGS editor allows, you can always use a paint program of your choice to create an image mask and use it instead. More information on this can be found in Chapter xyz.

Once you have the tree outlined, your room's walk-behind should look something like Figure 3.13. Notice the very top of the picture, just above the sky. Do you see a blue dashed line going across the picture? This line is the **baseline** of the walk-behind area. The baseline is important, so pay attention here.



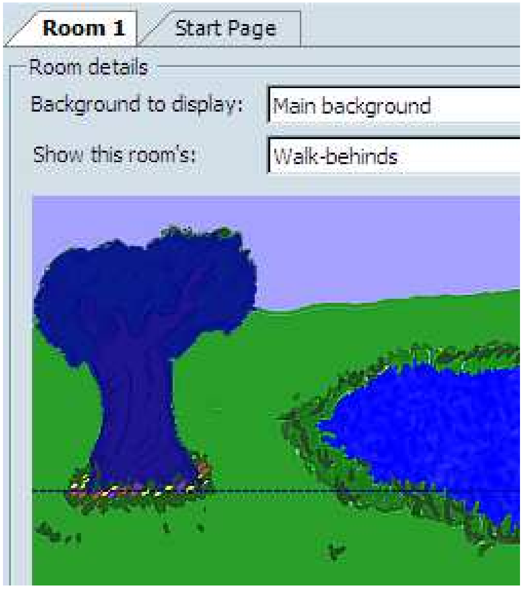
Background to display: Main background

Show this room's: Walk-behinds

Figure 3.13: Walk-behind on the Tree

Every walk-behind has a baseline, which is an imaginary line that gives AGS information on when the character should be drawn behind the walk-behind area. You can click and drag this baseline up and down to wherever you want it to be. Whenever a character's baseline* is above the walk-behind's baseline, the character will be drawn behind the walk-behind area. Conversely, whenever a character's baseline is below the walk-behind's baseline, the character will be drawn in front of the walk-behind area. Occasionally, the placement of the walk-behind's baseline takes a little thought, but most of the time the baseline should be placed snug against the bottom of the walk-behind area. Figure 3.14 shows where we put the baseline of the tree walk-behind area.

Side Note: By default, the character's baseline is set to the very bottom of the sprite that is used to display the character. If that sounds confusing, just think about the character's baseline as being the same thing as the character's feet. Unless your character is an inverted Squirkle with 7 feet from the planet Vexus, this analogy should work pretty well for you.



Room details

Background to display: Main background

Show this room's: Walk-behinds

Figure 3.14: Baseline for the Walk-behind

Now that we've defined the walk-behind area, Foxy should be able to walk behind the tree. Run the game and see if it works. When Foxy goes behind the tree, she should really go *behind* the tree (Figure 3.15)! If Foxy doesn't walk behind the tree for you, go back and make sure your baseline is set correctly.

Side Note: By the way, remember how we outlined the flowerbed at the base of the tree when we were creating our walkable area in the last section? The reason we excluded the base of the tree from the walkable area was that it adds to the illusion of depth by making it appear that Foxy walks around the tree. If she could walk directly up to the tree, it would make the tree seem paper thin, which is obviously not what we want. If you want to see what we mean, go back to your walkable area and fill in the flower bed so that Foxy can walk there, then run the game and have Foxy walk around the tree. The tree seems kinda flat, huh?

Figure 3.15: Foxy Hiding

Regions (not the bank (this was funny at the time of writing))

A Region is basically a place that the character walks onto and something happens. That makes no sense; let me try again. A region can be a spot that triggers an event and/or changes the environment. For example, you could change the light level or color tint in that region. You can also trigger events when a player walks INTO the region, OUT OF the region, or is just STANDING in the region. I believe this could best be explained with an example. So guess what?

Nope, you guessed wrong! We're going to add another room!!! And what better place to add a new room than inside our shack? You can draw your own room of course, but, we did the hard work and you should be able to find a file called *ShackRoom1.png*, which will become the inside of our shack.

To start, right-click on **Rooms** in the Project Tree and choose **New Room**. Keep the default options and click **OK**. Double-click on **Edit room** under **2:** in the Project Tree and go ahead and give this room a good name by typing in a name in the `Description` field of the Properties Pane. We're calling ours `Main Hall`.

Side Note: Maybe explain the options in the New Room dialog

Now think way back to when you first added a background to a room. Do you remember how you did it? Good! Add a background to this room using the file *ShackRoom1.png* (or one that you made).

Great! Now we need a way for Foxy Monk to be able to walk from outside the shack to inside. That's what we'll use a region for. We're going to put a region right in front of the door on the outside of the shack. Basically, when Foxy Monk steps onto the region it would be as if she walked through the door. Go back to the Project Tree and double-click **Edit Room** under **1: Pond** to edit room 1. (Notice that AGS will only allow you to edit one room at a time. Whenever you start editing a room, it will close the previously opened room.) Scroll the background of the Pond room so you can see the shack's door on the right. Now, select **Regions** from the drop down box that says **Show this room's**. Look at the space between the Project Tree and the Properties Pane. You should see a drop-down box with **Region ID 0 (or 1)** in it. This is where you select which region you want to work with. AGS allows you to have up to 15 regions. Region 0 is an eraser region and can't be used for what we want (you use it to get rid of other regions). Choose **Region ID 1** from the drop-down box so we can draw our first region. (Figure 3.16).

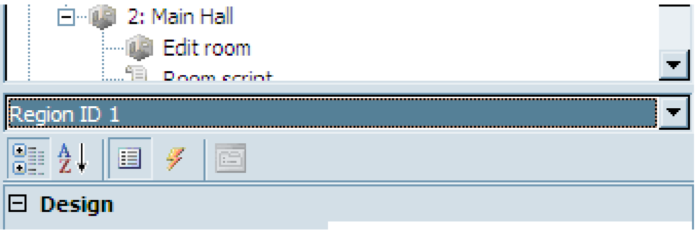


Figure 3.16: Choosing Region 1

Drawing a region is very much like drawing a walkable area. Enclose the area for the region with a drawing tool and fill it in. To make our door-to-the-shack region, we chose the Rectangle tool (The blue box in Figure 3.10) and made a small rectangle right in front of the door as in Figure 3.17. Don't make this rectangle too big, otherwise Foxy Monk will go inside the shack when she's far away from the door and that would be just crazy.

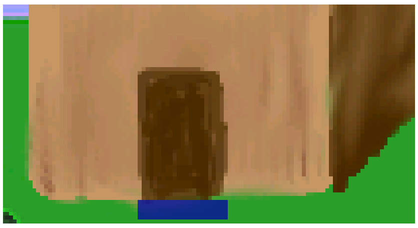
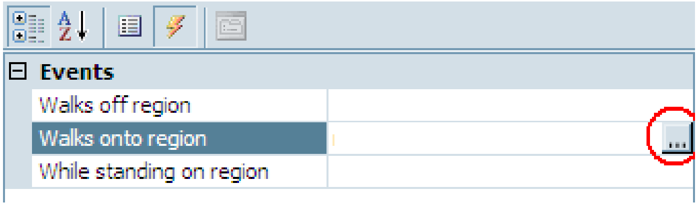


Figure 3.17: Region in Front of the Door

That's all there is to making a region; Except for that whole scripting thing. But before we start scripting, we need to add an event to that region. You see that thunderbolt symbol in Figure 3.16? Good. Go ahead and click that. Once you click it, the Properties Pane will change to show 3 different events:

- Walks off region
- Walks onto region
- While standing on region

This tells us that we can do something when the character walks off of the region, do something else when the characters walks onto it, or do something repeatedly as long as the character is standing on the region. For our purposes, we want to use the `Walks onto region` event to make Foxy Monk change rooms when she walks up to the door. To create the script, click on `Walks onto region` and then click the **ellipses** that will show up to the right of the input area next to the `Walks onto region` option (Red circle in Figure 3.18). Doing this will open the script editor for room 1. (The script editor can also be opened by double-clicking **Room script** in the Project Tree, but that will not add events; it will just open the script editor.)



Events

Walks off region

Walks onto region

While standing on region

Figure 3.18: Click the Ellipses to Add a Script

Now for the fun stuff. Oh boy, we're going to get into a bit of scripting now. Don't worry; it's really not as hard as it sounds. AND it doesn't sound hard. Huh?

You should see a new function called `region1_WalksOnto()`. A function is a set of instructions that are grouped together to perform a certain task. Nifty huh? Make the function look like Listing 2.1.

```
function region1_WalksOnto()
{
  cFoxyMonk.ChangeRoom(2, 155, 184);
}
```

Listing 3.1

Let's dissect this line-by-line:

```
function region1_WalksOnto()
```

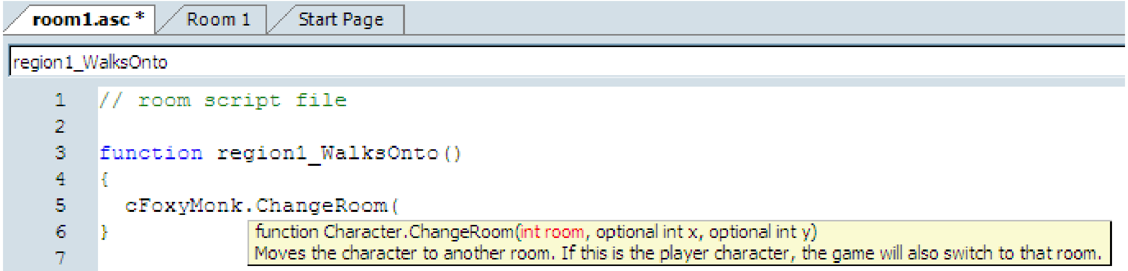
This line declares the function `region1_WalksOnto` that AGS created for us. Notice that the word `function` is colored blue—this tells you that it's a word that has special meaning in AGS's scripting language. In this case, the word `function` means that we are beginning to define a function, and the name that follows, `region1_WalksOnto`, is the name of the function we're defining.

Following the name of the function we would define any parameters that need to be passed to the function to help it work. For example, there's a function called `Say` that is used to cause a character to say something. Well, if we were using that function, we'd need to tell it what the character should say. This text would be passed to the function as a parameter. Function parameters are included in parentheses after the function name. (The `region1_WalksOnto` function doesn't require any parameters, so there's nothing within the parentheses.)

```
{
  cFoxyMonk.ChangeRoom(2, 155, 184);
}
```

These next lines are the body of the function. Everything within the curly braces is considered part of the function. In our case, there's only one instruction in our function.

Remember when we were creating Foxy Monk, there was an attribute in her character properties called `Script Name` and we set it to `cFoxyMonk`? Any time we want to refer to Foxy in the script, we have to call her by her Script Name (appropriate, eh?). So, you can see above that we say `cFoxyMonk.ChangeRoom`. This causes Foxy Monk to eat a jelly donut. No wait! I mean it causes her to change rooms. This time we're *calling* a function instead of *defining* one. But what are all those numbers for in the parentheses? Those are the parameters that the `ChangeRoom` function needs. If you were observant (and assuming you didn't just copy and paste the code above but actually typed it) you would have noticed that when you typed that open parenthesis after the `ChangeRoom` function, there was a tool tip that popped up (Figure 3.19). If you did happen to copy and paste the code, or if you just didn't see this tool tip pop up before, you might want to try to re-type this line into AGS by hand so that you can see it. This tool tip is there to help you remember what parameters are required for the function that you are using. The first parameter for `ChangeRoom` is called `room`, and it's an integer (we know that because it has an "int" in front of it, which stands for integer). This is the room that we want Foxy to change to. In our case, we want her to change to room #2 (the Main Hall) so we type 2 for the room parameter. The second and third parameter are both optional (hence the "optional" keyword in front of each parameter) so we don't have to supply these at all, but we will anyway. These two parameters are the x and y coordinates of where Foxy should be located in the new room when she shows up there. We chose coordinates 155 for x and 184 for y.



room1.asc * | Room 1 | Start Page

region1_WalksOnto

```
// room script file

function region1_WalksOnto()
{
  cFoxyMonk.ChangeRoom(
}
```

function Character.ChangeRoom(int room, optional int x, optional int y)
Moves the character to another room. If this is the player character, the game will also switch to that room.

Figure 3.19: Tooltip Pop-up

Side Note: You MUST use AGS to create the function as we did here. You CAN'T just open the script editor and type a whole function in because AGS won't know to connect the function to its event. That is, the step that we did at first, where we clicked the ellipses button to create the region1_WalksOnto function, was very important. Clicking that button not only created the function for us, but it also told AGS to run that function whenever that event (the player walks onto the region) happens. If we had just gone into the room's script file and manually created this function without clicking the ellipse button first, then AGS wouldn't know to run the function when the event happened.

X and Y Coordinates

The ChangeRoom function seems pretty simple, right? If you're confused as to what the x and y coordinates are that we talked about at the end there, we'll try to shed some light on that here.

AGS uses x and y coordinates to specify the location of something in your game. The x coordinate is the distance the object is from the left edge of the room, and the y coordinate is the distance the object is from the top edge of the room. These distances are measured in *pixels*, which are the tiny little dots that make up the image on your computer screen. So, an object that is located at x coordinate 110 and y coordinate 167, or (110, 167) as it's sometimes written, is 110 pixels from the left edge of the room, and 167 pixels from the top edge of the room, as in Figure 3.20 below.

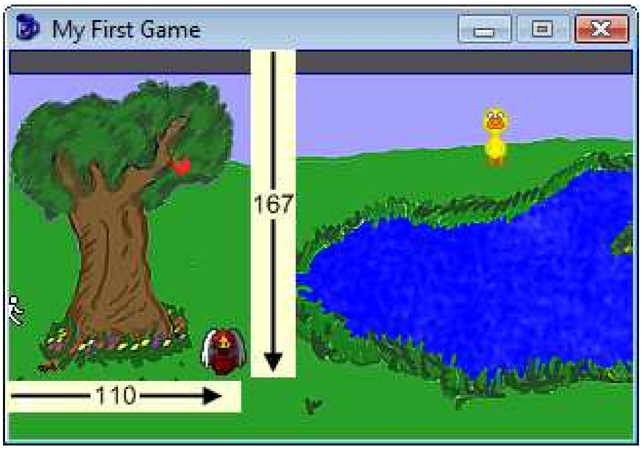


Figure 3.20: Foxy is 110 pixels from the left edge of the room and 167 pixels from the top.

There’s one “gotcha” here to keep in mind. In AGS, x and y coordinates are relative to the *room* and not to the *screen*. For most rooms, the size of the screen and the size of the background will probably be the same, but in the case of our Pond room, which has a scrolling background, the room is larger than the screen. So, an x coordinate of 342, for example, refers to a location 342 pixels from the left edge of the room, not 342 pixels from the left edge of the screen, since the screen itself might be scrolled to the right.

Side Note: How do you know what x and y coordinates to use? Well, open your room in the room editor (double-click Edit room) and move your mouse around on your room. Do you see at the top, where it says Mouse Position? This tells you the x and y position of your mouse cursor. So, just put your mouse at the spot in your room where you want Foxy’s feet to be, and then look at the value of Mouse Position. Plug those numbers into the script and that’s all you need to do!

What happens if you don’t supply those optional parameters? Many functions in AGS have optional parameters and each function behaves differently if you don’t supply them. In the case of ChangeRoom, for example, if you didn’t supply the x and y coordinates then Foxy’s position wouldn’t change in the new room. In other words, her x and y coordinates would remain the same from one room to the other. So if she were standing at x, y coordinate (10, 137) and you called ChangeRoom but didn’t specify a new x, y location, then she would be at location (10, 137) in the new room as well. Other functions that have optional parameters have fixed default values that they will take if you don’t supply them. When in doubt, just hit F1 and refer to the manual. It will tell you what the default values are for each optional parameter in AGS.

Let’s review and run!

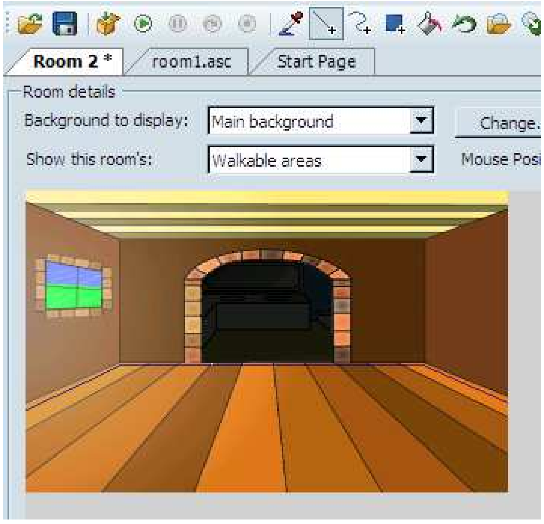
That's all there is to the function. Let's review real quick:

- We created a region in front of the house that will be used to cause Foxy to enter the shack.
- We created an Event that was associated to that region so that whenever Foxy walks onto the region it calls our function `region1_WalksOnto`.
- Inside this function is the scripting command that actually causes Foxy to change rooms.

Cool huh?

Now run your game and have Foxy walk just in front of the door to the shack. If everything worked correctly, Foxy will now be inside the shack! Yippee! Oh hang on a second… She can't move around in this new room at all (are her feet stuck in cement?), and she can't get back to the pond yet.

First things first: Foxy can't walk around in the new room because we haven't created a walkable area for her yet. Remember that a walkable area defines the area on the screen where characters can walk, and since we haven't created one yet in our new room, Foxy can't walk around at all! That's easily fixed. Go back to the room editor by double-clicking on **Edit room** under the Main Hall room in the Project Tree. Open the **Show this room's** dropdown box and select **Walkable areas**. You should be quite familiar with this now. Trace around the floor area using the Line tool (Figure 3.21) and then fill that with the Fill area tool (Figure 3.22). Make sure to add a little extra walkable area that goes up into the top room (You'll see why later).



Background to display: Main background

Show this room's: Walkable areas

Figure 3.21: Trace the Walkable Area in the Main Hall

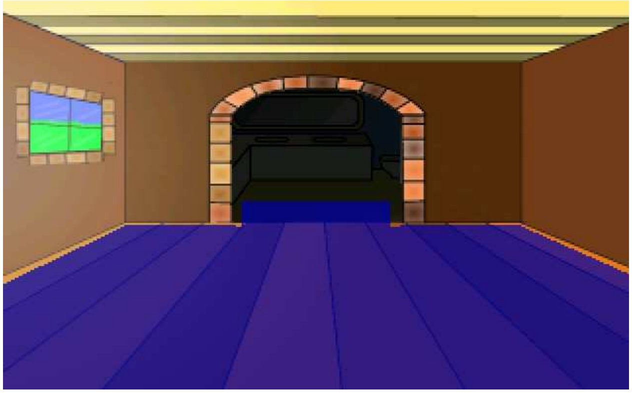


Figure 3.22: Complete Walkable Area in the Main Hall

Now if you run that game you should find that Foxy can walk around in the shack, but there's still one problem: once she enters the shack, there's no way for her to leave! Don't worry Foxy, we'll fix that in a little bit. For now, though, let's take a small detour and talk about room events.

Room Events

When you're writing your game, you'll want the game to be able to react to different actions that the player takes while she's playing. For example, you might want to be cause the character to say something when the player enters a room for the first time ("Wow, this place looks spooky!"), or you might want an object to move somewhere if the player enters a room from the left side or something. These things can be handled through the room's events. The events for the room are different than the ones we've seen for regions. If you don't already have the room editor open, go ahead and double-click **Edit Room** for one of the rooms (it doesn't matter which one). If you take a look at the list of events for the room we have open by clicking the lightning bolt icon in the Properties Tree, you'll see 9 different events listed.

- `Enters room after fade-in`: When your room becomes active, it fades in, or gradually becomes visible. Once the room has faded in and AGS is ready for the player to interact with the room, this event is triggered. This event is useful for doing things right when the player comes into the room.
- `Enters room before fade-in`: Before your room has faded in, but just before AGS is getting ready to fade it in, this event is triggered. General things like setting up objects in the room or making sure variables are set right can be done in this event.
- `First time enters room`: This is just like the `Enters room after fade-in` event, except it only occurs the very first time the player enters this room, and never again.

- `Leaves room`: When the player leaves the room, just before AGS is getting ready to bring up the next room, this event will be triggered.
- `Repeatedly execute`: This event is triggered over and over again throughout the entire life-cycle of the room. Normally, this means that this event is triggered 40 times per second while the room is active. Things that you want to check on a continuous basis can be put in this event. For example, timers will use this event (which we'll discuss in detail in Chapter xyz).
- `Walks off bottom edge`: When the player walks off the bottom edge of the screen, this event is triggered. Most of the time, this event will be used to move the character to another room but it could be used for other things too, like if the bottom edge of the room leads to a pit full of snakes, then this function might cause the character's untimely death!
- `Walks off left edge`: This is just like `Walks off bottom edge`, but it's triggered for when the player walks off the left edge of the room.
- `Walks off right edge`: Ditto, but right edge.
- `Walks off top edge`: Do I really have to explain this?

In the next section, we'll discuss more about the last four events. Right now, Foxy has no way of getting out of the Main Hall once she's in there, and we promised her a minute ago that we'd fix that, so… Onward!

Room Edges

Regions are one way to change rooms, but it's not always the best way. Most of the time room changes will occur as the character walks off one of the room's edges.

The first thing we should do is allow Foxy to leave the shack and get back out that door. We could create a region at the bottom of the shack floor and put some code in place for that region to move Foxy out to the pond area, or, we could use the room's bottom edge for that. Since changing rooms happens at the edges most of the time, room edges cut down on some of the work of having to draw the regions.

Start by going to the **Show this room's** drop down box at the top of the room editor. (We're assuming you know where this is by now.) Choose **Edges** from the drop down and you should see 4 yellow lines – one for each edge (Figure 3.23).

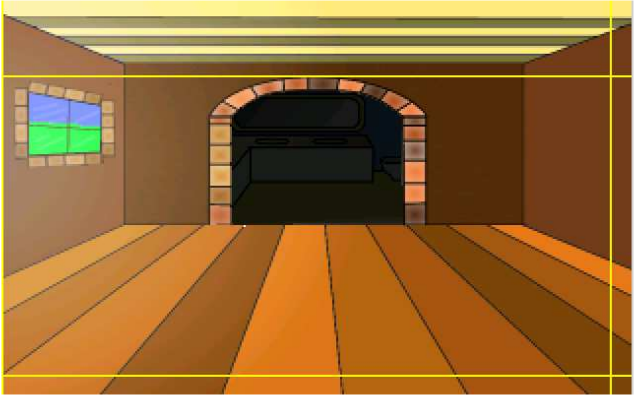


Figure 3.23: Room Edges

Be aware that one or more of the edges might be, literally, right up along the edge, so look hard to find them (The left edge in Figure 3.23 is flush against the left side). Just like you can create a function that runs when a character enters a region, you can also set up a function that runs when a character crosses one of these edges. To leave the shack, we want to fire up a function when Foxy crosses the bottom edge (where she came in). We need the bottom edge to be moved up a little so that Foxy can actually cross it. Click and drag the bottom edge so that the y coordinate (that's the second number in the Mouse Position) is set at about 188.

Now let's write the function. Click the lightning bolt between the Project Tree and the Properties Pane. You should see some events pop up. One of these events should be `Walks off bottom edge`. Click on that event and then click on the ellipses button on the far right that will pop up. This is going to create the function, link to the event, and place you in the function (script) editor. The code for this function is going to be very similar to the code for the region we created earlier and looks like Listing 3.2.

Side Note: From now on, when we refer to the edges of a room, we will be talking about the edges that we can drag and NOT the physical edge of the picture.

```
function room_LeaveBottom()
{
  cFoxyMonk.ChangeRoom(1, 634, 108);
}
```

Listing 3.2

As you can see, the differences between this function and the last one we wrote are the name of the function, the room number to change to, and the x,y coordinates. We chose those coordinates by looking at room 1 (the Pond) and placing the mouse where we want Foxy to be when she comes out. Oh, and make sure not choose chose any x,y coordinates that are right in the region we created in room 1. Otherwise Foxy will never be able to leave the shack because as soon as she does, she'll step on the region and come right back in.

And that's all there is to edges. While we're here, let's go ahead and create the two remaining rooms in the shack and create edges to get into and out of them. Find two files named *ShackRoom2.png* and *ShackRoom3.png*. Create two new rooms with those files as backgrounds. Make *ShackRoom2.png* room 3 and *ShackRoom3.png* room 4. Well ok, so the numbering can get confusing. Live with it. Name room 3 "Bathroom" and room 4 "Longroom." Hopefully you remember how to do all that. Now create walkable areas in both rooms that look something like Figure 3.24.

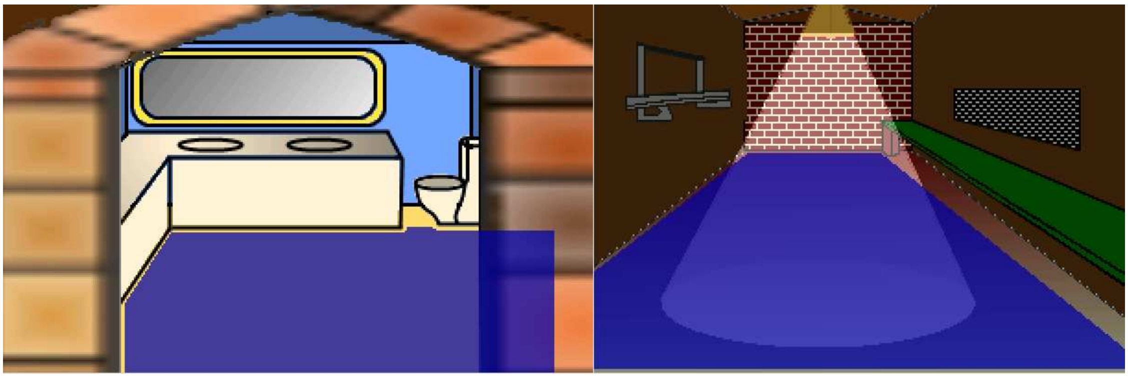


Figure 3.24: The Other 2 Room in the Shack

And yes, I know that the walkable area in the bathroom goes behind the wall, so guess what you have to do with that. Yep, create a walk-behind for it so it looks like Figure 3.25 (we created two). And remember to set the baseline for your walk-behind all the way at the bottom so that Foxy will always be behind that wall when she walks there.

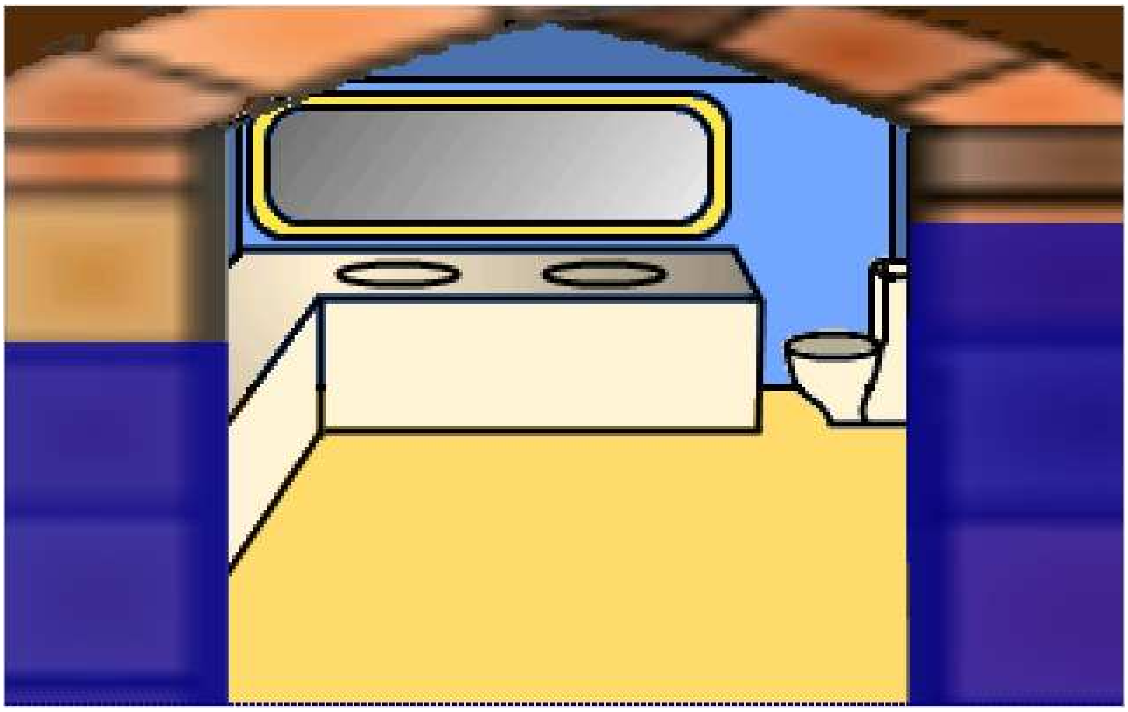


Figure 3.25: Walk-behinds in the Bathroom

Great! Now we're ready to add some functions for two more edges in our first shack room. Let's start with the bathroom. Go back to editing room 2's edges and drag the top edge so that it's just at the junction where the floor meets the walls (Figure 3.26). Once the edge is in the correct spot, create a new function for the `Walks off top edge` event (hint: click the ellipses button next to the event) and make it so it looks like Listing 3.3.

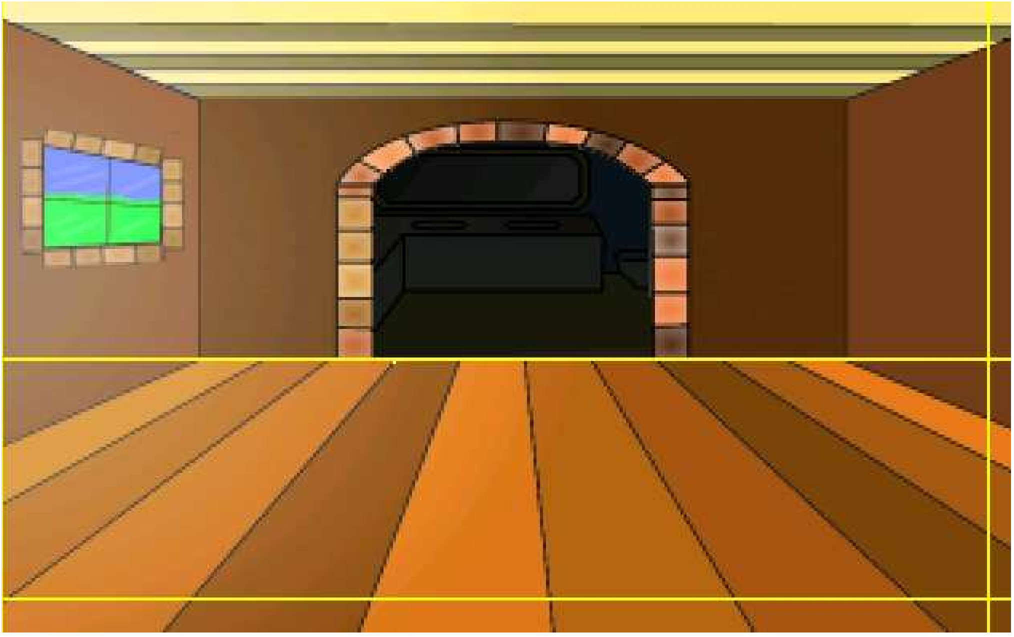


Figure 3.26: Set the Top Edge at the Bottom of the Wall

```
function room_LeaveTop()
{
  cFoxyMonk.ChangeRoom(3, 160, 189);
}
```

Listing 3.3

Before running the game, go ahead and add the right edge function to move Foxy to room 4. I'll let you do that on your own. Run the game and walk around. Then, once you realize that your stuck either in the bathroom or the longroom, go ahead and write the functions to exit out of those rooms using the bottom edge of the bathroom and the left edge of the longroom. Our code for that is in Listing 3.4. The first function is in room three's file and the second function in room four's.

```
function room_LeaveBottom()
{
  cFoxyMonk.ChangeRoom(2, 159, 118);
}

function room_LeaveLeft()
{
  cFoxyMonk.ChangeRoom(2, 310, 168);
}
```

Listing 2.4

Lighting

Some of you may have noticed that there's a light in the Long Room. I'd say as long as there's that light there, let's use it to our advantage and create a lighting effect for Foxy. Edit room 4 and create two regions right under the light and in the cone of the light as in Figure 3.27.

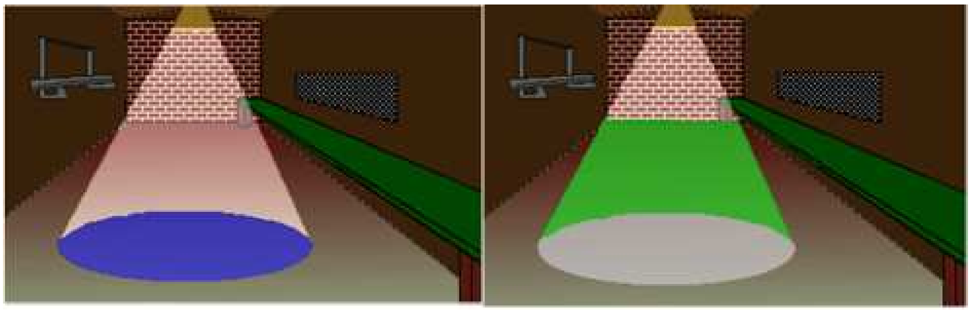


Figure 3.27: The Two Lighting Regions

Now here's how easy it is to set the lighting. Choose **Region ID 1** from the dropdown between the Project Tree and the Properties Pane. Change the `lightLevel` property from 100 to 150. Choose **Region ID 2** and change that light level from 100 to 120. Run the game and go into that room. Walk around in and out of the regions and watch how the lighting on Foxy changes.

You can cause a character to ignore light levels by setting the `IgnoreLighting` attribute of the character to `False` within the script, or by setting `UseRoomAreaLighting` to `False` in the Character editor.

Scaling

Scaling in AGS is simply a way to make characters appear larger or smaller. For example, when Foxy is walking around in the bathroom she looks like a little child who can't reach anything. Foxy is not a little child though. We have to make sure she fits into her surroundings well, especially if she needs to use the toilet. Let's scale her up a notch when she's in the bathroom. Edit the bathroom and show the room's walkable areas. In the Properties Pane, change the `ScalingLevel` propery to 220. This means that Foxy will appear at 220% of her normal size while she's in this walkable area. Take Foxy into the bathroom and check it out. She's HUMONGOUS.

Let's also add some scaling in the Long Room. It would be nice if Foxy got smaller as she walked towards the back wall since she's walking away from us. We can't set a certain scaling level for this, though, since we want Foxy to get progressively smaller as she walks towards the back of the room. There's another property just for that and it's called `UseContinuousScaling`, which is set to `False` by default. Turn this option on (by setting it to `True`). You will notice that AGS has replaced the `ScalingLevel` property with two new ones called `MinScalingLevel` and `MaxScalingLevel`. The `MinScalingLevel` property is the scaling level that Foxy will appear at when she is at the top of the walkable area, and the `MaxScalingLevel` is the scaling level that she'll appear at when she's at the bottom of the walkable area. Anytime Foxy is in the walkable area, her scaling level will be set to something between these maximum and minimum levels (depending on how far she is from the top or bottom of the walkable area), which will cause her to get larger as she walks down and smaller as she walks up. Edit the Long Room and view its walkable areas. If you haven't already, change the `UseContinuousScaling` property to `True` and set the `MinScalingLevel` to 100 and the `MaxScalingLevel` to 200. This will cause Foxy to get smaller as she moves to the back of the room. When she's at the bottom of the walkable area, she will appear at 200% of her normal size, at when she's at the top she'll appear at 100%. Run the game and make Foxy walk next to the green table on the right of the room. You should notice that she get smaller and her head stays mostly in the same position relative to the table.

Room Transitions

Now that Foxy can go to the different rooms in the shack, we need to talk about something called Room Transitions. This isn't something that's really a feature of AGS but it's something to keep in mind to give your game a little bit of a professional touch. Right now, when Foxy walks from room to room, as soon as she passes the room edge, the game immediately moves to the next room and Foxy instantly jumps to the correct (x, y) coordinates in the new room.

Let's pretend like we're a player of your game. We've just entered the shack for the first time and we're exploring a bit and walking around. We walk Foxy over near the right side of the screen because we want to see something over there, and BOOM! We cross the right edge of the room and we're suddenly in another room. If we didn't know that we just crossed the right edge of the screen, we might be a little confused as to why we're suddenly somewhere else.

A much more elegant alternative would be, as soon as Foxy crosses the right edge of the screen, she continues to walk off the screen before the room changes and then, when the new room appears, we see Foxy walk into the screen from the left side. This kind of attention to detail is what will make your game stand out and will give it a bit more of a polished look and feel.

So, how would we go about doing this? Well, we've really already outlined what we need to do; we just need to write it into the script.

There are two things we need to accomplish here. First, we said that when Foxy crosses the edge of the screen we want her to continue to walk off the screen before the room changes. And the second thing we want is, when Foxy enters the new room, she should walk in from the left side of the screen.

Walking off the screen

Open the room script for the Main Hall room. Find the function we created in the last section called `room_LeaveRight`. Change that function so it looks like this:

```
function room_LeaveRight()
{
  cFoxyMonk.Walk(335, cFoxyMonk.y, eBlock, eAnywhere);
  cFoxyMonk.ChangeRoom(4, -15, cFoxyMonk.y);
}
```

You can probably figure out what that Walk statement does. This is where we tell Foxy to walk off the right edge of the screen before the room changes. The first two parameters are the *x* and *y* location that we want her to walk to. We're doing something a little strange with each of these parameters (so pay attention!). Remember back to our background image of this room. Its dimensions are 320 pixels wide by 200 pixels high. Why, then, did we choose an x location of 335 to pass to the Walk function? That's not even within the bounds of the background! But wait, we want Foxy to walk *off the screen* before she changes rooms so this is ok. An x location of 335 will give us this effect. But what about that y location? What the heck is `cFoxyMonk.y`? This simply refers to the current y location of Foxy. By using this value instead of hard-coding a number, she will walk in a horizontal direction as she walks off the edge of the screen.

The next parameter to the Walk function is the blocking style. This tells AGS whether or not to wait for this command to finish before moving on to the next line of scripting. There are two possible values you can use here: `eBlock`, which causes the script to stop at this command and wait until it finishes before moving on, and `eNoBlock`, which immediately continues with the rest of the script without waiting for this command to finish. We're using `eBlock` in this case, because we don't want Foxy to switch rooms until after she has finished walking.

Finally, the last parameter tells Foxy whether she has to obey the walkable areas we've defined in the room in order to reach her destination. The two values you can use here are `eWalkableAreas` and `eAnywhere`. If we use `eWalkableAreas` then Foxy will only walk on the Walkable areas. This isn't what we want, since we're explicitly telling her to walk off the edge of the screen where there's no walkable area defined. So, we'll use the other option for this parameter, eAnywhere, which allows Foxy to walk anywhere on the screen (or even off the screen!).

So that takes care of the walking part. But we also changed the ChangeRoom line as well. As we learned in a previous section, the ChangeRoom function takes 3 parameters—namely, a room number, and an x and y location of where she will be in the new room. The room number didn't change but we did change the x and y location. We're using an x location of -15 for the same reason we used 335 for x earlier: we want Foxy to walk into the new room from off the screen so we need to set her x location to be off the left edge of the screen. This will be her starting location in the new room. The y location doesn't need to change from room to room, so we can just use cFoxyMonk.y for it. So to reiterate: To walk Foxy **OFF** the screen, tell her to walk completely off the edge of the screen and then set her new (x,y) coordinates (for the new room) also off the screen so that she can start there and walk onto the new screen. Confused? Don't worry. You just need to see it in action and you'll get it soon enough.

So that takes care of walking off the screen. Now we need to handle the situation where Foxy walks back onto the screen in the new room. Double click **Edit Room** under Room 4: Longroom to bring up the room in the editor. Now, click on the **Events** button (the one with the lightning bolt) to bring up the events tab, and look for the event Enters room after fade-in. This event is triggered after the room fades in, so we'll use it to have Foxy walk in from the bottom of the screen. Click the ellipses button next to the event which will create a new script called room_AfterFadeIn. Edit that function so it looks like this:

```
function room_AfterFadeIn()
{
  if(cFoxyMonk.PreviousRoom == 2)
  {
    cFoxyMonk.Walk(23, cFoxyMonk.y, eBlock,
     eAnywhere);
  }
}
```

Here, we're doing two things. First, we're checking to make sure that the room that Foxy was just in was the Main Hall. If it was, then we're going to have her walk from her current position to somewhere just inside the room.

```
if (cFoxyMonk.PreviousRoom == 2)
```

This line does the checking part. We're using an if statement to look at Foxy's PreviousRoom attribute to see if she was just in the Main Hall (room 2). Note the use of the double equals signs. Double equals signs are used for testing equality, so don't let that throw you.

Next we have an open curly brace, followed by:

```
cFoxyMonk.Walk(23, cFoxyMonk.y, eBlock, eAnywhere);
```

This is our good friend the Walk function again. This should be familiar now, but just for clarity's sake, I'll explain it briefly. We're telling Foxy to walk to x location 23, but ensuring that her y location doesn't change so she walks in a straight horizontal line. We don't want anything else to happen until she gets there so we use `eBlock` for the blocking style. And finally, since we're walking outside of our normal walkable areas, we have to use `eAnywhere` as the last parameter.

That should do it. Run the game and try it out. Walk Foxy into the shack then walk to the right to see our transitions in action! Notice how she walks off the screen to the right, then the screen changes, and we see her walk onto the screen from the left. Man! How I wish we could do video screenshots!!!

A Little Scripting Detour...

So far our functions have been simple. You have a name for the function preceded by the word **function**, you follow the name with parentheses, and then you put the statements within curly braces like this:

```
function myFunction()
{
   do something here;
}
```

In the preceding sub-section we introduced something new: the `if` statement. This statement examines a condition and only does the statements under it if the condition is true. So to do something only if Foxy is in room 1 we say `if(cFoxyMonk.Room == 1)`. If we want her to do something if she's in any room *except* room 1 we say `if(cFoxyMonk.Room != 1)`.

Just like a function, an `if` statement can be a block. All the statements in an `if` block will execute if the `if` statement is true. Use curly braces to distinguish an `if` block just like you do with a function, like this:

```
function myFunction()
{
   if(cFoxyMonk.Room == 1)
   {
     do something here;
```

```
          do some more;
   }
   if(cFoxyMonk.Room != 1)
   {
          do something else;
   }
}
```

In this example we do two statements if Foxy is in room 1 and we do one other statement if she's not in room 1. This would be a good time to introduce the `else` clause. An `if` statement can have an `else` clause that happens only if the `if` statement is false, like this:

```
function myFunction()
{
   if(cFoxyMonk.Room == 1)
   {
     do something here;
          do some more;
   }
   else
   {
          do something else;
   }
}
```

This gives us the same function but we don't have to check the room twice. If Foxy is in room 1 do the first block, otherwise do the second. We can further reduce this code by taking out the second set of curly braces like this:

```
function myFunction()
{
   if(cFoxyMonk.Room == 1)
   {
     do something here;
          do some more;
   }
   else
          do something else;
}
```

If an `if` or `else` clause only has one statement in it, then the curly braces are optional.

Another important feature about `if` statements is the `else/if` block. You can have one or more of these to test for different cases. Let's say you want to do one thing if Foxy is in room 1, something else if she's in room 2, and something completely different if she's in any other room. It would look like this:

```
function myFunction()
{
   if(cFoxyMonk.Room == 1)
   {
     do something here...
          do some more...
   }
   else if(cFoxyMonk.Room == 2)
          do something else;
   else {
          do something completely different;
          sing Monty Python songs;
   }
}
```

One last thing to cover about `if` statements is checking for multiple cases all at once. Let's say we want to do something if Foxy is in room 1 AND her x coordinate is 35:

```
if(cFoxyMonk.Room == 1 && cFoxyMonk.x == 1)
```

The double ampersand (&&) makes the `if` statement true ONLY if Foxy is in room 1 AND at the x coordinate 35. If we want to do something if EITHER she’s in room 1 OR she’s in room 2 it would look like this:

```
if(cFoxyMonk.Room == 1 || cFoxyMonk.Room == 2)
```

The double pipe (`||`) symbol is an OR. The `if` statement will be true if Foxy is either in room 1 or room 2.

And finally, here's a table of the tests you can do in an `if` statement:

Test	What
= =	Left term is equal to right term
! =	Left term is not equal to right term
<	Left term is less than right term
>	Left term is greater than right term
< =	Left term is less than or equal to right term

> =	Left term is less than or equal to right term

HOMEWORK:
Make 3 more screen transitions: One for going into the bathroom, one for coming back to the main hall from the bathroom, and one for coming back to the main hall from the longroom. You can also add the same code to the region in room 1 and `afterFadeIn` of room 2 to walk Foxy in from the outside. Just as a bit of help, here's the final code for the `afterFadeIn` function of room 2.

```
function room_AfterFadeIn()
{
  if (cFoxyMonk.PreviousRoom == 1)
  {
    cFoxyMonk.Walk(cFoxyMonk.x, 184, eBlock,
     eAnywhere);
  }
  else if (cFoxyMonk.PreviousRoom == 3)
  {
    cFoxyMonk.Walk(cFoxyMonk.x, 120, eBlock,
     eAnywhere);
  }
  else if(cFoxyMonk.PreviousRoom == 4)
  {
    cFoxyMonk.Walk(300, cFoxyMonk.y, eBlock,
     eAnywhere);
  }
}
```

Summary

Rooms are an integral part of any game in AGS. In this chapter we talked about the main elements of rooms:

- **Rooms** The Room editor in AGS is actually one of the more complex editors, but it's important to understand how to use it. Rooms are where the game action happens. Rooms in AGS aren't necessarily "rooms" in the traditional sense, in that they might not have four walls, a floor, and a ceiling. A room can be an outdoor area just as well as a traditional room inside.
- **Backgrounds** The room's image is called the background. A background that is larger than the game's native resolution will automatically scroll when the character moves around the room. Also, a background can have up to 5 animated frames and AGS will cycle through them all, creating an animated background.

- **Walkable Areas** The areas of the screen where the character is allowed to walk are called Walkable Areas.
- **Walk-behinds** Walk-behinds give the room a 3-D effect by allowing the character to appear to walk behind areas of the room's background. This is useful, for example, if you have a tree, a table, a wall, or any other object that is part of the room background that characters should be able to walk behind.
- **Regions** A player might decide to interact with the room's background. Using regions, you can distinguish between different parts of the background and have each part of the room react differently to player interactions.
- **Room Events** You can respond to the various events that happen in a room, like the first time a player enters a room, or walking off the edges of the room.
- **Room Edges** Walking off the edge of the screen can trigger events to happen, like changing to another room, for example. The Room Edges define where the player must walk to for those events to occur.
- **Lighting** AGS gives you the illusion of lighting by setting the light level of regions in each room. When a character is within a region, its brightness is affected by the light level of that region.
- **Scaling** Things in your game can grow and shrink with distance by using scaling. This is a feature of walkable areas.
- **Transitions** When your characters leave and enter rooms, it's nice to give the player feedback of this happening by, instead of triggering a new room as soon as the player crosses the room's edge, have the character continue to walk off the edge of the screen before triggering the new room.

Chapter 4

Interacting with Your World

Our game is coming along quite nicely at this point. We have a main character that is fully animated, and she can walk around and visit 4 different rooms. But we're far from finished yet. After all, even though we've accomplished a lot, Foxy still can't really *do* anything yet. All she can do is walk. There are several more actions that the player can do, and we'll start to focus on them in this chapter in the section about Hotspots. Also, Foxy should be able to pick up things to put in her inventory and interact with objects in her environment (after all, this *is* an adventure game!). Well don't worry; we'll cover that in this chapter as well when we talk about Objects and Inventory Items.

Interaction

So far, we've had Foxy walk around each room by clicking the little mouse icon (which looks like a stick figure) on different parts of the screen. But have you tried right-clicking? We briefly mentioned this before, but let's try it again. Load up the game and try it now. You'll notice that your mouse cursor changes from a stick figure to an eyeball (Figure 4.1). If you right-click again, it will change to a hand, and if you right-click yet again it will change to a person's head. If you continue to right-click, it will simply cycle back through these four mouse cursors. (We know, this is all basic stuff but not everyone read the first chapter.) Each of these mouse cursors represents a different action that the player can take. The stick figure, as we've seen, is used for walking; the eyeball is used for looking around; the hand is for interacting with things; and the head is used to talk to someone or something. When you left-click you are performing that action on whatever you left-clicked on. Rocket science, right?

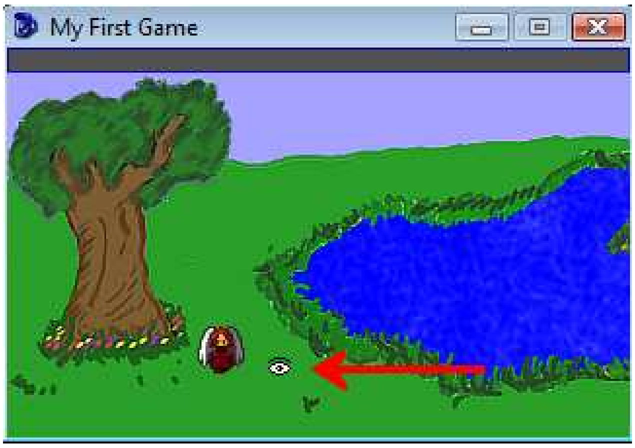
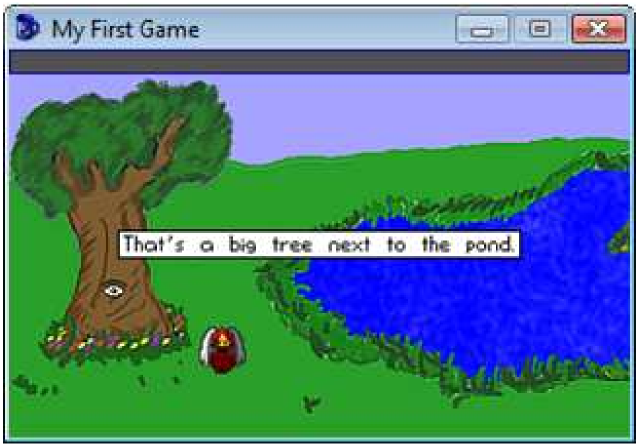


Figure 4.1: The Eyeball Cursor

Notice, though, that none of the mouse modes does anything except the walk mode. That's because we haven't told AGS to do anything with those modes yet! That's all about to change.

Hotspots

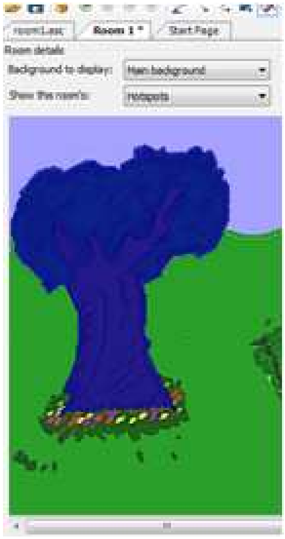
Let's just say that we want Foxy to be able to look at the big tree next to the pond. What we'd really like is for the game to say something witty and clever when the player clicks the eyeball cursor on the tree, like, “That's a big tree next to the pond.” (Figure 4.2)



That's a big tree next to the pond.

Figure 4.2: Foxy Looks at the Tree

We'll do that using a hotspot. To get started, edit the Pond room and select **Hotspots** from the **Show this room's** dropdown box. Since we don't have any hotspots yet, all you see is the pond, but let's draw a hotspot on the tree. Select **hHotspot1** from the dropdown list of Hotspots under the Project Tree. Using the drawing tools at the top of the window, outline the tree, and then flood fill the area inside your outline. This should color the tree blue, as in Figure 4.3.



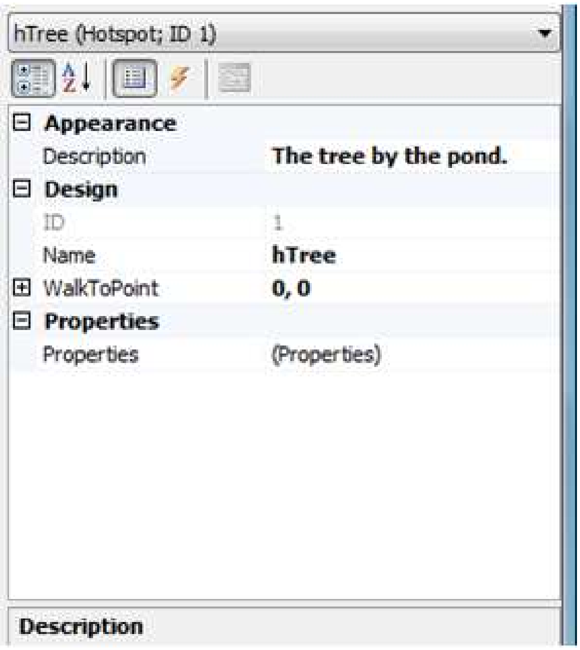
Room details

Background to display: Main background

Show this room's: Hotspots

Figure 4.3: A Hostspot on the Tree

Before we start to use the hotspot, let's rename it to something that makes a little more sense than “hHotspot1.” Make sure that **hHotspot1** is still selected, and look in the Properties Window for an attribute called **Name**. Change the value of that attribute from `hHotspot1` to `hTree` (the “h” stands for “hotspot”). While we're at it, let's go ahead and change the description of the tree to something descriptive like, “The tree by the pond.” When you're done, the Properties Window should look like Figure 4.4.



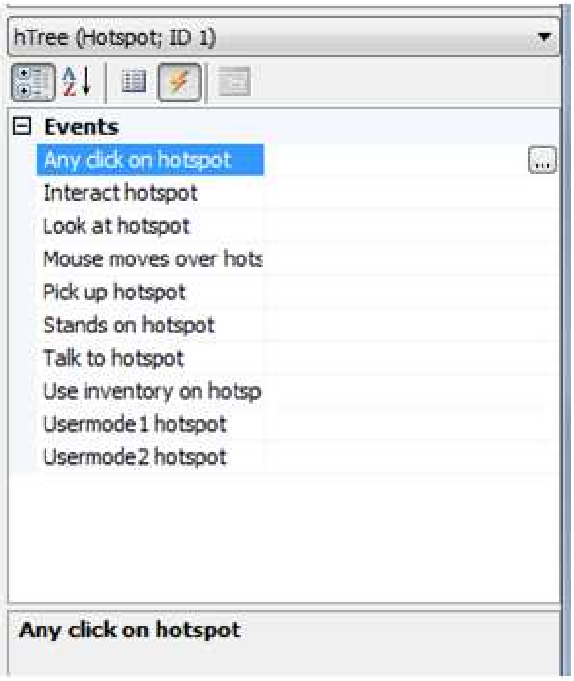
hTree (Hotspot; ID 1)

⊟ **Appearance**	
Description	**The tree by the pond.**
⊟ **Design**	
ID	1
Name	**hTree**
⊞ WalkToPoint	**0, 0**
⊟ **Properties**	
Properties	(Properties)

Description

Figure 4.4: The Properties Window for Our First Hotspot

Now we need to tell AGS to display our message whenever the player clicks the eyeball mouse cursor on the tree. Bring up the Events for the hotspot by clicking the lightning bolt icon in the Properties Window (Figure 4.5).



hTree (Hotspot; ID 1)

Events

- Any click on hotspot
- Interact hotspot
- Look at hotspot
- Mouse moves over hots
- Pick up hotspot
- Stands on hotspot
- Talk to hotspot
- Use inventory on hotsp
- Usermode1 hotspot
- Usermode2 hotspot

Any click on hotspot

Figure 4.5: Events for the Tree Hotspot

Here we have all the events that can occur with a hotspot. There's one for each mouse mode (Interact [Hand], Look at [Eye], Stands on [Walk], and Talk to [Head]), as well as some other events that can occur, like when the mouse moves over the hotspot, when the player uses an inventory item on the hotspot, and also a couple of “Usermode” events which can be used if you to create your own custom mouse modes (we'll go over each of these later).

At the moment we're interested in the eyeball cursor, so click on the event **Look at hotspot**, and then click the ellipses button next to the event to create the function in the room script. The function that AGS creates for you is called `hTree_Look`. All that's left to do now is to add one simple line to that function:

```
Display(“That's a big tree next to the pond.”);
```

That line causes AGS to display a message on the screen with the text “That's a big tree next to the pond.”

Run the game and right-click to change to the eyeball cursor, then left-click on the tree. If you did everything right, the message will appear just like in Figure 4.2 above. Cool!

Objects

Objects are exactly what their name implies they are. They're objects; things in the game that can move. They can disappear and come back. They can move up and down the screen. Or even side to side if that's your fancy. A good example of an object is a door, or a tree branch. Or maybe even a light switch.

Let's add a door to the bathroom. Most people enjoy the ability to do their business in private. In addition, most people like having huge garage-door-like doors in their house that lead to the bathroom. Let's do that now. Use your favorite painting program to draw a door that fits into the opening to the bathroom. Or, you can use the one we provided called *BathroomDoor.bmp*. Let's begin by creating a new folder under Sprites. Double-click on **Sprites** in the Project Tree to open the sprites editor. Right-click on the **Main folder** on the left and choose to **Create** a sub-folder and name it Objects. Of course, you don't have to do this, but it will keep all your sprites organized. Now open that folder and import the door sprite from the file. You should know how to do this by now. The final result is in Figure 4.6.

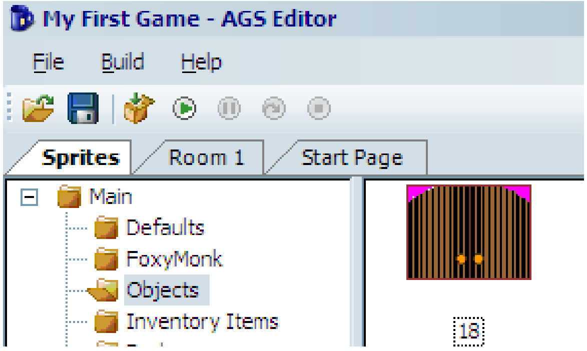


Figure 4.6: Importing the Bathroom Door

Great! Now let's add that door as an object to our Main Hall. Edit the Main Hall room and choose Objects from the **Show this room's** drop down box. Now right-click on the background and choose **New object here**. As you can see, that created a new object in the room and made it look like a little blue cup (Figure 4.7).

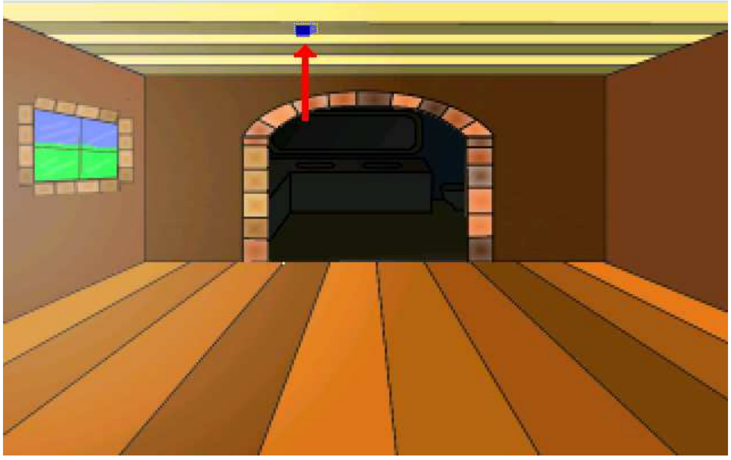
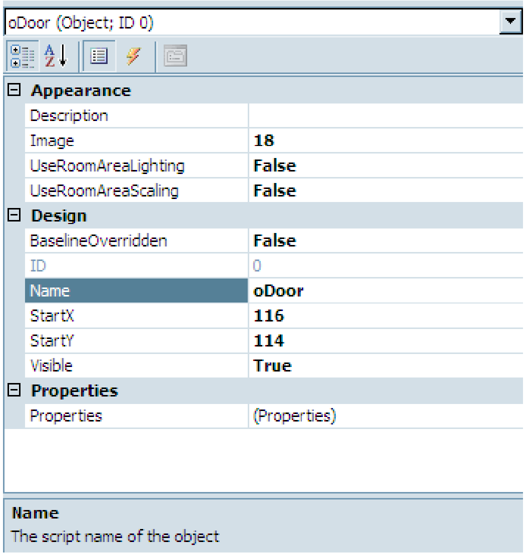


Figure 4.7: Our Little Blue Cup Object

The blue cup, which is AGS's logo, is the default look of all objects. The blue cup is nice, but we'd really like our object to look like a door, not a cup. There are two ways to change the sprite of our object. The first method involves going back to the sprite editor and getting the sprite number for the sprite we want to use, and then plugging that number in to the `Image` property of the door object, as in Figure 4.8. You can also choose the sprite another way, by clicking the `Image` property, and then clicking the ellipses button next to it. This will bring up a Sprite Chooser dialog, where you can browse to find the sprite for the door. Whichever method you choose, the end result should cause your object to look like a door.

While we're changing the object's properties, go ahead give the object a name, by changing its `Name` property. We're calling ours `oDoor` (the "o" stands for "object").



oDoor (Object; ID 0)

Appearance	
Description	
Image	**18**
UseRoomAreaLighting	**False**
UseRoomAreaScaling	**False**
Design	
BaselineOverridden	**False**
ID	0
Name	**oDoor**
StartX	**116**
StartY	**114**
Visible	**True**
Properties	
Properties	(Properties)

Name
The script name of the object

Figure 4.8: Changing the Object's Image

You should see the blue cup change into the door. Use the mouse to drag the door to its proper position. Ta da! We now have privacy. But how do we open this door?

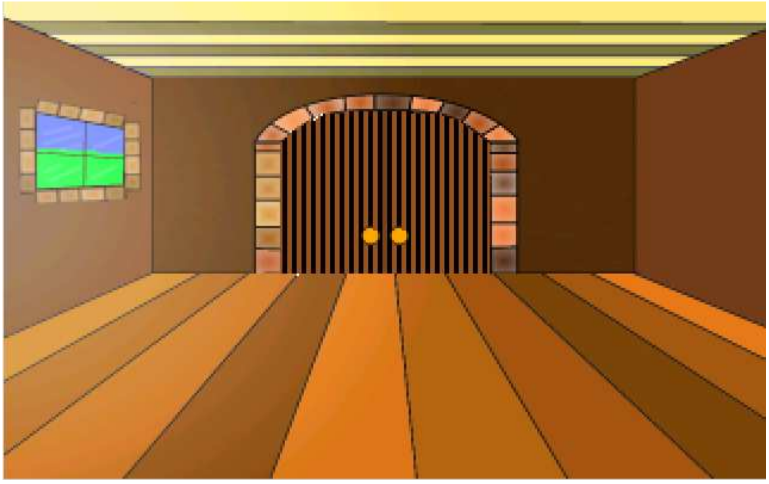
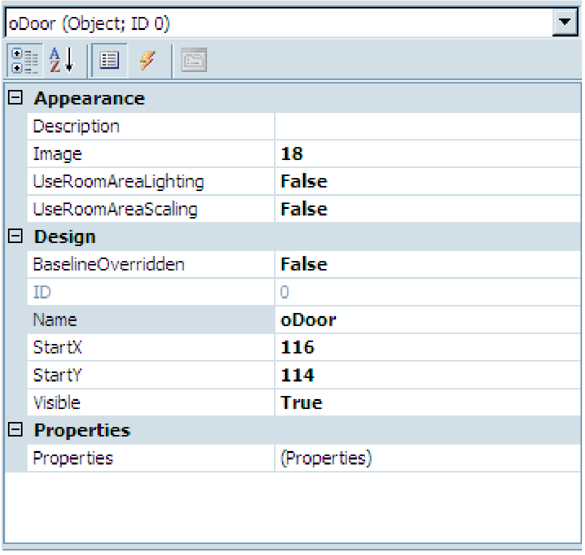


Figure 4.9: Our Bathroom Door

To open the door we need to create an event for when Foxy interacts with the door. This is going to be much like the event created for the hotspot on the tree. Click the lightning bolt to open the event in the Properties Pane and add a function to the **Interact object** event. Now we want to tell the door to slide up when Foxy interacts with it (Yes, we're making a sliding door). For this function we need to move the object up when it's clicked on, and down when it's clicked on again. Look at the Properties Pane for the door and find the `StartY` value.



oDoor (Object; ID 0)

Appearance	
Description	
Image	**18**
UseRoomAreaLighting	**False**
UseRoomAreaScaling	**False**
Design	
BaselineOverridden	**False**
ID	0
Name	**oDoor**
StartX	**116**
StartY	**114**
Visible	**True**
Properties	
Properties	(Properties)

Figure 4.10: See the StartY Value?

This is the y coordinate of the bottom left pixel of an object. We want to move this pixel up and down as necessary.

The Move Function

As you can see from Figure 4.10, the `StartY` value for our door is 114. Moving it up to about 55 should accomplish what we want, but feel free to play with the value once you get the thing moving. So, to move this object up, we will use the Move function. Put the following line of code into the `oDoor_Interact` function that AGS created:

```
oDoor.Move(oDoor.X, 55, 3, eBlock, eAnywhere);
```

This function will keep the door’s x coordinate in the same spot and move the y coordinate up to 55. The `eBlock` and `eAnywhere` are nothing new, but what does that 3 do? Well that’s the speed of movement. Again, feel free to play with that as needed. If you run the game now and use the hand mouse icon on the bathroom door, you should see it move up.

Now we need a way to move the door back down to the ground when we click on it again. We’re going to use the Move function again, but this time, instead of moving to y coordinate 55, we’ll move the door back to its original y coordinate of 114. But we need to tell AGS to toggle these two movements; that is, when the player clicks on the door when it’s at y coordinate 114, move it up to 55, and when the player clicks on the door when it’s at 55, move it down to 114.

So, our finished function should look like this:

```
function oDoor_Interact()
{
  if (oDoor.Y == 114)
  {
    oDoor.Move(oDoor.X, 55, 3, eBlock, eAnywhere);
  }
  else
  {
    oDoor.Move(oDoor.X, 114, 3, eBlock, eAnywhere);
  }
}
```

First, we check to see where the door is. If it's resting in the down position, we move it to the up position. If it's in the up position, we move it to the down position. Go ahead and run the game now and click on the door using the hand mouse icon. You should see it toggle between moving up and down with each click.

Walk-behinds are for Objects, too!

I'm sure you've noticed something about the door. It just looks very weird moving up and down the way it does (see Figure 4.11). It doesn't make sense for it to just hover up and down in front of the wall and the ceiling like that. Maybe, just maybe, if we make it go behind the wall, then it would look a lot more natural. Let's do just that. For this exercise, we're going to use our good friend the walk-behind. Create a walk behind that looks like Figure 4.12.

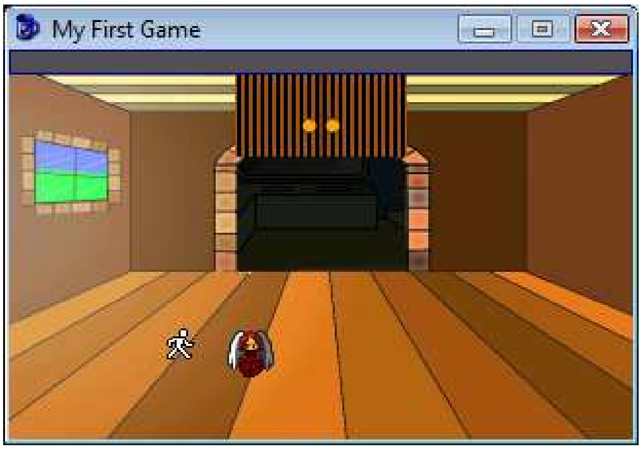


Figure 4.11: That door should go behind the wall not in front of it!

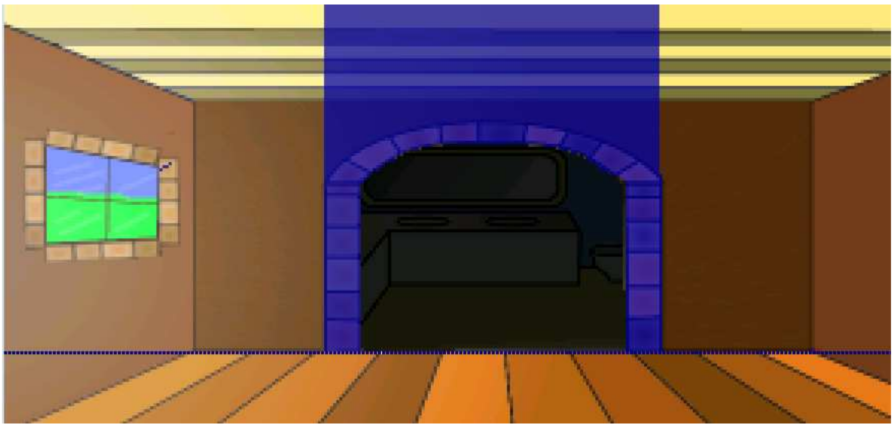


Figure 4.12: Walk-behind for the Bathroom Door

Set the baseline at the bottom of it. Run the game now and see how the door looks. As you can see, characters aren't the only things that are affected by walk-behinds—objects in your game can use them, too. Neat huh?

Foxy is a ghost?

Run the game and tell Foxy to walk into the bathroom with the door closed. She can walk right through the door! Either she's a ghost or we've got more work to do. Let's prevent Foxy from going into the bathroom without opening the door first.

Open the script editor for the Main Hall and find the function that gets called when Foxy moves beyond the top edge (probably called `room_LeaveTop`). Change that function to look like this:

```
function room_LeaveTop()
{
  if (oDoor.Y == 114)
  {
    cFoxyMonk.y = cFoxyMonk.y + 1;
  }
  else
  {
    cFoxyMonk.ChangeRoom(3, cFoxyMonk.x, 220);
  }
}
```

As you can see, we added a check to see if the door is down (i.e., the door's y coordinate is 114), and if it is, move Foxy back down one pixel and don't change her room. Moving down one pixel puts her back under the top edge of the room so that she can attempt to move past it again. Now the door has to be opened before Foxy can go into the bathroom.

We're almost done. There are only two small problems left. One problem is that Foxy can open the door from anywhere in the room. Clicking the hand icon on it will open the door even if Foxy is all the way on the other side of the room. That just won't do at all because (unlike the rest of our game) it's just not realistic! This is easy to fix. Change the function for interacting with the door (`oDoor_Interact`) to first move Foxy to it before opening or closing it.   All we have to do is add one line to the function. Add the following line as the first line in the function:

```
cFoxyMonk.Walk(oDoor.X + 20, Room.TopEdge, eBlock,
     eAnywhere);
```

Before the door is moved, Foxy will walk to the door's x position plus 20 pixels. That will put her somewhere in the vicinity of the middle of the door. And, she'll walk to the top edge of the room. Remember that this is the edge at which she will actually walk into the next room. So now when Foxy interacts with the door, she will walk up to it, open it, and proceed into the bathroom. If you don't want her going into the bathroom after opening the door, then just add 1 to Room.TopEdge and she won't pass the edge and will just open the door and stand there. But why open the door if you're not going through.

> **Side Note:** Here's a question. When we move Foxy to the room's top edge before the door opens, shouldn't this immediately change her to the bathroom, without giving the door a chance to open first? Well, normally this would be the case, but AGS treats room changes a little different than other functions. Any function that causes the main character to change rooms (as our Walk function does here) will be completed before the actual room change takes place. So, even though it's the Walk function that causes Foxy to change rooms, the rest of the function will execute before the game actually moves her to the next room.

And now for the final little problem: When Foxy tries to walk into the bathroom with the door closed, she'll stop but will appear to flicker there for a bit. This is actually because she's passing through the door first, then our `room_LeaveTop` function is called which changes her y coordinate, throwing her back out. Let's fix this by splitting our walkable area into two walkable areas. We'll put one in the bathroom and one outside it and only activate the one inside the bathroom when the door is opened.

Go back to editing the room and view its walkable areas. It should look something like Figure 4.13.

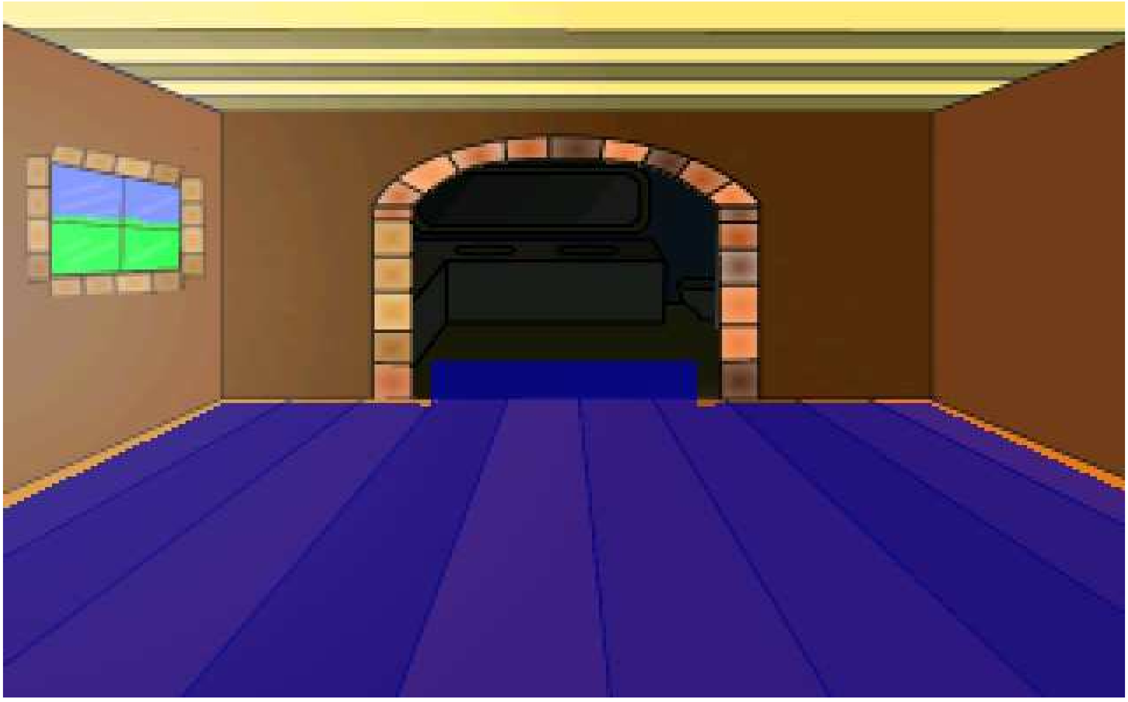
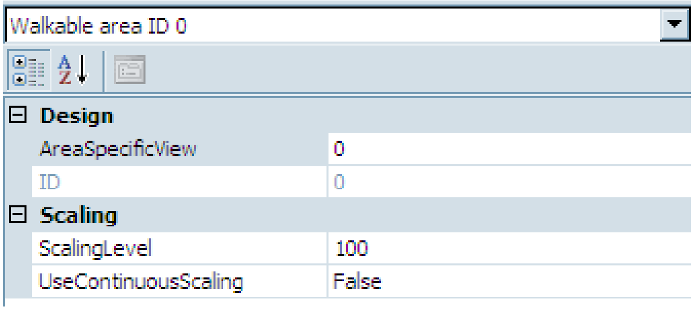


Figure 4.13: The Main Hall Walkable Area

Remember how we added that extra lip that goes into the bathroom so that Foxy will pass the room's edge? Well that lip should be made into its own walkable area. To do this, use the eraser to get rid of the lip. You'll find the eraser by choosing **Walkable area ID 0** from the dropdown box between the Project Tree and Properties Pane (Figure 4.14). Use the eraser on the lip and remove it. Now choose **Walkable area ID 2** from the dropdown to draw a second walkable area and redraw the lip. It should end up looking like Figure 4.15.



Walkable area ID 0

Design	
AreaSpecificView	0
ID	0
Scaling	
ScalingLevel	100
UseContinuousScaling	False

Figure 4.14: Choosing the Eraser

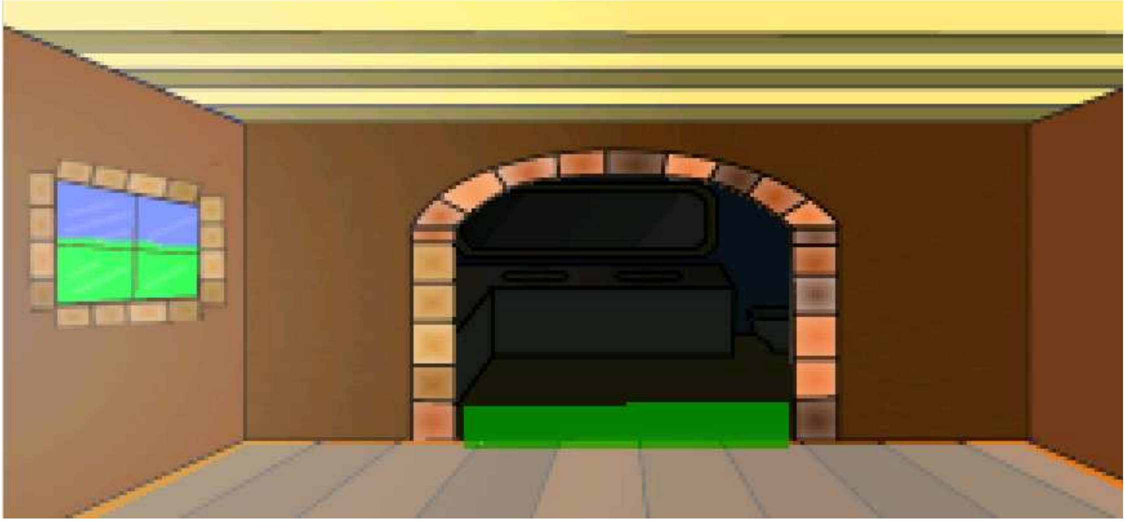


Figure 4.15: Adding the Second Walkable Area

The only thing we have to do now is turn our new area off when the door is closed and on when it's opened. We should do this in two places: whenever Foxy first enters the room and whenever she interacts with the door. Put the following block of code in the `room_AfterFadeIn` function:

```
if (oDoor.Y == 114)
{
  RemoveWalkableArea(2);
}
else
{
  RestoreWalkableArea(2);
}
```

What this says is, if the door is down, remove the walkable area we just created. Now Foxy can't go up there at all. If the door is up, then we restore the area so Foxy can move into the bathroom.

The `RemoveWalkableArea` and `RestoreWalkableArea` functions should also be placed in the `oDoor_Interact` function. Make that function look like the following:

```
function oDoor_Interact()
{
  cFoxyMonk.Walk(oDoor.X + 20, Room.TopEdge, eBlock,
     eAnywhere);
  if (oDoor.Y == 114)
  {
    oDoor.Move(oDoor.X, 55, 3, eBlock, eAnywhere);
    RestoreWalkableArea(2);
  }
  else
  {
    oDoor.Move(oDoor.X, 114, 3, eBlock, eAnywhere);
    RemoveWalkableArea(2);
    cFoxyMonk.PlaceOnWalkableArea();
  }
}
```

Notice we also added the function `cFoxyMonk.PlaceOnWalkableArea`. This makes sure that Foxy is placed on walkable area 1 since we're turning off walkable area 2 by moving her to the closest position on walkable area 1. Otherwise, Foxy might get stuck in a non-walkable area and not be able to move.

Inventory Items

Now we're really getting some interaction going. We can look at things, and we can manipulate objects within the game. But, of course, an adventure game just isn't an adventure game unless the player can pick things up and carry them around, and that's where the inventory system comes in. Every adventure game from *King's Quest* to *Monkey Island* uses an inventory system; after all, without an inventory, how can you do really obscure things like in *Monkey Island* where Guybrush used a wad of spit from Largo to make a voodoo doll? Adventure Games Need Inventory Items.

By default, AGS uses a Sierra-style inventory system, where the player's inventory is managed through a separate "inventory screen" which displays all the items the player is currently carrying. Figure 4.16 shows an example of an inventory screen from *King's Quest VI*. (*King's Quest VI* wasn't written using AGS, of course, but it shows the type of Inventory Screen you get by default with AGS.) Just like about everything else in AGS, the inventory system you use is entirely configurable and you can use any other style of inventory system you wish. For now, though, we'll use this Sierra-style one.

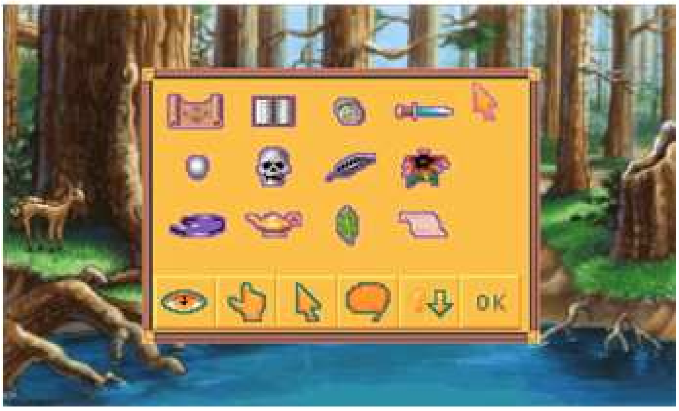


Figure 4.16: Sample Inventory Screen

In the Inventory Screen, the player is presented with the inventory items that he or she has collected throughout the game. Notice that each inventory item is represented by its own sprite image. This sprite image is usually different than the sprite that was used when the character picked up the item. For example, in the image above, the sprite for the black feather would be much too large if it was actually placed in a room in the game (compare it to the size of the fawn in the foreground to see what we mean). So, each inventory item that is in your game will most likely need two sprites to represent it; one for the object when it's in the game, and one for the inventory item that appears on the inventory screen once the player picks it up.

Enough talk about that. Let's create an inventory item!

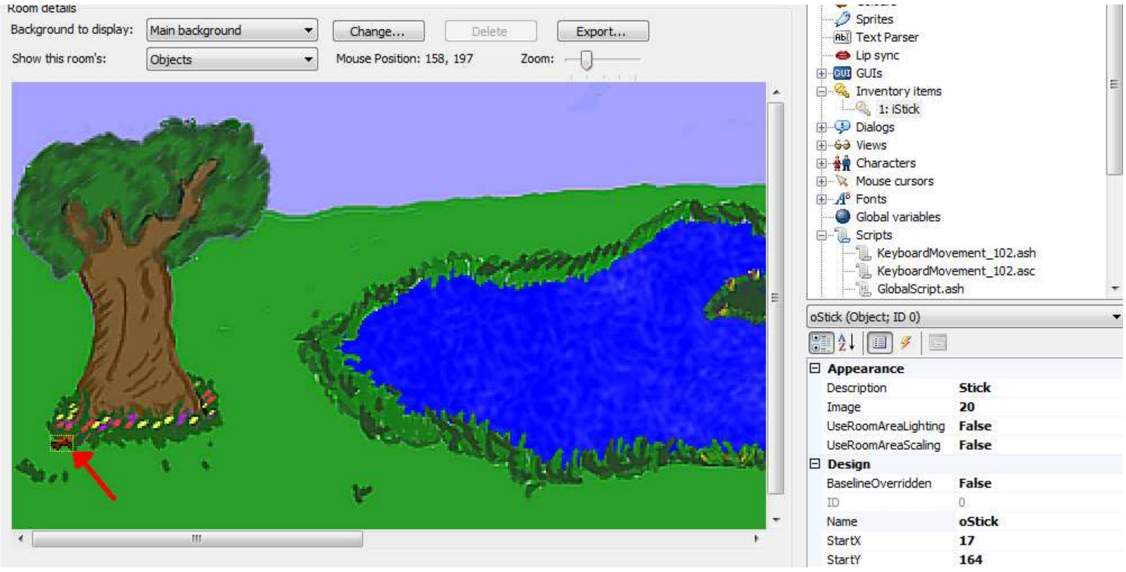
We're going to put a stick on the ground in front of the big tree and allow Foxy to pick up the stick to use later in the game. First thing we need is a sprite of the stick so that we can import it into AGS. Once again, we've done the hard work for you and provided you with a stick sprite you can use.

Double-click on **Sprites** in the Project Tree. Let's create a new folder again just like we did for the Door sprite in the last section, but this time let's call it *Inventory Items*. So, right-click on the Main folder and select **Create sub-folder** and name the new folder *Inventory Items*. Right-click on the right pane and select **Quick import sprites** from the context menu. Find the file *LittleStick.bmp* and open it. This will import the sprite into AGS. (Using the Quick Import option is quicker and easier than the way we imported sprites before, but doing it this way doesn't let us import multiple sprites from the same image as we did earlier.)

Great! Now we have our sprite imported that will represent the stick. This is the stick that will be placed near the tree. Now let's import the sprite for that same stick that will be used in the inventory screen. Right-click again in the right pane and select **Quick import sprites** but this time, select *InventoryStick.bmp*.

That's our sprites taken care of. The next step is to create the inventory item. In the Project Tree, expand **Inventory Items**, where you'll see two items listed: `iKey` and `iPoster`. These are just examples that are built in to the default game, so you can delete them if you want by right-clicking them and selecting **Delete this item** (just say Yes to the confirmation dialog that pops up; deleting these items won't be a problem for us). Create a new inventory item by right-clicking **Inventory Items** and selecting **New Inventory Item**. This will create a new inventory item called `iInvItem1`. That's a really dumb name, so let's rename it to something more descriptive like `iStick`. Double-click the inventory item, and change its `Name` attribute to `iStick`. While you're changing attributes, we need to set the image of the stick to the sprite we just imported. Click on the Image property, then click the ellipses button next to it. This will bring up the Sprites browser, where you can browse to the image of the inventory stick, select it, and click **Use this sprite**. (Make sure you choose the big stick and not the small one, since we're creating the inventory item and not the object.) Each inventory item has an associated Mouse Cursor Image, which is the image used for the mouse cursor when the player selects the inventory item. We need to set the sprite of the mouse cursor image, so just change this property (called `CursorImage`) to the same number as the `Image` property.

Now comes the part where we will add the stick in our game under the tree. This is just like when you added the door to the Main Hall earlier. Edit the Pond room, and select **Objects** from the **Show this room's** dropdown. Right-click in the room somewhere near the base of the tree, and select **New object here**. Change the `Image` attribute of the new object to the sprite for the little stick, change the Name to `oStick`, and change the Description to “Stick”. Once you've done that, your room should look something like Figure 4.17.



Room details

Background to display: Main background

Show this room's: Objects

Mouse Position: 158, 197

oStick (Object; ID 0)

Appearance	
Description	Stick
Image	20
UseRoomAreaLighting	False
UseRoomAreaScaling	False
Design	
BaselineOverridden	False
ID	0
Name	oStick
StartX	17
StartY	164

Figure 4.17: Our Stick Under the Tree

Since we want the player to be able to pick up the stick, we need to create an event for the stick object. With the stick selected, click the lightning bolt icon to bring up the events, and, just like with the door, select the **Interact object** and click the ellipses icon next to it.

Side Note: So why didn't we use the Pick up object event for the stick, since we're wanting to pick it up? Well, the Pick up event is used when the player uses the Pick Up mode of the mouse on the object. By default, there is no Pick Up mouse mode enabled, so this event really doesn't do anything. Some adventure games use different mouse modes for the different actions like Pick Up, Open, Move, Operate, etc., and you can do this too if you want (we'll talk about adding more mouse modes later), but in our game all of those actions are represented with the Interact mouse mode.

This brings up the room script and creates a function for us called `oStick_Interact`. Put the following code in the function.

```
cFoxyMonk.Walk(oStick.X, oStick.Y, eBlock,
     eWalkableAreas);
oStick.Visible = false;
cFoxyMonk.AddInventory(iStick);
Display("You stick the stick in your pocket and hope
     it's not a sticky stick that will stick you.");
```

Let's talk about what each line does:

```
cFoxyMonk.Walk(oStick.X, oStick.Y, eBlock,
     eWalkableAreas);
```

The first statement should be all-too-familiar by now. It causes Foxy to walk over to where the stick is.

```
oStick.Visible = false;
```

This line sets the `Visible` property of the `oStick` object to `false`, which (surprise!) makes the stick invisible. Once an object is invisible, the player can no longer interact with it at all, so this effectively turns the object off.

```
cFoxyMonk.AddInventory(iStick);
```

This is where the item is added to the player's inventory. Notice that we used `iStick` here, and not `oStick`. The `iStick` is the inventory item, whereas the `oStick` is the object in the room. (See? We told you the letters at the beginning of those names would be helpful later on!)

And finally, we display a message to the user to tell them they picked up the stick:

```
Display("You stick the stick in your pocket and hope
     it's not a sticky stick that will stick you.");
```

That's it. Run the game now and click the hand icon on the stick. You should see Foxy walk over, the stick will disappear, and our message will be displayed on the screen. Click to dismiss the message and then look at your inventory. You can do this either by pressing the **Tab** key, or by moving your mouse to the top of the screen and clicking the **suitcase** icon.) You should see the stick in your inventory now! Yay! Mission accomplished!

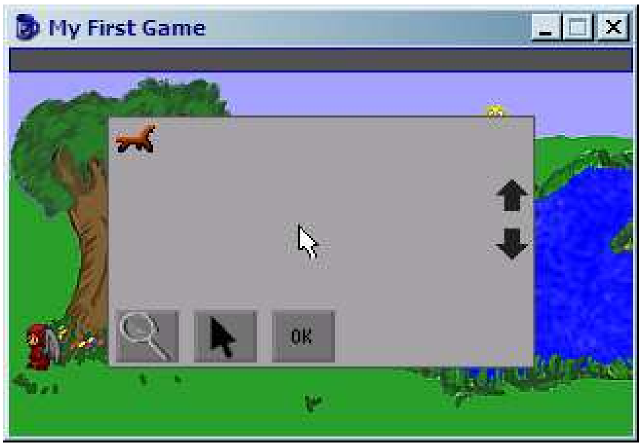


Figure 4.18: Our First Inventory Item

Using Inventory Items

That was so awesome. Let's add another inventory item now, but this time we'll make Foxy work a little harder to get it. If there was an apple way up high in the tree, maybe Foxy could use her newly-acquired stick to throw at the apple and knock it down. (Yeah, we know, Foxy has wings and could just fly up there to get an apple, but let's forget about that and just play along.)

This would accomplish a couple of things. First, it would let us get more practice adding inventory items. But more importantly, requiring that Foxy uses the stick on the apple in the tree lets us see how to use inventory items on other objects in the game. We'll have to figure out a way to make something happen when the stick is used on the apple... hmm...

Before we get too far ahead of ourselves, we need to first put the apple in the tree and create an inventory item for it. Go to your game's **Sprites** and import two new sprites: *LittleApple.bmp* and *InventoryAppleWithWorm.bmp*. Just like with the stick before, these sprites will be used to represent the apple in the game and in the inventory, respectively. Ewww, the apple looks like it has a worm! That's ok, we'll let Foxy get the worm out as another exercise later.

Putting the apple in the tree is very similar to when we put the stick on the ground, except for one very important difference. Open the Pond room and select **Objects** from the **Show this room's** dropdown. Right-click somewhere in the tree and select **New object here** from the context menu. Find the `Image` attribute in the new object's Properties Window, and change this to the sprite of the Little Apple you just imported (you can click the ellipses button to browse for the right sprite, just make sure to select the little apple and not the big one). Now, change the `Description` to “Apple”, and the `Name` to `oApple`. When you're done, your Pond should look something like Figure 4.19.

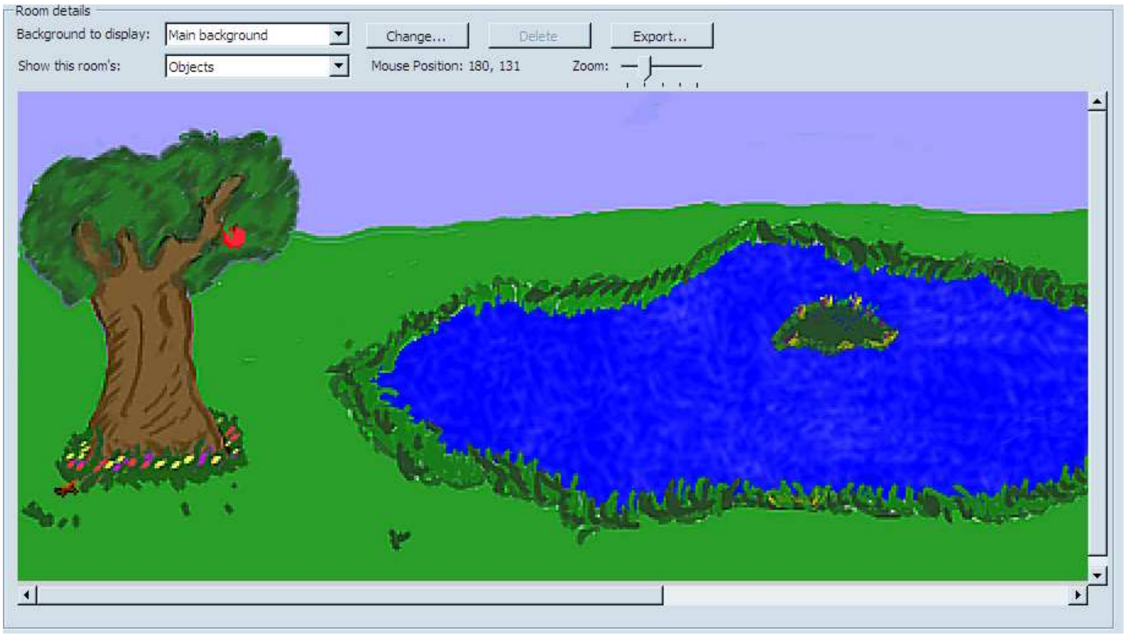


Figure 4.19: The Apple of My Tree

Here's the part that's different from when we added the stick. If you run your game you'll see a problem. Actually, you *won't* see a problem, because you won't see the apple at all! What happened? Where'd the apple go? The apple really is there, but it's hidden by the walk-behind area on the tree we created back in Chapter 3. Let's think about what's happening here. There's a walk-behind area on our tree, which we put there so that Foxy could walk behind the tree. The problem is, objects obey walk-behind areas as well, and so the apple we put in the tree is being drawn behind the tree, since it is above the baseline of the tree's walk-behind area. Well great, how do we fix that? We need the apple to ignore the tree's walk-behind area so it's always drawn in front of the tree. It just so happens that AGS allows you to do that relatively easily. You might think there's an attribute on the apple object called `IgnoreWalkBehinds` or something like that, but there's not. There is, however, something that will work just as well. Find the attribute `BaselineOverridden` in the apple's Properties Window. This value is set to `False` by default, and that means that the object's Baseline is set to the very bottom of the object. This is similar to how the character's baseline is at the very bottom of the character, like we mentioned when we create the walk-behind way back in Chapter 3. Change the `BaselineOverridden` value from `True`. You should see a new attribute appear, called `Baseline`. This lets us set a new `y` location for the object's baseline. If we set the baseline to `200`, which is the very bottom of the screen, this will effectively create a situation such that the apple's baseline is always *below* the walk-behind's baseline, causing the apple to be drawn in front of the tree. After you've changed the apple's Baseline attribute, run the game again and you'll be able to see the apple up in the tree.

Eventually, Foxy will be able to pick up the apple, so we'll need an inventory item for it also. Right-click on **Inventory Items** and select **New Inventory Item**. Under the Properties, change the `Description` to “Apple” and change the `Name` to `iApple` (please don't sue us, Steve!). Browse for the `Image` and this time, select the big apple with the worm in it. That's all there is to that, so let's go back to the Pond room and put all this together!

When Foxy uses the stick on the apple in the tree we want the apple to fall out of the tree onto the ground. When the apple is on the ground, Foxy should be able to interact with the apple to pick it up. We have to be sure that we don't let Foxy pick up the apple while it's still in the tree.

Click on the apple in the tree, and create a new Event for **Use Inventory on object**. This should create a function for you in the room script called `oApple_UseInv`. Edit this function so it looks like the function below, then we'll discuss it.

```
function oApple_UseInv()
{
  if (cFoxyMonk.ActiveInventory == iStick)
  {
    if (Game.DoOnceOnly("StickIsInTree") == true)
    {
      oApple.Move(oApple.X, 170, 4, eBlock,
     eAnywhere);
      oApple.Baseline = 0;
      Display("Good shot! The apple falls out of the
     tree and lands on the ground with a thud.");
    }
  }
}
```

The `oApple_UseInv` function will be called by AGS any time the player uses an inventory item on the apple object. Since the player might have several inventory items throughout the game, we have to make sure that it was the stick that was used and not some other item the player might have. We use the `ActiveInventory` property of the character to do this:

```
if (cFoxyMonk.ActiveInventory == iStick)
```

Here, we're checking that the active inventory item (`cFoxyMonk.ActiveInventory`) is the stick (`iStick`). If it is, the code inside the `if` block's curly braces will run.

The first instruction in that `if` block is another `if` statement:

```
if (Game.DoOnceOnly("StickIsInTree") == true)
```

The function `Game.DoOnceOnly` does just what it sounds like it might do: it ensures that something happens only one time. The function will return a `true` value the first time AGS encounters this statement and a `false` value every time after that. The string that we passed as a parameter to the function, `StickIsInTree`, can be anything you want, and this is how AGS knows if this particular `DoOnceOnly` statement has been done before. For example, suppose you have two events in your game and you want each event to happen only once. You can use `DoOnceOnly` for each event, but each one needs to have a different string passed to it.

The next statement causes the apple to fall down to the ground.

```
oApple.Move(oApple.X, 170, 4, eBlock, eAnywhere);
```

We're using the `Move` function here, but it's similar to the `Walk` function we've seen before. Both functions are used to move things around on the screen, but objects can't walk, so you can only use the `Move` function with objects. Characters, however, can move and walk, so both functions are available with them. While `Walk` causes the character to animate, `Move` doesn't animate at all.

We changed the apple's `Baseline` property earlier so that the apple would always appear in front of the tree's walk-behind area. Well, now that the apple is on the ground, that Baseline property will also make it always appear on top of Foxy whenever she walks over to it. That's not what we want! So, just after we make the apple fall on the ground, let's set the `Baseline` property of the apple back to `0`, which effectively turns the Baseline back to its default behavior.

```
oApple.Baseline = 0;
```

Finally, we display a message to the player to let them know what just happened.

```
Display("Good shot! The apple falls out of the tree
     and lands on the ground with a thud.");
```

To try this out, run the game and pick up the stick by interacting with it. Then, open the inventory by rolling the mouse all the way up the screen and clicking on the suitcase icon. You should see the stick there. Click on the stick and your mouse cursor will change into it. Then click **OK**. Now click the stick on the apple to use it. The apple should fall from the tree.

That was the hard part; now's the easy part. If the player interacts with the apple while it's on the ground, we want Foxy to walk over to it and pick it up. Create a new Event for the apple object for **Interact object**. AGS will create a function for you called `oApple_Interact`. Edit it so it looks like this:

```
function oApple_Interact()
{
  if (oApple.Y == 170)
  {
    cFoxyMonk.Walk(oApple.X, oApple.Y, eBlock,
     eWalkableAreas);
    oApple.Visible = false;
    cFoxyMonk.AddInventory(iApple);
    Display("Foxy puts the apple away. Maybe she can
     eat it as a snack later.");
  }
  else
  {
    Display("The apple is too high for Foxy to reach
     it!");
  }
}
```

This looks very similar to when we picked up the stick earlier. The difference here is, we added that initial `if` statement to make sure that the apple is on the ground first before Foxy walks over to it (if the apple's Y location is 170, we know it's on the ground because that's what we set the Y location to in the `oApple_UseInv` function). If it isn't on the ground, then we display the message telling the player that the apple is too high for Foxy to reach.

HOMEWORK: Add code to this function so that you see the stick fly from Foxy's position to hit the apple before it falls. Don't forget to make Foxy lose the stick from the inventory when she throws it. (Hint: use `cFoxyMonk.LoseInventory(iStick)`.) Also, have Foxy turn to face the apple before she throws the stick at it. (Hint: use `cFoxyMonk.FaceObject(oApple)`.)

Using Inventory Items on Each Other

Let's get Foxy to take the worm out of the apple now. I don't think Foxy wants to actually touch the worm with her hand, so let's have her dig the worm out with the stick. This will be a good exercise on how to use one inventory item on another. We'll need a few more sprites for this. We're going to need a sprite of the apple without a worm in it, and a sprite of a stick with a worm on it. That way the worm can crawl out of the apple and onto the stick. Import the files

InventoryApple.bmp and *InventoryStickWithWorm.bmp* and create two new inventory items using those sprites called `iAppleNoWorm` and `iStickWithWorm`. Now it's just a matter of adding some events. Select `iApple` from the Inventory Items section of the Project Tree and click the Events lightning bolt. You should see an event named **Use inventory item on this item**. Create an event function for that event (it will be called `iApple_UseInv`) and make it look like this:

```
function iApple_UseInv()
{
  if(cFoxyMonk.ActiveInventory == iStick)
  {
         cFoxyMonk.LoseInventory(iStick);
    cFoxyMonk.LoseInventory(iApple);
    cFoxyMonk.AddInventory(iStickWithWorm);
    cFoxyMonk.AddInventory(iAppleNoWorm);
    Display("Oh goody! You got the worm out of the
     apple and onto the stick.");
  }
}
```

Basically what we did is make Foxy lose the stick and the apple with the worm in it, then we gave her the stick with the worm and the apple without the worm. Then we displayed a message to the user to tell her what just happened. The inventory window should now show the new items.

Non-Player Characters (NPC)

Even though there are games out there that only have one character, I don't think our game would be complete without at least one more character. We figure that since we have a pond, then we should have a duck. Therefore, we created a duck name Dork. Dork the Duck is a happy sort of duck that likes to play around the pond, splashing in the water, and happily waddling his way around the tree.

The first part of introducing a new character is of course drawing the character's sprites. We've already done that and put the sprites in a file called *Dork.bmp*. If you look at those sprites you'll notice that Dork has a swimming view. Also, notice that he has walk and swim right views, but no walk or swim left views.

Even though you're now an expert at importing sprites and creating views, let's import Dork and create his views together. Start by opening the Sprites editor and creating a new folder for Dork. Choose to import new sprites from a file and import the sprites any way you wish. When you've finished, you should have 24 sprites in all. They should be walk right, swim right, walk up, walk down, swim up, and swim down.

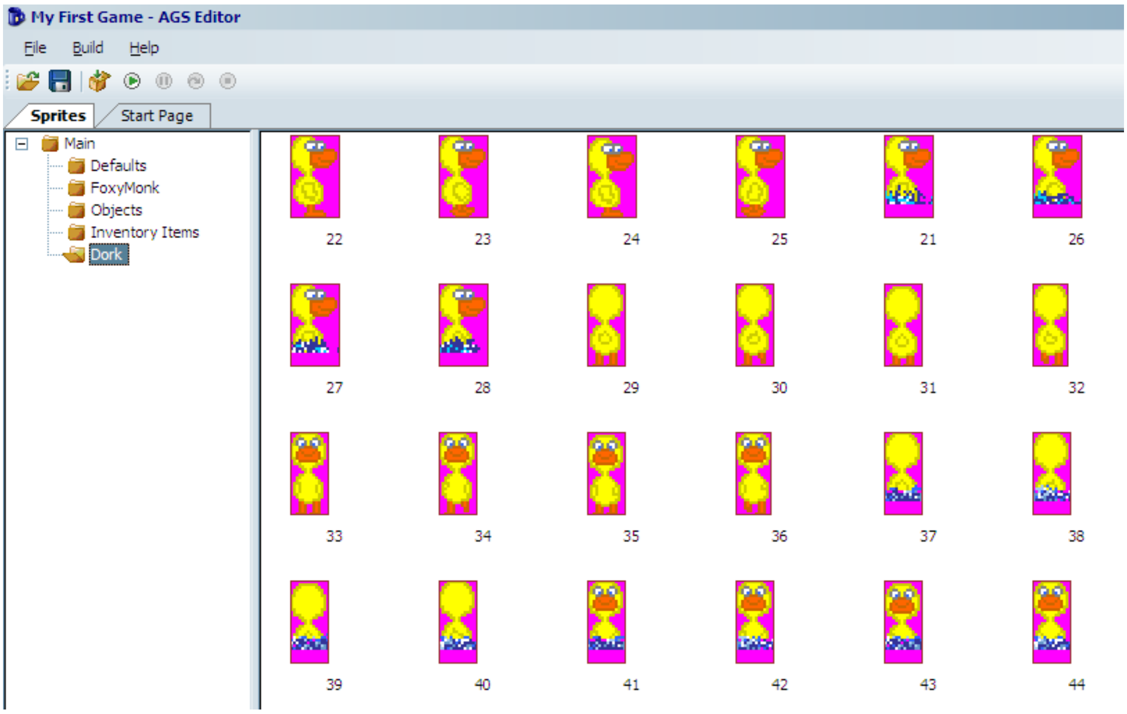


Figure 4.20: The Sprites of Dork

We need to create two views for Dork: one of him walking and one of him swimming. Let's start with the walking view. Create a new view and call it vDNormal. Select the 4 walk right sprites for Dork, right-click, and choose to assign them to a view. Put in your new view number (probably 4), choose Loop 2 (right), and click **OK**. Remember how we don't have a walk left view? Here's how to make it. Select the **SAME 4** walk right sprites, right-click, and choose to assign them to a view. Put in view 4 again, choose Loop 1 (left), and check the box at the bottom that says: **Set all new frames as Flipped**. Click **OK** and check your view. Neat huh? This way our walk right and walk left will look the same. Now go ahead and create the walk up and walk down loops on your own.

For the swimming view, create a new view called vDSwim. Add the loops just as above but choosing the swimming sprites. Be sure to flip the walk left loop.

Now that we have the views for Dork, we need to actually create the character. Right-click the **Characters** node in the Project Tree and choose **New Character**. Make sure the character is selected and change the ScriptName property to cDork and the RealName property to Dork. Set the StartingRoom property to 1 to make him show up at the pond. Set the NormalView property to 4 (or whatever your normal Dork view was) and set the StartX and StartY to 250 and 60 to put him near the pond when the game starts but not in the pond.

Set the MovementSpeed property to 6 to match that of Foxy's. Run the game and check him out. He won't do anything, but it'll be fun to see him standing there.

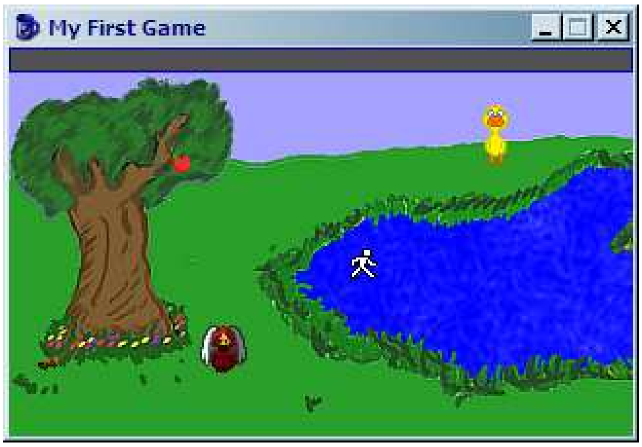


Figure 4.21: Hey Look! Dork is Standing There!

When you're done staring in awe at your new character, close the game and go on with this lesson. We know exactly what you want to do now: you want to see that duck swim! But why would he swim? Let's take this one step at a time. First, let's make Dork walk over to the middle of the pond when Foxy interacts with him. Double-click Dork to edit him and click on the lightning bolt to bring up his events. Notice that characters have the same kinds of events as objects and hotspots do. Create a new event for `Interact character`, which will create a function named `cDork_Interact` in the script. In this function tell Dork to walk to position (334, 95), which is the middle of the island. Remember to tell him to walk anywhere because there is no walkable area over the pond. You'll need to make Foxy walk over in that direction too, otherwise Dork will walk off the screen and you won't see him, so we'll make Foxy walk up to him and he run away from her when she gets close, and we only want that to happen if Dork is not already on the island. The function should have the following:

```
if(cDork.x != 334)
{
    cFoxyMonk.Walk(230, 60, eBlock, eWalkableAreas);
    cDork.Walk(334, 95, eNoBlock, eAnywhere);
}
```

First we check Dork's `x` coordinate and if it's not on the island, we tell Foxy to walk over to Dork. We also tell her to make sure to only walk on walkable areas. The second line of the `if` block tells Dork to run away from Foxy and to ignore walkable areas while NOT blocking. The reason we don't want him to block will become apparent in a few minutes. Run the game, use the hand icon on Dork, and watch the fun.

Side Note: the function is created in the global script and not the room script. This is because character interactions can happen in any room.

Animations

Let's make him swim now. This is what we've all been waiting for. In order to make Dork swim, we have to change his view to the swim view when he's on water, and the best way to do that is to create a region.

Open the editor for room one and view the room's regions. You'll notice we already created a region in front of the shack's door, so we'll need to change the region ID to 2. Find that in the dropdown box between the Project Tree and Properties Pane (Figure 4.22). Once you choose Region ID 2, use the pen to trace all around the pond enclosing all the water. Be sure to leave out the island though. Then, use the flood tool to fill in the water. When finished, it should look like Figure 4.23.

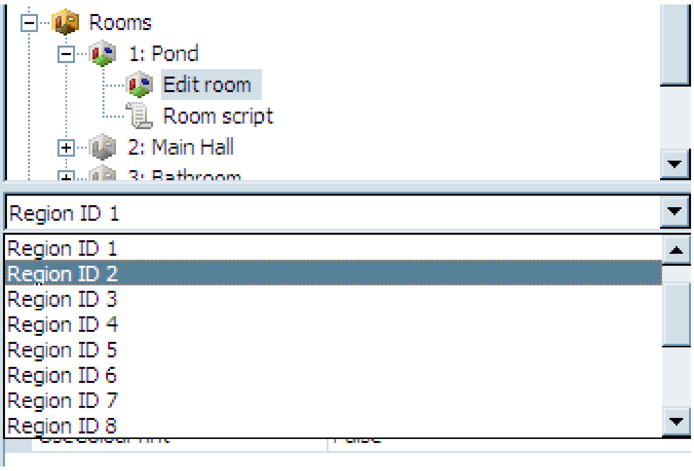


Figure 4.22: Choosing Region 2

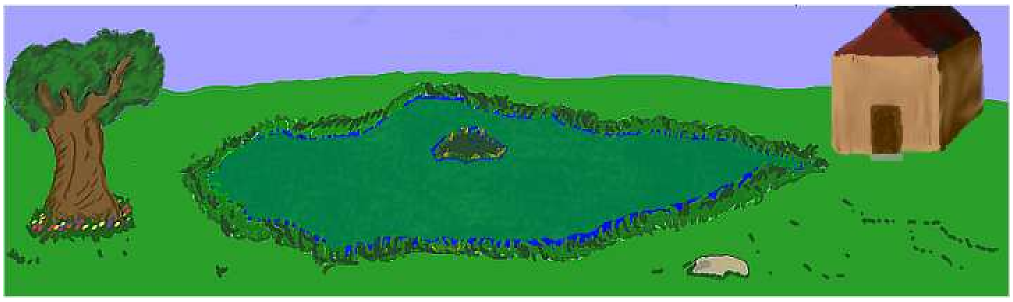


Figure 4.23: Region 2 is the Pond

Repeatedly Execute

If Dork was the main character then at this point we would add two event handlers for this region, one for walking onto the region and one for walking off of it. We would change the view to the swimming view when he walks onto the region and back to normal when he walks off of it. But, since these events are only called when the main character walks onto and off of the region, and since Dork is not the main character, we have to do something special. There is an event in every room called `Repeatedly Execute`. This event fires every *game cycle*, which equates to 40 times per second, or once every 25 milliseconds. So, anything that we put in this event will happen 40 times every second that the room is on the screen (See side note). We need to add some code to this function that constantly checks where Dork is, and change his view accordingly.

Side Note: Remember the eBlock parameter we've been using for various function calls? Anytime a function runs with eBlock, it's called a *blocking function*. Script instructions, including those in the Repeatedly Execute event, will not fire while a blocking function is running. There is a special Repeatedly Execute event that does get called even through blocking routines, called *repeatedly_execute_always*. If you put a function with this name in your room script (or in the global script), it will get called even when a blocking function is running.

Choose to show this room's **Nothing** and then click the lightning bolt to bring up the room's events. You've done this before when you added the after fade in and leave right/leave left events in other rooms. You should see an event called `Repeatedly execute`. Add a handler to this event by clicking the ellipses. This will create a function called `room_RepExec`. Edit the function to make it looks as follows:

```
function room_RepExec()
{
  if(Region.GetAtRoomXY(cDork.x, cDork.y) ==
     region[2])
  {
    if(cDork.View != VDSWIM)
      cDork.ChangeView(VDSWIM);
  }
  else if(cDork.View != VDNORMAL)
  {
      cDork.ChangeView(4);
  }
}
```

This function consists of two `if` blocks. The first block checks Dork's position in the room to see if he's in the pond region. The function `Region.GetAtRoomXY` takes an x and a y and gives you the region number that the (x,y) coordinates is in. If the coordinates are not in any region, then you'll get a zero back. So we compare the return from that function to see if it equals region 2, which is our pond region. If so, we check to see if Dork's view is already the swim view and, if not, change it to the swim view. So now Dork will have the swim view activated whenever he's in the pond. Notice that we used `VDSWIM` instead of the actual number of the view. We could have used the number 5, which is our swim view, but this is more readable. **AGS will always create an all-caps version of the view names that you create to make it easier to refer to them in scripts**.

The second `if` block in the function is actually an `else/if` block. This will only happen if the first block is `false` and Dork's view is not the normal view (i.e. it's the swimming view). In that case, we change the view back to normal. Notice this time we used the number so you can see that they really are interchangeable. One thing to note: We couldn't have written the function like this:

```
function room_RepExec()
{
  if(Region.GetAtRoomXY(cDork.x, cDork.y) == region[2])
  {
      cDork.ChangeView(VDSWIM);
  }
  else
  {
      cDork.ChangeView(VDNORMAL);
  }
}
```

This way, the view is always changed. We don't want to do this because of a couple of reasons: first, it's not very efficient to change Dork's view 40 times per second even when it doesn't need to be changed; and second, every time Dork's view is changed, his position changes as well, which actually has a peculiar side effect of making him walk really fast (try it out for yourself). Oh, and now for the reason we didn't let Dork block while moving: Since the Repeatedly Execute event doesn't fire when a blocking function is running, this would mean that the view would not change. Try that out too and see for yourself.

More Animation

Now let's do a bit of animating with Foxy. Earlier in the chapter, we gave you a homework assignment to show the stick fly out of Foxy's hands and hit the apple. We're going to do that here and add a little bit more pizzazz to it. Foxy is going to first walk to a good position to better see the apple and turn to face the apple. Then you'll see her hand go up and throw the stick at the apple.

To start this, we'll need to create a whole new view of Foxy throwing the stick. There's a sprites file called *FoxyThrowingAnimation.bmp* that contains the proper sprites. Import those sprites into the *FoxyMonk* folder of the Sprites editor (or create a new folder if you wish). You should now have 6 new sprites of Foxy (We actually don't need all 6 here, so just use the first 4. The other two are there for you to play with if you want to extend the animation). Create a new view for Foxy called `vFMThrow` using the new sprites. We'll just need one loop here so it will be loop zero by default. That's it for the easy part. The rest is the code in the function. Find the `oApple_UseInv` function in the Pond room's script and change it to the following: (The comments in the code should explain what's going on.)

```
function oApple_UseInv()
{
  if (cFoxyMonk.ActiveInventory == iStick)
  {
    if (Game.DoOnceOnly("StickIsInTree") == true)
    {
      // Have Foxy walk to a prime throwing position
      cFoxyMonk.Walk(116, 164, eBlock,
     eWalkableAreas);

      // Turn Foxy to face the apple
      cFoxyMonk.FaceObject(oApple);

      // Since she's going to throw the stick, it
     needs to disappear from her inventory.
      cFoxyMonk.LoseInventory(iStick);

      // Change her view to the new throwing view and
     lock it
      cFoxyMonk.LockView(VFMTHROW);
      // Animate the new view
      cFoxyMonk.Animate(0, 5, eOnce, eBlock,
     eForwards);
      // Unlock the view
      cFoxyMonk.UnlockView();
      // Lock frame 2 of the view so her arm stays up
     in throwing position
      cFoxyMonk.LockViewFrame(VFMTHROW, 0, 2);
      // Set the x and y location of the stick object
     to be wherever Foxy is, and then make it visible.
      oStick.X = cFoxyMonk.x;
      oStick.Y = cFoxyMonk.y - 10;
      oStick.Visible = true;

      // Override the baseline of the stick so it
     doesn't appear behind the tree.
      oStick.Baseline = 200;

      // Move the stick to where the apple is.
      oStick.Move(oApple.X, oApple.Y, 6, eBlock,
     eAnywhere);

      // Now move the stick down to the ground.
     Notice the use of eNoBlock here, since we want
     the apple to fall at the same time.
      oStick.Move(oApple.X, 160, 5, eNoBlock,
     eAnywhere);
      oApple.Move(oApple.X, 170, 4, eBlock,
     eAnywhere);

      // Reset the baselines for both the apple and
     the stick back to the default.
      oApple.Baseline = 0;
      oStick.Baseline = 0;

      // Unlock the view
      cFoxyMonk.UnlockView();

      Display("Good shot! The apple falls out of the
     tree and lands on the ground with a thud.");
    }
  }
}
```

The things to note here are the view locking and unlocking functions. Locking a view will keep it from changing until you call the unlock function. This way, if you change a view and then ask a character to walk, the walking view will not come back unless you unlock the view first. Always remember that for every lock view call you need an unlock view call: **NO EXCEPTIONS**.

```
cFoxyMonk.LockView(VFMTHROW);
cFoxyMonk.Animate(0, 5, eOnce, eBlock, eForwards);
cFoxyMonk.UnlockView();
cFoxyMonk.LockViewFrame(VFMTHROW, 0, 2);
```

The code snippet above demonstrates this. Here we lock Foxy's view to the throwing view and animate. The `Animate` function says to animate using loop 0 with a delay of 5 (game cycles). The `eOnce` parameter says to do the animation only one time. We want to block while animating and we want to animate forward. After that we unlock the view then we lock the view again using only one frame with the `LockViewFrame` function. This will hold the view at frame 2, which is the frame of Foxy's arm being in the up, or extended, position. We keep the lock while the stick flies and the apple falls, then we unlock her view with the `UnlockView` function so that she can go back to her normal view.

Summary

An adventure game becomes a lot more enjoyable and engrossing when it has some interaction. Here are some of the ways a player can interact with your game:

- **Objects** Objects are things in your game that are moveable, as opposed to items that are part of a room's background. Objects have their own attributes and events and can be manipulated through the game's script files.
- **Hotspots** Items that the player can interact with that are not moveable and are part of the room's background are called Hotspots. These behave similarly to objects, but objects are more versatile.
- **Inventory Items** We discussed how to give your character inventory items, and how they are used in conjunction with objects to let the player interact with them on the screen.
- **NPCs** Characters that are not controlled by the player are called Non-player Characters, or NPCs. All of the actions that an NPC does are controlled through the game script. In this chapter we created an NPC named Dork the Duck that Foxy could interact with.
- **Custom Animations** If something in your game should animate, you have two options: either use the built-in views that are associated with every character (Normal View, Speech View, Idle View, etc.), or, if these don't suit your needs, you can create custom animations.

Chapter 5

Sounds and Music (Make Some Noise!)

We know what you're thinking: our game is great so far, but what about sounds and music? (Or if you weren't thinking that then you are now, because we're Jedi and we make you think what we want you to think.) Sounds and music are a very important part of any game, and AGS makes it simple to add them to your game.

In this chapter, we'll take a look at the different kinds of audio you can use in your game. We'll show you how you can use standard sound effects when things happen in your game. But AGS offers more than just that. You can use ambient sounds like crickets chirping in the background, room music, and you can even give a voice to your characters and have them speak their lines.

Sound effects

Creating sound effects is one of those things that's a lot of fun to do, but you'll quickly realize that you can easily get carried away with making a sound effect for every action in your game. That's definitely not a bad thing necessarily, but having too many sound effects—or, I should say, having too many *obnoxious* sound effects—can drive your player bonkers, so be careful with them. We're only going to put in a couple of sound effects into our game, just to show you an example of the different types of sound effects that AGS supports.

AGS supports several file formats when it comes to audio files. All the major sound formats are supported: OGG, MP3*, WAV, and VOC. To use sounds in your game, you have to name your sound files a specific way for AGS to be able to find them. First, all sound files must be in the Sound folder under your game's main folder (e.g., C:\Documents and Settings\User\My Documents\My First Game\Sound). Second, each sound file must be called **SoundX.zzz**, where X is a number, and zzz is the file extension* that corresponds to the format of the sound file (e.g., ogg, mp3, wav, voc). So, for example, if my game has 5 sounds—a wav file, two ogg files, and two voc files—the filenames would be: Sound1.wav, Sound2.ogg, Sound3.ogg, Sound4.voc, and Sound5.voc.

Side Note: MP3 is supported, but there are licensing considerations to consider if you use MP3 sounds in your game. If you plan to release your game commercially you will need to obtain an MP3 license, which you can get from Faunhofer and Thomson Multimedia, the owners of the MP3 decoding patent. There is a flat fee to obtain a license, but you should check out the MP3 licensing website at http://www.mp3licensing.com/royalty/games. To avoid the licensing issue entirely, the easiest solution is to go to the downloads page of AGS, scroll to the bottom of the page, and download the “Windows engine without MP3 support.” This will let you make games that don't use MP3 and you can use OGG instead. OGG is a digital audio format similar to MP3 but without the licensing restrictions (plus, OGG supports better compression and higher quality).

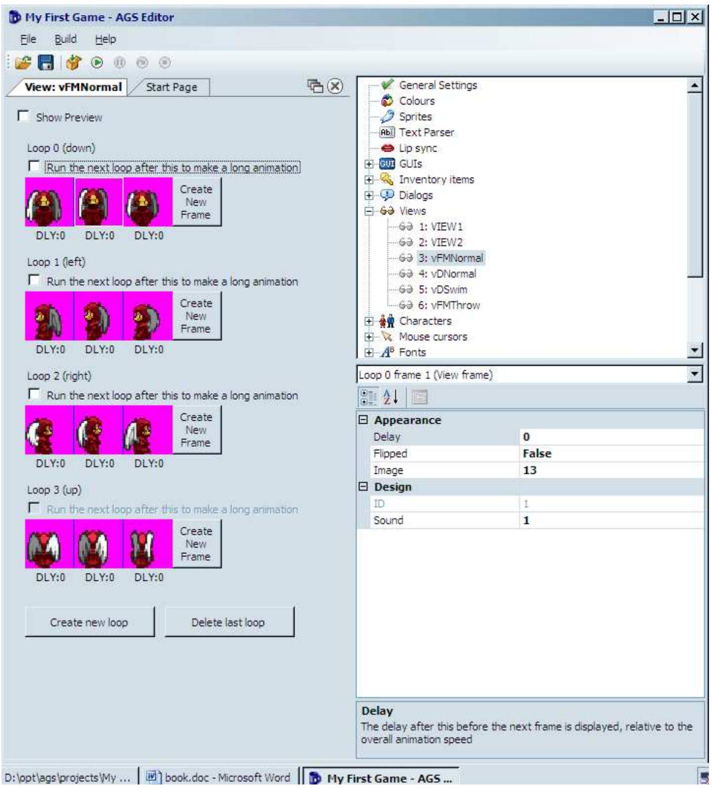
Side Note Two: Windows hides file extensions by default. You may need to set your properties to show file extensions. Look online if you don't know how because we don't want to waste all this space teaching you something that you can just as easily find online by using Google. I mean, after all, what's the point of explaining something here in the book that's documented online in about a gazillion places? That would not only waste your time to have to read it, but it would also waste our time by having to type it out. Especially when this book is about AGS and not about Windows. Do you see our point here? Should we also go into how to disable the display of file extensions in Linux and Mac as well? Well, come to think of it, AGS doesn't even run on these platforms so that would be an even BIGGER waste of time and space. So you can see why we didn't want to waste the time and space to explain a simple concept like showing or hiding file extensions.

Footsteps – no more sneaking up on people

I've got an idea. It would be nice if the player could hear Foxy's footsteps when she walks around. AGS makes this really easy to do, because it lets you assign a sound effect to any frame of a view. In Foxy's case, we want to assign two footstep sounds to two different frames of her walking view. Here's how to do that.

Once again we've done the hard work for you and created the files you'll need. Look for the files called *Sound1.wav* and *Sound2.wav* and copy them to your game's *Sound* folder (This is the Windows folder that your game is in and not a folder in AGS itself). Next, open Foxy's normal view by expanding **Views** in the Project Tree, and double-clicking on `vFMNormal`. Each loop of this view contains three frames. What we're going to do is assign a sound to two of the three frames in each loop, and AGS will play that sound when it displays that frame of animation in the game. Click on the second frame of loop 0. If you look at the Properties window, you'll see a property called `Sound` (Figure 5.1). Change this from 0 to 1, which is the number of the sound that represents the first footstep (*Sound1.wav*). Now click on the third frame of loop 0, and change its Sound property from 0 to 2, to play *Sound2.wav*. Repeat this for the second and third frames of each of the other three loops in this view.

Now run the game! As Foxy walks around you should hear her footsteps. (If you don't hear anything, you might need to turn your volume up; the footstep sounds we created are fairly quiet—remember, we don't want to totally annoy our player!)



Loop 0 frame 1 (View frame)

Appearance	
Delay	0
Flipped	False
Image	13
Design	
ID	1
Sound	1

Delay
The delay after this before the next frame is displayed, relative to the overall animation speed

Figure 5.1: Properties for the Second Frame of Loop 0

HOMEWORK:
Create splish splash sounds for Dork and add them to his swimming view.

Ambient Sounds

Most of the time you won't need ambient sounds, but AGS provides the possibility just in case you want to use it. Ambient sounds are simply sounds that can be heard in the background, like crickets chirping, water running, etc.

To play ambient sounds, you have to use the script function `PlayAmbientSound`. This function takes 5 parameters: `channel`, `sound`, `volume`, `x`, and `y`.

- `Channel` is the sound channel to play the ambient sound through. AGS supports 8 sound channels, which are numbered from 0 to 7. Basically you can think of a sound channel as a tunnel which carries one sound at a time. So, if you have 2 sounds that you want to play at the same time, you have to play them through 2 different sound channels. So, with 8 channels, AGS allows you to play up to 8 sounds at the same time. Just as a convention, ambient sounds typically use channel 1, although you are free to use whatever sound channel you want.
- `Sound` is the sound number you wish to play.
- `Volume` is a number from 1 to 255, and represents the volume of your ambient sound. The higher the number, the louder the sound will be played.
- `X` and `Y` are the coordinates of the source of the sound. These parameters let you use ambient sounds that appear to be emanating from a certain spot in your game. If a sound is coming from a waterfall on the right side of your screen, for example, you can specify the x and y coordinates of the sound to match the location of the waterfall and the sound will get louder as the player approaches the waterfall and quieter as the player walks away from it. This gives the illusion of a location to the sound. If you don't want this effect, you can simply use 0 for both x and y and the sound will be played at the same volume throughout the room.

Background Music

Background music can give a nice ambiance to any room. Just like in the movies, proper background music can convey different feelings and change a player's mood. Let's add some background music to the long, dark, hall to make it seem a bit scary. Find the file name *music1.mid* and copy it to you game's *Music* folder. Just like with sounds, the music files need to be named *music1.xxx, music2.xxx,* etc. Edit the Longroom and look for the property named `PlayMusicOnRoomLoad`. Change this to 1. Run the game, go into that room, and be afraid...

Did you try leaving the room? If you do, you'll notice that the music doesn't stop. That room property starts music but it will not stop it. This is useful if you want the same music to play throughout your game, regardless of the room the player is in. We want the creepy music we selected to play only in the Longroom, however. To stop the music, you'll need to use the `StopMusic()` function somewhere. A good place for this would be the `room_LeaveLeft` function of the Longroom. You also don't have to use the room property to start the music. In fact, if you're going to start the music when the character enters a room and stop it when the character leaves, then it might make more sense to do it all in scripting instead of using the room properties. There are numerous functions to manipulate music.

Go back and change the `PlayMusicOnRoomLoad` property to zero and let's start the music with scripting. Go to the Longroom's script and find the `room_AfterFadeIn` function. Add the following 2 lines to the top of the function:

```
SetMusicVolume(-2);
PlayMusic(1);
```

The first line will set the volume down a bit. This function will take a number between -3 and 3. -3 is the quietest, 0 is normal volume, and 3 is loudest. The second line will actually start the music. With these two lines and the `StopMusic()` call in the `room_LeaveLeft` function, you'll have your scary, yet soft, music in that room.

Some other functions you should be aware of are `SetMusicMasterVolume`, `SetMusicRepeat`, and `PlayMusicQueued`. `SetMusicMasterVolume` takes a number from 0 to 100 and sets the overall music volume of the game. This volume is somewhat overridden by the volume set in each room though. `SetMusicRepeat` takes either a 1 or a 0 and tells AGS whether it should repeat the background music. 1 means keep looping it, 0 means play it once and stop. By default, this is set to keep looping the music. `PlayMusicQueued` creates a queue of different music to play one right after another. You can have up to 10 music files in the queue and AGS will play them all for you. It's like having a juke box.

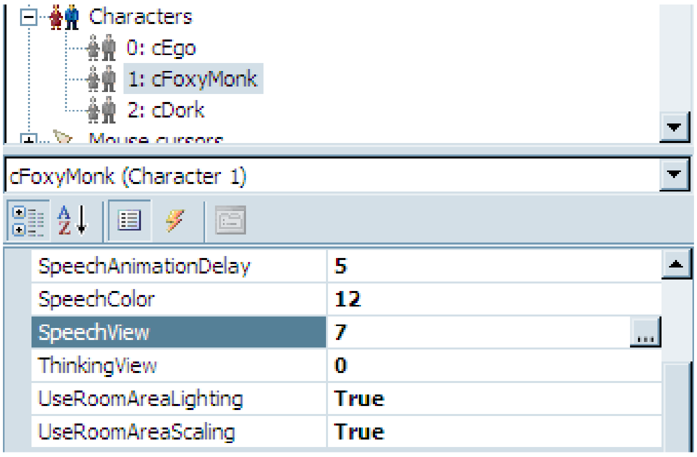
Speech

Unless you're creating a game like *Myst*, you'll probably want your characters to be able to say stuff throughout your game. There are two paradigms when it comes to speech in AGS: there's basic, scripted talking, either in response to events that happen in the game (like when Foxy looks at things or when she breaks the fourth wall by talking to the player) or a linear sequence of conversation between characters (“Hi, Fred!”, “Howdy Billy, how's the weather?”); and then there's the interactive dialog that can occur between characters, where the player is given a choice of conversation topics and can choose which one(s) to talk about and in which order. We'll be talking about the first kind of speech here; the second kind is called simply “Dialogs” in AGS parlance, and we'll cover that later in Part 2.

Speech Views

The first thing we need to do to make Foxy and Dork talk is to create a Speech View for them. The Speech View is the animation that is displayed for the character when that character is speaking. AGS automatically uses the character's Speech View anytime the character is saying something, so we don't have to think about it.

We'll do Foxy's view first, so create a new view for her by right-clicking **Views** in the Project Tree and click **New View**. Name this view `vFMSpeech`. Go to the Sprites section of the Project Tree and import a new set of sprites by opening the Foxy sprites folder, right clicking in the sprite list and selecting **Import new sprite from file...**. Find the file called *foxy_monk_speech.bmp* and import the twelve sprites in that file (if you need a refresher, refer back to Chapter 2 where we imported our sprites earlier). Once those sprites have been imported, assign them in groups of three to each of the four loops in the new view you just created. (Again, if you need help remembering how to do this, refer back to Chapter 2.) Finally, open the `cFoxyMonk` character from the Characters list in the Project Tree, and assign this new view for the Speech View in the Properties.



SpeechAnimationDelay	5
SpeechColor	12
SpeechView	7
ThinkingView	0
UseRoomAreaLighting	True
UseRoomAreaScaling	True

Figure 5.2: Setting the SpeechView

Now do the same thing for Dork the duck, using the sprite sheet file *DorkSpeech.bmp*.

The Say Function

So let's make Foxy and Dork say something already! We're going to have a short, scripted conversation between Foxy and Dork. When the player clicks the "Talk to" mouse cursor on Dork, Foxy will walk over to him, and the following conversation will take place:

Foxy: Hi! My name is Foxy.
Dork: Quack, quack, quack.
Foxy: Oh, I thought you could talk.
Dork: Quaaaaaack!
Foxy: I feel silly talking to a duck.
Dork: Thanks a lot!

Yeah, it's not great, but it will do for our purposes.

Create a “Talk to” event for Dork (double-click cDork in the Project Tree, click the **Events** thunderbolt icon, click the “Talk to character” event, and click the ellipses button). This creates a new function called cDork_Talk in the global script file. The function we'll be using to actually have the characters say stuff is the Say function. You'll use it like this:

```
function cDork_Talk()
{
  cFoxyMonk.Walk(cDork.x - 20, cDork.y, eBlock,
     eWalkableAreas);
  cFoxyMonk.FaceCharacter(cDork);
  cFoxyMonk.Say("Hi!  My name is Foxy.");
  cDork.Say("Quack, quack, quack.");
  cFoxyMonk.Say("Oh, I thought you could talk.");
  cDork.Say("Quaaaaaack!");
  cFoxyMonk.Say("I feel silly talking to a duck.");
  cDork.Say("Thanks a lot!");
       cDork.Say("&1 Quack-quack-quack-quack quack-
     quack-quack-quack!");
}
```

You've seen the first two lines before—they cause Foxy to walk over to where Dork is and then turn to face him.

The next 7 lines use the Say function, and we put the text we want the character to say in double quotation marks. AGS will animate the character with the Speech View while the text is on the screen, and stop animating the character when the text goes away. By default, the text goes away either with a mouse click or after a certain time has passed proportional to the amount of text that is being displayed. This behavior can be changed, however, in the General Settings, by changing the value of the Allow speech to be skipped by which events property.

One thing to note is the last line. Notice that there is a &1 and a space right before “Quack-quack-quack-quack quack-quack-quack-quack!” This tells AGS to play the file called *Dork1.wav* in the *Speech* folder of your file system. Look back at the sounds section at the beginning of this chapter. Speech recordings work the same way with the following two differences: 1) Instead of placing your recordings in the *Sound* folder, you place them in the *Speech* folder. 2) Instead of naming the recordings *Sound1.wav, Sound2.wav,* etc., they are named after the character that speaks them. So, for Dork’s sound 1, the file name would be *Dork1.wav*. This way, you can have actual speech in your game and tell AGS which recording to play just by using the ampersand and a number. How simple is that?

Now to try it out! Run the game and click the Speech mouse cursor on Dork. You should the conversation take place, and you should see both characters animate while they are speaking.

NOTE TO GEORGE AND DAVE: note that foxy and dork both have the same text color. Let’s change it to 9 which is a nice light blue color.

Summary

In this chapter, we saw how AGS allows us to use sounds and music in our game through the use of sound effects, background music, and speech.

- **Sound Effects** Sound effects <BANG!> are a cool way to <POP!> give your game some realism <WHIZZZ!> and help to engross your player <CLAP! CLAP! CLAP!> into your game. But just <SSSREEEEEEEEEEEEEEEEK!> make sure you don't get too annoying with <SNARF!> the sound effects or it could <BEEEEP!> cause your players to walk away <CRUNCH CRUNCH CRUNCH CRUNCH> in frustration!
- **Background Music** Every good game should have background music and with AGS it's a simple matter to play ambient music either on a room-by-room basis, or play music throughout your whole game.
- **Speech** If you have voice actors that can act out the speech in your game, then you can add those voices by just prepending the speech lines in your script with an ampersand (&) followed by the number of the speech file which contains the recorded audio for that line of text.

Chapter 6

Some other stuff

If you've made it here then you should know enough to make a few games for yourself from scratch. So, we're going to take a bit of a detour and explore a few things that can help with the way the game plays.

General Settings

We briefly touched the General Settings editor at the beginning of this book and promised you that we'll get to it in Chapter 6. Well we like to keep our promises, and according to the 24 point, bold Arial font at the top right-hand corner of this page, this is Chapter 6. The General Settings editor can be accessed by double-clicking it from the Project Tree just like any of the other editors. This editor allows you to specify some of the basic settings for your game, like the resolution, the name, the maximum score the player can achieve, and some other interesting things. There are lots of options but we're only going to talk about some of them. We'll talk about other ones as we get to them in later chapters.

(Setup) Section

This section of the General Settings editor sets up generic things about the game itself.

- Color depth – The color depth setting tells AGS how to interpret your images. The higher the color depth the more colors you can have. If you set your game to 16-bit color depth then you shouldn't make any 32-bit drawings to import.
- Game name – This is the name that will appear in the window title bar (assuming you run the game in a window). It's a good idea to make sure this is actually the name of your game, and it should be by default.
- Maximum possible score – This will basically set up a globally accessible variable that you can use to display the maximum possible score on the screen. For example, you can have something at the top left of the screen that says “0 of 500 points”. That 500 can be placed in the variable and accessed anywhere. The variable's name is `game.total_score`. The current score can be stored in `game.score` using the `GiveScore()` function.
- Resolution – This is the width and height of your game. Whatever you decide to set this to is what your backgrounds should be drawn with.

Character movement Section

This section sets up how the character reacts to movement.

- Characters turn before walking – Setting this to true will make the characters look like they're actually turning to face a new direction and then start walking. For example, if the main character is facing down and you click above him using the walk icon, he'll change to the **side** loop then the **up** loop before starting to walk. If the setting was false, the character will immediately go from the **down** loop to the **up** loop before starting to walk.
- Characters turn to face direction – This setting is just like the one above except it's used with the function `FaceLocation().` If this is true, the when `FaceLocation()` is called, the character will go through the proper loops in the view to turn to face the new location. If it's false, then the character will simply change to the new loop immediately.

Compiler Section

This section sets up how the game executable is created. The executable is the main file that you double-click to start the game, and ends in a *.exe* extension (usually). Compiling is the process by which AGS will read the game data that you've input and the scripts that you've written and put them together (compile them) into a file that is the game itself, which is the game executable. Dave wrote the game executable, and it's the best damn executable ever written, because Dave is such an awesome programmer. He's a much better programmer than George, that's for sure. Wait! What? That's odd since George is writing this section. Hmmm.

- Compress the sprite file – If you have a large number of sprites in your game, you could end up with a quite large executable. Turn this option on and your executable will shrink. Be forewarned though, the game will run a bit slower because it has to uncompress the sprites when it needs them. At least I think that's what this option does!
- Enable Debug Mode – This option (true by default) is very helpful while you're developing your game. It turns on certain shortcuts to help you see some things or move around. Here's a list of what it can do:
  - Press **control-S** to give the main character all inventory items. This is good for testing so you don't have to walk around and pick up everything.
  - Press **control-V** to see the game engine's version information.
  - Press **control-A** to see all walkable areas in the room. You can't move around or do anything but it's helpful sometimes.
  - Press **control-X** and a dialog box will pop up listing all the rooms in the game. Chose a room and you will immediately be taken there. Good for testing changes in rooms without actually having to walk there.
  - Press **control-W** to move to the closest walkable area. If you somehow get stuck in a non-walkable area (like maybe if you use control-X and end up inside a wall) then this will move you to the closes walkable area so you can perform your tests.

It would be wise to turn this option off before distributing your game. Otherwise I'll totally cheat when I play your game. <evil laugh here>.

- Split resource files into X MB-sized chunks – Normally, when you compile your game all the resources (like the sprites for instance) are placed into the executable. Therefore, the whole game fits into one file. If that file is too large then you can split the resources out of it and make them into their own files. This way, users can download small files instead of one large file. The files will be split into MB (Megabyte) sections designated by the number you put here.

Inventory Section

This section has a few settings that change the way the inventory looks and feels.

- Display multiple icons for multiple items – Setting this option to true will show multiple icons in the inventory window if you have more than one of a certain item. So, if there are three strawberries, and you pick up all three strawberries, you will see three pictures of the strawberries in the inventory window. If this is false, then you'll only see one picture of a strawberry and you'll have to keep track of how many the character actually has in the code. If you want to show some items as multiples and some not, then you'll need to set this to false and create multiple objects in your game that represent the same thing. Assign those objects the same sprites but give them different variable names (like `oStrawberry1` and `oStrawberry2` for example). Then you can show both objects in the inventory window whereas others will appear only once.
- Handle inventory clicks in script – When you click on an item from the inventory window, AGS handles the click by changing the mouse cursor to that item and making that item the current inventory item. Cycling through the different mouse pointers by right-clicking, you'll see that there's an extra one that is the current inventory item. Then you can use that item on something else in the game. So, after all that blabbing...if you don't want AGS to do any of that and you want to handle the click yourself, then set the option to true. AGS will then call a function in your script called `on_mouse_click()` and you can do whatever with it.
- Inventory item cursor hotspot marker – This option allows you to place a crosshair or other image on inventory items. The crosshair will appear at the point on the item that you use as the clicking point. You can have AGS draw a crosshair for you, or you can draw your own and assign it to it.
- Use selected inventory graphic for cursor – If you keep this true, then the cursor will change to the item that you chose. Depending of course on what you set as your cursor image in the inventory editor. If you set it to false then the cursor will always look a little bag no matter what inventory item you choose.

Saved Games Section

This section deals with how games are saved and how the computer will treat them.

- Save games folder name – When a player saves a game it will go into a folder. Normally this folder will be called the same name as the game, but you can change it here if you like.
- Save screenshots in save games – Turning this on will take a snapshot of were the player is and save it into the saved game file. That way, if using Windows Vista+, a screen shot will appear in the game explorer of the current position in the game.

Sound Section

A few things to manipulate sounds of music.

- Crossfade music tracks – AGS will crossfade tracks when it switches from one to the other.
- Play sound when the player gets points – Give this option a sound and it will play it whenever you use the `GiveScore()` function to add to the player's score.

Text output Section

This section deals with how text and speech are shown in the game.

- Always display text as speech – If this option is on then anything displayed with the `Display()` function will appear as speech said by the main character. If it's off, then the text will just appear in the middle of the screen.
- Anti-alias TTF fonts – Anti-aliasing makes corners smoother and fonts look better. Turning this option on will give you better looking true type fonts but will slow the game up slightly. It's a matter of performance, but it's probably negligible.
- Custom text-window GUI – We've already said that we'll talk about GUIs later, and we will. Be patient. In the meantime, if you, for some reason, looked ahead and know how to make a GUI, you can use this option to change the default GUI for normal text in the game. Any text that is spoken or displayed normally will use this GUI. Leaving it at 0 will leave it up to AGS, and it will always choose its own GUI, of course.
- Custom thought bubble GUI – Just like the option above, this option will set a GUI to use for thinking. Using the `Character.Think` (for example: `cFoxyMonk.Think(“Man I'm hot in this robe!”)`) function will show the thought text using this GUI.
- Fonts designed for 640x480 – Set this option to true if you created (or are using) fonts that look better in 640x480 resolution. AGS will use this setting to know how to scale them right.
- Write game text Right-to-left – If you translate your game to a right-to-left language, set this to True to make the text appear from right to left instead of left to right.

Visual Section

- Default transition when changing rooms – Transitions are fun to play with. AGS can change what transitions are used to go from room to room. By default it fades out the old room and then fades in the new one. That's ok for most people. However, it also has the following options:
  - Instant – Don't transition; just instantly show the new room.
  - Dissolve – The old room will dwindle out and disappear and the new room will dwindle in.
  - BlackBoxOut – The old room will be engulfed by a black box, and then the new room will appear taking out the black box. Just go try it.
  - CrossFade – The new room will fade in as the old one fades out.
- Enable letterbox mode – Make this True to show a black ribbon across the top and bottom of the screen. Why? Because you want to.
- Pixel-perfect click detection – This is True by default and enables AGS to figure out exactly where the player clicks using the correct point on the mouse cursor. Setting this to False will cause AGS to draw a rectangle in the area where the mouse was clicked and choosing the closest thing there as the clicked item. This is good if you want your game to be less exact for some reason. Like maybe if the mouse cursor was a shotgun for example, and you want the click to be in the general vicinity of a bunch of stuff you want to destroy.
- When player interface is disabled, GUIs should – Sometimes the player has to wait for an event to happen and all controls are disabled (like during a cut scene). In this case, AGS will cause all controls on any GUIs showing to go gray and become un-clickable. This behavior can be changed, though, to any of the following:
  - Grey out all their controls – This is the default.
  - Hide all their controls – Buttons and other controls on the GUIs will simply disappear.
  - Display normally – Do nothing. Just leave them be.
  - Be hidden – GUIs will run away and hide from the player.

Summary

AGS has a whole section of the Project Tree devoted to the general settings of your game. The settings you set here are applied globally to the whole game, and can affect things like the resolution, the name of the game, the developer name and website, as well as a host of other settings.