

DIGITAL ENGINEERING WITH MINECRAFT®



JAMES FLOYD KELLY

UNOFFICIAL GUIDE

FREE SAMPLE CHAPTER



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DIGITAL ENGINEERING WITH MINECRAFT™

James Floyd Kelly

que®

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Indianapolis, Indiana 46240 USA

Digital Engineering with Minecraft™

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About the Author

James Floyd Kelly is a writer from Atlanta, Georgia. He has degrees in industrial engineering and English and has written technology books on a number of subjects, including CNC machines, 3D printing, open source software, LEGO robotics, and electronics.

Dedication

For Decker and Sawyer, my Minecraft maniacs.

Acknowledgments

If you'll take a look a few pages back, you'll see the list of Que staff who were responsible for making this book a reality. I'd like to thank each and every one of them for doing such a great job in making this book shine.

I'd like to call out one particular person for being this book's champion and pushing it along so readers would have access to some of the fun and unusual things I do with Minecraft. That person is Executive Editor Rick Kughen. Rick is always enthusiastic about my book proposals, and this one just seemed to grab his attention and required very little persuasion to get approval to start writing. If you like this book, drop Rick an email and tell him thank you for making it happen.

My wife, Ashley, will always have my thanks for any book I write—but this time I have two very young people to also thank: my boys, Decker and Sawyer. They discovered Minecraft and dragged me along for the ride. As I discovered their fascination and enjoyment with the game, I jumped in to see what the fuss was all about...and I'm glad I did! I continue to enjoy exploring worlds with them, and many of the projects in this book came about because of something they asked for or observed or wanted, but couldn't quite figure out how to make it happen. I put on the Dad-hat and figured out some things so they could extend their fun, never knowing a book would come out of the experience. So, thank you boys!

We Want to Hear from You!

As the reader of this book, *you* are our most important critic and commentator. We value your opinion and want to know what we're doing right, what we could do better, what areas you'd like to see us publish in, and any other words of wisdom you're willing to pass our way.

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Introduction

Minecraft. This single word can make kids grin a mile wide and parents scratch their heads. It's both phenomenon and mystery. Mojang (pronounced Moe-Yang, rhymes with Joe-Sang), the company that created Minecraft, made a fortune in game sales, merchandise, and Minecraft-related books—and then turned another fortune by selling the company. (And sales continue, with thousands of copies being sold every day as new fans discover the game.) Computer games come and go, but Minecraft survives; I am having a difficult time thinking of another game that continues to be played by so many fans, year after year, and continues to grow in popularity.

Game designer Markus Persson, known as Notch to his fans, released an early version of Minecraft in May 2009; the final version (with new features and fixed bugs) showed up in November 2011. Minecraft quickly became available on a variety of platforms, including Windows, Mac, Android, iOS devices such as the iPad, and even game consoles such as the Xbox and PlayStation. With sales of more than 60 million games (and climbing) and well over 100 million players, it's not hard to understand why in 2014 Microsoft made an offer to purchase Mojang. In November 2014, three years after the full version of the game was released, Microsoft bought Mojang and its Minecraft game for \$2,500,000,000.00. Yes, you read that right: \$2.5 billion.

Mojang did sell a few other games, but let's be honest: Microsoft bought Mojang because of the incredible popularity of one game and one game only—Minecraft. (Microsoft has even dropped a bit of news that it fully intends to make Minecraft 2, but they chose (wisely) not to share a release date.) Ask Minecraft fans what they like best about the game, and you'll get dozens and dozens of different responses. The game was designed first as a sandbox-style platform—which still exists in the Creative mode of the game—allowing players to build whatever they could imagine (within limits, of course). Another mode, called Survival mode, was added; in it, players are pitted against enemies and must scavenge for food and build shelter, among other activities. The Multiplayer mode allows more than one player to exist in the same play area (called a World); players can work together or compete. Additional modes and features have been added over the years, helping ensure that new players can find at least one mode that suits their style of play.

I prefer Survival mode. I like being dropped into a new game with no weapons, no food, and no shelter. It's a fun challenge to survive that first night (and the creatures that magically appear when

the sun goes down). My two young boys prefer Creative mode and Multiplayer. They love building tall houses with secret rooms, laying down miles of track for a custom-made roller-coaster, and creating traps to snare the bad guys. If you're a Minecraft player, you've probably got your favorite things to do in the game as well.

Never played Minecraft? Well, I've got some good news and some bad news. The good news is that dozens of books and hundreds of websites are available to help turn you into a Minecraft expert. Trust me: It won't take long for you to learn your way around the Minecraft interface and all the various tools you can use in the game. The bad news is that the book you're holding in your hands is not going to teach you how to play Minecraft.

NOTE

Books on Minecraft

Fellow writer and Minecraft fan, Stephen O'Brien, has a number of Minecraft books out that can teach you all sorts of tricks and tips for playing Minecraft. You can find more information here: <http://www.quepublishing.com/authors/bio/2cfac6df-79ea-4e90-bbc3-01c2bb6cad6b>

But even if you're not already a Minecraft player, this book is for you—not only will you discover the Minecraft game and just how much fun it is to play, but you'll also learn some new skills that are useful outside of Minecraft. In it you'll use a lot of non-Minecraft software to perform some amazing tasks. You'll still be spending some time in Minecraft, too, if you follow along with this book's projects, but as you'll learn next, there are some interesting things you can do (and learn) outside of Minecraft to create some jaw-dropping creations inside the game.

NOTE

Using different versions of Minecraft

It doesn't matter if you use a PC or Mac version of Minecraft or even the Pocket Edition that's available for mobile devices such as iPad and Android tablets. Most of the software I use in this book is available for multiple platforms, but I'll point out alternatives for you when a software tool might not be available for a particular operating system or version of Minecraft.

Minecraft Can Make You Money

I imagine there are a lot of Minecraft fans who just read the above subhead and sat up a bit straighter! I can almost hear you now: “Are you kidding? I can get paid to play Minecraft?”

Well...no. I don't know anyone who gets paid to play Minecraft except for maybe Mojang's employees. While there are people in the real world who get paid to play video games, that group is very small. (And most of them are playing ultra-competitive shoot-em-up-style games like Counter-Strike.)

When I say that Minecraft can make you money, I mean the skills you learn while inside the game are skills that many companies find useful. Companies that design physical products are often in need of employees who can visualize objects in three dimensions as well as create new and unique objects. Think about any modern-day electronic device you own; chances are it was first designed in software. Mobile phones, tablets, and game controllers are all objects that started out as ideas; someone thought up each one and then created it as a digital object on a screen for someone else to approve or reject. These designers use special software to create 3D digital objects, and they often get paid very well for their work.

MONEY FROM MINECRAFT SERVERS

You can find a new book, *The Ultimate Guide to Minecraft Server*, from Timothy Warner that will teach you to setup your own Minecraft servers. More information on this book can be found here: <http://www.quepublishing.com/store/ultimate-guide-to-minecraft-server-9780789754578>

And the same goes for software companies, especially game developers. Pretty much any video game today requires in-game objects (such as characters, weapons, or vehicles) to be created as three-dimensional objects that can be rotated around and viewed from any angle. Someone has to create those objects that are used in games, and game developers (such as Mojang) hire people who are skilled in designing 3D objects. Oh yeah...they, too, get paid very well for their work.

The software that these 3D digital designers use is special. While the software can be learned by just about anyone, it takes time to learn all the tools and capabilities the software has to offer and put them together to create advanced designs. Digital designers who dive deep into this special software and become skilled in its use are often sought out (and then paid handsomely) by companies needing those skills.

Throughout this book, you're going to be learning about this special software, called CAD, which stands for computer-aided design, software. If you work through the book's projects, you'll gain some basic skills with the software. If you continue to dig deeper into the software when you're done with the book, you can move from being a novice to having the skills of an expert. And, as you just read, those expert skills could come in handy one day.

Becoming a Minecraft Engineer

I like the term *Minecrafter*. If you've ever designed anything in the game—a house, a castle, or something as simple as a chest to store stuff—then you're a Minecrafter. But I've got bigger goals for you. My plan is to turn you into a *Minecraft engineer*.

Engineers design things—big things, little things, complicated things, and crazy things. Engineers also tend to use some of the most amazing tools on the planet, and that's exactly what you'll be doing by the time you finish this book. You'll be pushing the limits of the Minecraft game, and you'll also be pushing your creative skills to the max!

TIP

Engineering Career Gameplan

Want to know more about what engineers do and how to study to become one? One of the best places to start is the Wikipedia page on engineering. This page provides links that can tell you about the different types of engineers, what they study, and what kinds of work they perform. Open a web browser and visit <http://en.wikipedia.org/wiki/Engineering> to learn more.

Trust me: If you enjoy playing and designing inside Minecraft, you'll find the software I'm going to introduce to you just as enjoyable. You'll also be spending more time playing and enjoying Minecraft once you've learned how to create the things you need much faster than you do now.

Getting Started

Throughout this book, I'm going to make one large assumption: that you've installed Minecraft (any version) and understand the basics of playing the game and using the crafting tools. If this isn't you, then get your hands on some of the books I mentioned earlier by Tim Warner or Stephen O'Brien. Turn to those books if you need help, have a parent help you search for “Minecraft Tutorials” on Google or YouTube, and prepare to be blown away by just how many how-to videos and guides are out there. Be aware that many YouTube videos on Minecraft contain unsuitable language and content, so ask a parent or teacher before you go looking on the Internet for help.

Throughout the book, as I introduce you to other specialty software, I'll tell you where to find it, how to download and install it, and how to use it.

With a lot of books, you first learn some (boring) theory and do a lot of (boring) reading before you get to the fun stuff, right? Well, not with this book. I'm going to be doing things a little out of order. I've got a lot of projects to show you, and with each project I'm first going to show you the fun, cool, awesome stuff and how it actually works in Minecraft.



Then I'll get to the nitty-gritty details about the software needed, how to install that software, and how to use it. Why am I introducing projects in this order? Because once you see a special project actually implemented in Minecraft, I think you'll be more curious and more energized to learn the ins and outs of the new software so you can modify the projects and make them your own. If you like my projects, you're going to be going crazy creating your own with the tools I'll be showing you!

Are you ready to make the jump from Minecrafter to Minecraft engineer? Of course you are! And I can't think of a better way to start your journey as a Minecraft engineer than by creating the ultimate home for yourself: a castle that will protect you from enemies and make your friends green with envy. I'll see you in Chapter 1, "Taking Over a Castle."

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Crafting a Super Maze

What You'll Be Doing

- Watch Didgee and Coolcrafter10 plan additional security
- Create your custom maze
- Use online-convert.com to create your .svg file
- Use Tinkercad to turn your 2D maze into a 3D maze
- Import your maze into Minecraft

“This is unbelievable,” said Coolcrafter10. “It’s a real castle. On my land!” He turned and smiled at Didgee-Engie. “This would have taken me weeks—no, months—to build!”

The sun was up but hiding behind some rain clouds in the distance, and the temperature had dropped a bit. A storm was coming, but Coolcrafter10 wasn’t focused on the weather. In front of him, a new castle rested, its many towers disappearing high into the sky.

Didgee nodded. “These days, I use swords for fighting and shovels and pick axes for mining. When it comes to building, I always look for digital tools like Tinkercad and MCEdit to help me.”

“I cannot thank you enough for showing me how to do this,” Coolcrafter10 replied. “You are welcome to stay in my castle anytime you’re in the neighborhood.”

Didgee laughed. “Thank you. I may be taking you up on that if that storm starts moving in this direction.” She pointed to the east and frowned.

Coolcrafter10 looked at the sky between the small mountain range to the north and the dense forest to the south. “I was hoping to do some gardening today, but you’re right...That sky doesn’t look friendly.”

“Well, the storm hasn’t arrived yet. Why don’t we take a look around, and I can make some suggestions for improving your castle?”

“Oh, yeah! That would be great. Where do we start?” asked Coolcrafter10.

“Well, your castle can obviously use some torches right now, but are you familiar with redstone?”

Coolcrafter10 shook his head as he followed Didgee around the inside of his castle. “No. What is redstone?”

Didgee grinned wide. “You’re going to have so much fun, I can promise you. Redstone is a special block that you can build with that carries electricity. With electricity, you can add switches to control lights in different parts of your castle. Torches are great, but it’s nice to be able to turn on lights when you need them and turn them off when you don’t. Oh, and once you get really good with redstone, you can even use it to build weaponry to defend your castles against any baddies that might try to attack.”

“Is there a fast way to build with redstone? Something like Tinkercad that can build all these lights and switches for me?” asked Coolcrafter10.

“Unfortunately, no. Redstone is a material and a skill that you can only learn by doing yourself. I’ll give you some websites that you can read on your computer to learn how to use it. That should give you plenty to do in the evening.”

Coolcrafter10 frowned. “Well, I wish there were a way to defend my castle now while I start to learn about redstone. I think...”

CRAAAACK!!!!

Coolcrafter10 jumped as a lightning bolt hit a tree in the distant forest. The wind had kicked up, and a light rain began to fall.

Didgee scanned the sky. “I suggest we get back to your house while this storm blows over. I wish we could stay in your castle, but it doesn’t have any rooms yet, and until you carve a few out and add a large door to that entrance, it’s just not safe enough.”

CRAAACCKKK!!!! Another lightning bolt popped in the distance.

Coolcrafter10 nodded. “Let’s hurry.” He ran back to his house and closed and locked the door behind them after Didgee ran in.

Didgee shook the rain off her shoulders and looked over at the computer. “You know, while we’re stuck inside, I could show you something we can do right now that can add some extra security to your castle. Are you interested?”

“Are you kidding?” said Coolcrafter10, as he pushed a chair in front of his computer.

“Please sit here and show me. Please! And thank you for all your help.”

Didgee pulled out the chair from the desk, sat down, and turned on the computer.

“So, what do you have in mind?” asked Coolcrafter10. “A moat filled with giant squids? No! A pit of lava that spills down onto any attacking zombies?”

Didgee laughed. “Those are good ideas, but I’ve got something better in mind that won’t take as long to create. How are you at solving mazes?” she asked with a wink.

“Uh, you mean the kind you solve with a pencil?”

“Not quite,” replied Didgee. “Sit down and let me show you.”

There's Almost Always a Solution

Back in Chapters 1, “Taking Over a Castle,” and 2, “Creating Your Own Castle,” you saw two examples of using applications other than Minecraft. Tinkercad and MCEdit are powerful tools, and you’re going to get more hands-on time with both of them as the book continues. But there are other applications to explore that also allow you to create things that can be imported into Minecraft.

NOTE

Reference previous chapters for rusty skills

Once again, this chapter is going to give you a fast example of another fun project and save the nitty-gritty details for Chapter 4, “Getting Lost (in a Maze).” Now that you’ve seen examples of Tinkercad and MCEdit, I won’t be providing as many screenshots of tasks that you’ve already learned to do, such as importing an SVG file into Tinkercad or opening up a world in MCEdit. These are tasks that you’ll need to know how to do, but if you’ve forgotten how to perform a task that’s already been covered, you can always refer back to earlier chapters for the particular steps.

With today’s digital devices—including computers, mobile phones, and tablets—it’s easy to move files back and forth between devices. But what hasn’t always been easy is changing files from one type to another (such as the change from .stl to .schematic that is done for you by Tinkercad). Fortunately, today you can usually do a simple Google search to find instructions on converting one type of file to another. If you have a need for a conversion, then someone else has probably already come up with a solution. In this chapter, you’re going to be introduced to an outstanding online application (that’s also free to use) that allows you to do even more amazing things with your Minecraft worlds.

As you work through the various projects in this book, you’ll discover that often you need to use more than one application or service to get a job done. If you ever hit a roadblock with a project, just know that there’s often a solution out there that’s already been created, and you just need to do a little investigation to find it.

Next you’ll see an example of another project you can do with Minecraft. In this chapter you’ll see what’s possible with this example, and then in Chapter 4 you’ll get a more detailed walkthrough for your own Minecraft world.

Creating Your Own Hedge Maze

Have you ever been chased by a giant spider or zombie back to your Minecraft house? Or have you ever played a game of hide-and-seek with your friends (in Multiplayer mode) in Minecraft? Wouldn’t it be nice to have some method of quickly disappearing from anyone (or anything) chasing you?

One solution is to create a giant maze. Think about it: You can memorize the path through the maze or have a printout of the solution in front of you, and with just a few fast left and right turns, you can quickly throw off any pursuers behind you. What's great about a maze is that if it's designed correctly, you can place it around your house (or castle) for an extra level of defense.

TIP

Outside exploration

Hedge mazes have been around for centuries. They are typically made up of bushes that are carefully trimmed to create the maze walls. If you'd like more information on hedge mazes, here are some links for you to investigate: https://en.wikipedia.org/wiki/Hedge_maze and https://www.youtube.com/watch?v=zAGu2TPt_78.

You can easily draw your own maze and then build it block-by-block inside Minecraft. Another solution is to grab a book of mazes, find a suitable maze in its pages, and then use that as the model. But I've got a different method that's great for creating a maze and saving it in a digital format so I can quickly get it moved into Minecraft and avoid building it block-by-block. Just follow along and rest assured that I'll provide more specific instructions in Chapter 4.

Figure 3.1 shows a maze I created by using a free maze generator (mazegenerator.net, a tool covered in more detail in Chapter 4) on the Internet.

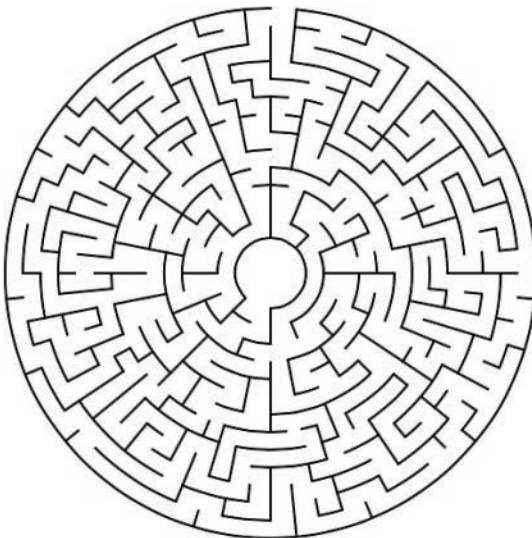


FIGURE 3.1 I've selected to use a circular maze.

What's special about this tool is that you can use it to create circular, rectangular, and many other types of mazes. Even better, you can customize your maze in many ways; with this one, I've enlarged the center area so that a house or tower could be placed inside as a safe retreat.

Once I'm happy with my maze's design, I need to save it as a file. While the maze generator tool can save a maze as an .svg file, there's a problem: The .svg file it saves only retains the outside shape of the maze (circle or square) when imported into Tinkercad, not the pathways that make up the maze. For this reason, one more step is required before moving a maze to Tinkercad.

NOTE

More crazy file extensions

When you work with computers, you'll find there's a neverending list of file types you'll be using. Here are two new ones: .png (Portable Network Graphics) and .svg (Scalable Vector Graphics). Both are related to displaying graphics on a screen, but not every application related to drawing or displaying images is compatible with .png or .svg. Thankfully sites such as online-convert.com will let you convert graphics files from one version to another easily.

Instead of saving as an .svg file, I'll save the maze as a .png file. You can see this file saved on my computer in Figure 3.2.

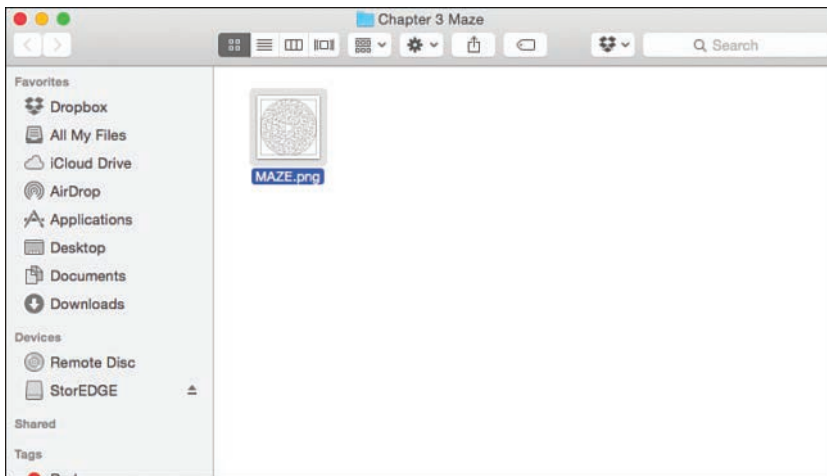


FIGURE 3.2 My maze is saved as a .png image file.

I still need to convert the .png file to .svg (and this conversion will make certain the pathways are retained). To do this, I'll be using a free online tool called online-convert.com, shown in Figure 3.3.

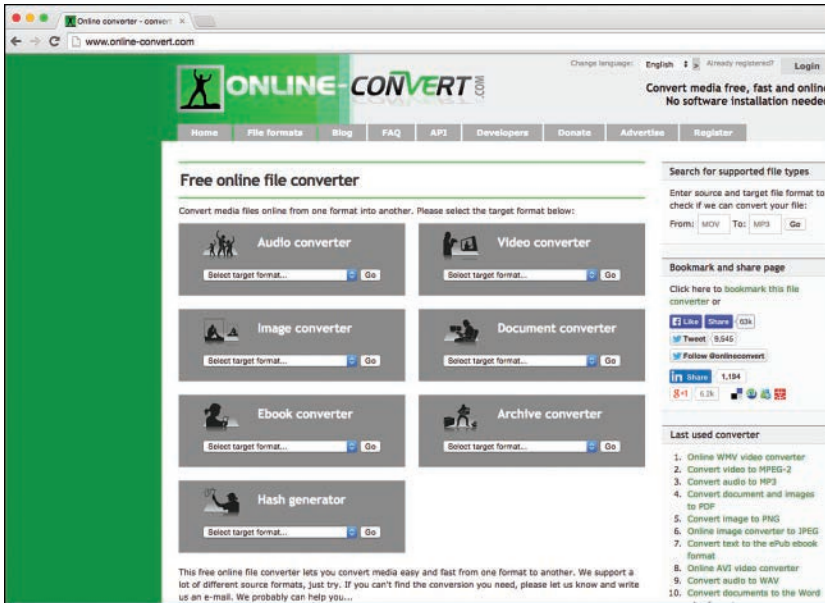


FIGURE 3.3 I'll use online-convert.com to change a .png to .svg.

Once the conversion is done, I have a matching file with the .svg file extension, as shown in Figure 3.4.

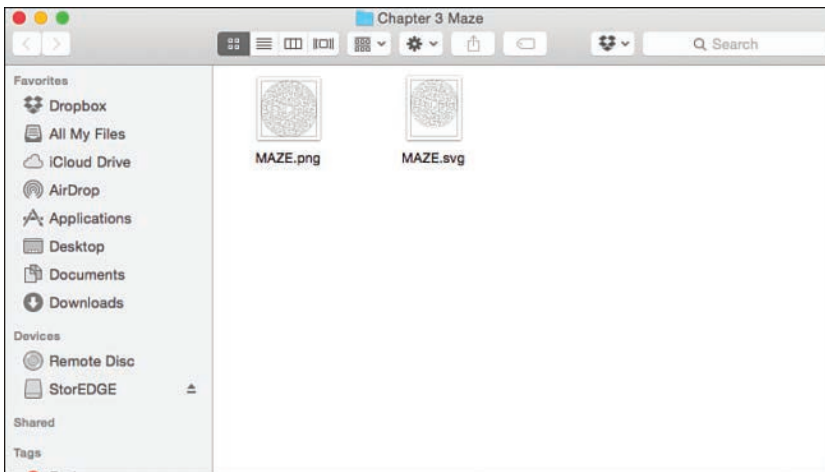


FIGURE 3.4 The .svg file is now ready to import into Tinkercad.

NOTE

Photos of a sketch or printed image will work

If you have a hand-drawn maze (or sketch) or a maze from a book, you can simply take a photo of the sketch. In Chapter 4 I'll show you how to use online-convert.com to convert your photo to an .svg file suitable for use in Tinkercad.

At this point, my maze is only two-dimensional. It has length and width, but no height. But I'm about to change that.

Preparing the Maze with Tinkercad

Back in Chapter 2, you saw how Tinkercad can be used to import an .stl or .svg file and then export it as a .schematic file for use with MCEdit and Minecraft. My maze is now in the .svg format, so I'm going to go ahead and import it into Tinkercad by using the Import tool.

NOTE

Tinkercad only works with .stl and .svg files

Refer to Chapter 2 for complete directions on using the Import tool in Tinkercad to import an .svg or .stl file.

After opening up Tinkercad, I click on the Create New Design button to open up a new project. I use the Import tool and locate the MAZE.svg file. After I click the Open button, the maze appears on the workplane as shown in Figure 3.5.

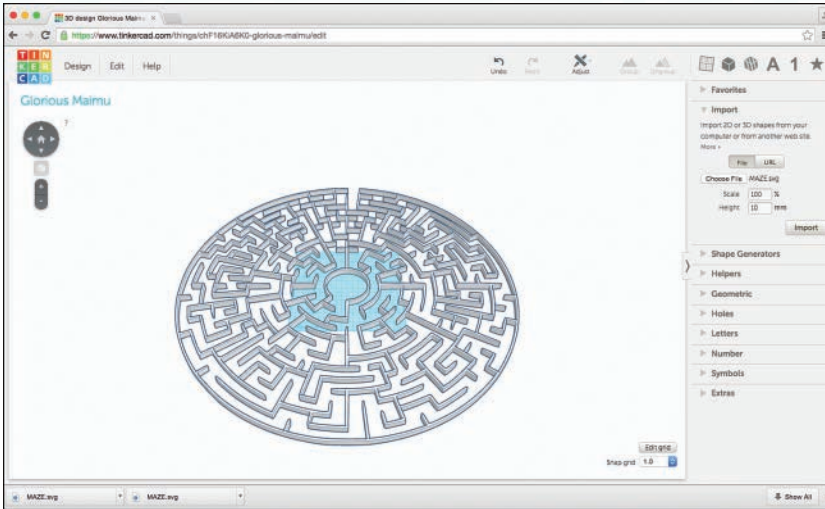


FIGURE 3.5 My maze has now been imported into Tinkercad.

As you can see in Figure 3.5, the maze is much larger than the workplane that is hiding underneath it. I'll shrink the maze down a bit by clicking on it once to select it. In the four corners of the maze, you can see small white boxes (sometimes also called Resize boxes), as indicated in Figure 3.6.

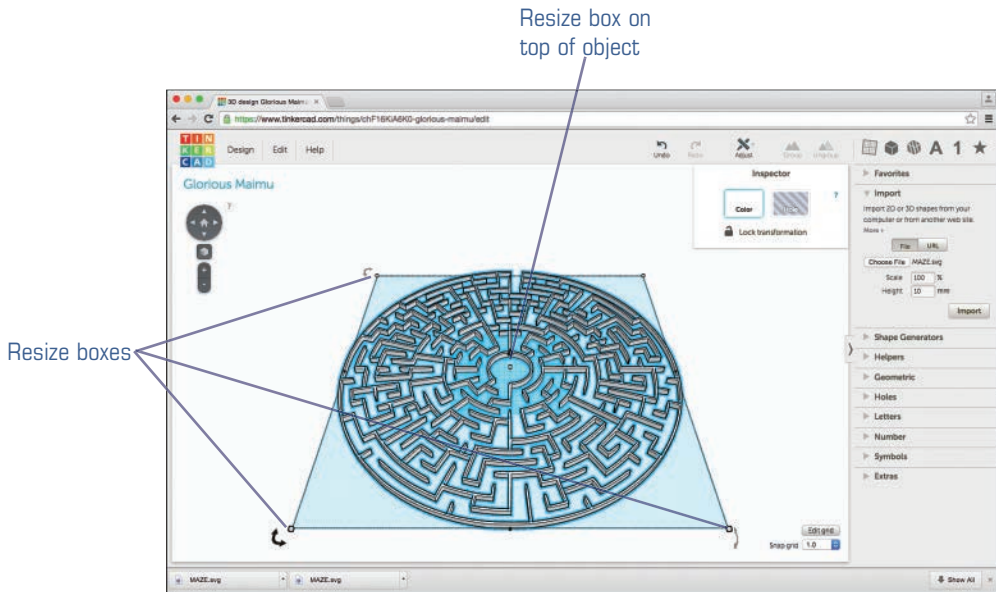


FIGURE 3.6 Select the maze, and small white boxes appear at the corners.

I need to shrink the maze's width and length at the same time and at the same rate. To do this, I hold down the Shift key and then click on one of the four corner white boxes; it doesn't matter which one, as long as it's not the white box on top of the maze.

As I drag a white corner box closer to the center of the maze, the maze shrinks. Figure 3.7 shows that I've shrunk it down to fit inside the workplane. It's not centered over the workplane, but that's okay. I can simply click once and hold on my maze and drag it to center it on the workplane.

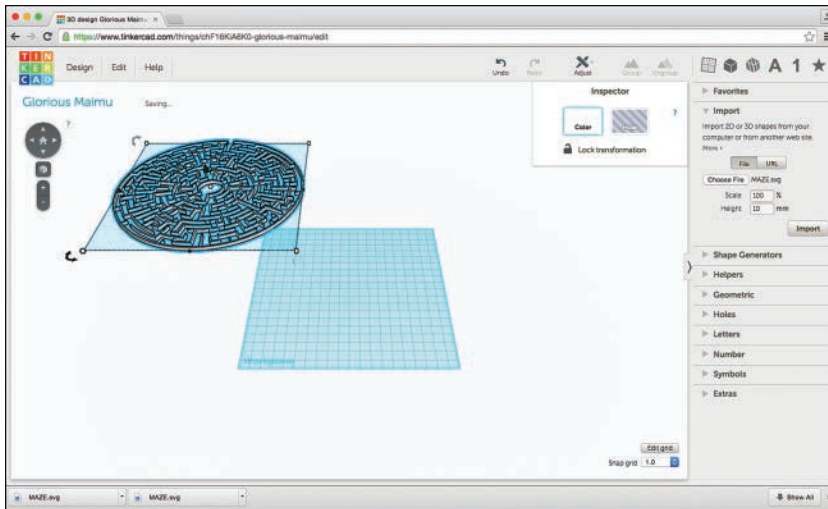


FIGURE 3.7 My maze is shrunk down in size.

Remember from Chapter 2 that when you export an object in Tinkercad to Minecraft, it uses a 1mm = 1 block ratio for the size. As you can see in Figure 3.8, my maze is 192mm in length and width. (Hover your mouse pointer over a corner white box to see the length and width will displayed.)

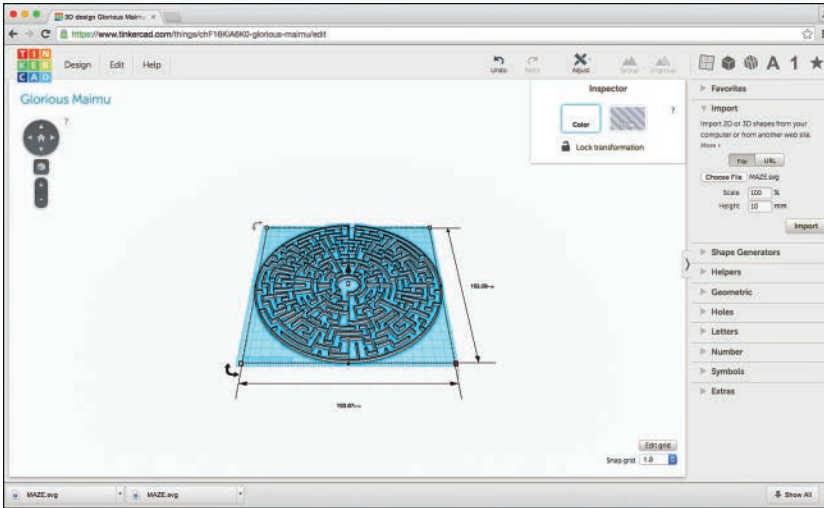


FIGURE 3.8 My maze is currently 192mm in width and length.

TIP

Enlarging a maze takes no time at all

If I find that my maze is too small in my Minecraft world, I just need to open Tinkercad and my maze project. Then I select the maze, hold down the Shift key, and then drag a white box away from the center of the maze to enlarge it.

To see how tall my maze will be, I hover my mouse pointer over the white box in the center of the maze, near the top. As you can see in Figure 3.9, my maze is 3.19mm tall, so it will be three blocks tall.

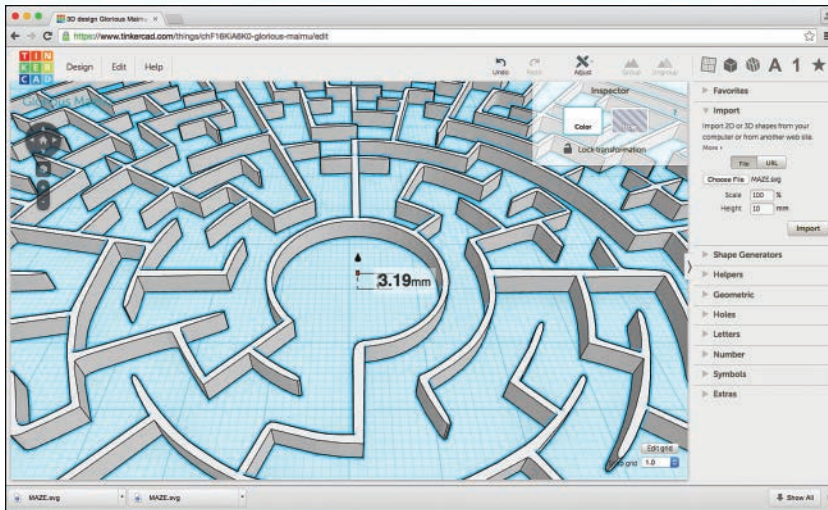


FIGURE 3.9 My maze will be three blocks tall.

What if I want a taller maze? Easy! Click and hold down on that center white block and drag up (slowly) but don't hold down the Shift key. This way you will change only the height of the maze. Figure 3.10 shows that I've resized my maze to be 5mm tall, which means it will be 5 blocks in height once it's imported into Minecraft.

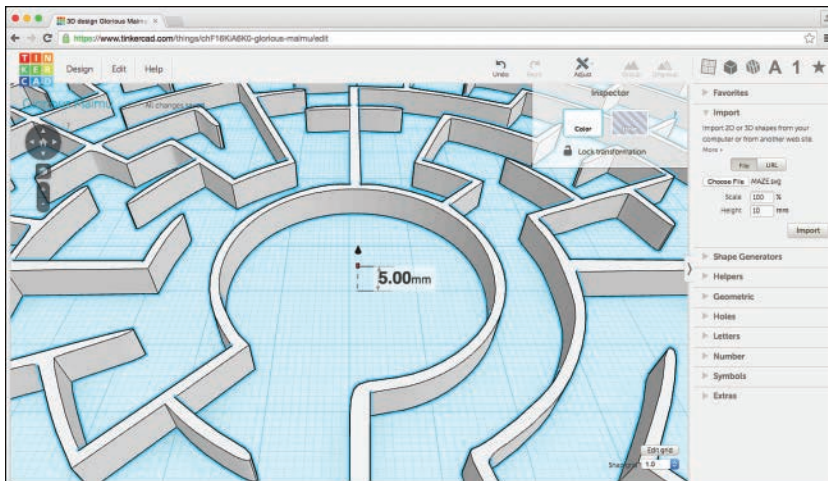


FIGURE 3.10 The maze is resized to be 5 blocks tall.

I've played around with my maze, increasing the inside circle's diameter and the outer diameter until I've ended up with a maze that is 239mm in length and width and 5mm in height. This information will become important shortly, when I find a piece of land to place the maze.

All that's left to do in Tinkercad is to export the maze as a .schematic file. I click on the Design tab and select the Download for Minecraft option, as shown in Figure 3.11.

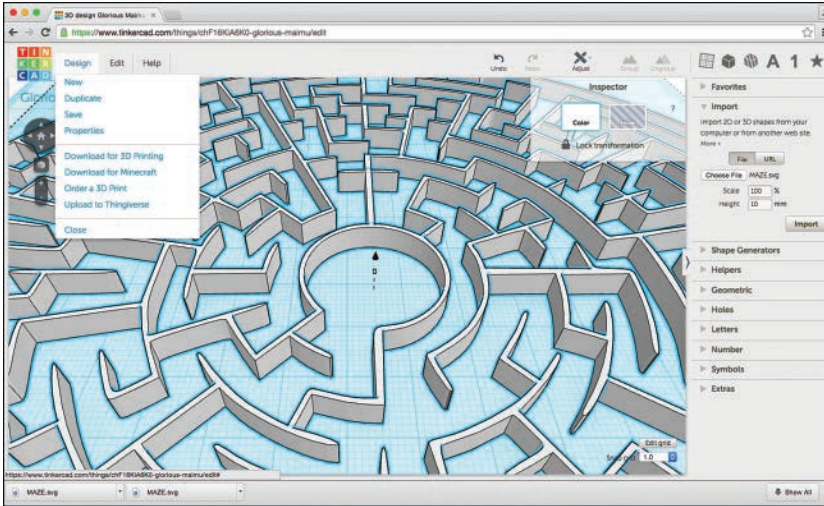


FIGURE 3.11 My maze will be downloaded as a .schematic file.

I've placed this .schematic file in the folder that holds my MAZE.png and MAZE.svg files, as shown in Figure 3.12.

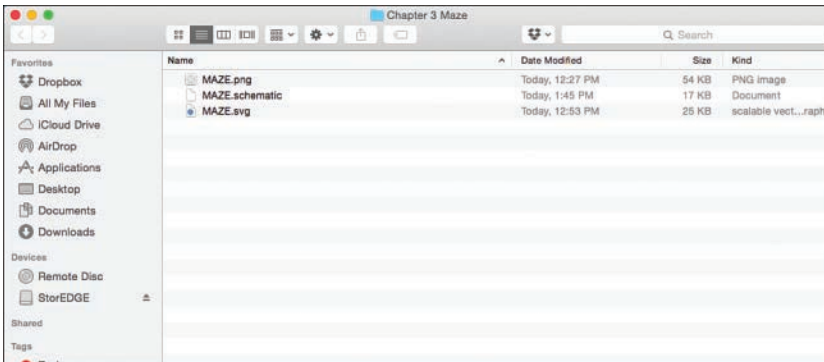


FIGURE 3.12 The MAZE.schematic file is saved to my computer.

Now it's time to open up MCEdit and get this maze imported into a Minecraft world.

Landscaping for Your Minecraft World

Prior to importing my maze, I found a nice medieval tower that I plopped down in my EngineerLand world. You can see it in Figure 3.13, with the Eiffel Tower in the distance.

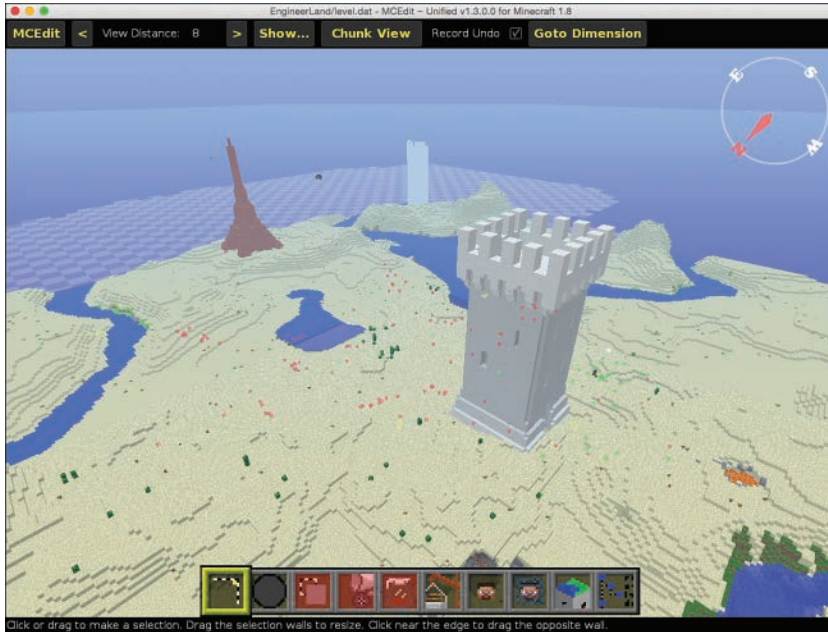


FIGURE 3.13 A nice little piece of land to place a maze.

I've used MCEdit to import my maze, but as you can see in Figure 3.14, there's a slight problem.

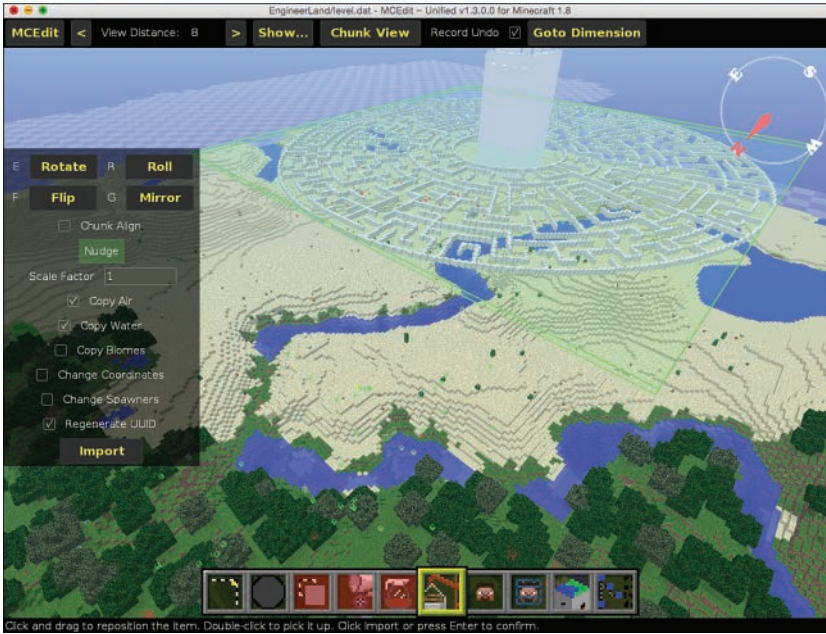


FIGURE 3.14 The maze is imported but not permanently placed.

If you can't see the problem here, take a look at Figure 3.15. Here you can see that I've dropped down (using the WASD and IJKL keys), and you and I can both now see that the maze is floating above the terrain. Not good. What I need is a lot of flat terrain surrounding the tower before I place the maze. Specifically, I need at least 239 blocks by 239 blocks of flat terrain (to fit the length and width of my maze).



FIGURE 3.15 The maze is floating above the ground.

Normally, you'd have to flatten a piece of land by mining it block by block by block. Yawn. Fortunately, MCEdit can come to my rescue.

There are a lot of things you can do with MCEdit, as you'll discover in this book. One handy help MCEdit gives you is the ability to quickly and easily modify the terrain to suit your needs. In Chapter 2, you saw how easy it is to change one type of block to another; in Chapter 4, I'm going to show you how to use MCEdit to remove large numbers of blocks simultaneously.

I've already done this block removal in Figure 3.16. I'm high up in the air so you can get a good look at the flat terrain that is 250 by 250 blocks of stone—a perfect surface for planting my maze and my tower, although I could have filled it with grass or any other block material.

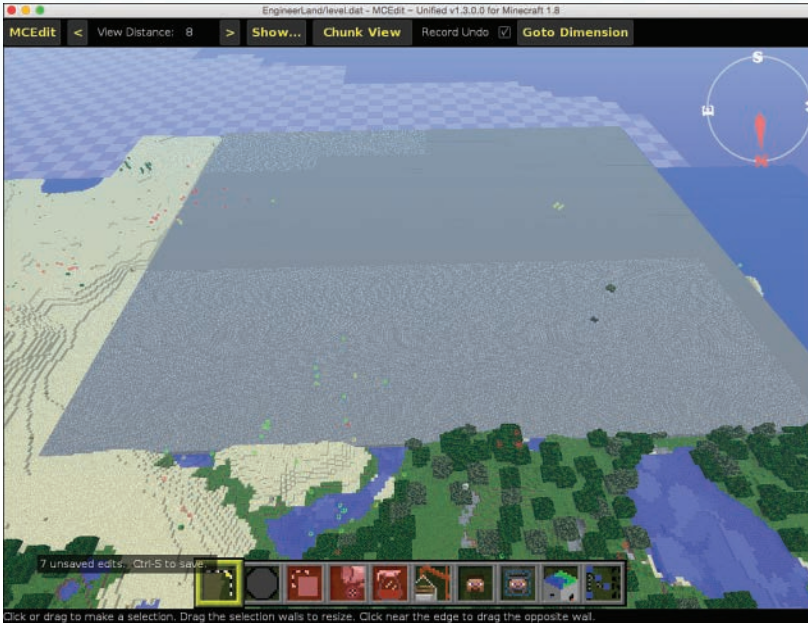


FIGURE 3.16 This flat terrain will be perfect for my maze.

After placing the maze with a single click (but before clicking the Import button), I can see that it fits well in my 250 × 250-block plot of flat terrain, as shown in Figure 3.17.

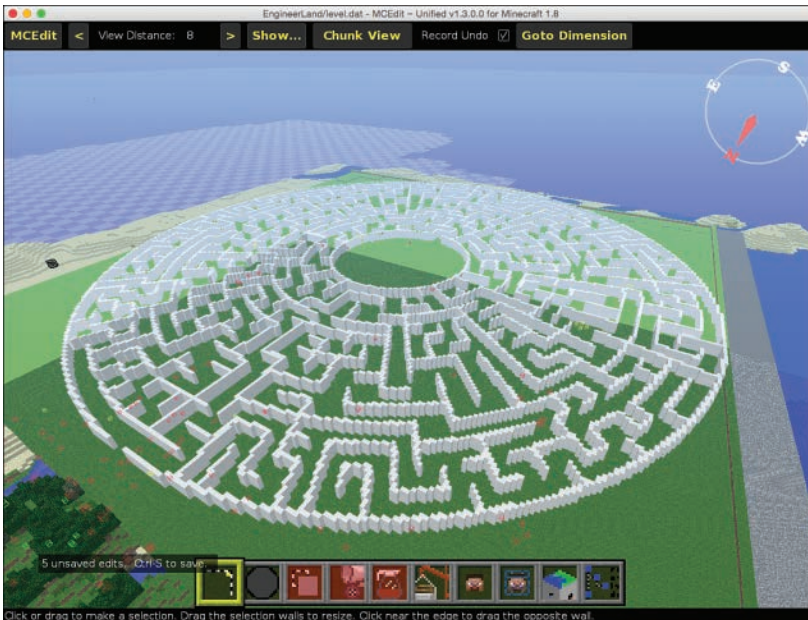


FIGURE 3.17 My maze fits well on the flat terrain.

Now it's time to import the tower and place it at the center of the maze. You can see in Figure 3.18 that the tower sits in the center circle. I also converted the rock surface to grass (using the Fill and Replace tool covered in Chapter 2).



FIGURE 3.18 My tower in the middle of the maze.

Before I go explore my maze in Minecraft, I click on the MCEdit menu and choose Save. After the save action is done, I click on MCEdit again and choose Quit. Now I can go check out my maze in Minecraft.

Exploring the Maze

After opening up EngineerLand, it's not hard to find my maze. As you can see in Figure 3.19, it's *gigantic*!



FIGURE 3.19 My maze looks great in Minecraft.

I've circled around and found the maze entrance. I can see that it'll probably be helpful to build some sort of building at the spot shown in Figure 3.20 so that I can easily find the entrance.



FIGURE 3.20 The entrance needs a big ENTER HERE sign.

The real fun begins, however, inside the maze. If I memorize the solution, I'll be able to run through it super-fast, while any enemies chasing me will certainly get lost.

NOTE

Slow players down with some hard walls

Of course, a player can simply dig his way through the walls to the center in Creative mode. If you're planting your maze in Survival mode, however, be sure to select the entire maze and use the Fill and Replace tool to change its material to bedrock. That'll slow them down.

Figure 3.21 shows what it's like to be running through the maze. If you don't know the solution, it can definitely get confusing as you explore.



FIGURE 3.21 Having fun inside my version of a hedge maze.

Before leaving this chapter, think about how long it would take you to build a maze of this size and complexity using simple mining and placement of individual blocks. It would take dozens and dozens of hours...maybe even hundreds.

Guess how long I spent on this entire process? Less than 15 minutes. Here's a breakdown:

- Creating the maze with the maze generator: 2 minutes
- Converting the maze file to .svg with online-convert.com: 1 minute
- Importing into Tinkercad and resizing the maze: 2 minutes

- Exporting the maze to a .schematic file: 1 minute
- Flattening terrain before maze placement: 3 minutes
- Importing the maze and placing it: 2 minutes
- Importing the tower and placing it: 2 minutes

It may take you just a little longer than this because you'll be familiarizing yourself with the various tools, but once you become familiar with Tinkercad, MCEdit, online-convert.com, and other tools, the time it takes you to create these kinds of amazing structures will drop as well.

Up Next...

In this chapter I ran through the process of creating a maze and importing it into Minecraft quickly because I wanted to get you to the end result fast to show you the possibilities. Next, in Chapter 4, I'll slow things down a bit and give you complete step-by-step instructions for every task I covered briefly in this chapter.

Instead of helping you create and add a maze, however, I'll walk you through adding another fun element to a Minecraft world that uses the same tools and procedures you read about in this chapter.

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