

1

Introduction

Minecraft is an independently produced game that is the brainchild of Markus “Notch” Persson. The game was first released in 2009 and has become hugely popular. The game’s appeal is largely due to its creative side, which allows its players to create the most fantastic “contraptions” in a virtual world.

This book is about the creative side of the game, especially using redstone (which is similar to electronics) as well as using and developing your own “mods” to the basic game.

What Is Minecraft?

Minecraft is a first-person game. As a player in Minecraft, you have to survive in a hostile world. This world has night and day and is made up of a vast and randomly generated terrain made up of various types of blocks.

These blocks can be collected and have different properties. You can also transform blocks into more useful items that you can keep in your “inventory.” You can use the blocks to create building materials and tools.

However, you are not alone in this world. Your world also contains “mobs.” Some of these mobs will come out at night or hide in the shade, and will do their best to kill you (Figure 1-1). These mobs are best avoided by making a home and staying in it at night. As you get better at the game, these spiders, skeletons, and zombies will become less of a threat and you will have crafted yourself tools to fight them with or torches to light an area up and keep them away.



Figure 1-1 *A scary mob*

Other mobs are decidedly useful. These include chickens and pigs, which are sources of food. You need to eat, or you become weak. You can use the wool gathered from sheep (which unfortunately you have to kill) to make things, including a bed to put in your home. A bed might not seem like much of a priority, but Minecraft follows a speeded-up daily cycle. The daytime lasts 10 minutes of real time, as does the night. Since generally at night you probably want to stay indoors, a bed allows you to sleep through the night and speeds up the game play.

You will soon progress past surviving, making yourself a nice secure home, perhaps settling down to farm. If life starts to become a bit pedestrian, you might decide that it's time to do some grand engineering and make some great contraptions just for the hell of it. When doing this, it is a lot easier to dispense with the threat and distraction of mobs, and play the game in Creative mode, where you are indestructible, have unlimited resources, and can fly.

Minecraft Versions

Most people will be using the full version of Minecraft. The game will run on computers using Windows, Mac, or Linux. The game is written in the Java programming language, which is available for almost every type of computer. Java is a fairly resource-hungry language, so despite the fairly simple-looking graphical style of the game, it will play better on a computer with a decent graphics card and plenty of memory. Minecraft is also available for the Xbox and PlayStation 4 and 3 consoles.

A cut-down, simplified version of Minecraft is called Minecraft Pocket Edition. This version is based on an early release of Minecraft ported to the C++ language. It is available on the Android Market and Apple iStore. It lacks some of the sophistication of the full version, including (at the time of writing) redstone, but is actively being developed with new features being added to bring it closer to the full version.

For enthusiasts of the Raspberry Pi single-board computer, there is Minecraft Pi Edition. This has the same basis as the Pocket Edition.

Getting Started

You should start the game playing in Survival mode and understand the basic principles before moving on to more creative endeavors. The key to getting started with Minecraft is to survive your first night. The official guide to doing this can be found here: www.minecrafttopia.com/how_to_play_minecraft.

As you progress and need a bit more detailed information, you will find this beginner's guide useful too: http://minecraft.gamepedia.com/Tutorials/Beginner's_guide.

Basic Crafting

Without the ability to make things, Minecraft would be a fairly uninteresting game that mostly involved running away from monsters. The process of making tools and material from things that you pick up in the game (usually after whacking them a bit) is called "crafting."

When you first start the game, the only crafting "recipes" available to you are those that use just four components in the 2×2 grid that you see when you open your inventory by pressing the E key during play (Figure 1-2).



Figure 1-2 Two-by-two crafting



Figure 1-3 *Crafting a crafting table*

In this example we have placed a single block of wood (obtained by punching a tree until it breaks) into the top-left corner. This has resulted in four oak wood planks being created from the block of wood. Once the crafted items have been created, you should drag them to the nine slots at the bottom of the inventory. This will make them quickly accessible by typing one of the numbers 1 to 9 corresponding to the slot you want to use.

You can use these blocks to build a shelter, or more importantly to create what should be your first tool, a “crafting table.” A crafting table is created by placing four of these planks into the crafting grid (Figure 1-3).

You will normally create a crafting table in your home where you can use it without the danger of attack from mobs. The crafting table gives you a 3x3 grid, which you use in just the same way as the 2x2 grid, but it opens up a lot more recipes.

You will find quite a few of the more common crafting recipes reproduced in this book for your convenience, but the sheer scale of the Minecraft game makes it impractical to include all the crafting recipes. You can find a complete list here: <http://minecraft.gamepedia.com/Crafting>.

Forging

One of the first things that you will want to make with your crafting table is a “furnace.” A furnace will allow you to make even more things, as well as cooking raw meat to reduce the chance of food poisoning (yes, really). You create a forge using a ring of cobblestone. You will have to work a little to get the cobblestone, possibly even doing some actual mining using a pickaxe, which you can make from planks and sticks (sticks are made from planks).

Forging (or cooking) is similar in concept to using a crafting table, because you are transforming some raw material into something else. However, it differs because it requires fuel to burn. For this you can use anything made

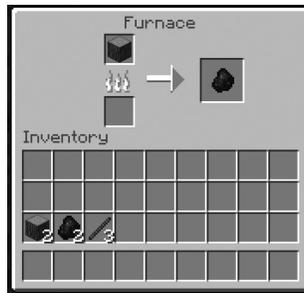


Figure 1-4 Using a furnace to make charcoal

of wood, coal that you mine, or charcoal that you make from wood. For example, Figure 1-4 shows how you can make charcoal (useful for making torches) by placing planks in the box below the flames and a block of wood above the flames. Note that the planks placed in the box below the flames have immediately disappeared from Figure 1-4 as they burned.

Throughout this book, you will find pictorial crafting recipes that show what you must place in the 3×3 grid in order to craft some special type of material or tool.

Creative Mode

When you create a new world, you can specify that you wish to play it in Creative mode rather than Survival mode, by clicking the Game Mode button until it toggles to Game Mode Creative (Figure 1-5).



Figure 1-5 Setting the Game Mode to Creative



Figure 1-6 *World Options screen*

You can also click the More World Options button at this time to make life even easier (Figure 1-6).

You can optionally specify a “seed” for the world. You can put any text in here and whenever you make a new world with this same seed, you will get exactly the same starting world, in terms of terrain. You could use this feature so that your friends could start with exactly the same world as you.

Another option that you might want to set here is the World Type. Toggling this to Superflat will create a world without mountains and valleys, making it more suitable for building your contraptions on. You can also set the option to Allow Cheats.

Playing in Creative mode will give you the following advantages:

- You will be able to fly.
- You will be invincible.
- You will have an infinite inventory, stocked with every type of item to an unlimited quantity.

Some of the constraints of Survival mode still apply, so you will still have a day/night cycle and there will still be mobs. However, the mobs will not be able to hurt you and you can also turn them off anyway.

Cheats

By selecting the option to allow cheats, you can make the process of creating contraptions even easier. With cheats enabled, you can enter commands by just typing a slash (/) followed by the command.

For example, the following command will set the time to dawn, useful when you want to skip the night.

```
/time set 0
```

There are many commands available and you can see the full list here: <http://minecraft.gamepedia.com/Commands>.

Redstone

You can make magnificent houses and do all sorts of grand civil engineering projects using basic blocks and tools. However, sooner or later, you will feel the urge to experiment with what in the real world would be mechanical and electrical engineering—that is, making things that move and controlling them electrically.

Redstone is a special type of rock that you can use to make things that are similar in concept to electrical wiring and even electronic components. You can create switches that control torches and move pistons. People have even created entire computers from first principles using redstone.

Using Mods

Many people have developed expansion mods that can be installed into Minecraft. This process is entirely unofficial and not supported by Mojang, the developers of Minecraft. Mods are available to download and range from simple new types of block or modifications to existing items, all the way through to complex mods like ComputerCraft, which we will use in Chapter 8.

Installing a mod is not as simple as just copying some files into the Minecraft installation directory. You have to run a utility program that converts the compiled Java class files back into source code. The source code for the mod is then installed over the top of the original decompiled Mojang code and the files recompiled.

Mods are often available in bundles called *mod packs* that include a whole load of mods from different sources. These normally have an automated installer that takes care of all the class file hacking that is needed.

You can find a list of popular mod packs here: http://minecraft.gamepedia.com/Mods/Mod_packs.

Of these, Feed the Beast and Tekkit are the most popular choices.

Making Mods

In addition to using other people's mods, you can also create your own mods. Chapters 9 to 11 of this book deal with this complex and interesting activity.

You will need to do some Java programming to create mods, but, you do not need to already know Java to be able to follow the examples in this book, which take you step by step through the creation of mods.

Installing the Example World

All the example contraptions described in this book are set up in an example world that you can explore as you read the book. In fact, it will make it much easier to follow the instructions in the book if you download and install this. It will allow you to interact with the contraptions that are built, walk around them to view them from different angles, and even pull them apart to see how they work.

The first step is to download the zip file of the world from: https://github.com/simonmonk/minecraftmastery/tree/master/example_world.

To download the zip file, you need to first click on the link "Minecraft_Mastery.zip" and then on the page that opens click on the "view raw" link. Save the zip file on your desktop and unzip the file. You then need to copy the entire Minecraft_Mastery folder into your saves folder.

The location of your saves folder will depend on which platform you are running Minecraft on. In both Mac and Windows, these files are hidden by default.

There is a handy trick that you can use to find the saves folder, which works on all platforms, including Windows. The trick is to select Options from the main menu of Minecraft, then click Resource Packs, and then Open

Resource Packs Folder. Then navigate up one level and you will see the Minecraft folder, which also contains the saves folder.

When you have copied the Minecraft Mastery folder into the saves folder, you will find that when you start up Minecraft again, the new world will be there. You can open it and explore the world as you please. If you accidentally damage one of the contraptions that you are looking at, you can always copy the files again.

Summary

In this chapter, we have introduced Minecraft and surveyed the wide range of ways in which you can use Minecraft and even extend it by creating your own mods.