2.2 A Simple Makefile

Here is a straightforward makefile that describes the way an executable file called edit depends on eight object files which, in turn, depend on eight C source and three header files.

这是一个简单的 makefile，它描述了一个名为 edit 的可执行文件依赖于八个目标文件的方式，而这些目标文件又依赖于 8 个 C 源文件和 3 个头文件。

In this example, all the C files include defs.h, but only those defining editing commands include command.h, and only low level files that change the editor buffer include buffer.h.

在这个例子中，所有的 C 文件都包含 defs.h，但只有那些定义编辑命令的文件包含 command.h，只有改变编辑器缓冲区的低级文件包含 buffer.h。

```
edit : main.o kbd.o command.o display.o \
       insert.o search.o files.o utils.o
        cc -o edit main.o kbd.o command.o display.o \
                   insert.o search.o files.o utils.o

main.o : main.c defs.h
        cc -c main.c
kbd.o : kbd.c defs.h command.h
        cc -c kbd.c
command.o : command.c defs.h command.h
        cc -c command.c
display.o : display.c defs.h buffer.h
        cc -c display.c
insert.o : insert.c defs.h buffer.h
        cc -c insert.c
search.o : search.c defs.h buffer.h
        cc -c search.c
files.o : files.c defs.h buffer.h command.h
        cc -c files.c
utils.o : utils.c defs.h
        cc -c utils.c
clean :
        rm edit main.o kbd.o command.o display.o \
           insert.o search.o files.o utils.o
```

We split each long line into two lines using backslash / newline; this is like using one long line, but is easier to read. See Splitting Long Lines.

我们使用反斜杠/换行符将每个长行分成两行； 这就像使用一个长行，但更容易阅读。 请参阅拆分长线。

To use this makefile to create the executable file called edit, type:

```
make
```

To use this makefile to delete the executable file and all the object files from the directory, type:

```
make  clean
```

In the example makefile, the targets include the executable file 'edit', and the object files 'main.o' and 'kbd.o'. The prerequisites are files such as 'main.c' and 'defs.h'. In fact, each '.o' file is both a target and a prerequisite. Recipes include 'cc -c main.c' and 'cc -c kbd.c'.

When a target is a file, it needs to be recompiled or relinked if any of its prerequisites change. In addition, any prerequisites that are themselves automatically generated should be updated first. In this example, edit depends on each of the eight object files; the object file main.o depends on the source file main.c and on the header file defs.h.

当目标是一个文件时，如果它的任何先决条件发生变化，则需要重新编译或重新链接。此外，应首先更新本身自动生成的任何先决条件。在本例中， edit 依赖于八个目标文件中的每一个； 目标文件 main.o 依赖于源文件 main.c 和头文件 defs.h。

A recipe may follow each line that contains a target and prerequisites. These recipes say how to update the target file. A tab character (or whatever character is specified by the .RECIPEPREFIX variable; see Special Variables) must come at the beginning of every line in the recipe to distinguish recipes from other lines in the makefile. (Bear in mind that make does not know anything about how the recipes work. It is up to you to supply recipes that will update the target file properly. All make does is execute the recipe you have specified when the target file needs to be updated.)

方法可以遵循包含目标和先决条件的每一行。这些方法说明了如何更新目标文件。Tab（或 .RECIPEPREFIX 变量指定的任何字符；请参阅特殊变量）必须出现在方法中每一行的开头，以将方法与 makefile 中的其他行区分开来。（请记住，make 对配方的工作方式一无所知。由您提供能够正确更新目标文件的配方。make 所做的只是在需要更新目标文件时执行您指定的配方 .)

The target 'clean' is not a file, but merely the name of an action. Since you normally do not want to carry out the actions in this rule, 'clean' is not a prerequisite of any other rule. Consequently, make never does anything

with it unless you tell it specifically. Note that this rule not only is not a prerequisite, it also does not have any prerequisites, so the only purpose of the rule is to run the specified recipe. Targets that do not refer to files but are just actions are called phony targets. See Phony Targets, for information about this kind of target. See Errors in Recipes, to see how to cause make to ignore errors from rm or any other command.

目标 'clean' 不是一个文件，而仅仅是一个操作的名称。 由于您通常不想执行此规则中的操作，因此 "clean" 不是任何其他规则的先决条件。 因此，除非你明确告诉它，否则 make 永远不会对它做任何事情。 请注意，此规则不仅不是先决条件，它也没有任何先决条件，因此该规则的唯一目的是运行指定的配方。 不引用文件而只是动作的目标称为虚假目标。 有关此类目标的信息，请参阅 Phony Targets。 请参阅配方中的错误，了解如何使 make 忽略来自 rm 或任何其他命令的错误。