- To access a directory—that is, to read or write the files in the directory or to run the files if they're programs—a user needs execute permission on that directory. Note that to access a directory, a user must *also* have execute permission to all of its parent directories, all the way up to the root!

File Access Permissions

The access permissions on a file control what can be done to the file's *contents*. The access permissions on the *directory* where the file is kept control whether the file can be renamed or removed. (If this seems confusing, think of it this way: the directory is actually a list of files. Adding, renaming, or removing a file changes the contents of the directory. If the directory isn't writable, you can't change that list.)

Read permission controls whether you can read a file's contents. Write permission lets you change a file's contents. A file shouldn't have execute permission unless it's a program.

Setting Permissions with chmod

Once you know what permissions a file or directory needs—and if you're the owner (listed in the third column of **ls -l** output)—you can change the permissions with the **chmod** program.

There are two ways to change permissions: by specifying the permissions to add or delete, or by specifying the exact permissions.* For instance, if a directory's permissions are almost correct, but you also need to make it writable by its group, tell **chmod** to add group-write permission. But if you need to make more than one change to the permissions—for instance, you want to add read and execute permission, but delete write permission—it's easier to set all permissions explicitly instead of changing them one-by-one. The syntax is:

chmod *permissions file(s)*

Let's start with the rules; we see examples next. The *permissions* argument has three parts, which you must give in order with no space between.

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* Early versions of **chmod** can't add or delete particular permissions. Instead, you have to give an exact permission as three digits between 0 and 7. If you need to use **chmod** that way, please see a more detailed Unix reference.