

4

ANSWERS TO EVEN-NUMBERED EXERCISES

2. List the commands you can use to perform these operations:
 - a. Make your home directory the working directory
 - b. Identify the working directory

- a. cd; b. pwd

4. The df utility displays all mounted filesystems along with information about each. Use the df utility with the -h (human-readable) option to answer the following questions.

```
$ df -h
Filesystem                Size      Used Avail Capacity  Mounted on
/dev/disk2s10             20G       2.6G   17G     13%     /
devfs                    114K       114K    0B    100%    /dev
fdesc                     1.0K       1.0K    0B    100%    /dev
<volfs>                   512K       512K    0B    100%    /.vol
/dev/disk0s9              77G       37G    39G     49%    /Volumes/Scratch
/dev/disk1s9              25G       16G    9.5G     63%    /Volumes/Sys
/dev/disk2s12             94G       43M    94G      0%    /Volumes/New
/dev/disk1s10            86G       71G    15G     83%    /Volumes/Home
automount -nsl [223]       0B         0B     0B    100%    /Network
automount -fstab [232]    0B         0B     0B    100%    /automount/Servers
automount -static [232]  0B         0B     0B    100%    /automount/static
```

- a. How many filesystems are mounted on your Mac OS X system?
- b. Which filesystem stores your home directory?
- c. Assuming that your answer to exercise 4a is two or more, attempt to create a hard link to a file on another filesystem. What error message do you get? What happens when you attempt to create a symbolic link to the file instead?

Following are sample answers to these questions. Your answers will be different because your filesystem is different.

a. five; b. `/dev/disk2s10`; c. `ln: xxx: Cross-device link`. No problem creating a cross-device symbolic link.

6. What are some of the differences between a Finder alias and a hard link or a symbolic link?

A Finder alias has traits of both hard and symbolic links. A Finder alias is like a hard link in that it points to the same file no matter where you move that file on the disk. A Finder alias is like a symbolic link in that it can point from one volume to another, and that it will not work if the target file is deleted.

8. Suppose that a user belongs to a group that has all permissions on a file named `jobs_list`, but the user, as the owner of the file, has no permissions. Describe which operations, if any, the user/owner can perform on `jobs_list`. Which command can the user/owner give that will grant the user all permissions on the file?

Initially the user/owner cannot perform any operations involving the file, other than to use `ls` to list it. When the user/owner gives the following command, the user/owner can perform any operation involving the file:

```
$ chmod u+rwx jobs_list
```

10. Assume that you are given the directory structure shown in Figure 4-2 on page 73 and the following directory permissions:

```
d--x--x--- 3 max max 578 Mar 10 15:16 business
drwxr-xr-x 2 max max 578 Mar 10 15:16 business/milk_co
```

For each category of permissions—owner, group, and other—what happens when you run each of the following commands? Assume that the working directory is the parent of `correspond` and that the file `cheese_co` is readable by everyone.

a. `cd correspond/business/milk_co`

b. `ls -l correspond/business`

c. `cat correspond/business/cheese_co`

a. owner: OK; group: OK; other: Permission denied

b. owner, group, and other: Permission denied

c. owner and group: OK; other: Permission denied

12. What does the `..` entry in a directory point to? What does this entry point to in the root (`/`) directory?

The `..` entry is a link to the parent directory. In the case of the root directory, there is no parent and the `..` entry is a link to the root directory itself.

14. Suppose that the working directory contains a single file named `andor`. What error message do you get when you run the following command line?

```
$ mv andor and\or
```

Under what circumstances is it possible to run the command without producing an error?

```
$ mv andor and\or
mv: rename andor to and/or: No such file or directory
$ mkdir and
$ mv andor and\or
$ ls and
or
```

The backslash is superfluous.

16. Explain the error messages displayed in the following sequence of commands:

```
$ ls -l
total 0
drwxrwxr-x 3 zach zach 102 Mar  2 17:57 dirtmp
$ ls dirtmp
$ rmdir dirtmp
rmdir: dirtmp: Directory not empty
$ rm dirtmp/*
rm: dirtmp/*: No such file or directory
```

There is a file whose name begins with a period (an invisible file) in the `dirtmp` directory. Use `ls` with the `-a` option to list the file. Remove the file, and then you will be able to remove the directory.

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