

SECTION 5 Manage Directories and Files in the Linux System

In this section of the workbook, you learn how to do the following:

- “Mount Removable Media” on 5-2
- “Change Directories and List Directory Contents” on 5-3
- “Create and View Files” on 5-5
- “Copy and Move Files and Directories” on 5-6
- “Create Directories” on 5-8
- “Delete Files and Directories” on 5-9
- “Link Files” on 5-10
- “Find Files on Linux” on 5-12
- “Search File Content” on 5-14
- “Archive Files” on 5-15
- “Compress and Uncompress Files with `gzip` and `bzip2`” on 5-17

Most of the exercises in this Section instruct you to close the terminal window at the end of the exercise (in case you do not complete the exercises at the same time).

However, if you plan on completing the exercises in one sitting, you can ignore the instruction at the end of each exercise to close the terminal window.

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Exercise 5-1 Mount Removable Media

In past versions of Linux it was necessary to mount removable media with some command to access them and to unmount them afterwards. This has been automated in current kernel versions.

To access removable media, do the following:

1. From the KDE desktop, open a terminal window.
2. Log in as root by entering **su -** with a password of **novell**.
3. Insert a **SLES 9 CD** in your CD-ROM drive.
4. (Conditional) If a dialog appears indicating that a data CD was found, close the dialog by selecting **No**.
5. Display the content of the directory `/media/cdrom/` by entering
ls /media/cdrom



If your CD-ROM drive is also a CD recorder, enter
ls /media/cdrecorder

If the CD is mounted automatically, the content of the CD is listed; if not, the directory is empty.

6. Mount the CD manually by entering
mount /dev/cdrom /mnt



If your CD-ROM drive is also a CD recorder, enter
mount /dev/cdrecorder /mnt

A message appears indicating that the device is write-protected and is mounted as read only.

7. Display the content of the directory `/mnt` by entering
ls /mnt

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5. Display the content of the directory `/media/cdrom/` by entering
ls /media/cdrom



If your CD-ROM drive is also a CD recorder, enter
ls /media/cdrecorder

If the CD is mounted automatically, the content of the CD is listed; if not, the directory is empty.

6. Mount the CD manually by entering
mount /dev/cdrom /mnt



If your CD-ROM drive is also a CD recorder, enter
mount /dev/cdrecorder /mnt

A message appears indicating that the device is write-protected and is mounted as read only.

7. Display the content of the directory `/mnt` by entering
ls /mnt

The content of the CD is listed.

8. Try to remove the CD from the drive by pushing the eject button on the drive.

The CD unmounts automatically and the CD tray opens.

9. (*Conditional*) If the CD tray does not open, unmount the CD manually by entering

umount /mnt

Then push the eject button.

10. Remove the CD from your CD drive.
11. Display the contents of the directory /mnt by entering

ls /mnt

The directory is now empty.

12. Log out as user root by entering **exit**.
13. Close the terminal window by entering **exit**.

(End of Exercise)

Exercise 5-2 Change Directories and List Directory Contents

Smooth administration of a Linux system requires familiarity with the directory tree and how to move within it. The purpose of this exercise is to show you how to orient yourself and move about within that tree.

To change the current directory and list the directory contents, do the following:

1. Describe what directories the following characters refer to:
 - **/**
 - **~**

The content of the CD is listed.

8. Try to remove the CD from the drive by pushing the eject button on the drive.

The CD unmounts automatically and the CD tray opens.

9. (*Conditional*) If the CD tray does not open, unmount the CD manually by entering

umount /mnt

Then push the eject button.

10. Remove the CD from your CD drive.
11. Display the contents of the directory /mnt by entering

ls /mnt

The directory is now empty.

12. Log out as user root by entering **exit**.
13. Close the terminal window by entering **exit**.

(End of Exercise)

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Smooth administration of a Linux system requires familiarity with the directory tree and how to move within it. The purpose of this exercise is to show you how to orient yourself and move about within that tree.

To change the current directory and list the directory contents, do the following:

1. Describe what directories the following characters refer to:
 - **/**
 - **~**

- .
 - ..
2. From the KDE desktop, open a terminal window (Konsole).
 3. Change to the directory /tmp/ by entering `cd /tmp`.
 4. Change to the home directory by entering `cd ~`.
 5. Display the name of the current directory by entering `pwd`.
 6. Change to the directory /usr/share/doc by entering
`cd /usr/share/doc`
 7. Display the name of the current directory by entering `pwd`.
 8. Change back to the last directory (home) by entering `cd -`.
 9. Display the name of the current directory by entering `pwd`.
 10. Display the content of the current directory by entering `ls`.
 11. Display the content of the current directory including the hidden files by entering `ls -a`.
 12. Display the permissions and the file size of the directories starting with “D” in the current directory by entering
`ls -ld D*`
 13. View the permissions and the file size of all the files in the current directory by entering `ls -la`.
 14. Close the terminal window by entering `exit`.

(End of Exercise)

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 - ..
2. From the KDE desktop, open a terminal window (Konsole).
 3. Change to the directory /tmp/ by entering `cd /tmp`.
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 5. Display the name of the current directory by entering `pwd`.
 6. Change to the directory /usr/share/doc by entering
`cd /usr/share/doc`
 7. Display the name of the current directory by entering `pwd`.
 8. Change back to the last directory (home) by entering `cd -`.
 9. Display the name of the current directory by entering `pwd`.
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 12. Display the permissions and the file size of the directories starting with “D” in the current directory by entering
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 13. View the permissions and the file size of all the files in the current directory by entering `ls -la`.
 14. Close the terminal window by entering `exit`.

(End of Exercise)

Exercise 5-3 Create and View Files

To be able to view configuration and log files is a necessary part of system administration. Various tools exist for this purpose, and you choose the appropriate one depending on whether you want to view the complete file or only part of it.

To create and view files or parts of them, do the following:

You need to create **new_file** for Exercise 5-4 to work properly.

1. Open a terminal window, log in as root (**su -**) with a password of **novell**.
2. Create a new, empty file by entering
touch new_file
3. Display the content of the file `/var/log/messages` by entering
cat /var/log/messages
4. Display the content of `/var/log/messages` page by page by entering
less /var/log/messages
5. Find the first occurrence of the word “root” by entering **/root**.
6. Find the next occurrence of the word “root” by typing **n**.
7. Navigate through the output by using the cursor keys and the **Page Up** and the **Page Down** keys.
8. Quit the display and return to the command line by typing **q**.
9. Display the first 5 lines of the file `/var/log/messages` by entering
head -n 5 /var/log/messages
10. View a continuously-updated display of the last lines of the file `/var/log/messages` by entering
tail -f /var/log/messages
11. Open a second terminal window.

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To create and view files or parts of them, do the following:

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1. Open a terminal window, log in as root (**su -**) with a password of **novell**.
2. Create a new, empty file by entering
touch new_file
3. Display the content of the file `/var/log/messages` by entering
cat /var/log/messages
4. Display the content of `/var/log/messages` page by page by entering
less /var/log/messages
5. Find the first occurrence of the word “root” by entering **/root**.
6. Find the next occurrence of the word “root” by typing **n**.
7. Navigate through the output by using the cursor keys and the **Page Up** and the **Page Down** keys.
8. Quit the display and return to the command line by typing **q**.
9. Display the first 5 lines of the file `/var/log/messages` by entering
head -n 5 /var/log/messages
10. View a continuously-updated display of the last lines of the file `/var/log/messages` by entering
tail -f /var/log/messages
11. Open a second terminal window.

12. Arrange the terminal windows on the desktop so that you can see the content of both.
13. In the second terminal window, log in as root (**su -**); then enter an invalid password (such as **suse**).
Notice that the failed login attempt is logged in the first terminal window.
14. In the second terminal window, log in as root (**su -**) with a password of **novell**.
The login is logged in the first terminal window.
15. Log out as root in the second terminal window by entering **exit**.
16. Close the second terminal window by entering **exit**.
17. Stop the tail process in the first terminal window by pressing **Ctrl + c**.
18. Log out as root by entering **exit**.
19. Close the terminal window.

(End of Exercise)

Exercise 5-4 Copy and Move Files and Directories

Copying, moving and renaming files are basic and frequent operations done with files. Most probably you are already very familiar with these operations on a graphical desktop environment.

The purpose of this exercise is to get used to performing these operations on the command line.

To copy and move files and directories, do the following:

1. Open a terminal window and log in as root (**su -**) with a password of **novell**.
2. Rename `new_file` to `my_file` by entering

You need to complete this exercise for the rest of the exercises in Section 5 to work properly.

12. Arrange the terminal windows on the desktop so that you can see the content of both.
13. In the second terminal window, log in as root (**su -**); then enter an invalid password (such as **suse**).
Notice that the failed login attempt is logged in the first terminal window.
14. In the second terminal window, log in as root (**su -**) with a password of **novell**.
The login is logged in the first terminal window.
15. Log out as root in the second terminal window by entering **exit**.
16. Close the second terminal window by entering **exit**.
17. Stop the tail process in the first terminal window by pressing **Ctrl + c**.
18. Log out as root by entering **exit**.
19. Close the terminal window.

(End of Exercise)

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Copying, moving and renaming files are basic and frequent operations done with files. Most probably you are already very familiar with these operations on a graphical desktop environment.

The purpose of this exercise is to get used to performing these operations on the command line.

To copy and move files and directories, do the following:

1. Open a terminal window and log in as root (**su -**) with a password of **novell**.
2. Rename `new_file` to `my_file` by entering

You need to complete this exercise for the rest of the exercises in Section 5 to work properly.

mv new_file my_file

3. Verify that the file was renamed by entering **ls -l**.
4. Copy my_file by entering **cp my_file my_file1**.
5. Verify that my_file1 was created by entering **ls -l my***.
6. Copy the files /usr/bin/rename and /usr/bin/mcopy to the directory /tmp/ by entering

cp /usr/bin/rename /usr/bin/mcopy /tmp

7. Verify that the files were copied by entering

ls -l /tmp

8. Move the file /tmp/mcopy to the home directory by entering
mv /tmp/mcopy ~
9. Verify the move by entering **ls -l**.
10. Move and rename the file /tmp/rename to ~/my_file2 by entering
mv /tmp/rename ~/my_file2

11. Verify that the file my_file2 exists by entering **ls -l**.

12. Copy the complete directory /bin/ to the home directory with the new directory named my_dir by entering

cp -r /bin /home/my_dir

13. Verify that the files were copied by entering

ls -l /home/my_dir

14. Close the terminal window.

(End of Exercise)

mv new_file my_file

3. Verify that the file was renamed by entering **ls -l**.
4. Copy my_file by entering **cp my_file my_file1**.
5. Verify that my_file1 was created by entering **ls -l my***.
6. Copy the files /usr/bin/rename and /usr/bin/mcopy to the directory /tmp/ by entering

cp /usr/bin/rename /usr/bin/mcopy /tmp

7. Verify that the files were copied by entering

ls -l /tmp

8. Move the file /tmp/mcopy to the home directory by entering

mv /tmp/mcopy ~

9. Verify the move by entering **ls -l**.

10. Move and rename the file /tmp/rename to ~/my_file2 by entering

mv /tmp/rename ~/my_file2

11. Verify that the file my_file2 exists by entering **ls -l**.

12. Copy the complete directory /bin/ to the home directory with the new directory named my_dir by entering

cp -r /bin /home/my_dir

13. Verify that the files were copied by entering

ls -l /home/my_dir

14. Close the terminal window.

(End of Exercise)

Exercise 5-5 Create Directories

The purpose of this exercise is to show you how to create directories.

To create directories, do the following:

You need to complete this exercise for the rest of the exercises in Section 5 to work properly.

1. Open a terminal window and su to root (**su -**) with a password of **novell**.
2. Create a directory named `new_dir` inside the directory `my_dir` by entering
mkdir /home/my_dir/new_dir
3. Verify that the directory was created by entering
ls /home/my_dir
4. Create a directory `new_dir` that includes a new directory `empty_dir` by entering
mkdir -p ~/new_dir/empty_dir
5. Verify that `new_dir` was created by entering **ls**.
6. Verify that `empty_dir` was created by entering
ls new_dir
7. Close the terminal window.

(End of Exercise)

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The purpose of this exercise is to show you how to create directories.

To create directories, do the following:

You need to complete this exercise for the rest of the exercises in Section 5 to work properly.

1. Open a terminal window and su to root (**su -**) with a password of **novell**.
2. Create a directory named `new_dir` inside the directory `my_dir` by entering
mkdir /home/my_dir/new_dir
3. Verify that the directory was created by entering
ls /home/my_dir
4. Create a directory `new_dir` that includes a new directory `empty_dir` by entering
mkdir -p ~/new_dir/empty_dir
5. Verify that `new_dir` was created by entering **ls**.
6. Verify that `empty_dir` was created by entering
ls new_dir
7. Close the terminal window.

(End of Exercise)

Exercise 5-6 Delete Files and Directories

The purpose of this exercise is to show you how to delete files and directories on the command line.

When deleting files and directories it is especially important to work only with the permissions necessary for the task and not as root, if possible. As root, you can easily destroy your installation with the `rm` command, and there is no undelete in Linux.

Think twice before hitting enter on an `rm` command issued as root!

To delete files and directories, do the following:

1. Open a terminal window and `su` to root (**su -**) with a password of **novell**.

2. Try to remove the directory `~/new_dir` by entering

```
rmdir new_dir
```

A message is displayed indicating that the directory cannot be removed. This is because the directory is not empty.

3. Remove the directory `~/new_dir/empty_dir` by entering

```
rmdir new_dir/empty_dir
```

4. Verify that the directory `/empty_dir` has been removed by entering

```
ls new_dir
```

5. Remove the directory `~/new_dir` by entering

```
rmdir new_dir
```

6. Verify that the directory was removed by entering **ls**.

7. Remove the file `/home/my_dir/login` by entering

```
rm /home/my_dir/login
```

8. Verify that the file has been removed by entering

```
ls /home/my_dir/login
```

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A message is displayed indicating that the directory cannot be removed. This is because the directory is not empty.

3. Remove the directory `~/new_dir/empty_dir` by entering

```
rmdir new_dir/empty_dir
```

4. Verify that the directory `/empty_dir` has been removed by entering

```
ls new_dir
```

5. Remove the directory `~/new_dir` by entering

```
rmdir new_dir
```

6. Verify that the directory was removed by entering **ls**.

7. Remove the file `/home/my_dir/login` by entering

```
rm /home/my_dir/login
```

8. Verify that the file has been removed by entering

```
ls /home/my_dir/login
```

9. Remove all files with names that begin with "a" in the directory /home/my_dir/ by entering
rm -i /home/my_dir/a*
10. Confirm every warning by entering **y**.
11. Remove the directory /home/my_dir/ including its content by entering
rm -r /home/my_dir
12. Verify that the directory has been removed by entering
ls /home/
13. Close the terminal window.

(End of Exercise)

Exercise 5-7 Link Files

Links are very convenient in administration, as they help to avoid having different versions of the same file within the file system.

The purpose of this exercise is to learn how to set hard and symbolic links and know the difference between those two.

To link a file, do the following:

1. Open a terminal window and su to root (**su -**) with a password of **novell**.
2. Enter the following to create a symbolic link to the howto index file in the directory /usr/share/doc/howto/en/html:
ln -s /usr/share/doc/howto/en/html/index.html howto-sym
3. Enter the following to create a hard link to the howto index file in the directory /usr/share/doc/howto/en/html:
ln /usr/share/doc/howto/en/html/index.html howto-hard

9. Remove all files with names that begin with "a" in the directory /home/my_dir/ by entering
rm -i /home/my_dir/a*
10. Confirm every warning by entering **y**.
11. Remove the directory /home/my_dir/ including its content by entering
rm -r /home/my_dir
12. Verify that the directory has been removed by entering
ls /home/
13. Close the terminal window.

(End of Exercise)

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2. Enter the following to create a symbolic link to the howto index file in the directory /usr/share/doc/howto/en/html:
ln -s /usr/share/doc/howto/en/html/index.html howto-sym
3. Enter the following to create a hard link to the howto index file in the directory /usr/share/doc/howto/en/html:
ln /usr/share/doc/howto/en/html/index.html howto-hard

4. Display the links by entering **ls -l**.
Notice that the symbolic link identifies the file it is linked to.
5. View the contents of the file
/usr/share/doc/howto/en/html/index.html by entering
cat howto-hard
6. Create a file named **hello** by entering
echo hello > hello
7. Create a symbolic link to the file by entering
ln -s hello hello-symlink
8. View the content of the file hello via its symbolic link by entering
cat hello-symlink
9. Delete the original file by entering **rm hello**.
10. View the link by entering
ls -l hello-symlink
Note that the link is now highlighted to indicate that it points to a non-existent file.
11. Delete the link by entering
rm hello-symlink
12. Close the terminal window.

(End of Exercise)

4. Display the links by entering **ls -l**.
Notice that the symbolic link identifies the file it is linked to.
5. View the contents of the file
/usr/share/doc/howto/en/html/index.html by entering
cat howto-hard
6. Create a file named **hello** by entering
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7. Create a symbolic link to the file by entering
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8. View the content of the file hello via its symbolic link by entering
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9. Delete the original file by entering **rm hello**.
10. View the link by entering
ls -l hello-symlink
Note that the link is now highlighted to indicate that it points to a non-existent file.
11. Delete the link by entering
rm hello-symlink
12. Close the terminal window.

(End of Exercise)

Exercise 5-8 Find Files on Linux

With around 100,000 files in a usual installation it is essential to be able to find files effectively within the file system. It is possible to search using part of the file name, but also to look for files that contain a certain string, as covered in the exercise after this one.

Kfind is not relevant for CompTIA's Linux+.

To find files and directories, do the following:

1. Open a terminal window (you do not need to su to root).
2. Find the type of the command ll by entering **type ll**.
3. Find the manual pages of the command find by entering **whereis -m find**
4. Find the path of the program KFind by entering **which kfind**
5. Start KFind by entering **kfind &**.
A Find Files dialog appears on the KDE desktop.
6. Find all files in the home directory whose names start with "my" by entering **my*** in the Named field; then select **Find**.
7. Find all files in the directory /bin/ whose names consist of 2 characters by entering **??** in the Named field and **/bin** in the Look in field; then select **Find**.
8. Find all files in the directory /tmp/ that were changed or created in the last 24 hours by doing the following:
 - a. Enter ***** in the Named field and **/tmp** in the Look in field.
 - b. Select the **Properties** tab.
 - c. Select **Find all files created or modified**.
 - d. Select **during the previous**; then enter **24** in the text field.
 - e. Select **Find**.
9. Close the Find Files dialog.

Exercise 5-8 Find Files on Linux

With around 100,000 files in a usual installation it is essential to be able to find files effectively within the file system. It is possible to search using part of the file name, but also to look for files that contain a certain string, as covered in the exercise after this one.

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5. Start KFind by entering **kfind &**.
A Find Files dialog appears on the KDE desktop.
6. Find all files in the home directory whose names start with "my" by entering **my*** in the Named field; then select **Find**.
7. Find all files in the directory /bin/ whose names consist of 2 characters by entering **??** in the Named field and **/bin** in the Look in field; then select **Find**.
8. Find all files in the directory /tmp/ that were changed or created in the last 24 hours by doing the following:
 - a. Enter ***** in the Named field and **/tmp** in the Look in field.
 - b. Select the **Properties** tab.
 - c. Select **Find all files created or modified**.
 - d. Select **during the previous**; then enter **24** in the text field.
 - e. Select **Find**.
9. Close the Find Files dialog.

10. From the terminal window command line, find all files in the home directory whose names start with “my” by entering
find ~ -name “my*”
11. Find all files in the directory /tmp/ that were changed or created in the last 24 hours by entering
find /tmp -ctime -1
12. Su to root (**su -**) with a password of **novell**.
13. Install the locate utility by entering
yast -i findutils-locate
and inserting the appropriate **SLES 9 CD** when prompted.
14. Create the locate database by entering **updatedb**.
Notice that the updatedb utility also searches for any files located on your cdrom or floppy drive to add to the database.
15. When the database is updated, find all files in your file system whose names contain the string “my” by entering
locate my
16. Log out as root by entering **exit**.
17. Close the terminal window by entering **exit**.

(End of Exercise)

10. From the terminal window command line, find all files in the home directory whose names start with “my” by entering
find ~ -name “my*”
11. Find all files in the directory /tmp/ that were changed or created in the last 24 hours by entering
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12. Su to root (**su -**) with a password of **novell**.
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14. Create the locate database by entering **updatedb**.
Notice that the updatedb utility also searches for any files located on your cdrom or floppy drive to add to the database.
15. When the database is updated, find all files in your file system whose names contain the string “my” by entering
locate my
16. Log out as root by entering **exit**.
17. Close the terminal window by entering **exit**.

(End of Exercise)

Exercise 5-9 Search File Content

Sometimes all you know is some string that appears within a certain file, but you do not know in which file exactly. The purpose of this exercise is to show you how to find such a file.

To search file content, do the following:

1. Open a terminal window.
2. Find all HTML headings of hierarchy 2 in the file `/usr/share/doc/release-notes/RELEASE-NOTES.en.html` by entering (on one line)
grep "<H2>" /usr/share/doc/release-notes/RELEASE-NOTES.en.html
3. Find all locations in the HTML files of the directory `/usr/share/doc/packages/cups/` that include the word "management" by entering
grep management /usr/share/doc/packages/cups/*.html
4. Find all locations in the HTML files of the directory `/usr/share/doc/packages/cups/` that include lines beginning with a number by entering
egrep "[0-9]" /usr/share/doc/packages/cups/*.html
5. Find all locations in the HTML files of the directory `/usr/share/doc/packages/cups/` that include lines beginning with a four digit number by entering
egrep "[0-9]{4}" /usr/share/doc/packages/cups/*.html
6. Close the terminal window.

(End of Exercise)

Exercise 5-9 Search File Content

Sometimes all you know is some string that appears within a certain file, but you do not know in which file exactly. The purpose of this exercise is to show you how to find such a file.

To search file content, do the following:

1. Open a terminal window.
2. Find all HTML headings of hierarchy 2 in the file `/usr/share/doc/release-notes/RELEASE-NOTES.en.html` by entering (on one line)
grep "<H2>" /usr/share/doc/release-notes/RELEASE-NOTES.en.html
3. Find all locations in the HTML files of the directory `/usr/share/doc/packages/cups/` that include the word "management" by entering
grep management /usr/share/doc/packages/cups/*.html
4. Find all locations in the HTML files of the directory `/usr/share/doc/packages/cups/` that include lines beginning with a number by entering
egrep "[0-9]" /usr/share/doc/packages/cups/*.html
5. Find all locations in the HTML files of the directory `/usr/share/doc/packages/cups/` that include lines beginning with a four digit number by entering
egrep "[0-9]{4}" /usr/share/doc/packages/cups/*.html
6. Close the terminal window.

(End of Exercise)

Exercise 5-10 Archive Files

Files are frequently put into archives as they then can be sent more easily as attachments to e-mails. Backups also often make use of archives.

Various tools exist for this purpose in Linux and the purpose of this exercise is to show you the more common ones.

To archive files, do the following:

You need to complete this exercise for Exercises 5-11 to work properly.

1. Start the Ark utility from the KDE menu by selecting

Utilities > Archiving

An Ark dialog appears on the KDE desktop.

2. From the dialog, create a new archive by doing the following:

- a. Select **File > New**.

A Create New Archive - Ark dialog appears.

- b. Change to the geeko home directory by selecting the **up arrow** button once.
- c. In the Location field, enter **unzipped_file**.
- d. From the Archive format drop-down list select **Tar Archive**.
- e. Select **Save**.

3. Copy all the files in the directory /bin to the tar archive by doing the following:

- a. Start Konqueror by selecting the icon in the Kicker.

- b. Display the files in directory **/bin**.

- c. Select all files in the directory by selecting

Edit > Selection > Select All

(or press **Ctrl + a**).

- d. Copy the files in the directory /bin to the Ark window by dragging and dropping the files.
- e. Close the Konqueror window.

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- a. Start Konqueror by selecting the icon in the Kicker.

- b. Display the files in directory **/bin**.

- c. Select all files in the directory by selecting

Edit > Selection > Select All

(or press **Ctrl + a**).

- d. Copy the files in the directory /bin to the Ark window by dragging and dropping the files.

- e. Close the Konqueror window.

4. From the Ark dialog, select **File > Quit**; then select **Save** (twice).
5. Open a terminal window (do not su to root).
6. Create a zipped archive of the same files at the command line by entering
tar czvf zipped_file.tar.gz /bin
7. Start Konqueror by selecting the **blue house** icon in the Kicker.
8. Select the icon of the file **zipped_file.tar.gz**.
9. Select the **bin** directory icon.
10. View the navigation area by selecting the **red folder** icon at the left side of the Konqueror window.
11. Copy the file **df** to the directory **/tmp** by using drag-and-drop.
12. Close the Konqueror window.
13. From the terminal window, copy the file unzipped_file.tar to the directory /tmp by entering
cp unzipped_file.tar /tmp
14. Switch to the directory /tmp by entering **cd /tmp**.
15. Verify that the file was copied by entering **ls -l un***.
16. Extract the files of the archive /tmp/unzipped_file.tar by entering
tar xvf unzipped_file.tar
17. Switch to the home directory by entering **cd -**.
18. Close the terminal window.

(End of Exercise)

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5. Open a terminal window (do not su to root).
6. Create a zipped archive of the same files at the command line by entering
tar czvf zipped_file.tar.gz /bin
7. Start Konqueror by selecting the **blue house** icon in the Kicker.
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10. View the navigation area by selecting the **red folder** icon at the left side of the Konqueror window.
11. Copy the file **df** to the directory **/tmp** by using drag-and-drop.
12. Close the Konqueror window.
13. From the terminal window, copy the file unzipped_file.tar to the directory /tmp by entering
cp unzipped_file.tar /tmp
14. Switch to the directory /tmp by entering **cd /tmp**.
15. Verify that the file was copied by entering **ls -l un***.
16. Extract the files of the archive /tmp/unzipped_file.tar by entering
tar xvf unzipped_file.tar
17. Switch to the home directory by entering **cd -**.
18. Close the terminal window.

(End of Exercise)

Exercise 5-11 Compress and Uncompress Files with gzip and bzip2

Usually files are not just put into archives, but they are compressed as well to save on bandwidth and/or storage capacity.

To compress and uncompress files, do the following:

1. Open a terminal window.

2. Copy the file

```
/usr/share/doc/release-notes/RELEASE-NOTES.en.html
```

to the home directory by entering (on one line)

```
cp  
/usr/share/doc/release-notes/RELEASE-NOTES.en.html ~
```

The tilde (~) indicates to copy the file to the home directory.

3. Verify that the file was copied by entering

```
ls RELEASE-NOTES.en.html
```

4. Compress with gzip the file RELEASE-NOTES.en.html by entering

```
gzip RELEASE-NOTES.en.html
```

5. Verify that the file was compressed by entering ls.

Notice that the file RELEASE-NOTES.en.html.gz has replaced RELEASE-NOTES.en.html.

6. Display the content of the file RELEASE-NOTES.en.html.gz by entering

```
zcat RELEASE-NOTES.en.html.gz
```

7. Decompress the file RELEASE-NOTES.en.html.gz with gunzip by entering

```
gunzip RELEASE-NOTES.en.html.gz
```

8. Verify that the file was decompressed by entering **ls**.

Exercise 5-11 Compress and Uncompress Files with gzip and bzip2

Usually files are not just put into archives, but they are compressed as well to save on bandwidth and/or storage capacity.

To compress and uncompress files, do the following:

1. Open a terminal window.

2. Copy the file

```
/usr/share/doc/release-notes/RELEASE-NOTES.en.html
```

to the home directory by entering (on one line)

```
cp  
/usr/share/doc/release-notes/RELEASE-NOTES.en.html ~
```

The tilde (~) indicates to copy the file to the home directory.

3. Verify that the file was copied by entering

```
ls RELEASE-NOTES.en.html
```

4. Compress with gzip the file RELEASE-NOTES.en.html by entering

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7. Decompress the file RELEASE-NOTES.en.html.gz with gunzip by entering

```
gunzip RELEASE-NOTES.en.html.gz
```

8. Verify that the file was decompressed by entering **ls**.

Notice that the file RELEASE-NOTES.en.html has replaced RELEASE-NOTES.en.html.gz.

9. Compress the file unzipped_file.tar in the geeko home directory using bzip2 by entering

bzip2 unzipped_file.tar

10. Compare the size of the files unzipped_file.tar.bz2 and zipped_file.tar.gz by entering

ls -l *zipped_file.tar.*

11. Close the terminal window.

(End of Exercise)

Notice that the file RELEASE-NOTES.en.html has replaced RELEASE-NOTES.en.html.gz.

9. Compress the file unzipped_file.tar in the geeko home directory using bzip2 by entering

bzip2 unzipped_file.tar

10. Compare the size of the files unzipped_file.tar.bz2 and zipped_file.tar.gz by entering

ls -l *zipped_file.tar.*

11. Close the terminal window.

(End of Exercise)