Review Questions:

The Linux Operating System and Linux-Related Issues

1. Explain what is meant by the term *copyleft.*

2. In what ways is the *Linux* operating system superior to the *UNIX* operating system that was its inspiration?

3. Define the term *output redirection* and give an example of its use.

4. What are *pipes* and *filters?* Give an example of each.

5. What are the principal duties of the System Administrator?

6. What is the *Linux* "line kill" command?

7. If you were to look at the VDT screen of a user logged in to *Linux,* how would you determine at a glance the user's probable shell (command line interpreter)? Why can the shell only be determined probabilistically at a quick glance, rather than definitively?

8. How do you log out from *Linux?*

9. What characters in *Linux* are used to signal character erasure, line kill, word kill, and abortion of program execution?

10. What commands do you use in *Linux* to perform each of the following operations:

      a. List the contents of the current working directory.
      b. Display the contents of a text file.
      c. Delete a file.
      d. Copy a file.
      e. Rename a file or move it to another directory.

Revised 26 Feb 99, 1215 hrs

Answers to Selected Questions:

1. Explain what is meant by the term *copyleft.*

    Answer: The term *copyleft* refers to the copyright provisions of the Linux software distribution, which, although tehnically compliant with the features of copyright law, are nevertheless the opposite of the normal **intention** of copyright, which is to restrict the rights of users of published information. In software, copyright restrictions usually take the form of restricting the ability of the recipient or purchaser to make copies of the copyright-protected software, to "disassemble" it, to use it on more than a small numb er of machines (typically one), to pass it on to anyone else, or to make derivative works. In the case of the Linux copyright agreement, the user is specifically allowed to make as many copies as he/she likes, is not only allowed but actively encouraged to understand the software (no need to disassemble it; the source code is furnished to aid in understanding), is encouraged to use it on an unlimited number of machines, as well as to pass it on to as many others as he chooses, and to produce his own code based upon that which was supplied, as well as anyeas of his own. Furthermore, if passing on the materials to someone else, he is required to incorporate the same software agreement. Because these features of the copyright and licensing agreement are so unusual, it has been referred to as *copyleft.*

2. In what ways is the *Linux* operating system superior to the *UNIX* operating system that was its inspiration?

    Answer: There are several important considerations that make *Linux* superior to *UNIX.* First of all, *Linux* comes in only one flavor, whereas the *UNIX* community is split up into a variety of flavors, some public and others proprietary. Secondly, the source code for *Linux* is "open source". Thus, individuals can modify the source code individually for their own purposes. Third, there is a growing group of *Linux* devotees who contribute to the body of source and are continually improving the many modular software components that comprise the total *Linux* distribution.   Fourth, *Linux* comes with a well-thought-out group of utility programs. Several proprietary vendors are now supporting *Linux*, most notably Sun Microsystems.

3. Define the term *output redirection* and give an example of its use.

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Answer: The term output redirection *refers to the ability of a* Linux *user to specify that the output of a particular program, which is normally directed to a particular destination, instead be routed to an alternative destination of his/her choice. For example, the* cat *utility normally takes the contents of a file and displays them on the Video Display Tube (VDT) screen. With output redirection, it is possible to send the file contents to a file instead of to the VDT.*

4. What are *pipes* and *filters?* Give an example of each.

Answer: A pipe *is a means for sending the output of one program to become the input for another program. A filter modifies the output of a program, typically in preparation for sending it to become the input of a second program. For example, the output of the* cat *program can be redirected via a* pipe *from the VDT, to which it is normally sent, and sent instead to the* sort *utility, which is a filter.* Sort *reorders the data, after which they may be redirected once again via a* pipe *to the VDT.*

5. What are the principal duties of the System Administrator?

Answer: *The Systems Administrator is responsible for a variety of duties. He/she installs software (downloading it whenever necessary), upgrades the operating system, sets up accounts for new users and deletes users as appropriate. He also boots up the system and brings it down whenever necessary, manages system facilities, such as disk drives and printers, performs regular file and system backups, and also effects file restoration on as-needed basis.*

6. What is the *Linux* "line kill" command?

Answer: *CTRL-H*

7. If you were to look at the VDT screen of a user logged in to *Linux,* how would you determine at a glance the user's probable shell (command line interpreter)? Why can the shell only be determined probabilistically at a quick glance, rather than definitively?

Answer: *The shell prompts can be presumed not to have been interchanged by the user from the default values. The defaults are:*

Shell	Prompt
bourne again shell (bash)	$
c shell (tcsh)	>
z shell (zsh)	%

Revised 26 Feb 99, 1215 hrs

Use of these default prompts to identify the user's shell is likely to be sufficient. However, the user has control over the prompt from whichever shell he is in. Therefore, it is possible that, for whatever reason of his own, he might be using one of the three most common *Linux* shells, but might have changed the prompt to that normally used by a different shell.

8. How do you log out from *Linux?*

> Answer: *Logout procedure differs slightly among command interpreters or shells. From* **tcsh,** *issue the command* **logout.** *From* **bash** *or* **zsh***, the appropriate command is* **exit.** *The keyboard shortcut is CTRL-D for all three shells.*

9. What characters in *Linux* are used to signal character erasure, line kill, word kill, and abortion of program execution?

> Answer *Character erasure: BACKSPACE or CTRL-H. Line kill: CTRL-U. Word kill: CTRL-W. Abortion of program execution: CTRL-C*

10. What commands do you use in *Linux* to perform each of the following operations:

> f. List the contents of the current working directory.
> g. Display the contents of a text file.
> h. Delete a file.
> i. Copy a file.
> j. Rename a file or move it to another directory.
>
> *Answer:*
> a. ls
> b. cat *filename* or, alternatively, more *filename* or, alternatively, less *filename*
> c. rm *filename*
> d. cp *original-filename filename-of-copy*
> e. mv *original-filename new-filename* **or** cp *original-filename new-path-and-filename*