CST-321 Activity 6 Guide

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# Bash Shell Scripting – Simple File System Navigation

**Overview**

In this activity, students will work with the Terminal and code some more bash shell scripts. As needed, reference the bash resources located in the topic Resources.

**Execution**

Execute this assignment according to the following guidelines:

1. Per guidance from your instructor, write a bash shell script with the following capabilities:
   1. Create a bash script ~/test1.sh with any text editor.
   2. Write a bash script that does the following:
      1. Echo your current directory to the screen.
      2. Change directory to your *home* directory.
      3. Change directory to a child directory within your *home* directory.
      4. List all of the files that end with .c within the child directory.
      5. Navigate back to your *home* directory.
   3. Run your script after doing a chmod 777 on the script.
   4. Take a screenshot of the Terminal and Console window output.
   5. Write a theory of operation explaining how the script worked.

# Bash Shell Scripting – Simple File Manipulation

**Overview**

In this activity, students will work with the Terminal and code some more bash shell scripts. As needed, reference the bash resources located in the topic Resources.

**Execution**

Execute this assignment according to the following guidelines:

1. Per guidance from your instructor, write a bash shell script with the following capabilities:
   1. Create a bash script ~/test2.sh with any text editor.
   2. Write a bash script that does the following:
      1. Change directory to your *home* directory.
      2. Create a child directory called *mycode.*
      3. Change to the *mycode* directory.
      4. Copy all files that end with .c that you have developed in this course to the *mycode* directory.
      5. Navigate up a directory.
      6. Create a new child directory called *mycode2.*
      7. Copy all files from the *mycode* directory to the *mycode2* directory.
      8. Rename the *mycode* directory to *deadcode.*
      9. Remove the *deadcode* directory and all its files.
   3. Run your script after doing a chmod 777 on the script.
   4. Take a screenshot of the Terminal and Console window output.
   5. Write a theory of operation explaining how the script worked.

# Working with the Terminal – Simple Text File Viewing

**Overview**

In this activity, students will work with the Terminal and code some more bash shell scripts. As needed, reference the bash resources located in the topic Resources.

**Execution**

Execute this assignment according to the following guidelines:

1. Per guidance from your instructor, run the following commands in a Terminal:
   1. Run ls on your home directory, ls –a on your home directory, ls –l on your home directory.
   2. Go to a directory with all of your C source code files.
   3. Explore the less command and at least 3 options for less on your C code.
   4. Explore the more command and at least 3 options for more on your C Code.
   5. Run the file command on your home directory, /bin directory, and with your C code files directory.
   6. Run ls on your home directory, ls –a on your home directory, ls –l on your home directory.
   7. Take a screenshot of the Terminal and Console window output for each step of the activity.
   8. Write a theory of operation explaining how the commands worked.

# Bash Shell Scripting – Misc. Commands

**Overview**

In this activity, students will work with the Terminal and code some more bash shell scripts. As needed, reference the bash resources located in the topic Resources.

**Execution**

Execute this assignment according to the following guidelines:

1. Per guidance from your instructor, write a bash shell script with the following capabilities:
   1. Create a bash script ~/test3.sh with any text editor.
   2. Write a bash script that does the following:
      1. Declare a local variable to save your name.
      2. Declare another variable that stores your age.
      3. Echo both variables to the screen.
   3. Run your script after doing a chmod 777 on the script.
   4. Take a screenshot of the Terminal and Console window output.
   5. Write a theory of operation explaining how the script worked.
2. Create a bash script ~/test4.sh with any text editor.
   1. Write a bash script that does the following:
      1. Sets the IFS variable to a value of ‘-‘
      2. echo "File Name: $0"
      3. echo "First Parameter : $1"
      4. echo "Second Parameter : $2"
      5. echo "Quoted Values: $@"
      6. echo "Quoted Values: $\*"
      7. echo "Total Number of Parameters : $#"
   2. Run your script with 2 to 3 arguments after doing a chmod 777 on the script.
   3. Take a screenshot of the Terminal and Console window output.
   4. Write a theory of operation explaining how the script worked.
3. Open a Terminal window and run the following commands:
   1. which gcc
   2. man gcc
   3. Write a theory of operation explaining how these commands worked.

# Bash Shell Scripting – Permissions

**Overview**

In this activity, students will work with the Terminal and code some more bash shell scripts. As needed, reference the bash resources located in the topic Resources.

**Execution**

Execute this assignment according to the following guidelines:

1. Per guidance from your instructor, write a bash shell script with the following capabilities:
   1. Create a new bash script ~./test5.sh
   2. Add a simple echo "Hello World" statement and save the script.
   3. Run the ls –l command to inspect the files permissions.
      1. Who is the owner of this file?
      2. Can you execute this script? If not, why not?
      3. Take a screenshot of the Terminal and Console window output.
      4. Write a theory of operation explaining how the script worked.
   4. Use the chmod command to change the file permissions so you can execute the file.
      1. Run the ls – l command to inspect the files permissions
      2. What changed in the permissions to allow you to run the script?
      3. Take a screenshot of the Terminal and Console window output.
      4. Write a theory of operation explaining how the script worked.

# Working with the Terminal – Redirection

**Overview**

In this activity, students will work with the Terminal and code some more bash shell scripts. As needed, reference the bash resources located in the topic Resources.

**Execution**

Execute this assignment according to the following guidelines:

1. Per guidance from your instructor, run the following commands in a Terminal:
   1. Run the ls –l > myfiles.txt command.
   2. Inspect the myfiles.txt with any text editor.
   3. Sort text in a text file by performing the following:
      1. Create a file names.txt in any text editor.
      2. Create a list of the names of your classmates on each line of the file.
      3. Run the sort < names.txt command.
      4. Run the ls –l | less command.
      5. Explore one other command we have used that you could pipe into less.
   4. Take a screenshot of the Terminal and Console window output.
   5. Write a theory of operation explaining how the commands worked.

# Working with the Terminal – Head and Tail Files

**Overview**

In this activity, students will code some bash shell scripts to learn how to make decisions, perform loops, and work with files. As needed, reference the bash resources located in the topic Resources.

**Execution**

Execute this assignment according to the following guidelines:

1. Per guidance from your instructor, run the following commands in a Terminal:
   1. Navigate to the Linux logs directory at /var/log.
   2. Use the head and tail commands to view the syslog file.
      1. **Note:** if you do not have permissions to run the head and tail commands run with elevated privileges using sudo.
   3. Take a screenshot of the Terminal and Console window output.
   4. Write a theory of operation explaining how the commands worked.
2. From the Ubuntu Desktop, search for the Logs application. Run the application.
   1. Display the current System logs (i.e., syslog).
   2. Take a screenshot of the Logs application.
   3. Write a theory of operation explaining how the commands worked.

# Working with the Disk Utilities

**Overview**

In this activity, students will learn how to use some of the disk utility commands in Linux. As needed, reference the bash resources located in the topic Resources.

**Execution**

Execute this assignment according to the following guidelines:

1. Per guidance from your instructor, run the following commands in a Terminal:
   1. Run the sudo fdisk –l command.
      1. What are the types of each device in your Linux system?
      2. Why did you need to run with elevated privileges using sudo?
   2. Run the df command.
      1. What are the various mounts in your Linux system?
   3. Navigate to the directory where all your C code you developed in this course is and run the du command.
      1. What are the sizes for each of the directories and files?
   4. From the Ubuntu Desktop search for the Disk Usage Analyzer application. Run the application.
      1. Select your Home Folder and analyze the displayed results.
      2. Take a screenshot of Disk Usage Analyzer application.

# Research Questions

For traditional ground students, answer the following questions in a Microsoft Word document:

* 1. Research and analyze the FAT-16, FAT-32, NFS, and Unix file systems from Chapter 4 of your book. Compare and contrast the features of each file system. In a table and write up of at least 200 words, document your findings.
  2. Research and analyze 3 different Linux distributions that are available and can be installed on a virtual machine. Compare and contrast your chosen Linux distributions with the Ubuntu Desktop Linux distribution that you are using in this class. In a table and write up of at least 200 words, document 10 features that are new or different than Ubuntu Desktop.

# Submission

1. In a Microsoft Word document, complete the following for the activity report:
   1. Cover sheet with your name, the name of this assignment, and the date.
   2. Section with a title that contains all theory of operation write-ups, answers to questions asked in the activity, and any screenshots taken during the activity.
   3. Section with a title that contains the answers to the Research Questions (traditional ground students only).

Submit the activity report to the digital classroom.

# Appendix A – Sample Programs

The following can be used as guidance to program the C programs in the activity.

None available at present.