CSC 2500: Unix Programming Lab

Lab 03 – Redirecting Input and Output

# General Instructions

Using your book and previous lecture material, fill out this assignment sheet. **Use red text to signify your answers.** This assignment corresponds with chapter 5 of your textbook. You should utilize online resources to answer these questions as well.

# Retrieving a File from Your VM

To retrieve a file from your VM follow the following steps:

1. On your VM:
   1. Run the following command: **sudo apt install build-essential**
   2. In the title bar of your VM, click “Devices” > “Insert guest additions CD image”
   3. Mount the files using **sudo mount /dev/sr0 /mnt/.**
   4. Run the following command **sudo /mnt/VBoxLinuxAdditions.run**.
   5. Then **sudo adduser <username> vboxsf**
   6. Then poweroff the machine with **poweroff**.
2. On your host machine:
   1. Create a folder to store your VM files on your Desktop called **CSC-2500-Lab-Files**.
   2. Place an empty text file in this folder called **test.txt**.
   3. On VirtualBox, go to the settings for your VM.
   4. Click “Shared Folders”
   5. Click the button/icon to add a shared folder.
   6. In the dialog box, fill out the following
      1. “Folder Path” > “Other” and navigate the folder created in 2.a.
      2. Check “Auto-mount” and “Make Permanent”.
      3. Leave all other settings as default and press “Ok”
3. On your VM:
   1. Power your VM back on and login.
   2. Your mounted folder can be found in **/media/**. You should be able to run **ls /media/** to see our test.txt file.
   3. Copy files to this folder in order to access them on your host machine.

# Submission Instructions

To submit, **change the name in the header** and save this document as a PDF. Attach your PDF document to the iLearn dropbox. Additionally, you will need to attach **a text log file of your lab session**. You can do this by:

1. Starting your session with the following command: **script <username>.txt**
   1. Make sure to replace the **<username>** in the command with your username.
2. Ending your session with the **exit** command.
   1. This will end your session and save your commands to the file in step 1.

# Lab Questions

1. (3) The **echo** builtin copies its arguments to standard output which, by default, bash directs to the screen. Write the command to redirect standard output (Sobell, page 138) of **echo** to write a short message (e.g., “Hi there”) to a file and then use **cat** to display the contents of the file.

$ echo hi there > hi.file

$ cat hi.file

1. Do the following:
   1. (1) Write the command to redirect standard output of **cat** to create a file named **days** that holds the names of the days of the week in chronological order, one per line. Do not redirect standard input to **cat**; it will come from the keyboard. Remember to press CTRL-D on a line by itself to exit from **cat**.

$ cat > days

Monday

Tuesday

Wednesday

Thursday

Friday

Saturday

Sunday

* 1. (1) Use **cat** to read the days file and send it to standard output, through a pipeline, to standard input of the sort (Sobell, pages 58 and 145) utility. The result will be a list of days in alphabetical order.

$ cat days | sort

* 1. (1) Replace sort in the preceding command with **grep** (Sobell, page 56) with an argument of (uppercase) T. The result will be a list of days that have an uppercase T in their names in chronological order.

$ cat days | grep T

* 1. (1) Create a filter (Sobell, page 146) by repeating the preceding command but sending standard output of **grep** through a pipeline to standard input of sort. The result will be a list of days that have an uppercase T in their names in alphabetical order.

$ cat days | grep T | sort

1. (2) Produce a long listing of the **/etc**, **/usr/bin**, and **/sbin** directories, sending the output to a file and running the command in the background (Sobell, page 148).

$ ls /etc

$ ls /user/bin

$ ls /sbin

$ ls /etc /user/bin /sbin > file.txt &

$ jobs