**CIS 241, Homework 3, Winter 2020**

Introduction to Linux Commands

Total points: 130

**Due**: Wednesday, April 1, 2020

**Hints:**

* It is always a good idea to test your solution on a Linux system to gain a better understanding.
* It is not a good idea to predict the solution without testing it if you are not 100% sure.
* Ask your instructor if you have difficult to complete some questions, by email ([wangx@gvsu.edu](mailto:wangx@gvsu.edu)) or schedule a Zoom meeting.

1. (15 points) Please explain what the Linux commands do: “cd ..”, “cd /” and “cd ~”.

**cd .. -> this takes us back one (1) level**

**cd / -> this takes us to the highest level directory. The ‘origin’ of all directories.**

**cd ~ -> this takes us to our home directory, wherever that is set**

1. (20 points) What each of the following command does? Please explain.
2. Adds executable privileges to the user to ‘example\_a’
3. Removes read and write privileges to others to ‘example\_b’
4. Adds read, write, and executable privileges to everyone to ‘example\_c’
5. Owner has read and write, group has read, and everyone else has no rights to ‘example\_d’
   1. chmod u+x example\_a
   2. chmod o-rw example\_b
   3. chmod 777 example\_c
   4. chmod 640 example\_d
6. (25 points) Please briefly explain what the following Linux commands do.
   1. Pwd
7. Stands for ‘Print Working Directory’ and shows us our current directory path
8. Stands for ‘Make Directory’ and allows us to create a new directory
9. Allows us to print out things onto the console, which can be helpful for debugging or seeing info
10. grep stands for ‘Global Regular Expression Print’ and allows us to search for patterns
11. wc stands for ‘Word Count’ and allows us to find the number of newline count, word count, byte and characters count
    1. mkdir
    2. echo
    3. grep
    4. wc
12. (10 points) Suppose there are two directories “HW1” and “HW2” in the directory “CIS241”. There is a file “project.c” in the directory “HW1”. Give the Linux command(s) you would use to complete the following tasks. **Note that the your working directory is “HW1”.**
    1. Copy “project.c” from “HW1” to “HW2”

**cp project.c ../HW2**

* 1. Create a new directory “HW3” in the directory “CIS241”, and move “project.c” from “HW1” to “HW3”

**cd ..**

**mkdir HW3**

**mv HW1/project.c HW3**

1. (20 points) Please explain which kinds of files will be shown when each of the following commands gets executed.
   1. ls \*.txt
2. Any file with the suffix ‘.txt’
3. Any file that starts with ‘a’ and ends with ‘.c’
4. Any file that has ‘ab’ as its start, a SINGLE CHARACTER in place of the ‘?’, and ends with ‘.’ and any amount of other characters after the ‘.’
5. Any file that does not include any character between ‘a’ and ‘g’ as its first character
6. Will only access a file or directory that has has ‘abc’ as its beginning 3 characters
   1. ls a\*.c
   2. ls ab?.\*
   3. ls [^a-g]\*
   4. ls [abc]\*
7. (20 points) Please answer the following questions regarding links in a Linux file system.
   1. What is the command to create a hard link? **ln {source} {link}**
   2. What is the command to create a symbolic/soft link? **ln -s {source} {link}**
   3. When you create a hard link to file **target**, how many physical copies of the contents of the file **target** are there in the file system? **There are 2 physical copies: the original and the new copy**
   4. When you create a symbolic link to file **target**, how many physical copies of the contents of the file **target** are there in the file system? **There is only one physical copy of the contents**
8. (15 points) It is traightforward when file permissions (r, w, x) are set on a regular file. What do they mean when they are set on a directory? Explain each of them.

**r -> you can see the contents of the directory; w -> you can make new files and folders within it;**

**x -> you are granted “traversal” permission in the directory**

1. (5 points) What does the .. entry point to in the root (/) directory?

**It does nothing – there’s no where higher to go**