CSC 3320: System-Level Programming

50 Points

Homework 1

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Work on the following problems and submit your own answers. You are allowed to discuss with other students. However, do not copy the solutions from peers or other sources. If the assignment has any programming component, your program(s) must compile with **gcc** and execute on **snowball.cs.gsu.edu**! Please see https://cscit.cs.gsu.edu/sp/guide/snowball for more details.

Instructions:

- Upload an electronic copy (MS word or pdf) of your answer sheet to the folder named "HW1" in iCollege.
- Please add the course number, homework number, and your name at the top of your answer sheet.
- Please write down your answers with the question number only in the answer sheet.
- Name your file in the format of CSC3320_HW1_FisrtnameLastname (.docx/.pdf)
- Deadline: Submit by September 17, 2024, 11:59 pm

1. (5 points) Distinguish between `system programs` and `system calls`.

2. (5 points) What is the pipe mechanism in UNIX? Show at least one command using pipes and explain how the pipe mechanism works.

3. (10 points) Write your own definition of system-level programming and store your definition in a text file, named `file1.txt`. Write the reasons why C is more preferable for system-level programming and store the reasons in a text file, named `file2.txt`. Combine the two files using `cat` command and name the result file as `combined.txt`. Finally, use `cat` command again to append "These contents were combined from two files." Record everything you did so far on the terminal to answer this question into a file. Paste the file's contents as your answer.

4. (5 points) Assume the following two paths are absolute paths of `test1` and `test2` directories in a linux system:

   `/usr/bin/test1`, `/tmp/test2`

   Write down the relative path of the `test2` directory relative to `test1` directory.

5. (5 points) What do the following shortcuts do?

   `CTRL-D`, `CTRL-C`, `CTRL-H`, `CTRL-U`, `CTRL-Z`.

   (a) (5 points) How would you resume a suspended command?

6. (5 points) How `mv` command can be used in two ways? Please explain. What does the `-i` flag do in the `mv` command?

7. (10 points) Suppose the permission of a file, named `csc3320.txt` has been set as `rwxrw-r-x`. Please explain these permissions. Write the command using absolute octal numbers to change the file permission so that the user has only `read`, the groups have only `write`, and others have only `execution` permissions.

8. (10 points (bonus)) Answer question 7 differently: issue three commands to change file permissions of user, groups, and others separately. Finally show using `ls` command with appropriate flag that file permissions changed.

Question:	1	2	3	4	5	6	7	8	Total
Points:	5	5	10	5	10	5	10	0	50
Bonus Points:	0	0	0	0	0	0	0	10	10
Score:									