CSc 3320: Systems Programming
Spring 2021
Homework
3: Total points 100

Submission instructions:

1. Create a Google doc for each homework assignment submission.
2. Start your responses from page 2 of the document and copy these instructions on page 1.
3. Fill in your name, campus ID and panther # in the fields provided. If this information is missing in your document TWO POINTS WILL BE DEDUCTED per submission.
4. Keep this page 1 intact on all your submissions. If this *submissions instructions* page is missing in your submission TWO POINTS WILL BE DEDUCTED per submission.
5. Each homework will typically have 2-3 PARTS, where each PART focuses on specific topic(s).
6. Start your responses to each PART on a new page.
7. If you are being asked to write code copy the code into a separate txt file and submit that as well.
8. If you are being asked to test code or run specific commands or scripts, provide the evidence of your outputs through a screenshot and copy the same into the document.
9. Upon completion, download a .PDF version of the document and submit the same.

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Campus ID: agentile2

Panther #: 002413770

10 pts for the neatness factor of your presentation.

PART 1: 30pts

1. For each command tryout at least one example provided in **Chapter 3** of the Unix textbook. Feel free to use your own example. Show the screenshot for each command's output. Present your output in a tabular form with column 1 as index (1,2,3..), second column as the command, third as the usage, fourth as the screenshot of the output. You can just show a small snapshot for the output -- we do not need the entire screen's image.

Part II : 30pts

2. For each command tryout at least one example provided in **Chapter 4** of the Unix textbook. Feel free to use your own example. Show the screenshot for each command's output. Present your output in a tabular form with column 1 as index (1,2,3..), second column as the command, third as the usage, fourth as the screenshot of the output. You can just show a small snapshot for the output -- we do not need the entire screen's image.
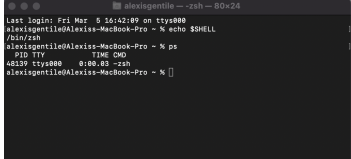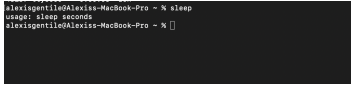
Part III : 30pts

3. For each command tryout at least one example provided in **Chapter 5** of the Unix textbook. Feel free to use your own example. Show the screenshot for each command's output. Present your output in a tabular form with column 1 as index (1,2,3..), second column as the command, third as the usage, fourth as the screenshot of the output. You can just show a small snapshot for the output -- we do not need the entire screen's image.
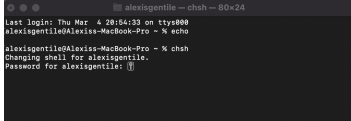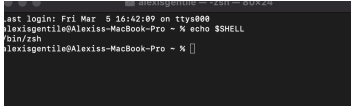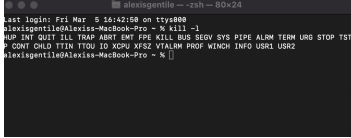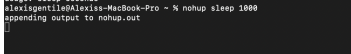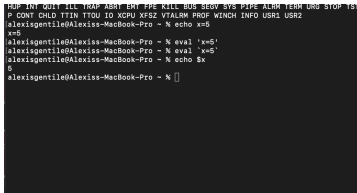
Index	Command	Usage	Example
1	at	Allows you to schedule one-time commands or scripts	`[agentile2@gsuad.gsu.edu@snowball ~]$ echo at done > /dev/pts/4` `at done` `[agentile2@gsuad.gsu.edu@snowball ~]$ `
2	awk	A programmable text processing utility that scans the lines of its input and performs actions on every line that matches criterion	`[agentile2@gsuad.gsu.edu@snowball ~]$ awk '{ print NF, $0 }' addressBook.txt` `6 alexis gentile, 2049 candy lane, 111-222-3333` `6 zylo r, 123 born dr, 222-555-6767` `6 tyler b, 312 st main, 820-492-5927` `[agentile2@gsuad.gsu.edu@snowball ~]$ `
3	biff	Enables and disables instant mail notifications	Unable to run/command not found
4	cmp	Finds the first byte that differs between two files	`[agentile2@gsuad.gsu.edu@snowball ~]$ cmp -l addressBook.txt Result` `1 141 124` `2 154 150` `4 170  40` `5 151 162` `6 163 145` `7  40 147` `8 147 145` `9 145 170` `10 156  40` `11 166 133`
5	crypt	Creates a key-encoded version of a text file	Unable to run/command not found
6	diff	Displays the differences and similarities between two files	`[agentile2@gsuad.gsu.edu@snowball ~]$ diff Result addressBook.txt` `1,2c1,3` `< The regex [^a]*ce can match the string(s):` `< piece` `---` `> alexis gentile, 2049 candy lane, 111-222-3333` `> zylo r, 123 born dr, 222-555-6767` `> tyler b, 312 st main, 820-492-5927`
7	dump	Can copy specific file system to a dumpFile; or allows you to specify the names of files to be dumped	Unable to run/command not found
8	egrep	Extended grep; matching regular expressions	`[agentile2@gsuad.gsu.edu@snowball ~]$ egrep -c '^alexis|7$' addressBook.txt` `3` `[agentile2@gsuad.gsu.edu@snowball ~]$ `
9	gzip	Replaces file with its compressed version	`[agentile2@gsuad.gsu.edu@snowball ~]$ gzip -v addressBookTest.txt` `addressBookTest.txt:      14.8% -- replaced with addressBookTest.txt.gz` `[agentile2@gsuad.gsu.edu@snowball ~]$ `

| 10 | Ln | Creates hardlinks or symbolic links to existing files | ```[agentile2@gsuad.gsu.edu@snowball ~]$ mkdir hold.3
[agentile2@gsuad.gsu.edu@snowball ~]$ ln hold.3 hold
ln: 'hold.3': hard link not allowed for directory
[agentile2@gsuad.gsu.edu@snowball ~]$ ln hold.* hold.3
ln: 'hold.3': hard link not allowed for directory
[agentile2@gsuad.gsu.edu@snowball ~]$```
 ## Unable to run |
|----|----|----|----|
| 11 | mount | Allows you to "splice" a devices system into the root hierarchy | ```[agentile2@gsuad.gsu.edu@snowball ~]$ mount
sysfs on /sys type sysfs (rw,nosuid,nodev,noexec,relatime,seclabel)
proc on /proc type proc (rw,nosuid,nodev,noexec,relatime)
devtmpfs on /dev type devtmpfs (rw,nosuid,seclabel,size=3992588k,nr_inodes=99814
7,mode=755)
securityfs on /sys/kernel/security type securityfs (rw,nosuid,nodev,noexec,relat
ime)
tmpfs on /dev/shm type tmpfs (rw,nosuid,nodev,seclabel)
devpts on /dev/pts type devpts (rw,nosuid,noexec,relatime,seclabel,gid=5,mode=62
0,ptxmode=000)
tmpfs on /run type tmpfs (rw,nosuid,nodev,seclabel,mode=755)
tmpfs on /sys/fs/cgroup type tmpfs (ro,nosuid,nodev,noexec,seclabel,mode=755)``` |
| 12 | od | Displays contents of a file in a variety of ways | ```[agentile2@gsuad.gsu.edu@snowball ~]$ cat > odTest.txt
123456789
[agentile2@gsuad.gsu.edu@snowball ~]$ od -b odTest.txt
0000000 061 062 063 064 065 066 067 070 071 012
0000012
[agentile2@gsuad.gsu.edu@snowball ~]$``` |
| 13 | tar | Allows you to create and access special tar-format archive files | ```[agentile2@gsuad.gsu.edu@snowball tarFile]$ tar -c a.c
a.c00006647573700000000026140202751002040 0ustar agentile2@gsuad.gsu.eduagen
tile2@gsuad.gsu.edu#this is for example
[agentile2@gsuad.gsu.edu@snowball tarFile]$``` |
| 14 | time | Can report execution time | ```...
[agentile2@gsuad.gsu.edu@snowball ~]$ time

real   0m0.000s
user   0m0.000s
sys   0m0.000s
[agentile2@gsuad.gsu.edu@snowball ~]$``` |
| 15 | tr | Maps all the characters in a file from one character set to another | ```[agentile2@gsuad.gsu.edu@snowball ~]$ tr a-z A-Z < addressBook.txt
ALEXIS GENTILE, 2049 CANDY LANE, 111-222-3333
RYLO R, 123 BORN DR, 222-555-6767
TYLER S, 312 ST MAIN, 820-492-6927
[agentile2@gsuad.gsu.edu@snowball ~]$``` |
| 16 | ul | Transforms a file that contains underlining characters so that it appears correctly | ```[agentile2@gsuad.gsu.edu@snowball ~]$ ul /dev/pts/4 odTest.txt
WHP(1)
WHP(1)
123456789
[agentile2@gsuad.gsu.edu@snowball ~]$``` |
| 17 | compress | Replaces files with compressed version | ## Unable to run |
| 18 | cpio | Allows you to create and access special cpio format files | ```[agentile2@gsuad.gsu.edu@snowball ~]$ ls *.c | cpio -ov > backup
cProgram2.c
Cprogram.c
factorial.c
firstC.c
getPhoneNumber.c
hello.c
myName.c
3 blocks``` |

20	crontab	Allows you to schedule a series of jobs to be executed on a periodic bases	Unable to run/cant install
21	fgrep	A faster version of grep that searches only for	```[agentile2@gsuad.gsu.edu@snowball ~]$ fgrep -c "rylo" addressBook.txt
[agentile2@gsuad.gsu.edu@snowball ~]$```

		fixed strings	

22	find	Can locate a file; or perform specific actions on a set of files that satisfies specific conditions	`[agentile2@gsuad.gsu.edu@snowball ~]$ find . -mtime 14 -ls`
			`656511    4 -rwxrwxr-x  1 agentile2@gsuad.gsu.edu agentile2@gsuad.gsu.edu`
			`602 Feb 18 16:02 ./checkError.sh`
			`656509    4 -rwxrwxr-x  1 agentile2@gsuad.gsu.edu agentile2@gsuad.gsu.edu`
			`296 Feb 18 16:26 ./hello.sh`
			`656507    4 -rw-rw-r--  1 agentile2@gsuad.gsu.edu agentile2@gsuad.gsu.edu`
			`49 Feb 18 15:59 ./Result`
			`656503    4 -rwxrwxr-x  1 agentile2@gsuad.gsu.edu agentile2@gsuad.gsu.edu`
			`296 Feb 18 17:02 ./Desktop`

23	grep	Allows you to search for a pattern in a list of files	`[agentile2@gsuad.gsu.edu@snowball ~]$ cat addressBook.txt`
			`alexis gentile, 2049 candy lane, 111-222-3333`
			`rylo r, 123 born dr, 222-555-6767`
			`tyler b, 312 st main, 820-492-5927`
			`[agentile2@gsuad.gsu.edu@snowball ~]$`

24	gunzip	Can uncompress file	`[agentile2@gsuad.gsu.edu@snowball ~]$ gunzip -v *.gz`
			`addressBookTest.txt.gz:  14.8% -- replaced with addressBookTest.txt`
			`[agentile2@gsuad.gsu.edu@snowball ~]$`

25	tty	Displays pathname of terminal	`[agentile2@gsuad.gsu.edu@snowball ~]$ tty`
			`/dev/pts/4`
			`[agentile2@gsuad.gsu.edu@snowball ~]$`

26	sed	Edits an input stream according to a script that contains editing commands	`[agentile2@gsuad.gsu.edu@snowball ~]$ sed 's/^/ /' addressBook.txt > addressBook`
			`.indent`
			`[agentile2@gsuad.gsu.edu@snowball ~]$ cat addressBook.indent`
			`alexis gentile, 2049 candy lane, 111-222-3333`
			`rylo r, 123 born dr, 222-555-6767`
			`tyler b, 312 st main, 820-492-5927`
			`[agentile2@gsuad.gsu.edu@snowball ~]$`

27	sort	Sorts a file in ascending or descending order on the basis of sort fields	`[agentile2@gsuad.gsu.edu@snowball ~]$ sort addressBook.txt`
			`alexis gentile, 2049 candy lane, 111-222-3333`
			`rylo r, 123 born dr, 222-555-6767`
			`tyler b, 312 st main, 820-492-5927`
			`[agentile2@gsuad.gsu.edu@snowball ~]$ sort -r addressBook.txt`
			`tyler b, 312 st main, 820-492-5927`
			`rylo r, 123 born dr, 222-555-6767`
			`alexis gentile, 2049 candy lane, 111-222-3333`
			`[agentile2@gsuad.gsu.edu@snowball ~]$`

28	su	Creates a temporary shell	`[agentile2@gsuad.gsu.edu@snowball ~]$ su`
			`Password:`
			`su: Authentication failure`
			`[agentile2@gsuad.gsu.edu@snowball ~]$ logout`
			`Connection to snowball.cs.gsu.edu closed.`
			`alexisgentile@Alexiss-MacBook-Pro ~ %`

29	umount	Unmounts previously mounted files	Unable to run
30	uncompress	Reverses effects of compress	Unable to run

31	uniq	Displays a file with all of its identical adjacent lines replaced by a single occurrence of the repeated line	`[agentile2@gsuad.gsu.edu@snowball ~]$ uniq -c addressBook.txt`
			`      1 alexis gentile, 2049 candy lane, 111-222-3333`
			`      1 rylo r, 123 born dr, 222-555-6767`
			`      1 tyler b, 312 st main, 820-492-5927`

32	whoami	Displays the name of the owner of a shell	`[agentile2@gsuad.gsu.edu@snowball ~]$ whoami`
			`agentile2@gsuad.gsu.edu`
			`[agentile2@gsuad.gsu.edu@snowball ~]$`

2.

Index	Command	usage	example
1	chsh	Change default login in shell	
2	echo	Displays all of its arguments to a standard output	
3	kill	Terminates a process before it is completed	
4	nohup	Executes command and makes it immune to the hangup and terminate signals	
5	ps	Generates listing of process status information	
6	sleep	Sleeps for specified number of seconds then terminates	

| 8 | eval | Executes output of command as a regular shell command | |

9	exec	Causes shell image to replace with command in the processes memory	alexisgentile@Alexiss-MacBook-Pro ~ % exec date Fri Mar 5 16:48:09 EST 2021 [Process completed]
14	tee	Copies standard input to specified files and to its standard output	alexisgentile@Alexiss-MacBook-Pro ~ % who | tee who.capture | sort alexisgentile console Feb 21 16:46 alexisgentile ttys000 Mar 5 16:48 alexisgentile@Alexiss-MacBook-Pro ~ %
15	umask	Sets value to the specified octal number or displays current value if argument is augmented	zsh: command not found: shit.csh alexisgentile@Alexiss-MacBook-Pro ~ % umask 022 alexisgentile@Alexiss-MacBook-Pro ~ %

3.

index	command	usage	example
1	expr	Evaluates expressions and sends results to standard output	alexisgentile@Alexiss-MacBook-Pro ~ % echo `expr length "cat"` expr: syntax error alexisgentile@Alexiss-MacBook-Pro ~ %
2	test	Returns 0 exit code if expression evaluates true	Unable to run