

CSc 3320: Systems Programming

Fall 2021

Homework 2

1: 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 *submission's 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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Part 1

1. Grep searches for the named input file or files for lines containing a match to the pattern provided. Egrep is similar to grep; however, it interprets the pattern as an extended regular expression. Fgrep interprets the pattern as a list of fixed strings separated by new lines. `grep -E '^my(first|last)' /home/mberhanu2`. `grep '^my\\(first\\|last\\)' /home/mberhanu2`. `grep -F -f user_list.txt /home/mberhanu2`
2. zip can be used to compress files and unzip can be used to decompress files. An example for compressing a file would be `zip mydoc.zip file1.txt`. An example for decompressing would be `unzip mydoc.zip`
3. The awk utility will allow us to break a line into multiple fields. The default is `[\\t]+` We can define a field separator using the "FS=" in the command line and boundaries are set by ":". `Awk-v TS='[,\\n]' '{a=$0; print a}' OFS =, test.txt`.
4. The purpose of the sort command is to print out the output of the file in the order that is provided by the user. The different possible fields are `sort -o`, `sort -M`, `sort -n`, `sort -u`, `sort -k`, `sort -r`, `sort -b`. Example: `sort test.txt`

Part 2A:

5.

```
[[mberhanu2@gsuad.gsu.edu@snowball ~]$ echo 'Hello World' | sed 's/$/!!!/g' ]  
Hello World!!!
```

6.

```
[[mberhanu2@gsuad.gsu.edu@snowball ~]$ awk me.sh ]  
awk: cmd. line:1: me.sh ]  
awk: cmd. line:1: ^ syntax error
```

7.

```
[[mberhanu2@gsuad.gsu.edu@snowball ~]$ echo good | sed '/Good/d' ]  
good
```

8. Example: `^+${print$0}`

9.

a. First 5 lines= `sed '1,5d' foo`

b. Last 5 lines = `sed '$d' foo | sed '$d' | sed '$d' | sed '$d' | sed '$d'`

Part 2b:

10. The utility awk is going to read the awk program from the file and apply it into the input file. NR means row number. Since $NR > 2$ and $NR < 4$. The row number that will be printed out is 3 then “:” and everything on the third line. Output will be 3: When everything seems so clear.

awk '/.*ing/{print NR ":" \$1}' float This prints out searching for the pattern (*.ing)* (matching 0 or many characters)

```
[[mberhanu2@gsuad.gsu.edu@snowball ~]$ cat float
Wish I was floating in blue across the sky, my imagination is
strong, And I often visit the days
When everything seemed so clear.
Now I wonder what I'm doing here at all...
[[mberhanu2@gsuad.gsu.edu@snowball ~]$ vi h1.awk
[[mberhanu2@gsuad.gsu.edu@snowball ~]$ awk '/.*ing/{print NR ":" $1}' float
1:Wish
3:When
4:Now
```

11. Prints the first item of each line followed by “,” and the last item of each line.

FILENAME prints the input file name

```
[[mberhanu2@gsuad.gsu.edu@snowball ~]$ awk -f h2.awk float
Start to scan file
Wish,is
strong,,days
When,clear.
Now,all...
END- float
```

12. The s signifies that it has to substitute the spaces that came with the \t. /g is stating that it is to be applied to the whole file.

```
[[mberhanu2@gsuad.gsu.edu@snowball ~]$ sed 's/\s/\t/g' float
Wish I was floating in blue across the sky, my imagination is
strong, And I often visit the days
When everything seemed so clear.
Now I wonder what I'm doing here at all...
```

13. A|b|c means that the output from a is considered to be the input of b and output of b is the input of c since | is a pipe. ls* awk will list all of the files using an awk extensions. Then it will take all the awk files as input and look for BEGIN and color it and print the current line and print it on shell.

```
[[mberhanu2@gsuad.gsu.edu@snowball ~]$ ls *.awk|awk '{print "grep --color 'BEGIN' " $1 }' |sh
[BEGIN{ print "Start to scan file"}
[[mberhanu2@gsuad.gsu.edu@snowball ~]$
```

14. It will generate .bak in the current working directory.

```
[[mberhanu2@gsuad.gsu.edu@snowball ~]$ ls -l |grep '^d'|awk '{print "cp -r " $NF " " $NF ".bak"}'|sh;
cp: cannot stat 'Lab3/Try.c': Permission denied
cp: cannot stat 'Lab3/RealEstate.csv': Permission denied
cp: cannot stat 'Lab3/test.txt': Permission denied
[[mberhanu2@gsuad.gsu.edu@snowball ~]$ ls -l
total 120
-rwxrwxr-x. 1 mberhanu2@gsuad.gsu.edu mberhanu2@gsuad.gsu.edu 8360 Oct 7 20:39 a.out
-rwxrwxr-x. 1 mberhanu2@gsuad.gsu.edu mberhanu2@gsuad.gsu.edu 641 Oct 1 21:03 checkError.sh
drwxrwxr-x. 4 mberhanu2@gsuad.gsu.edu mberhanu2@gsuad.gsu.edu 4096 Sep 6 12:47 csc3320
drwxrwxr-x. 4 mberhanu2@gsuad.gsu.edu mberhanu2@gsuad.gsu.edu 4096 Oct 8 20:18 csc3320.bak
-rw-rw-r--. 1 mberhanu2@gsuad.gsu.edu mberhanu2@gsuad.gsu.edu 173 Sep 30 16:05 float
-rwxrwxr-x. 1 mberhanu2@gsuad.gsu.edu mberhanu2@gsuad.gsu.edu 242 Oct 3 13:08 foo.sh
-rw-rw-r--. 1 mberhanu2@gsuad.gsu.edu mberhanu2@gsuad.gsu.edu 1 Sep 30 15:57 h1
-rw-rw-r--. 1 mberhanu2@gsuad.gsu.edu mberhanu2@gsuad.gsu.edu 30 Oct 8 19:55 h1.awk
-rw-rw-r--. 1 mberhanu2@gsuad.gsu.edu mberhanu2@gsuad.gsu.edu 80 Oct 8 20:04 h2.awk
-rwxrwxr-x. 1 mberhanu2@gsuad.gsu.edu mberhanu2@gsuad.gsu.edu 8360 Oct 3 13:27 hello
-rw-rw-r--. 1 mberhanu2@gsuad.gsu.edu mberhanu2@gsuad.gsu.edu 78 Oct 3 13:25 hello.c
-rwxrwxr-x. 1 mberhanu2@gsuad.gsu.edu mberhanu2@gsuad.gsu.edu 368 Oct 1 21:04 hello.sh
drwxrwxr-x. 2 mberhanu2@gsuad.gsu.edu mberhanu2@gsuad.gsu.edu 4096 Sep 13 23:00 homeworks
drwxrwxr-x. 2 mberhanu2@gsuad.gsu.edu mberhanu2@gsuad.gsu.edu 4096 Oct 8 20:18 homeworks.bak
drw-----. 2 mberhanu2@gsuad.gsu.edu mberhanu2@gsuad.gsu.edu 4096 Sep 12 18:58 Lab3
drw-----. 2 mberhanu2@gsuad.gsu.edu mberhanu2@gsuad.gsu.edu 4096 Oct 8 20:18 Lab3.bak
drwxrwxr-x. 2 mberhanu2@gsuad.gsu.edu mberhanu2@gsuad.gsu.edu 4096 Sep 20 13:14 Lab4
drwxrwxr-x. 2 mberhanu2@gsuad.gsu.edu mberhanu2@gsuad.gsu.edu 4096 Oct 8 20:18 Lab4.bak
-rw-rw-r--. 1 mberhanu2@gsuad.gsu.edu mberhanu2@gsuad.gsu.edu 140 Oct 7 20:39 myName.c
drwxrwxr-x. 4 mberhanu2@gsuad.gsu.edu mberhanu2@gsuad.gsu.edu 4096 Sep 6 13:17 public
drwxrwxr-x. 4 mberhanu2@gsuad.gsu.edu mberhanu2@gsuad.gsu.edu 4096 Oct 8 20:18 public.bak
-rw-rw-r--. 1 mberhanu2@gsuad.gsu.edu mberhanu2@gsuad.gsu.edu 49 Oct 1 16:00 Result
-rwxrwxr-x. 1 mberhanu2@gsuad.gsu.edu mberhanu2@gsuad.gsu.edu 130 Sep 23 16:19 simple.sh
drwxrwxr-x. 4 mberhanu2@gsuad.gsu.edu mberhanu2@gsuad.gsu.edu 4096 Oct 8 20:15 test
drwxrwxr-x. 4 mberhanu2@gsuad.gsu.edu mberhanu2@gsuad.gsu.edu 4096 Oct 8 20:18 test.bak
-rw-rw-r--. 1 mberhanu2@gsuad.gsu.edu mberhanu2@gsuad.gsu.edu 10 Sep 12 18:59 test.txt
```

Part 3

15.

```
[mberhanu2@gsuad.gsu.edu@snowball ~]$ cd ~
[mberhanu2@gsuad.gsu.edu@snowball ~]$ pwd
/home/mberhanu2
[mberhanu2@gsuad.gsu.edu@snowball ~]$ mkdir Text
[mberhanu2@gsuad.gsu.edu@snowball ~]$ mkdir PDF
[mberhanu2@gsuad.gsu.edu@snowball ~]$ ls
a.out          float          h2.awk         homeworks      Lab4           public         test
checkError.sh  foo.sh         hello          homeworks.bak  Lab4.bak       public.bak     test.bak
csc3320        h1            hello.c        Lab3           myName.c       Result         test.txt
csc3320.bak    h1.awk        hello.sh       Lab3.bak       PDF            simple.sh      Text
[mberhanu2@gsuad.gsu.edu@snowball ~]$ cp float Text/float_copy.txt
[mberhanu2@gsuad.gsu.edu@snowball ~]$ cp h1 Text/h1_copy.txt
[mberhanu2@gsuad.gsu.edu@snowball ~]$ cp h1.awk Text/h1.awk_copy.txt
[mberhanu2@gsuad.gsu.edu@snowball ~]$ cp h2.awk Text/h2.awk_copy.txt
[mberhanu2@gsuad.gsu.edu@snowball ~]$ cp myName.c Text/myName.c_copy.txt
[mberhanu2@gsuad.gsu.edu@snowball ~]$ cp Result Text/Result_copy.txt
[mberhanu2@gsuad.gsu.edu@snowball ~]$ cp test.txt Text/test.txt_copy.txt
[mberhanu2@gsuad.gsu.edu@snowball ~]$ cd Text
[mberhanu2@gsuad.gsu.edu@snowball Text]$ ls
float_copy.txt  h1_copy.txt    myName.c_copy.txt  test.txt_copy.txt
h1.awk_copy.txt h2.awk_copy.txt Result_copy.txt
[mberhanu2@gsuad.gsu.edu@snowball Text]$ sort -M float_copy.txt
Now I wonder what I'm doing here at all...
strong, And I often visit the days
When everything seemed so clear.
Wish I was floating in blue across the sky, my imagination is

[mberhanu2@gsuad.gsu.edu@snowball ~]$ tar -czvpf Text.tar.gz Text
Text/
Text/h2.awk_copy.txt
Text/h1_copy.txt
Text/myName.c_copy.txt
Text/test.txt_copy.txt
Text/float_copy.txt
Text/h1.awk_copy.txt
Text/Result_copy.txt
Text/Text.tar.gz
[mberhanu2@gsuad.gsu.edu@snowball ~]$ ls -lrth | grep -i tar
-rw-rw-r--. 1 mberhanu2@gsuad.gsu.edu mberhanu2@gsuad.gsu.edu 783 Oct  8 20:40 Text.tar.gz
[mberhanu2@gsuad.gsu.edu@snowball ~]$ ls
a.out          float          h2.awk         homeworks      Lab4           public         test      Text.tar.gz
checkError.sh  foo.sh         hello          homeworks.bak  Lab4.bak       public.bak     test.bak
csc3320        h1            hello.c        Lab3           myName.c       Result         test.txt
csc3320.bak    h1.awk        hello.sh       Lab3.bak       PDF            simple.sh      Text
```

