CSC3320 System Level Programming
Homework 2

Due at 11:59 pm on 9.26, 2019

100 points = 5 * 3 + 5 * 5 + 6 * (5 + 5)

Part I: Answer the following questions, 5 points each

1. What are the differences among **grep**, **egrep** and **fgrep**?

2. Which utility from Chapter 3 can be used to compress and decompress files? And how to compress multiple files into a single file? Please provide one example for it.

3. Which utility (or utilities) from Chapter 3 can break a line into multiple fields by defining a separator? What is the default separator? How to define a separator manually in the command line? Please provide one example for defining the separator for each utility.

Part II: Multiple Choices, 5 points each

1. What is the output of the following sequence of bash commands:

echo 'Hello World' | sed 's/$/!!!/g'

a. !!!Hello World
b. Hello!!! World
c. Hello World!!!
d. !!!
e. No output on screen

2. Which **awk** script outputs the first field of lines that in the first five lines:

a. 1 <= NF { print $5 }
b. NR >= 5 { print $1 }
c. 1,5 { print $0 }
d. {print $1 }
e. None of above

3. What is the output of following command line:
echo good | sed '/Good/d'
a. no output on screen
b. good
c. Good
d. good Good
e. None of above

4. Which **awk** script outputs all the lines where a plus sign + appears at the end of line?
a. /^\+/{print $0}
b. /+$/{print $0}
c. /\+\$/{print $0}
d. /\+$/{print $0}
e. None of above

5. Which command delete only the first 5 lines of "file"?
a. sed '5d' file
b. sed '1,5 p' file
c. sed '5dd' file
d. sed '5,$d' file
e. sed '1,5d' file

Part III: Write output of following commands and describe the function of commands (the last one only in each question). 10 points(5 output, 5 function) each

1)

```
$ 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...
$ cat   h1.awk
NR>2 && NR<4{print  NR  ":"     $0}
$ awk  -f  h1.awk  float
```

Output:

Function:

2)

```
$ awk     '/.*ing/ {print    NR  ":"  $1}'  float
```

Output:

Function:

3)

```
$ cat h2.awk
BEGIN { print     "Start to scan file" }
{print  $1      ","  $NF}
END {print     "END-" , FILENAME }
$ awk -f h2.awk float
```

Output:

Function:

4)

```
$ sed  's/\s/\t/g'   float
```

Output:

Function:

5)

$ ls *.awk| awk '{print "grep --color 'BEGIN' " $1 }' |sh *(Notes:* ***sh file*** *runs file as a shell script.)*
Output:

Function:

6)

$ mkdir test test/test1 test/test2
$ cat>test/test.txt
This is a test file
^D (CTRL + D)
$ cd test
$ ls -l . | grep '^d' | awk '{print "cp -r " $NF " " $NF ".bak"}' | sh
Output:

Function:

Submssion:

- Upload an electronic copy (MS word or pdf) of your answer sheet to the folder named "**HW2**" of the dropbox in the iCollege system.
- **Please add the homework number and your name at the top of your answer sheet.**
- Name your file in the format of HW2_FisrtnameLastname (eg.

  HW2_YuanLong.docx, HW2_YuanLong.pdf)