CSC3320 System Level Programming
Lab Assignment 4 - Part 2 (Out of lab)

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Lab 4 - Part 2

1) Use grep to print all lines where the mountains are at Towns or Union County.

$ egrep 'Towns|Union' mountainList.txt

```
[vsrikakulapu1@gsuad.gsu.edu@snowball Lab4]$ egrep 'Towns|Union' mountainList.txt
      Brasstown Bald, (summit),4784,feet,Union County
       Hightower Bald, (summit),4568,feet,Towns County
Wolfpen Ridge, (ridge high point),4561,feet,Towns and Union
      Blood Mountain, (summit),4458,feet,Union County
Tray Mountain, (summit), 4430,feet,Towns County
Slaughter Mountain, (summit),4338,feet,Union County
Coosa Bald, (summit),4280,feet,Union County
```

2) Use wc and grep to count the number of mountains located at Rabun County.
Hint: please use pipe | .

$ egrep 'Rabun' mountainList.txt | wc -l

```
[vsrikakulapu1@gsuad.gsu.edu@snowball Lab4]$ egrep 'Rabun' mountainList.txt|wc -l
4
```

3) Finish task 2) by using only grep.
Hint: open the manual page of grep, and check -c option.

$ grep -c 'Rabun' mountainList.txt

```
[vsrikakulapu1@gsuad.gsu.edu@snowball Lab4]$ grep -c 'Rabun' mountainList.txt
4
```

4) A. Type command sed 's/ridge high point/r.h.p./p' mountainList.txt and execute it. Then attach a screenshot of the output.

$ sed 's/ridge high point/r.h.p./p' mountainList.txt

```
[vsrikakulapu1@gsuad.gsu.edu@snowball Lab4]$ sed 's/ridge high point/r.h.p./p' mountainList.txt
      Brasstown Bald, (summit),4784,feet,Union County

Rabun Bald, (summit),4696,feet,Rabun County

Dick's Knob, (summit),4620,feet,Rabun County

       Hightower Bald, (summit),4568,feet,Towns County

Wolfpen Ridge, (r.h.p.),4561,feet,Towns and Union
Wolfpen Ridge, (r.h.p.),4561,feet,Towns and Union

Counties

      Blood Mountain, (summit),4458,feet,Union County

Tray Mountain, (summit), 4430,feet,Towns County

     Grassy Ridge, (r.h.p.),4420,feet,Rabun County
     Grassy Ridge, (r.h.p.),4420,feet,Rabun County

Slaughter Mountain, (summit),4338,feet,Union County

Double Spring Knob, (summit),4280,feet,Rabun County

Coosa Bald, (summit),4280,feet,Union County

[vsrikakulapu1@gsuad.gsu.edu@snowball Lab4]$
```

B. Type command sed -n ‘s/ridge high point/r.h.p./p’ mountainList.txt and execute it. Then attach a screenshot of the output.

$ sed -n ‘s/ridge high point/r.h.p./p’ mountainList.txt

```
[vsrikakulapu1@gsuad.gsu.edu@snowball Lab4]$ sed -n 's/ridge high point/r.h.p./p' mountainList.txt
Wolfpen Ridge, (r.h.p.),4561,feet,Towns and Union
     Grassy Ridge, (r.h.p.),4420,feet,Rabun County
[vsrikakulapu1@gsuad.gsu.edu@snowball Lab4]$
```

C. Open the manual page of sed and describe what does –n do in sed?

-n option suppresses automatic printing of pattern space i.e., by default sed prints out all the input given to sed command. -n inhibits this behavior of sed command.

D. Describe what does the sed command in (B) do?

In sed command in (B), -n option is used which suppresses the default printing of all the input to the output and only prints what this specific sed command instructs to. Here, the sed command substitutes **ridge high point** with **r.h.p.** and prints those lines where the substitution took place.

5) Use sed to remove the leading spaces in "mountainList.txt" and print out the processed lines.

$ sed ‘s/^ *//g’ mountainList.txt

```
[vsrikakulapu1@gsuad.gsu.edu@snowball Lab4]$ sed 's/^ *//g' mountainList.txt
Brasstown Bald, (summit),4784,feet,Union County

Rabun Bald, (summit),4696,feet,Rabun County

Dick's Knob, (summit),4620,feet,Rabun County

Hightower Bald, (summit),4568,feet,Towns County

Wolfpen Ridge, (ridge high point),4561,feet,Towns and Union

Counties

Blood Mountain, (summit),4458,feet,Union County

Tray Mountain, (summit), 4430,feet,Towns County

Grassy Ridge, (ridge high point),4420,feet,Rabun County

Slaughter Mountain, (summit),4338,feet,Union County

Double Spring Knob, (summit),4280,feet,Rabun County

Coosa Bald, (summit),4280,feet,Union County
```

6) Finish task 5) and save the output to file "newList.txt".

$ sed ‘s/^ *//g’ mountainList.txt > newList.txt

```
[vsrikakulapu1@gsuad.gsu.edu@snowball Lab4]$ sed 's/^ *//g' mountainList.txt > newList.txt
[vsrikakulapu1@gsuad.gsu.edu@snowball Lab4]$ cat newList.txt
Brasstown Bald, (summit),4784,feet,Union County

Rabun Bald, (summit),4696,feet,Rabun County

Dick's Knob, (summit),4620,feet,Rabun County

Hightower Bald, (summit),4568,feet,Towns County

Wolfpen Ridge, (ridge high point),4561,feet,Towns and Union

Counties

Blood Mountain, (summit),4458,feet,Union County

Tray Mountain, (summit), 4430,feet,Towns County

Grassy Ridge, (ridge high point),4420,feet,Rabun County

Slaughter Mountain, (summit),4338,feet,Union County

Double Spring Knob, (summit),4280,feet,Rabun County

Coosa Bald, (summit),4280,feet,Union County
```

7) Use sed to list the lines beginning with white spaces in "mountainList.txt".

$ sed -n ‘/^ /p’ mountainList.txt

```
[vsrikakulapu1@gsuad.gsu.edu@snowball Lab4]$ sed -n '/^ / p' mountainList.txt
     Brasstown Bald, (summit),4784,feet,Union County
      Hightower Bald, (summit),4568,feet,Towns County
     Blood Mountain, (summit),4458,feet,Union County
    Grassy Ridge, (ridge high point),4420,feet,Rabun County
```

8) Use sed to delete the lines where the mountains are only at Union County in "mountainList.txt".

$ sed ‘/,Union/d’ mountainList.txt

```
[vsrikakulapu1@gsuad.gsu.edu@snowball Lab4]$ sed '/,Union/d' mountainList.txt

Rabun Bald, (summit),4696,feet,Rabun County

Dick's Knob, (summit),4620,feet,Rabun County

       Hightower Bald, (summit),4568,feet,Towns County

Wolfpen Ridge, (ridge high point),4561,feet,Towns and Union Counties


Tray Mountain, (summit), 4430,feet,Towns County

     Grassy Ridge, (ridge high point),4420,feet,Rabun County


Double Spring Knob, (summit),4280,feet,Rabun County
```

9) Use sed to remove the middle three fields in each line of "mountainList.txt". Hint: Think about the meaning of regex '[^,]'
sed -r 's/,([^,]*){3},/,/g' public/mountainList.txt

$ sed -r 's/(,[^,]*){3},/,/g' mountainList.txt

```
[vsrikakulapu1@gsuad.gsu.edu@snowball Lab4]$ sed -r 's/(,[^,]*){3},/,/g' mountainList.txt
      Brasstown Bald,Union County

Rabun Bald,Rabun County

Dick's Knob,Rabun County

       Hightower Bald,Towns County

Wolfpen Ridge,Towns and Union

Counties

      Blood Mountain,Union County

Tray Mountain,Towns County

     Grassy Ridge,Rabun County

Slaughter Mountain,Union County

Double Spring Knob,Rabun County

Coosa Bald,Union County

[vsrikakulapu1@gsuad.gsu.edu@snowball Lab4]$
```

10) Use awk to finish task 9).

```
[vsrikakulapu1@gsuad.gsu.edu@snowball Lab4]$ cat > lab4.awk
NR%2==1 {print $1 "," $NF}
[vsrikakulapu1@gsuad.gsu.edu@snowball Lab4]$ awk -F"," -f lab4.awk  mountainList.txt
      Brasstown Bald,Union County
Rabun Bald,Rabun County
Dick's Knob,Rabun County
       Hightower Bald,Towns County
Wolfpen Ridge,Towns and Union
Counties,Counties
      Blood Mountain,Union County
Tray Mountain,Towns County
     Grassy Ridge,Rabun County
Slaughter Mountain,Union County
Double Spring Knob,Rabun County
Coosa Bald,Union County
[vsrikakulapu1@gsuad.gsu.edu@snowball Lab4]$
```

11) Use sed to insert a new line “Table: Eleven highest mountains in Georgia” at the beginning of "mountainList.txt".

$ sed ‘1 i\Table: Eleven highest mountains in Georgia’ mountainList.txt

```
[vsrikakulapu1@gsuad.gsu.edu@snowball Lab4]$ sed '1 i\Table: Eleven highest mountains in Georgia' mountainList.txt
Table: Eleven highest mountains in Georgia
      Brasstown Bald, (summit),4784,feet,Union County

Rabun Bald, (summit),4696,feet,Rabun County

Dick's Knob, (summit),4620,feet,Rabun County

       Hightower Bald, (summit),4568,feet,Towns County

Wolfpen Ridge, (ridge high point),4561,feet,Towns and Union

Counties

      Blood Mountain, (summit),4458,feet,Union County

Tray Mountain, (summit), 4430,feet,Towns County

     Grassy Ridge, (ridge high point),4420,feet,Rabun County

Slaughter Mountain, (summit),4338,feet,Union County

Double Spring Knob, (summit),4280,feet,Rabun County

Coosa Bald, (summit),4280,feet,Union County

[vsrikakulapu1@gsuad.gsu.edu@snowball Lab4]$
```

12) Use sort to print out the sorted lines in alphabetical order according to the names of mountains.

$ sed ‘/^$/d’ mountainList.txt | sort -t, +0 -1

Here, I deleted the empty lines in between and then sorted using , as separator for the names of mountains.

```
[vsrikakulapu1@gsuad.gsu.edu@snowball Lab4]$ sed '/^$/d' mountainList.txt | sort -t, +0 -1
      Blood Mountain, (summit),4458,feet,Union County
      Brasstown Bald, (summit),4784,feet,Union County
Coosa Bald, (summit),4280,feet,Union County
Dick's Knob, (summit),4620,feet,Rabun County
Double Spring Knob, (summit),4280,feet,Rabun County
     Grassy Ridge, (ridge high point),4420,feet,Rabun County
       Hightower Bald, (summit),4568,feet,Towns County
Rabun Bald, (summit),4696,feet,Rabun County
Slaughter Mountain, (summit),4338,feet,Union County
Tray Mountain, (summit), 4430,feet,Towns County
Wolfpen Ridge, (ridge high point),4561,feet,Towns and Union Counties
```

13) Use sort to print out the sorted lines in descending order according to the height of mountains.

$ sed '/^$/d' mountainList.txt | sort -r -t, +2 -3

Here, I deleted the empty lines in between and then sorted using , as separator and -r to get reverse order / descending order for height field.

```
[vsrikakulapu1@gsuad.gsu.edu@snowball Lab4]$ sed '/^$/d' mountainList.txt | sort -r -t, +2 -3
      Brasstown Bald, (summit),4784,feet,Union County
Rabun Bald, (summit),4696,feet,Rabun County
Dick's Knob, (summit),4620,feet,Rabun County
       Hightower Bald, (summit),4568,feet,Towns County
Wolfpen Ridge, (ridge high point),4561,feet,Towns and Union Counties
      Blood Mountain, (summit),4458,feet,Union County
Tray Mountain, (summit), 4430,feet,Towns County
     Grassy Ridge, (ridge high point),4420,feet,Rabun County
Slaughter Mountain, (summit),4338,feet,Union County
Double Spring Knob, (summit),4280,feet,Rabun County
Coosa Bald, (summit),4280,feet,Union County
[vsrikakulapu1@gsuad.gsu.edu@snowball Lab4]$
```

14) "When a pattern groups all or part of its content into a pair of parentheses, it captures that content and stores it temporarily in memory. You can reuse that content if you wish by using a back-reference, in the form:\1 or $1, where \1 or $1 reference the first captured group" (Refer to [1]). For example, the following command add a colon between Union and County
sed -E 's/(Union)\s(County)/\1:\2/g' mountainList.txt
Attach a screenshot of the output of the above sed command.

$ sed -E 's/(Union)\s(County)/\1:\2/g' mountainList.txt

```
[vsrikakulapu1@gsuad.gsu.edu@snowball Lab4]$ sed -E 's/(Union)\s(County)/\1:\2/g' mountainList.txt
      Brasstown Bald, (summit),4784,feet,Union:County

Rabun Bald, (summit),4696,feet,Rabun County

Dick's Knob, (summit),4620,feet,Rabun County

       Hightower Bald, (summit),4568,feet,Towns County

Wolfpen Ridge, (ridge high point),4561,feet,Towns and Union

Counties

      Blood Mountain, (summit),4458,feet,Union:County

Tray Mountain, (summit), 4430,feet,Towns County

     Grassy Ridge, (ridge high point),4420,feet,Rabun County

Slaughter Mountain, (summit),4338,feet,Union:County

Double Spring Knob, (summit),4280,feet,Rabun County

Coosa Bald, (summit),4280,feet,Union:County
```

15) Now can you write a command to finish task 9) using sed with back-reference?

$ sed -E ‘s/(Bald|Knob|Ridge|Mountain),.*(Rabun|Towns|Union)/\1,\2/g’ mountainList.txt

```
[vsrikakulapu1@gsuad.gsu.edu@snowball Lab4]$ sed -E 's/(Bald|Knob|Ridge|Mountain),.*(Rabun|Towns|Union)/\1,\2/g' mountainList.txt
      Brasstown Bald,Union County

Rabun Bald,Rabun County

Dick's Knob,Rabun County

       Hightower Bald,Towns County

Wolfpen Ridge,Union

Counties

      Blood Mountain,Union County

Tray Mountain,Towns County

     Grassy Ridge,Rabun County

Slaughter Mountain,Union County

Double Spring Knob,Rabun County

Coosa Bald,Union County

[vsrikakulapu1@gsuad.gsu.edu@snowball Lab4]$
```