UNIX SED command

What is SED?:
SED stands for stream editor
it can perform operations on file
opertions like search, find & replace, insert, deletion, edit file without opening (in compare to vi editor), supports regular expression
****
syntax:
sed [options] [script] [file]
****
Examples:
open jslinux (online unix emulator)
https://bellard.org/jslinux/vm.html?url=buildroot-x86.cfg
upload a input file

in my case sample.txt is a input file
****
let's view its content

[root@localhost ~]# ls
dos   hello.c   hello.js   sample.txt

[root@localhost ~]# cat sample.txt
The UNIX computer operating system has had a fascinating history and evolution.
Starting as a research project begun by a handful of people,
it has become an important product used extensively in business, academia, and government.
Today, people use operating systems with many different names that are variants of UNIX1, UNIX2, UNIX3, UNIX4.
Many of the commands and utilities in these different variants are identical and others are extremely similar.
The differences between these variants often lie in the inner workings of the operating system,
not seen by the user, as well as in special added capabilities for advanced users or system administrations.
****
lets retain original file sample.txt and create a copy of it as sample1.txt
[root@localhost ~]# cp sample.txt sample1.txt
[root@localhost ~]# ls
dos   hello.c   hello.js   sample.txt   sample1.txt

Now lets substitute or replace UNIX with Unix, in following, s means substitute, / is delimeter, UNIX is search string, Unix is substitute string
[root@localhost ~]# sed 's/UNIX/Unix/' sample1.txt
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note only first instance of UNIX is replaced with Unix, see line 4 in above output.
****
now try following
[root@localhost ~]# cp sample.txt sample2.txt
[root@localhost ~]# sed 's/UNIX/Unix/3' sample2.txt
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in above example only third instance (if exist) of UNIX in each line is replaced by Unix, see line 4 in above output.
****
if you want to replace all occurance in each line then use delimeter g in place of 3, g stands for global

[root@localhost ~]# cp sample.txt sample3.txt
[root@localhost ~]# sed 's/UNIX/Unix/g' sample3.txt
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****
[root@localhost ~]# cp sample.txt sample1.txt
[root@localhost ~]# sed '4/s/UNIX/Unix/g' sample1.txt
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notice only in 4th line substitution took place, not in first line.
****

if we are interested in only viewing replaced line, not all lines of file (as it may be thousand files), try following
[root@localhost ~]# rm sample1.txt
[root@localhost ~]# cp sample.txt sample1.txt
[root@localhost ~]# sed -n 's/UNIX/Unix/gp' sample1.txt
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in above command -n makes only replaced line to get printed, p is print flag
(try sed -n 'p' sample.txt to print file without double printing each line)
by default if we dont write -n then every line which is replaced will be printed twice, to indicate change.
****

[root@localhost ~]# cp sample.txt a.txt
[root@localhost ~]# sed '1,3 s/UNIX/unix/g' a.txt
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in above example all occurances of UNIX in line numbers 1 to 3 will be replaced by unix. see line 1 and 4 to compare.
****

you can try 3,$ to replace all occurances of UNIX by unix, from line number 3 to end (indicated by $).
[root@localhost ~]# cp sample.txt b.txt
[root@localhost ~]# sed '3,$ s/UNIX/unix/g' b.txt
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consider a file a.txt with 7 lines of text in it, if you want to delete a line number 5 from a file then use sed command with '5d' option as following

```
[root@localhost ~]# echo -e "line 1\nline 2\nline 3\nline 4\nline 5\nline 6\nline 7" > a.txt
[root@localhost ~]# cat a.txt
line 1
line 2
line 3
line 4
line 5
line 6
line 7
[root@localhost ~]# sed '5d' a.txt
line 1
line 2
line 3
line 4
line 6
line 7
[root@localhost ~]# cat a.txt
line 1
line 2
line 3
line 4
line 5
line 6
line 7
```

problem here is output is not written back to orginal file, so try -i option which makes sure output is written back to original file.

```
[root@localhost ~]# sed -i '5d' a.txt
[root@localhost ~]# cat a.txt
line 1
```

line 2
line 3
line 4
line 6
line 7
****

now lets delete last line
[root@localhost ~]# sed -i '$d' a.txt
[root@localhost ~]# cat a.txt
line 1
line 2
line 3
line 4
line 6
****

now lets delete first two lines
[root@localhost ~]# sed -i '1,2d' a.txt
[root@localhost ~]# cat a.txt
line 3
line 4
line 6
****

now lets count how many times a string appeared in a file. Its not that streight forward but using GREP with SED can solve this.
[root@localhost ~]# sed -n 's/UNIX/UNIX/gp' sample.txt
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above SED command replaces UNIX with UNIX (keep UNIX as it is, no change) and then prints those lines which were having UNIX word(s) in it globally.
now using pipe (|) we will transfer this output to another command. Recall grep with option o prints each occurance of given string in given text/ file.
[root@localhost ~]# sed -n 's/UNIX/UNIX/gp' sample.txt | grep -o UNIX
UNIX
UNIX
UNIX
UNIX
UNIX

hence above command prints UNIX number of times it appears in lines, how many times? lets count that using grep with c (count) option.

[root@localhost ~]# sed -n 's/UNIX/UNIX/gp' sample.txt | grep -o UNIX | grep -c UNIX
5

so in sample.txt UNIX word appears 5 times.
****