ITW1 Mid-Semester Assignment

Name: Tarun Arora

Roll No.: 20075092

Branch: CSE

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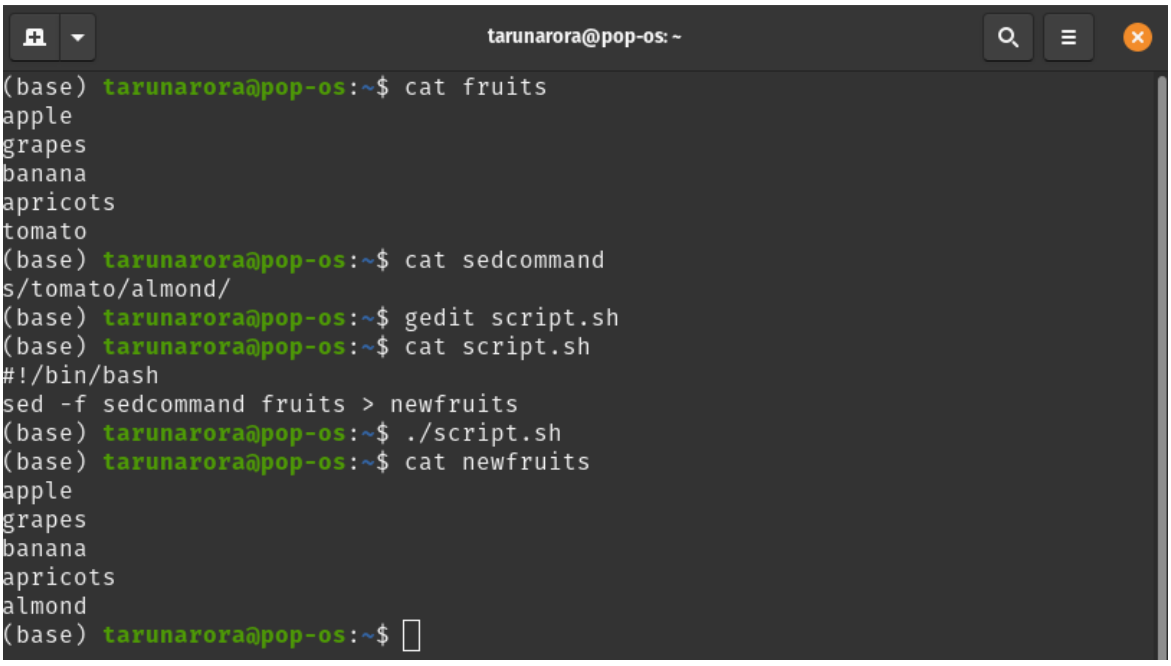
Q1. Write a shell script using "sed" command to take some command from a file apply that command on content of other file and display output in third file?

Solution:

Code: -

```
#!/bin/bash
sed –f {file_with_sedcommand} input_file > output_file
```



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Q2. Write a shell script using "sed" command to

(a) replace the word "gum" with "drum" in the first 100 lines of a file,

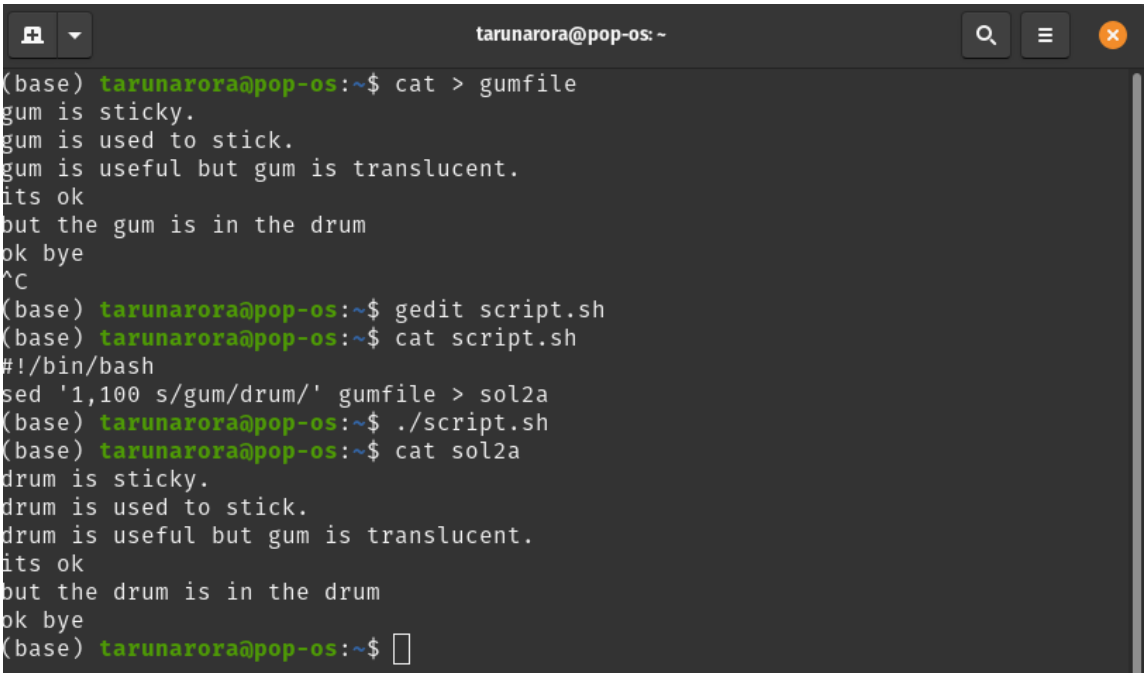
(b) switch the two consecutive words "apple" and "mango" in a file

(c) remove the first number on line 5 in file --- and save them in new files.

Solution:

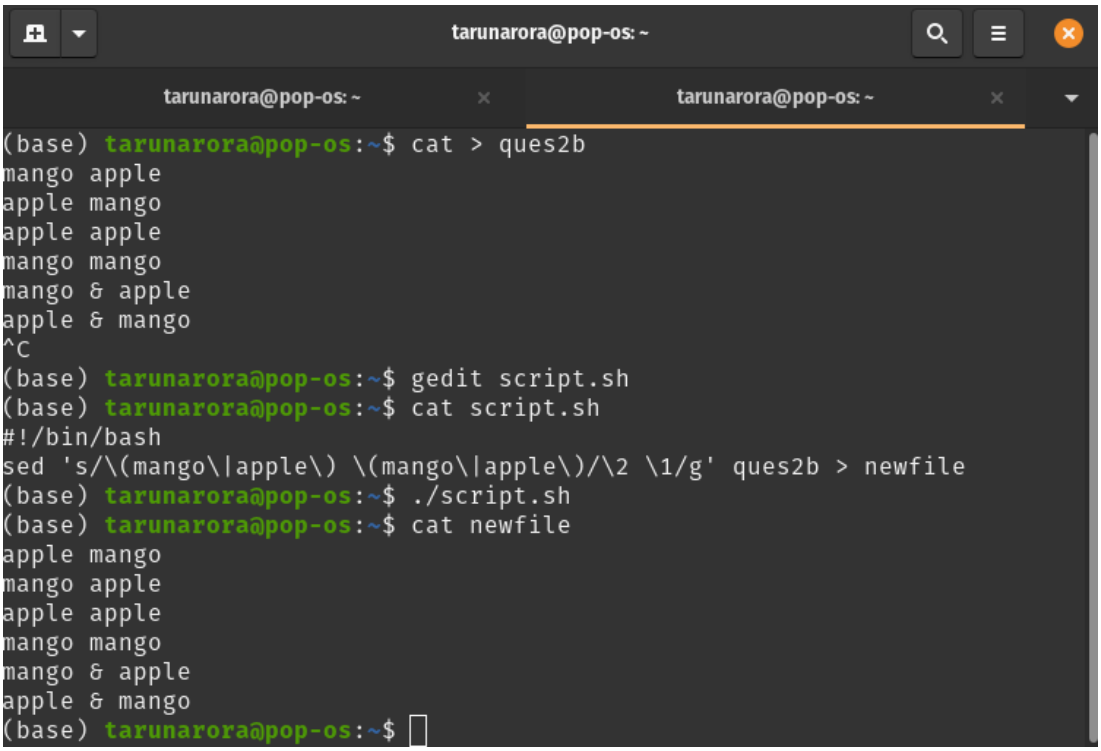
(a) Code: -

```
#!/bin/bash

sed '1,100 s/gum/drum/' {input_file} > {output_file}
```



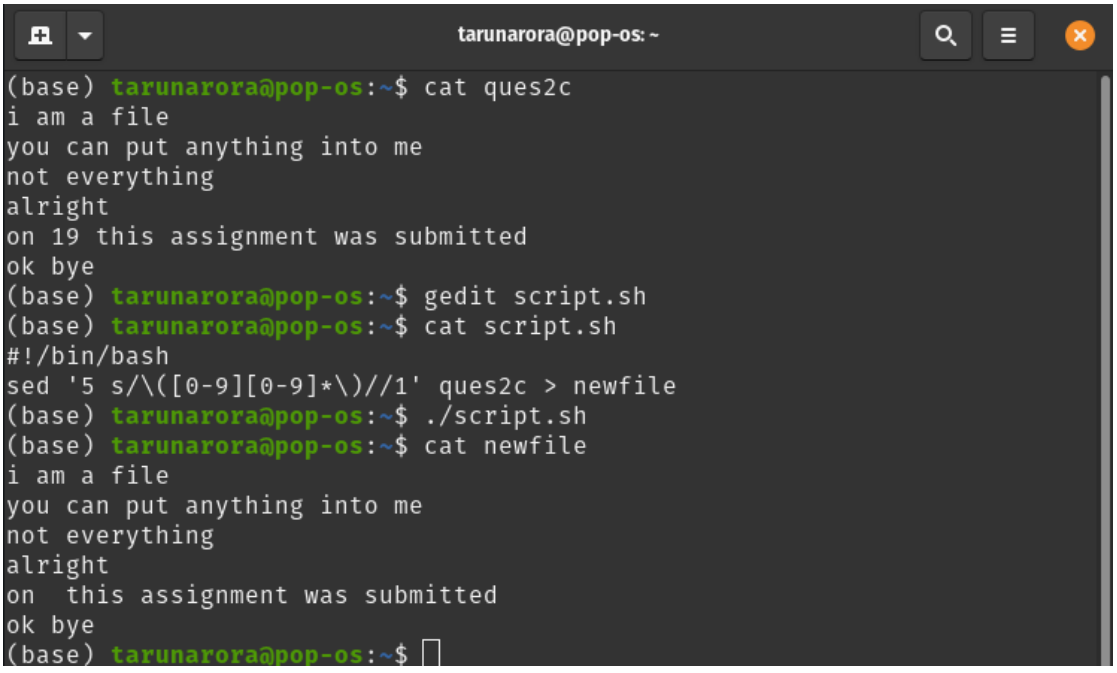
(b) Code: -

```
#!/bin/bash

sed 's/\(mango\|apple\) \(mango\|apple\)/\2 \1/' ques2b > newfile
```



(c) Code: -

```
#!/bin/bash

sed '5 s/\([0-9][0-9]*\)//1' ques2c > newfile
```



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Q3. Write a sed command to commify the numbers till thousands from a file Number.txt ? The file have numbers in multiple lines.

Solution: -

Code: -

```
sed ':a;s/\B[0-9]\{3\}\>/,&/;ta' {filename}
```

****

Q4. Write a sed command to display only the first field from the /etc/passwd file.

Solution: -

Code: -

```
sed 's/:.*//' /etc/passwd
```

****

Q5. Write a sed command to deletes the first line, last line and all the blank lines from input file. Also write sed command to write first and last line from an input.txt file to the output.txt file respectively.

Solution: -

Code: -

'To delete first,last and blank lines'

```
sed '1d;$d;/^$/d' ques5
```

'To print first and last lines of a file'

```
sed –n '1p;$p' {input_file} > {output_file}
```

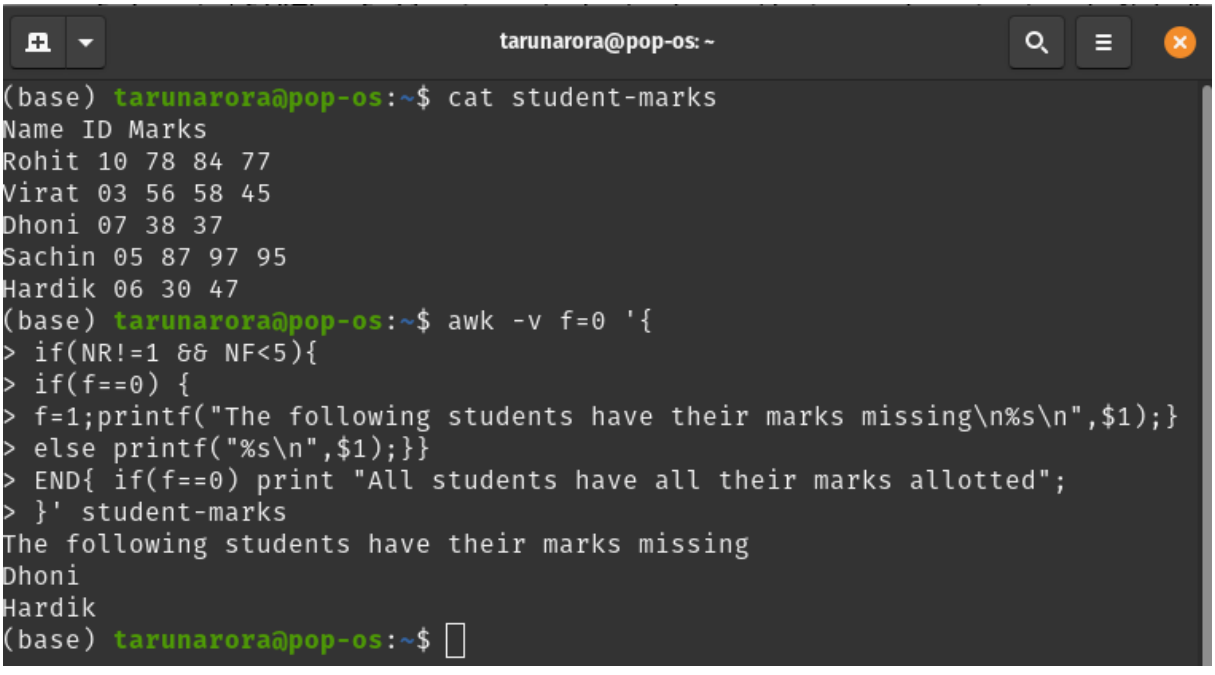
****

Q6. Write awk command to check if all marks are there in student-marks file. Display the names of students whose marks are missing.

Solution: -

Code: -

```
awk -v f=0 '{
if(NR!=1 && NF<5){
if(f==0) {
f=1;printf("The following students have their marks missing \n%s\n",$1);}
else printf("%s\n",$1);}}
END{ if(f==0) print "All students have all their marks allotted";
}' student-marks
```



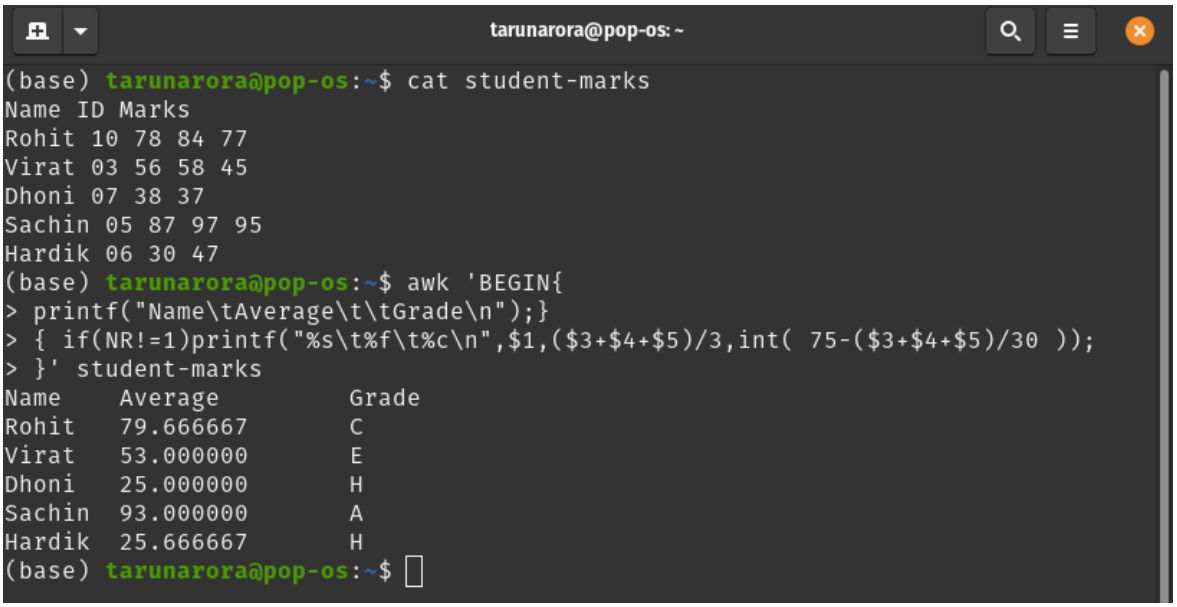
****

Q7. Using awk, find the average marks of students, and grades from student-marks file.

Solution: -

Code: -

```
awk 'BEGIN{
printf("Name\tAverage\t\tGrade\n");}
{ if(NR!=1)printf("%s\t%f\t%c\n",$1,($3+$4+$5)/3,int( 75-($3+$4+$5)/30 ));
}' student-marks
```



****

Q8. Write an awk command to concatenate every 3 lines of input file with a comma.

Solution: -

Code: -

```
awk '{
if(NR%3==0) printf("%s\n",$0);
else printf("%s,",$0);
}' ques8
```

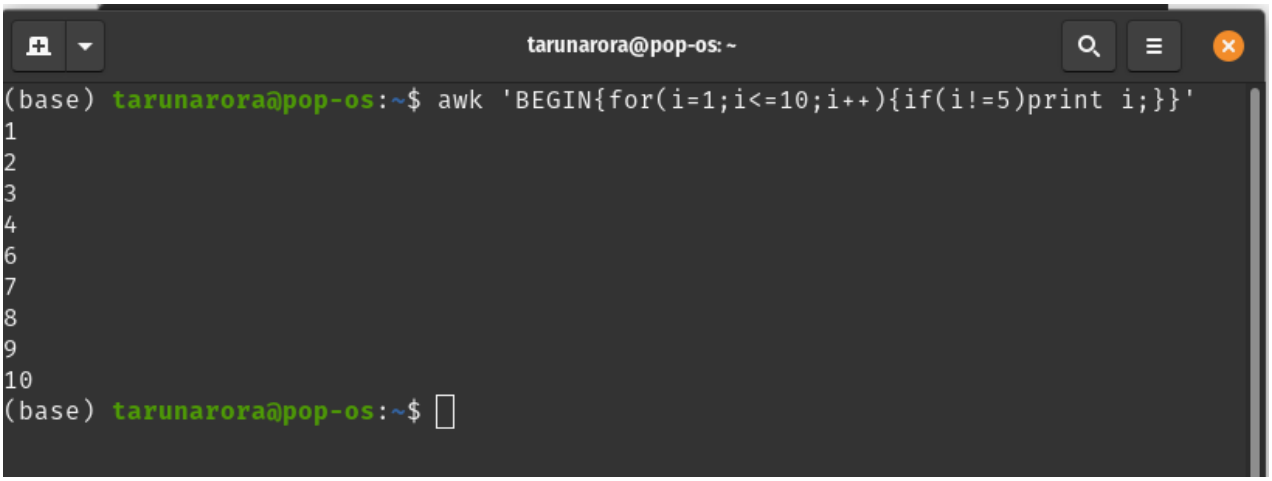
****

Q9. Write an awk command to execute the loop except 5th iteration while printing number from 1 to 10.

Solution: -

Code: -

```
awk 'BEGIN{for(i=1;i<=10;i++){if(i!=5)print i;}}'
```



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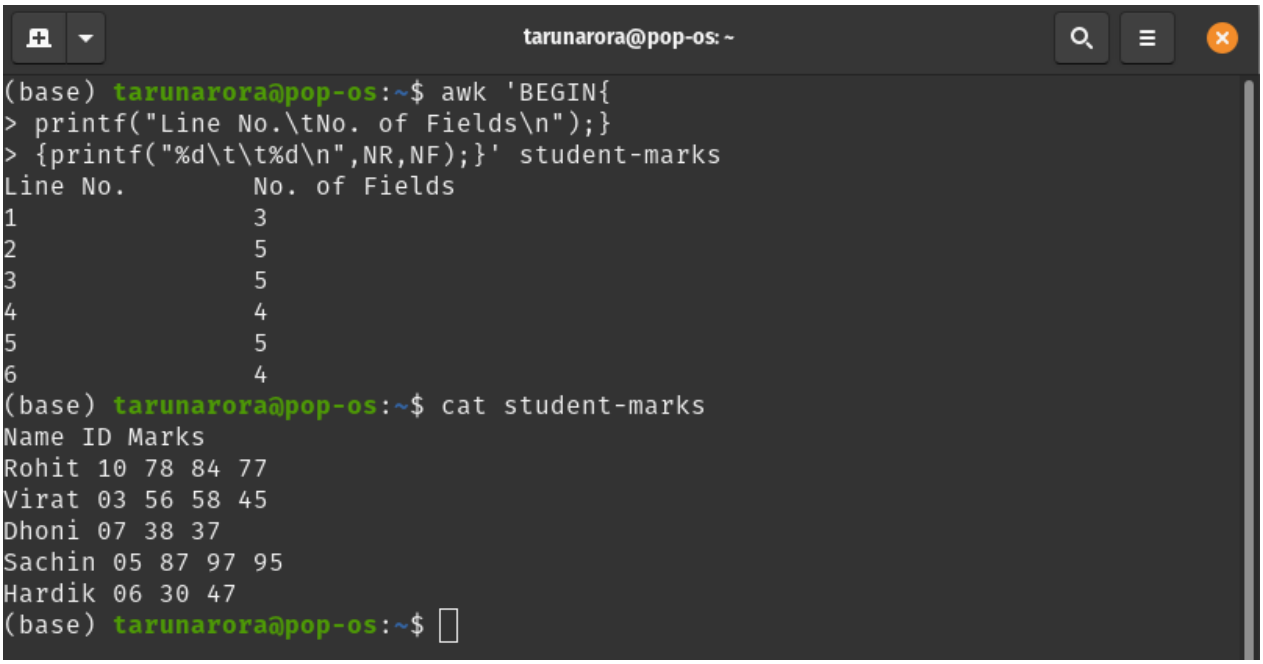
Q10. Write an awk command to count and display the number of fields in each line of the file student-marks.

Solution: -

Code: -

```
awk 'BEGIN{
printf("Line No.\tNo. of Fields\n");}
{printf("%d\t\t%d\n",NR,NF);}' student-marks
```



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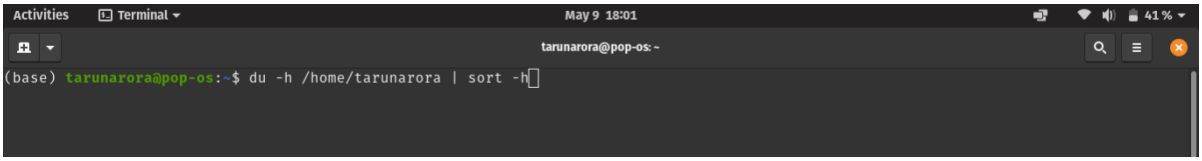
Q11. Sort the data that is in human readable format say 1K, 2M, 3G, 2T, where K, M, G, T represents Kilo, Mega, Giga, Tera from the /home/user file.

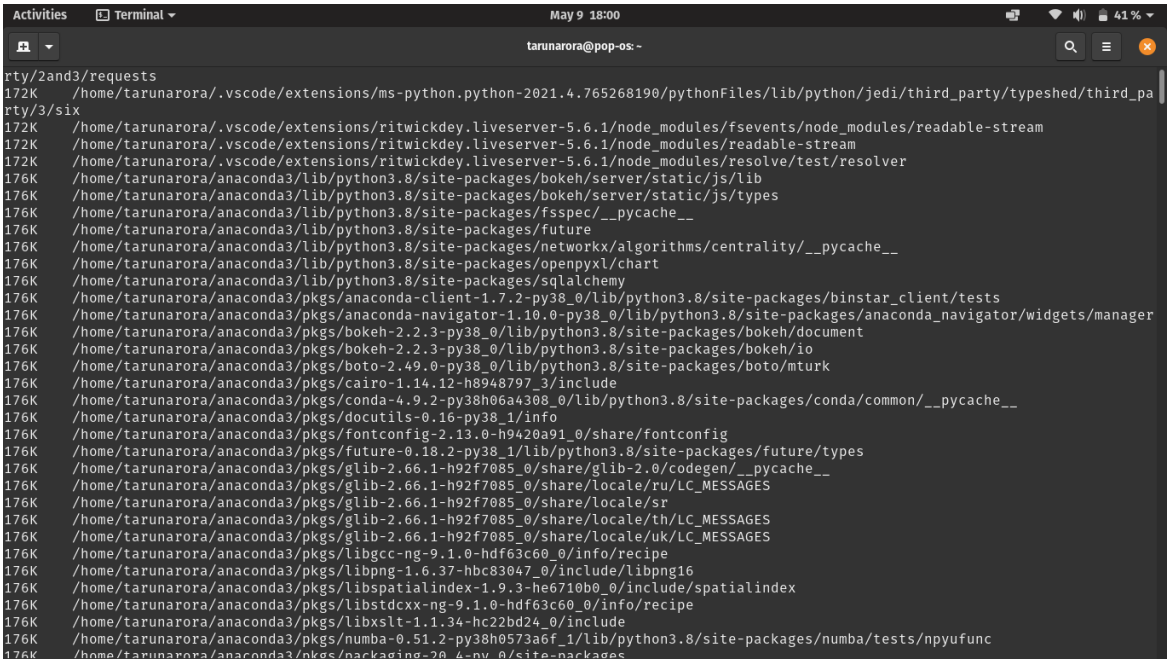
Solution: -

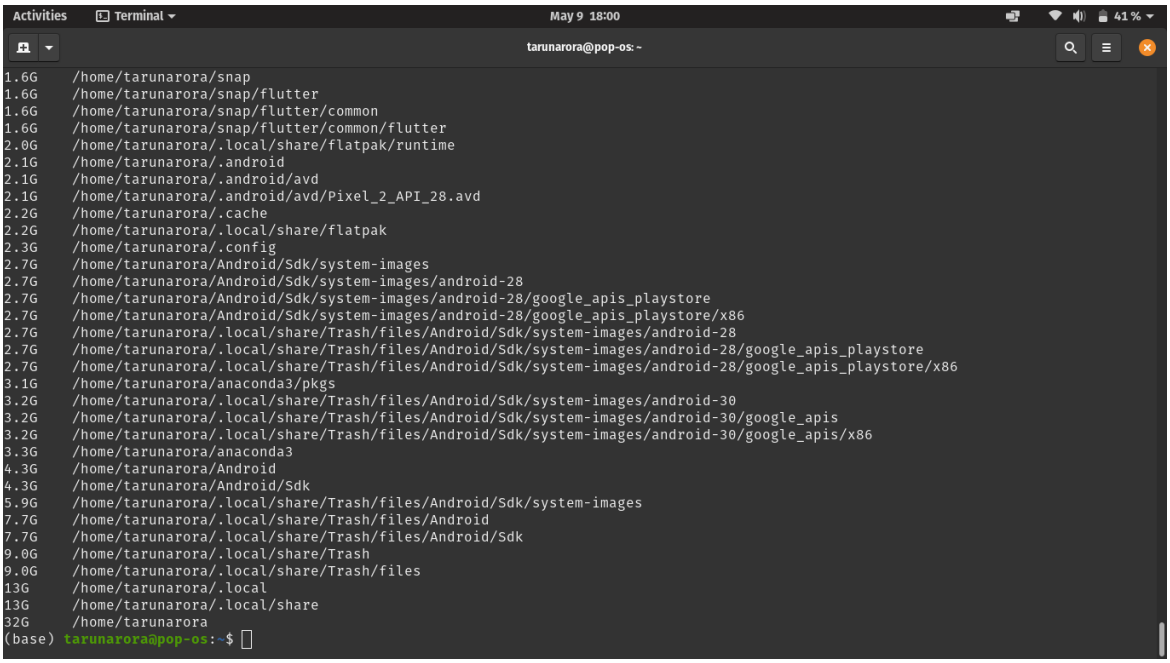
Code: -

```
du –h /home/tarunarora | sort –h
```

(Note: - In this command output is very large and terminal scroll buffer would be exhausted)






Activities
Terminal
May 9 18:00
41 %
tarunarora@pop-os: ~
1.6G /home/tarunarora/snap
1.6G /home/tarunarora/snap/flutter
1.6G /home/tarunarora/snap/flutter/common
1.6G /home/tarunarora/snap/flutter/common/flutter
2.0G /home/tarunarora/.local/share/flatpak/runtime
2.1G /home/tarunarora/.android
2.1G /home/tarunarora/.android/avd
2.1G /home/tarunarora/.android/avd/Pixel_2_API_28.avd
2.2G /home/tarunarora/.cache
2.2G /home/tarunarora/.local/share/flatpak
2.3G /home/tarunarora/.config
2.7G /home/tarunarora/Android/Sdk/system-images
2.7G /home/tarunarora/Android/Sdk/system-images/android-28
2.7G /home/tarunarora/Android/Sdk/system-images/android-28/google_apis_playstore
2.7G /home/tarunarora/Android/Sdk/system-images/android-28/google_apis_playstore/x86
2.7G /home/tarunarora/.local/share/Trash/files/Android/Sdk/system-images/android-28
2.7G /home/tarunarora/.local/share/Trash/files/Android/Sdk/system-images/android-28/google_apis_playstore
2.7G /home/tarunarora/.local/share/Trash/files/Android/Sdk/system-images/android-28/google_apis_playstore/x86
3.1G /home/tarunarora/anaconda3/pkgs
3.2G /home/tarunarora/.local/share/Trash/files/Android/Sdk/system-images/android-30
3.2G /home/tarunarora/.local/share/Trash/files/Android/Sdk/system-images/android-30/google_apis
3.2G /home/tarunarora/.local/share/Trash/files/Android/Sdk/system-images/android-30/google_apis/x86
3.3G /home/tarunarora/anaconda3
4.3G /home/tarunarora/Android
4.3G /home/tarunarora/Android/Sdk
5.9G /home/tarunarora/.local/share/Trash/files/Android/Sdk/system-images
7.7G /home/tarunarora/.local/share/Trash/files/Android
7.7G /home/tarunarora/.local/share/Trash/files/Android/Sdk
9.0G /home/tarunarora/.local/share/Trash
9.0G /home/tarunarora/.local/share/Trash/files
13G /home/tarunarora/.local
13G /home/tarunarora/.local/share
32G /home/tarunarora
(base) tarunarora@pop-os:~$

****

Q12. In the example ('how;now;brown;cow') convert the semi-colon into a space and display the first, third and fourth fields on the terminal using "cut command".

Solution: -

```
echo "how;now;brown;cow" | tr ';' ' ' | cut -d ' ' -f 1,3,4
```

****

Q13. Using cut command write a command to change the delimiter from input delimiter : (colon) to the output delimiter # (hash) in the field location 1, 6 and 7 from the /etc/passwd file where we have pattern "/bin/bash".

Solution: -

Code:-

```
cat /etc/passwd | grep "/bin/bash" | cut -d ':' -f 1,6,7 --output-delimiter='#'
```

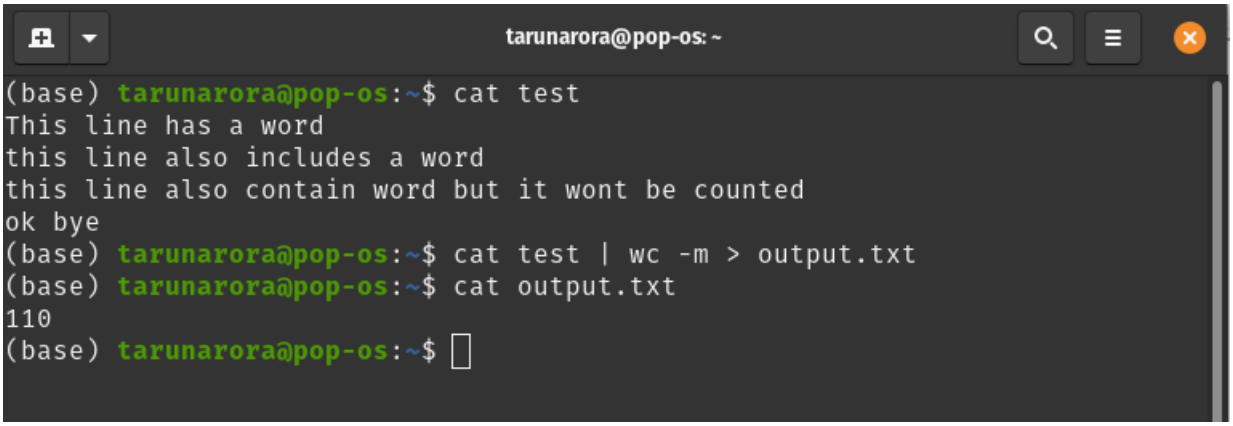
****

Q14. Write a command to count number of characters in our file and save the output to new text file at the same time.

Solution:-

Code:-

```
cat test | wc -m > output.txt
```



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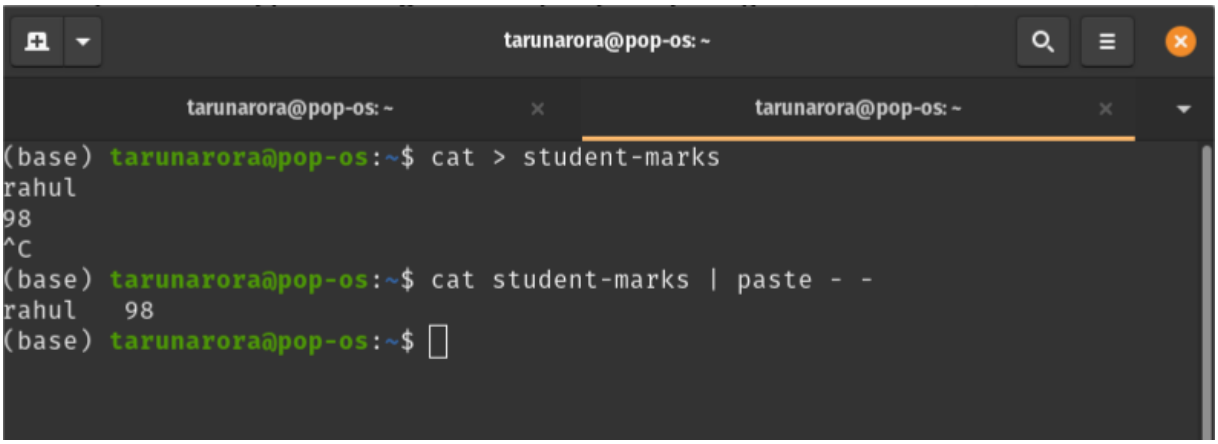
Q15. Write a paste command to merge 2 consecutive lines from the file student-marks into a single line.

Solution:-

Code: -

```
cat student-marks | paste - -
```



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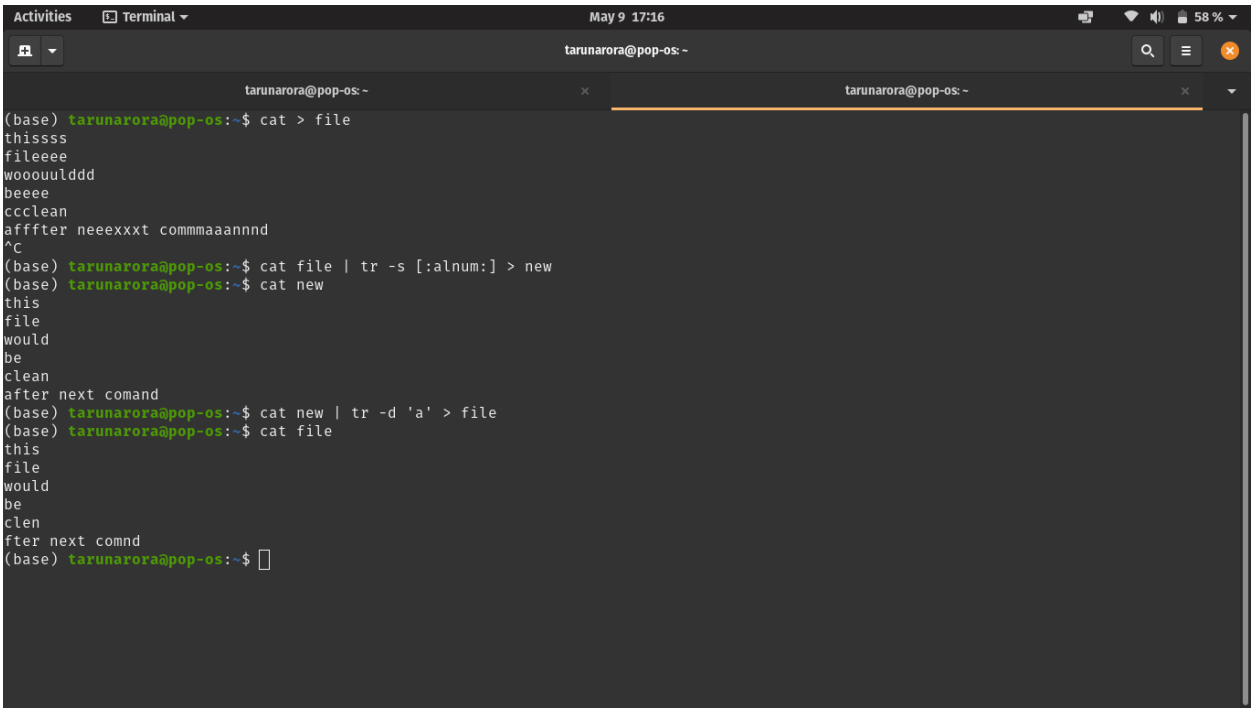
Q16. Write a command using tr to squeeze the repetition of characters from a file. Also remove the character "a" from the file.

Solution: -

Code:-

```
cat {file1} | tr –s [:alnum:] > {file2}

cat {file1} | te –d 'a' > {file2}
```



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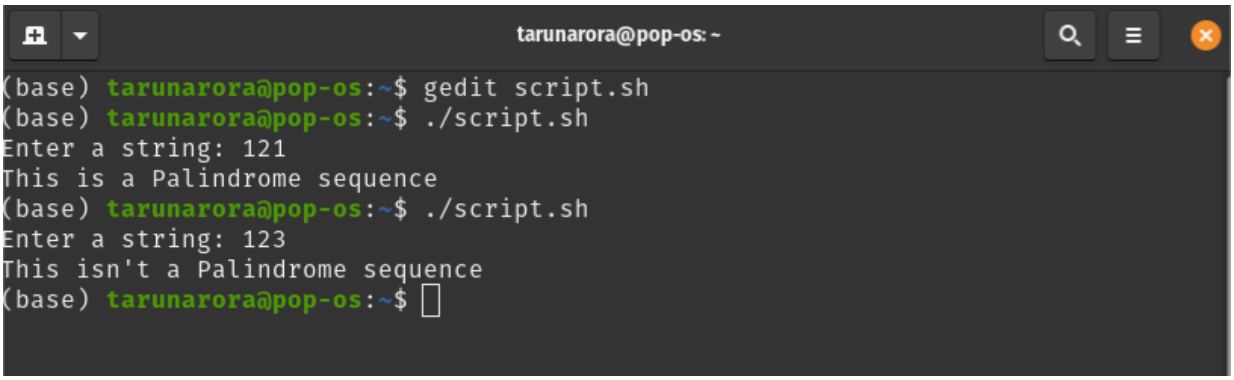
Q17. Write a shell script which takes input as a string on a terminal and check whether it's palindrome or not a palindrome.

Solution: -



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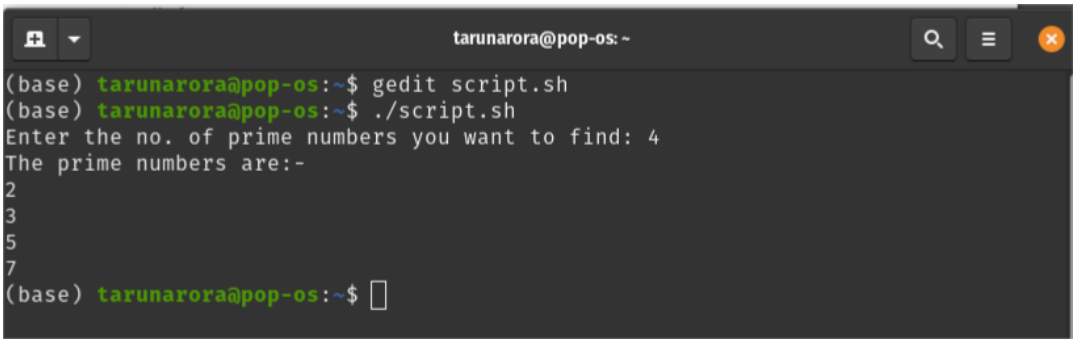
Q18. Write a shell script to check the giver year is leap year or not a leap year.

Solution: -

****

Q19. Write a shell script to display the list of prime number. It takes input as "How many prime numbers:" from the user. E.g.: How many prime numbers: 4 then it displays 2,3,5,7.

Solution: -



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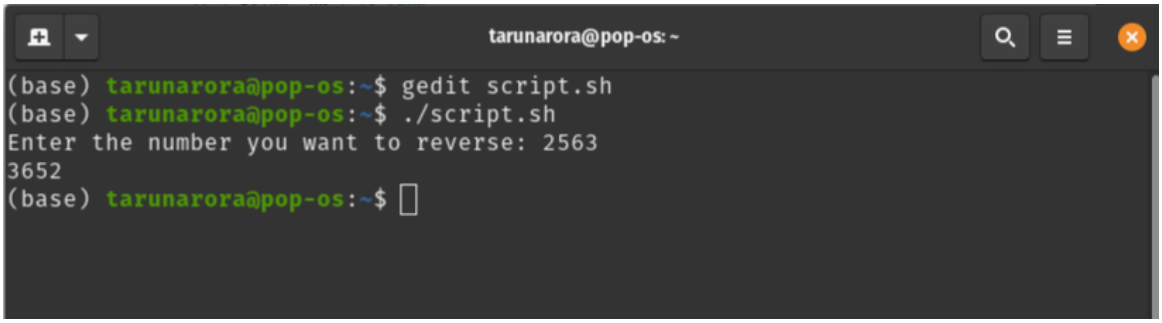
Q20. Write a shell script to reverse the input digits.

Solution: -



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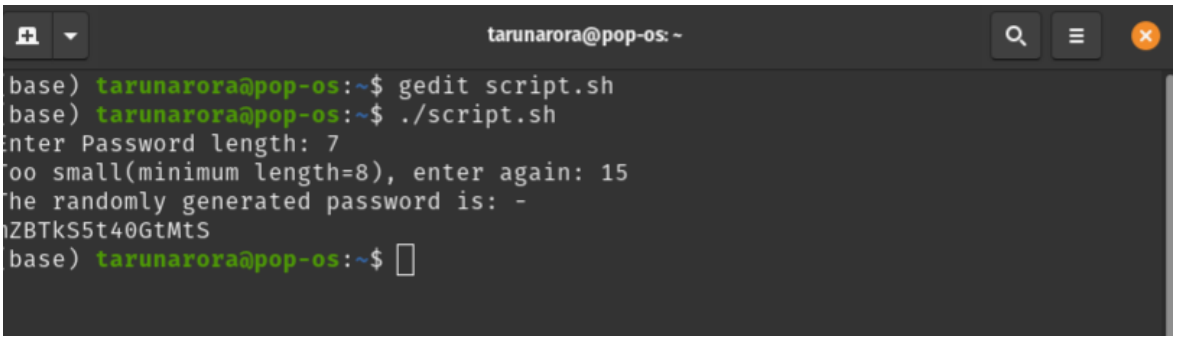
Q21. Write a script to generate a password of minimum length of 8. It must be alphanumeric, containing at least one upper case and one lower case character.

Solution: -



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Q22 In the example ('how;now;brown;cow') convert the semi-colon into a space and display the first, third and fourth fields on the terminal using "cut command".

Solution: -

Code: -

```
echo "how;now;brown;cow" | tr ';' ' ' | cut -d ' ' -f 1,3,4
```

****

Q23. Using cut command write a command to change the delimiter from input delimiter : (colon) to the output delimiter # (hash) in the field location 1, 6 and 7 from the /etc/passwd file where we have pattern "/bin/bash".

Solution: -

Code:-

```
cat /etc/passwd | grep "/bin/bash" | cut -d ':' -f 1,6,7 --output-delimiter='#'
```

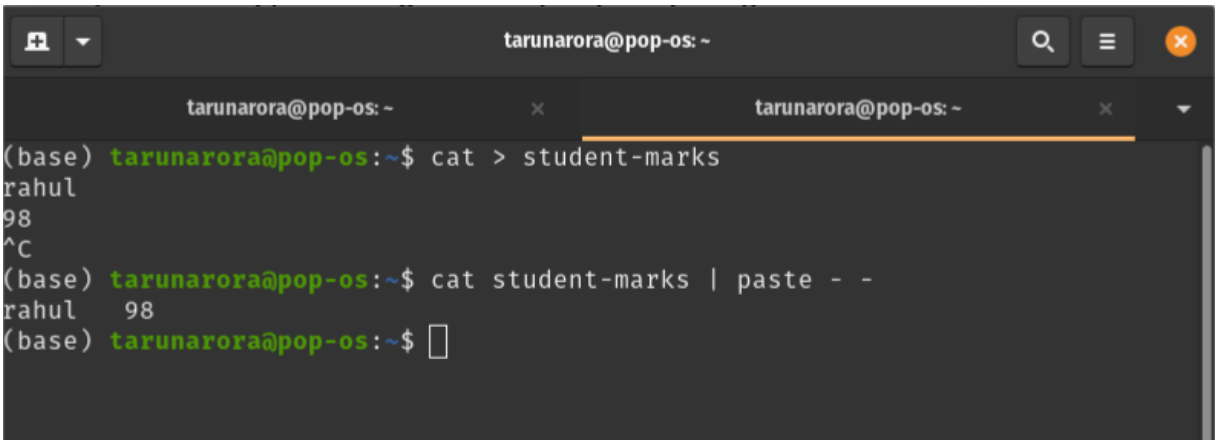
****

Q24. Write a paste command to merge 2 consecutive lines from the file student-marks into a single line.

Solution:-

Code: -

```
cat student-marks | paste - -
```



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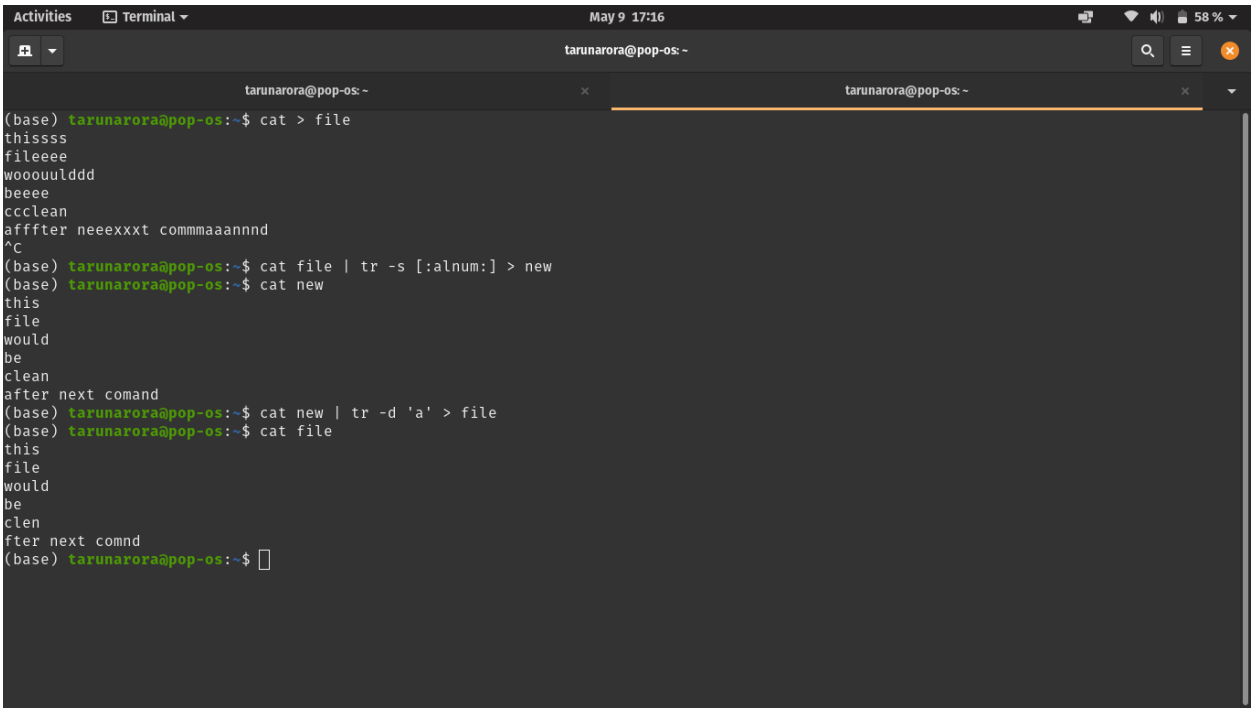
Q25. Write a command using tr to squeeze the repetition of characters from a file. Also remove the character "a" from the file.

Solution: -

Code:-

```
cat {file1} | tr –s [:alnum:] > {file2}

cat {file1} | te –d 'a' > {file2}
```



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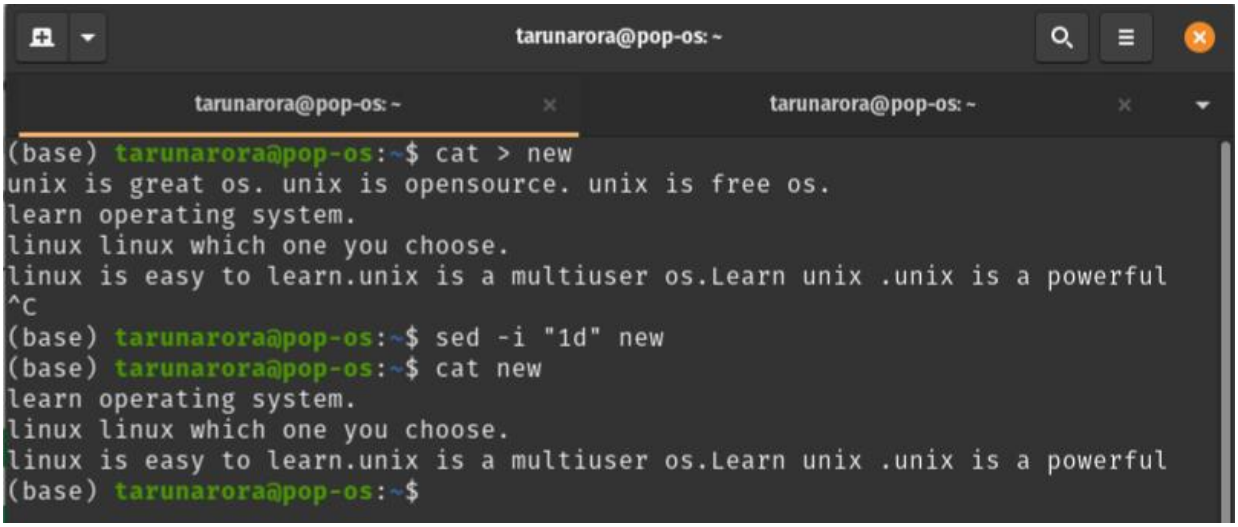
Q26. How to remove the header from a file?

Solution: -

Code: -

```
sed -i "1d" {filename}
```



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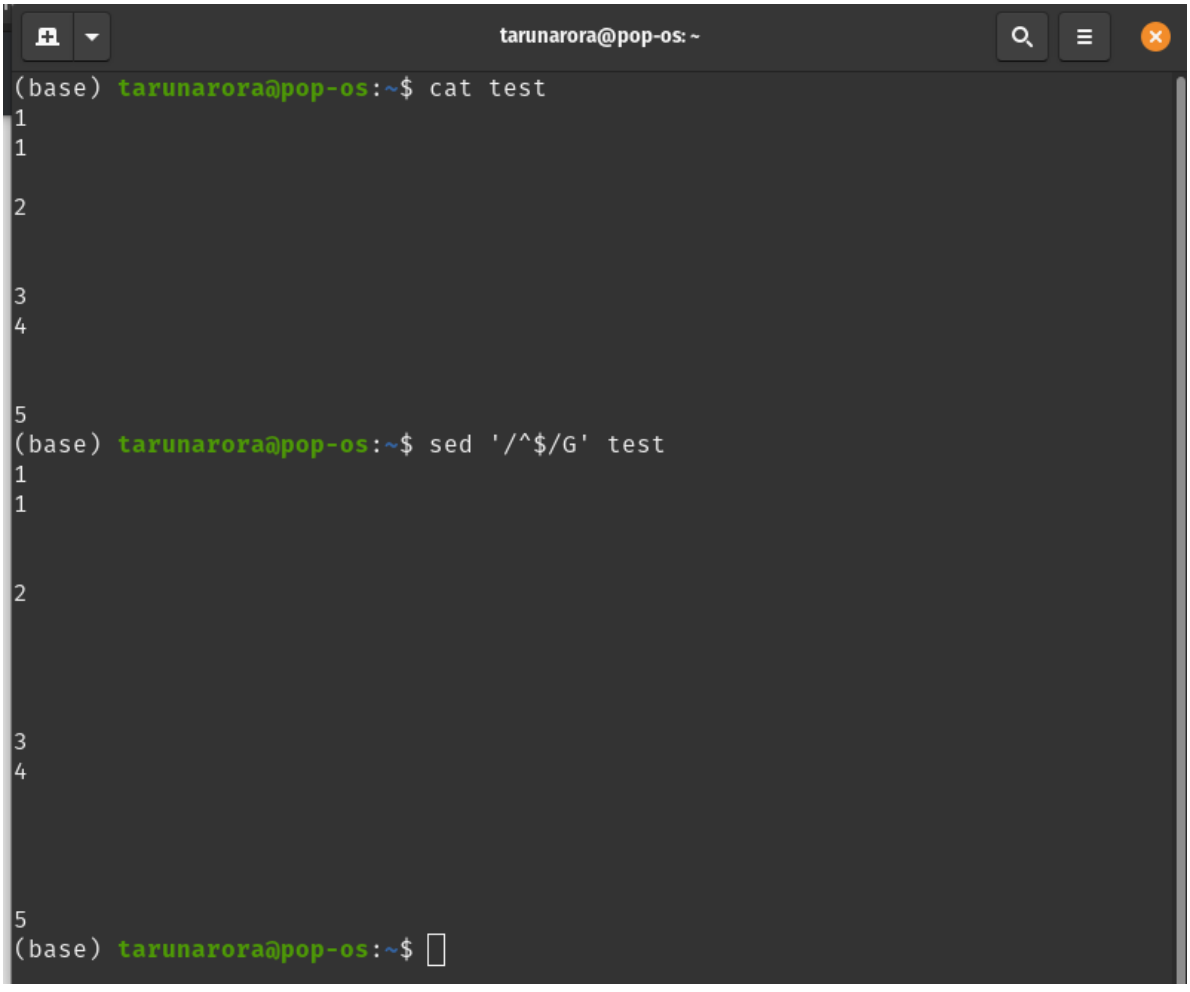
Q27. Write a command to duplicate empty lines in a file? Also write a command to display all content of a file except for some lines.

Solution: -

Code: -

```
sed '/^$/G' {input_file}
```

(Note one can use -i option to make changes in that file)

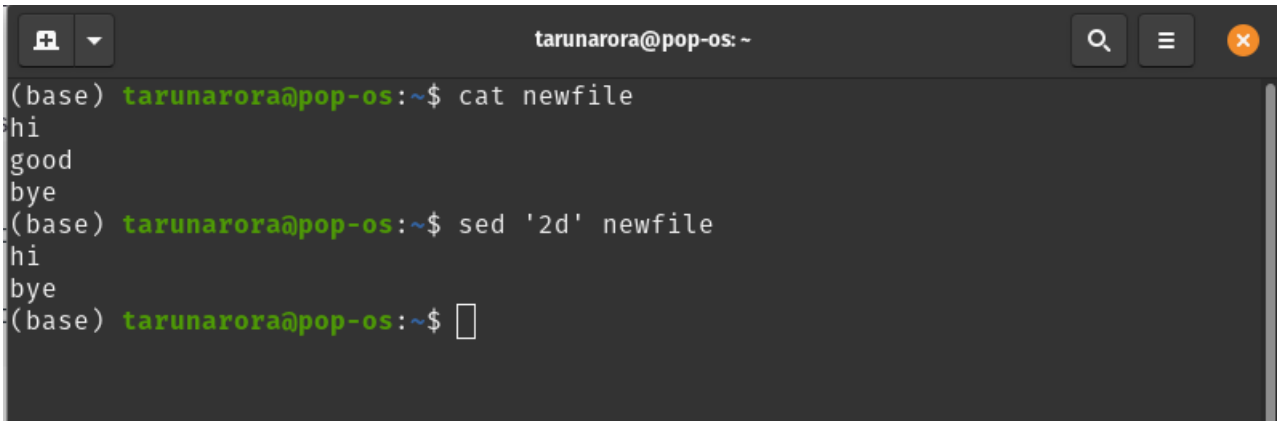


Command to display all content except a few lines: -

sed ‘nd’ {file_name} (To display all lines except nth line)

In case a range of lines is to be deleted: -

Sed ‘n,md’ {file_name} (Lines from nth to mth line will not be displayed)



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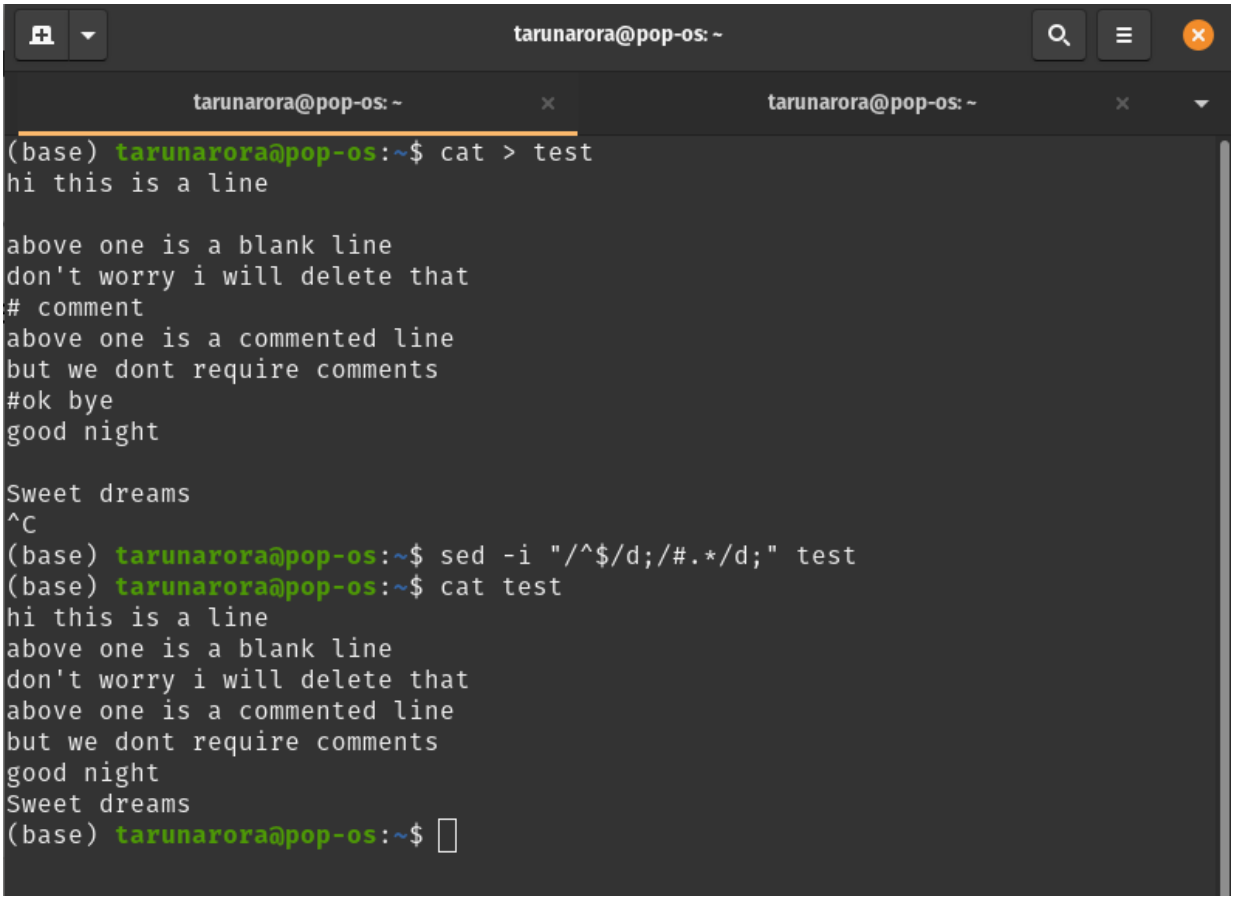
Q28. Write a sed command to remove all commented and empty lines in a file

Solution: -

Code: -

```
sed -i "/^$/d;/#.*/d;" {file_name}
```



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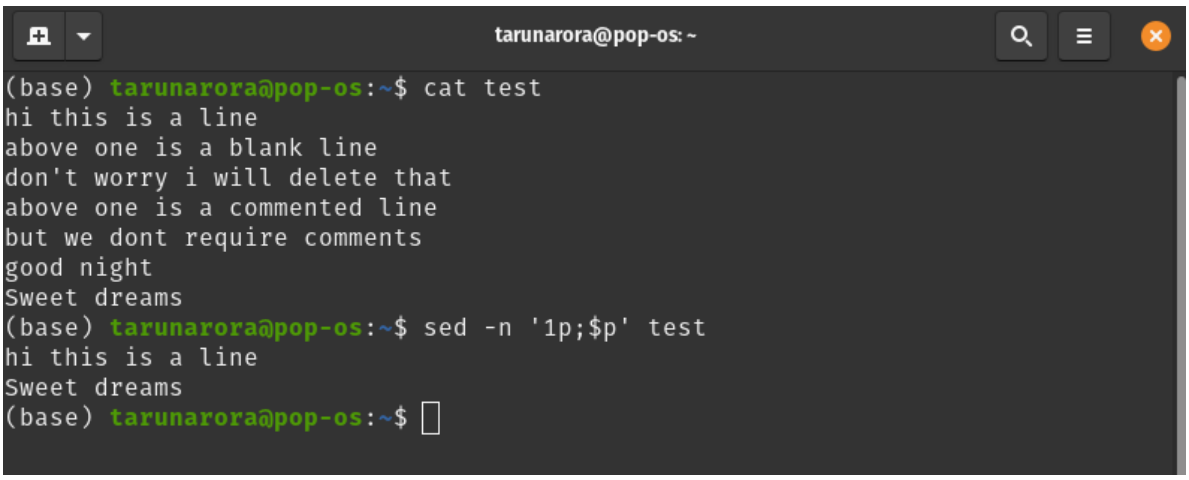
Q29. How to print first and last line of the file using Sed Command ? Also write a sed command to print the lines that don't contain the word "unix" from a given file?

Solution: -

Code: -

```
sed -n '1p;$p' {file_name}
```



Code: -

```
sed '/\unix\b/d' {file_name}
```

****

Q30. Given a file, replace all occurrence of word "linux" with "unix" from 2th line till end in only those lines that contains word "os".

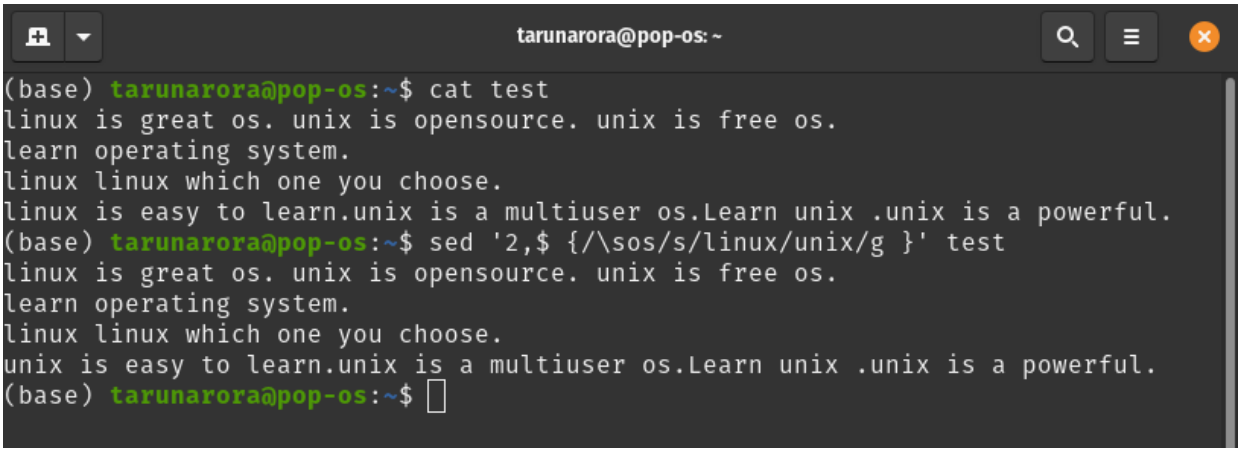
Solution: -

Input: -

```
linux is great os. unix is opensource. unix is free os.
learn operating system.
linux linux which one you choose.
linux is easy to learn.unix is a multiuser os.Learn unix .unix is a powerful.
```

Code: -

```
sed '2,$ {/\sos/s/linux/unix/g }' test
```



*********EOF*********