

NAME: RUCHIRA NASKAR

ROLL NO.: 21075072

DEPARTMENT:

COMPUTER SCIENCE AND ENGINEERING

ASSIGNMENT: MID SEMESTER

SUBMITTED ON: MAY 26, 2022

EMAIL ID: ruchira.naskar.cse21@iitbhu.ac.in

1) 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?

```
Open ▾ + unixfile.txt ~/Documents/ITW1
1 unix is awesome. unix is opensource.
2 unix is free. it is easy to learn.
3 unix is interesting.
```

unixfile.txt

```
Open ▾ + commandinfile.txt ~/Documents/ITW1
1 s/unix/linux/
```

commandinfile.txt

```
Open ▾ + filecomtry.sh ~/Documents/ITW1
1 #!/bin/bash
2 comm='cat $1'
3 sed $comm $2 > thirdfile.txt
4 cat thirdfile.txt
```

filecomtry.sh

```
ruchpottah@ruchpottah-HP-Laptop-14s-er0xxx:~/Documents/ITW1$ gedit filecomtry.sh
ruchpottah@ruchpottah-HP-Laptop-14s-er0xxx:~/Documents/ITW1$ cat filecomtry.sh
#!/bin/bash
comm='cat $1'
sed $comm $2 > thirdfile.txt
cat thirdfile.txt
ruchpottah@ruchpottah-HP-Laptop-14s-er0xxx:~/Documents/ITW1$ cat commandinfile.txt
s/unix/linux/
ruchpottah@ruchpottah-HP-Laptop-14s-er0xxx:~/Documents/ITW1$ cat unixfile.txt
unix is awesome. unix is opensource.
unix is free. it is easy to learn.
unix is interesting.
ruchpottah@ruchpottah-HP-Laptop-14s-er0xxx:~/Documents/ITW1$ bash ./filecomtry.sh commandinfile.txt unixfile.txt
linux is awesome. unix is opensource.
linux is free. it is easy to learn.
linux is interesting.
ruchpottah@ruchpottah-HP-Laptop-14s-er0xxx:~/Documents/ITW1$ cat thirdfile.txt
linux is awesome. unix is opensource.
linux is free. it is easy to learn.
linux is interesting.
ruchpottah@ruchpottah-HP-Laptop-14s-er0xxx:~/Documents/ITW1$
```

```
Open ▾ + thirdfile.txt ~/Documents/ITW1
1 linux is awesome. unix is opensource.
2 linux is free. it is easy to learn.
3 linux is interesting.
```

thirdfile.txt

*Here, the command is present in the file coomandinfile.txt which is applied on the file unixfile.txt with the output displayed on thirdfile.txt

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



The screenshot shows a text editor window titled "Number.txt" with the path "/Documents/ITW1". The file contains the following text:

```
1 100
2 10
3 1
4 1300
5 678900
6 1200
7 50000
```

Number.txt (previously)

```
ruchpottah@ruchpottah-HP-Laptop-14s-er0xxx:~/Documents/ITW1$ cat Number.txt
100
10
1
1300
678900
1200
50000
ruchpottah@ruchpottah-HP-Laptop-14s-er0xxx:~/Documents/ITW1$ sed -i ':a;s/\B[0-9]\{3\}\>/,&/;ta' Number.txt
ruchpottah@ruchpottah-HP-Laptop-14s-er0xxx:~/Documents/ITW1$ cat Number.txt
100
10
1
1,300
678,900
1,200
50,000
ruchpottah@ruchpottah-HP-Laptop-14s-er0xxx:~/Documents/ITW1$ 
```



The screenshot shows a text editor window titled "Number.txt" with the path "/Documents/ITW1". The file now contains the following text, with commas added as thousand separators:

```
1 100
2 10
3 1
4 1,300
5 678,900
6 1,200
7 50,000
```

Number.txt (after applying the command)

- 3) Write a shell script using “sed” command to
a) replace the word "gum" with "drum" in the first 100 lines of a file



The screenshot shows a text editor window with the file name "Gumfile1.txt" and the path "~/Documents/ITW1". The content of the file is:

```
1 Here is gum.  
2 Now gum is going to be replaced.  
3 Here is gum.
```

Gumfile1.txt



The screenshot shows a text editor window with the file name "q3a1.sh" and the path "~/Documents/ITW1". The content of the file is:

```
1 #!/bin/bash  
2 sed -e '1,100 s/gum/drum/g' gumfile1.txt > newgumfile1.txt  
3 cat newgumfile1.txt
```

q3a1.sh

```
ruchpottah@ruchpottah-HP-Laptop-14s-er0xxx:~/Documents/ITW1$ gedit q3a1.sh  
ruchpottah@ruchpottah-HP-Laptop-14s-er0xxx:~/Documents/ITW1$ cat gumfile1.txt  
Here is gum.  
Now gum is going to be replaced.  
Here is gum.  
ruchpottah@ruchpottah-HP-Laptop-14s-er0xxx:~/Documents/ITW1$ cat q3a1.sh  
#!/bin/bash  
sed -e '1,100 s/gum/drum/g' gumfile1.txt > newgumfile1.txt  
cat newgumfile1.txt  
ruchpottah@ruchpottah-HP-Laptop-14s-er0xxx:~/Documents/ITW1$ bash ./q3a1.sh  
Here is drum.  
Now drum is going to be replaced.  
Here is drum.  
ruchpottah@ruchpottah-HP-Laptop-14s-er0xxx:~/Documents/ITW1$ cat newgumfile1.txt  
Here is drum.  
Now drum is going to be replaced.  
Here is drum.  
ruchpottah@ruchpottah-HP-Laptop-14s-er0xxx:~/Documents/ITW1$ 
```



The screenshot shows a text editor window with the file name "newgumfile1.txt" and the path "~/Documents/ITW1". The content of the file is:

```
1 Here is drum.  
2 Now drum is going to be replaced.  
3 Here is drum.
```

newgumfile1.txt

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



```
fruits1.txt
~/Documents/ITW1

1 Hi! here is apple mango
2 apple water mango
3 apple mango apple mango
```

fruits1.txt



```
q3b1.sh
~/Documents/ITW1

1 #!/bin/bash
2 sed -e 's/apple mango/mango apple/g' fruits1.txt > newfruits1.txt
3 cat newfruits1.txt
```

q3b1.sh

```
ruchpottah@ruchpottah-HP-Laptop-14s-er0xxx:~/Documents/ITW1$ gedit q3b1.sh
ruchpottah@ruchpottah-HP-Laptop-14s-er0xxx:~/Documents/ITW1$ cat q3b1.sh
#!/bin/bash
sed -e 's/apple mango/mango apple/g' fruits1.txt > newfruits1.txt
cat newfruits1.txt
ruchpottah@ruchpottah-HP-Laptop-14s-er0xxx:~/Documents/ITW1$ cat fruits1.txt
Hi! here is apple mango
apple water mango
apple mango apple mango
ruchpottah@ruchpottah-HP-Laptop-14s-er0xxx:~/Documents/ITW1$ bash ./q3b1.sh
Hi! here is mango apple
apple water mango
mango apple mango apple
ruchpottah@ruchpottah-HP-Laptop-14s-er0xxx:~/Documents/ITW1$ cat newfruits1.txt
Hi! here is mango apple
apple water mango
mango apple mango apple
ruchpottah@ruchpottah-HP-Laptop-14s-er0xxx:~/Documents/ITW1$ 
```



```
newfruits1.txt
~/Documents/ITW1

1 Hi! here is mango apple
2 apple water mango
3 mango apple mango apple
```

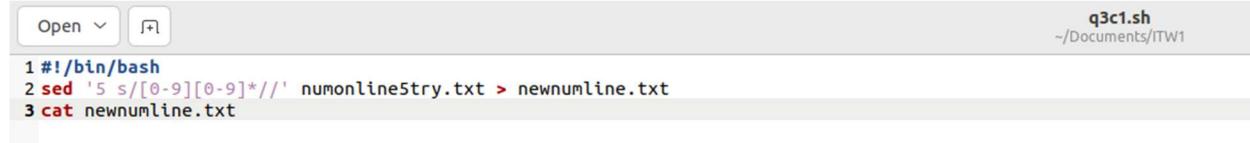
newfruits1.txt

c) remove the first number on line 5 in file



```
1 this is the first line
2 second line
3 ok third
4 fourth it is
5 ok 5 this is
6 m at 6
```

numonline5try.sh



```
1 #!/bin/bash
2 sed '5 s/[0-9][0-9]*//' numonline5try.txt > newnumline.txt
3 cat newnumline.txt
```

q3c1.sh

```
ruchpottah@ruchpottah-HP-Laptop-14s-er0xxx:~/Documents/ITW1$ gedit q3c1.sh
ruchpottah@ruchpottah-HP-Laptop-14s-er0xxx:~/Documents/ITW1$ cat q3c1.sh
#!/bin/bash
sed '5 s/[0-9][0-9]*//' numonline5try.txt > newnumline.txt
cat newnumline.txt
ruchpottah@ruchpottah-HP-Laptop-14s-er0xxx:~/Documents/ITW1$ cat numonline5try.txt
this is the first line
second line
ok third
fourth it is
ok 5 this is
m at 6
ruchpottah@ruchpottah-HP-Laptop-14s-er0xxx:~/Documents/ITW1$ bash ./q3c1.sh
this is the first line
second line
ok third
fourth it is
ok this is
m at 6
ruchpottah@ruchpottah-HP-Laptop-14s-er0xxx:~/Documents/ITW1$ cat newnumline.txt
this is the first line
second line
ok third
fourth it is
ok this is
m at 6
ruchpottah@ruchpottah-HP-Laptop-14s-er0xxx:~/Documents/ITW1$ 
```



```
1 this is the first line
2 second line
3 ok third
4 fourth it is
5 ok this is
6 m at 6
```

newnumline.txt

*Here, the changes made are saved in new files as mentioned in the question

4) 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.

The screenshot shows a text editor window with the title bar "input.txt" and the path " ~/Documents/ITW1". The text area contains the following data:

```
1 Name ID Marks
2
3 Rohit 10 78 84 77
4 Virat 03 56 58 45
5
6 Dhoni 07 38 37
7 Sachin 05 87 97 95
8 Hardik 06 30 47
```

input.txt

```
ruchpottah@ruchpottah-HP-Laptop-14s-er0xxx:~/Documents/ITW1$ cat input.txt
Name ID Marks

Rohit 10 78 84 77
Virat 03 56 58 45

Dhoni 07 38 37
Sachin 05 87 97 95
Hardik 06 30 47
ruchpottah@ruchpottah-HP-Laptop-14s-er0xxx:~/Documents/ITW1$ sed -i '/^$/d; 1d; $d' input.txt
ruchpottah@ruchpottah-HP-Laptop-14s-er0xxx:~/Documents/ITW1$ cat input.txt
Rohit 10 78 84 77
Virat 03 56 58 45
Dhoni 07 38 37
Sachin 05 87 97 95
ruchpottah@ruchpottah-HP-Laptop-14s-er0xxx:~/Documents/ITW1$ 
```

The screenshot shows a text editor window with the title bar "input.txt" and the path " ~/Documents/ITW1". The text area contains the following data:

```
1 Rohit 10 78 84 77
2 Virat 03 56 58 45
3 Dhoni 07 38 37
4 Sachin 05 87 97 95
```

input.txt

```
ruchpottah@ruchpottah-HP-Laptop-14s-er0xxx:~/Documents/ITW1$ cat input.txt
Rohit 10 78 84 77
Virat 03 56 58 45
Dhoni 07 38 37
Sachin 05 87 97 95
ruchpottah@ruchpottah-HP-Laptop-14s-er0xxx:~/Documents/ITW1$ sed -n '1p;$p' input.txt > output.txt
ruchpottah@ruchpottah-HP-Laptop-14s-er0xxx:~/Documents/ITW1$ cat output.txt
Rohit 10 78 84 77
Sachin 05 87 97 95
ruchpottah@ruchpottah-HP-Laptop-14s-er0xxx:~/Documents/ITW1$ 
```

The screenshot shows a text editor window with the title bar "output.txt" and the path " ~/Documents/ITW1". The text area contains the following data:

```
1 Rohit 10 78 84 77
2 Sachin 05 87 97 95
```

output.txt

Let we have an input file named as student-marks.

Name	ID	Marks
Rohit	10	78 84 77
Virat	03	56 58 45
Dhoni	07	38 37
Sachin	05	87 97 95
Hardik	06	30 47

5) Write an awk command to check all the marks that are exist in the file student-marks. Also display the name of student whose marks are missing?



The screenshot shows a terminal window with the following interface elements:

- Top left: "Open" dropdown and a "+" icon.
- Top right: File path: "student-marks" and " ~/Documents/ITW1".
- Content area:

```
1 Name ID Marks
2 Rohit 10 78 84 77
3 Virat 03 56 58 45
4 Dhoni 07 38 37
5 Sachin 05 87 97 95
6 Hardik 06 30 47
```

student-marks

```
ruchpottah@ruchpottah-HP-Laptop-14s-er0xxx:~/Documents/ITW1$ cat student-marks
Name ID Marks
Rohit 10 78 84 77
Virat 03 56 58 45
Dhoni 07 38 37
Sachin 05 87 97 95
Hardik 06 30 47
ruchpottah@ruchpottah-HP-Laptop-14s-er0xxx:~/Documents/ITW1$ awk '{print $3 " " $4 " " $5}' student-marks
Marks
78 84 77
56 58 45
38 37
87 97 95
30 47
ruchpottah@ruchpottah-HP-Laptop-14s-er0xxx:~/Documents/ITW1$
```

```
ruchpottah@ruchpottah-HP-Laptop-14s-er0xxx:~/Documents/ITW1$ cat student-marks
Name ID Marks
Rohit 10 78 84 77
Virat 03 56 58 45
Dhoni 07 38 37
Sachin 05 87 97 95
Hardik 06 30 47
ruchpottah@ruchpottah-HP-Laptop-14s-er0xxx:~/Documents/ITW1$ awk '{ if (NF < 5) print $1; }' student-marks
Name
Dhoni
Hardik
ruchpottah@ruchpottah-HP-Laptop-14s-er0xxx:~/Documents/ITW1$
```

6) Using awk, find the average marks and grade for every student from the file student-marks.



The screenshot shows a terminal window with the following interface elements:

- Top left: "Open" button with a dropdown arrow and a "New" button.
- Top right: "student-marks" and the path " ~/Documents/ITW1".
- Content area:

```
1 Name ID Marks
2 Rohit 10 78 84 77
3 Virat 03 56 58 45
4 Dhoni 07 38 37
5 Sachin 05 87 97 95
6 Hardik 06 30 47
```

student-marks

```
ruchpottah@ruchpottah-HP-Laptop-14s-er0xxx:~/Documents/ITW1$ cat student-marks
Name ID Marks
Rohit 10 78 84 77
Virat 03 56 58 45
Dhoni 07 38 37
Sachin 05 87 97 95
Hardik 06 30 47
ruchpottah@ruchpottah-HP-Laptop-14s-er0xxx:~/Documents/ITW1$ awk '{ avg=((\$3+\$4+\$5)/3);
if (NR == 1)
print "The average marks and grades of the students are given as follows:-"
else if(avg>=90)
print $1 " marks: " avg " -Grade A"
else if(avg>=80)
print $1 " marks: " avg " -Grade B"
else if(avg>=60)
print $1 " marks: " avg " -Grade C"
else if(avg>=40)
print $1 " marks: " avg " -Grade D"
else if(avg>=30)
print $1 " marks: " avg " -Grade E"
else print $1 " marks: " avg " -Grade F"
}' student-marks
The average marks and grades of the students are given as follows:-
Rohit marks: 79.6667 -Grade C
Virat marks: 53 -Grade D
Dhoni marks: 25 -Grade F
Sachin marks: 93 -Grade A
Hardik marks: 25.6667 -Grade F
ruchpottah@ruchpottah-HP-Laptop-14s-er0xxx:~/Documents/ITW1$
```

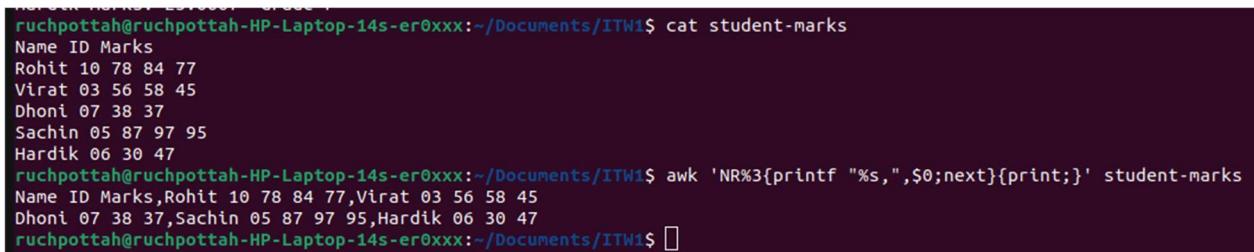
7) Write an awk command to concatenate every 3 lines of input file with a comma.



The screenshot shows a terminal window with the title "student-marks" and the path "~/Documents/ITW1". The file contains the following data:

```
1 Name ID Marks
2 Rohit 10 78 84 77
3 Virat 03 56 58 45
4 Dhoni 07 38 37
5 Sachin 05 87 97 95
6 Hardik 06 30 47
```

student-marks



```
ruchpottah@ruchpottah-HP-Laptop-14s-er0xxx:~/Documents/ITW1$ cat student-marks
Name ID Marks
Rohit 10 78 84 77
Virat 03 56 58 45
Dhoni 07 38 37
Sachin 05 87 97 95
Hardik 06 30 47
ruchpottah@ruchpottah-HP-Laptop-14s-er0xxx:~/Documents/ITW1$ awk 'NR%3{printf "%s,",\$0;next}{print;}' student-marks
Name ID Marks,Rohit 10 78 84 77,Virat 03 56 58 45
Dhoni 07 38 37,Sachin 05 87 97 95,Hardik 06 30 47
ruchpottah@ruchpottah-HP-Laptop-14s-er0xxx:~/Documents/ITW1$
```

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



The screenshot shows a terminal window with the following interface elements:

- Top left: "Open" button with a dropdown arrow.
- Top right: "student-marks" tab and path indicator: " ~/Documents/ITW1".
- Content area: A list of student records with their names, IDs, and marks.

	Name	ID	Marks
1	Name	ID	Marks
2	Rohit	10	78 84 77
3	Virat	03	56 58 45
4	Dhoni	07	38 37
5	Sachin	05	87 97 95
6	Hardik	06	30 47

student-marks

```
ruchpottah@ruchpottah-HP-Laptop-14s-er0xxx:~/Documents/ITW1$ cat student-marks
Name ID Marks
Rohit 10 78 84 77
Virat 03 56 58 45
Dhoni 07 38 37
Sachin 05 87 97 95
Hardik 06 30 47
ruchpottah@ruchpottah-HP-Laptop-14s-er0xxx:~/Documents/ITW1$ awk '{print NF}' student-marks
3
5
5
4
5
4
ruchpottah@ruchpottah-HP-Laptop-14s-er0xxx:~/Documents/ITW1$ 
```

9) 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".

```
ruchpottah@ruchpottah-HP-Laptop-14s-er0xxx:~/Documents/ITW1$ cat /etc/passwd
root:x:0:0:root:/root:/bin/bash
daemon:x:1:1:daemon:/usr/sbin:/usr/sbin/nologin
bin:x:2:2:bin:/bin:/usr/sbin/nologin
sys:x:3:3:sys:/dev:/usr/sbin/nologin
sync:x:4:65534:sync:/bin:/sync
games:x:5:60:games:/usr/games:/usr/sbin/nologin
man:x:6:12:man:/var/cache/man:/usr/sbin/nologin
lp:x:7:7:lp:/var/spool/lpd:/usr/sbin/nologin
mail:x:8:8:mail:/var/mail:/usr/sbin/nologin
news:x:9:9:news:/var/spool/news:/usr/sbin/nologin
uucp:x:10:10:uucp:/var/spool/uucp:/usr/sbin/nologin
proxy:x:13:13:proxy:/bin:/usr/sbin/nologin
www-data:x:33:33:www-data:/var/www:/usr/sbin/nologin
backup:x:34:34:backup:/var/backups:/usr/sbin/nologin
list:x:38:38:Mailing List Manager:/var/list:/usr/sbin/nologin
irc:x:39:39:ircd:/run/ircd:/usr/sbin/nologin
gnats:x:41:41:Gnats Bug-Reporting System (admin):/var/lib/gnats:/usr/sbin/nologin
nobody:x:65534:65534:nobody:/nonexistent:/usr/sbin/nologin
systemd-network:x:100:102:systemd Network Management,,,:/run/systemd:/usr/sbin/nologin
systemd-resolve:x:101:103:systemd Resolver,,,:/run/systemd:/usr/sbin/nologin
messagebus:x:102:105:/:/nonexistent:/usr/sbin/nologin
systemd-timesync:x:103:106:systemd Time Synchronization,,,:/run/systemd:/usr/sbin/nologin
syslog:x:104:111:/:/home/syslog:/usr/sbin/nologin
_apt:x:105:65534:/:/nonexistent:/usr/sbin/nologin
tss:x:106:112:TPM software stack,,,:/var/lib/tpm:/bin/false
uuidd:x:107:115:/:/run/uuidd:/usr/sbin/nologin
systemd-oom:x:108:116:systemd Userspace OOM Killer,,,:/run/systemd:/usr/sbin/nologin
tcpdump:x:109:117:/:/nonexistent:/usr/sbin/nologin
avahi-autopd:x:110:119:Avahi autopilot daemon,,,:/var/lib/avahi-autopd:/usr/sbin/nologin
usbmux:x:111:46:usbmux daemon,,,:/var/lib/usbmux:/usr/sbin/nologin
dnsmasq:x:112:65534:dnsmasq,,,:/var/lib/msc:/usr/sbin/nologin
kernooops:x:113:65534:Kernel Oops Tracking Daemon,,,:/usr/sbin/nologin
avahi:x:114:121:Avahi mDNS daemon,,,:/run/avahi-daemon:/usr/sbin/nologin
cups-pk-helper:x:115:122:user for cups-pk-helper service,,,:/home/cups-pk-helper:/usr/sbin/nologin
rtkit:x:116:123:RealtimeKit,,,:/proc:/usr/sbin/nologin
whoopsie:x:117:124:/:/nonexistent:/bin/false
sssd:x:118:125:SSSD system user,,,:/var/lib/sssd:/usr/sbin/nologin
speech-dispatcher:x:119:29:Speech Dispatcher,,,:/run/speech-dispatcher:/bin/false
nm-openvpn:x:120:126:NetworkManager OpenVPN,,,:/var/lib/openvpn/chroot:/usr/sbin/nologin
saned:x:121:128:/:/var/lib/saned:/usr/sbin/nologin
colord:x:122:129:colord colour management daemon,,,:/var/lib/colord:/usr/sbin/nologin
geooclue:x:123:130:/:/var/lib/geooclue:/usr/sbin/nologin
pulse:x:124:131:PulseAudio daemon,,,:/run/pulse:/usr/sbin/nologin
gnome-initial-setup:x:125:65534:/:/run/gnome-initial-setup:/bin/false
hplip:x:126:7:HPLIP system user,,,:/run/hplip:/bin/false
gdm:x:127:133:Gnome Display Manager:/var/lib/gdm3:/bin/false
ruchpottah:x:1000:1000:RuchPottah,,,:/home/ruchpottah:/bin/bash
ITW1:x:1001:1001:/:/home/ITW1:/bin/sh
```

```
ruchpottah@ruchpottah-HP-Laptop-14s-er0xxx:~/Documents/ITW1$ grep "/bin/bash" /etc/passwd
root:x:0:0:root:/root:/bin/bash
ruchpottah:x:1000:1000:RuchPottah,,,:/home/ruchpottah:/bin/bash
ruchpottah@ruchpottah-HP-Laptop-14s-er0xxx:~/Documents/ITW1$ grep "/bin/bash" /etc/passwd | cut -d ":" -f 1,6,7 --output-delimiter="#"
root#/root#/bin/bash
ruchpottah#/home/ruchpottah#/bin/bash
ruchpottah@ruchpottah-HP-Laptop-14s-er0xxx:~/Documents/ITW1$ 
```

- 10) 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”.

```
ruchpottah@ruchpottah-HP-Laptop-14s-er0xxx:~/Documents/ITW1$ echo "how;now;brown;cow" | cut -d ";" --output-delimiter=" " -f 1,3,4
how brown cow
ruchpottah@ruchpottah-HP-Laptop-14s-er0xxx:~/Documents/ITW1$
```

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



A screenshot of a terminal window titled "student-marks" located at "/Documents/ITW1". The window contains the following text:

```
1 Name ID Marks
2 Rohit 10 78 84 77
3 Virat 03 56 58 45
4 Dhoni 07 38 37
5 Sachin 05 87 97 95
6 Hardik 06 30 47
```

student-marks

```
ruchpottah@ruchpottah-HP-Laptop-14s-er0xxx:~/Documents/ITW1$ cat student-marks
Name ID Marks
Rohit 10 78 84 77
Virat 03 56 58 45
Dhoni 07 38 37
Sachin 05 87 97 95
Hardik 06 30 47
ruchpottah@ruchpottah-HP-Laptop-14s-er0xxx:~/Documents/ITW1$ cat student-marks | paste - -
Name ID Marks      Rohit 10 78 84 77
Virat 03 56 58 45      Dhoni 07 38 37
Sachin 05 87 97 95      Hardik 06 30 47
ruchpottah@ruchpottah-HP-Laptop-14s-er0xxx:~/Documents/ITW1$
```

12) Write a command using tr to squeeze the repetition of characters from a file. Also remove the character “a” from the file.



The screenshot shows a terminal window with the following interface elements:

- Top left: "Open" button with a dropdown arrow and a "+" button.
- Top right: File name "trfile.txt" and path "~/Documents/ITW1".

The content of the file is displayed in the main area:

```
1 Helloooooo!
2 Wayyyyy
3 OKKKKK
4 I am a Potterhed
5 I am fine
6 Fine
```

trfile.txt

```
ruchpottah@ruchpottah-HP-Laptop-14s-er0xxx:~/Documents/ITW1$ cat trfile.txt
Helloooooo!
Wayyyyy
OKKKKK
I am a Potterhed
I am fine
Fine
ruchpottah@ruchpottah-HP-Laptop-14s-er0xxx:~/Documents/ITW1$ cat trfile.txt | tr -s [:print:]
Hello!
Way
OK
I am a Poterhed
I am fine
Fine
ruchpottah@ruchpottah-HP-Laptop-14s-er0xxx:~/Documents/ITW1$ cat trfile.txt | tr -d 'a'
Hellooooo!
Wyyyyy
OKKKKK
I m  Potterhed
I m fine
Fine
ruchpottah@ruchpottah-HP-Laptop-14s-er0xxx:~/Documents/ITW1$ cat trfile.txt | tr -s [:print:] | tr -d 'a'
Hello!
Wy
OK
I m  Poterhed
I m fine
Fine
ruchpottah@ruchpottah-HP-Laptop-14s-er0xxx:~/Documents/ITW1$ 
```

13) 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.

```
ruchpottah@ruchpottah-HP-Laptop-14s-er0xxx:~/Documents/ITW1$ cd /home/ruchpottah
ruchpottah@ruchpottah-HP-Laptop-14s-er0xxx:~$ du -h | sort -h
4.0K    ./cache/evolution/addressbook/trash
4.0K    ./cache/evolution/calendar/trash
4.0K    ./cache/evolution/mail/trash
4.0K    ./cache/evolution/memos/trash
4.0K    ./cache/evolution/sources/trash
4.0K    ./cache/evolution/tasks/trash
4.0K    ./cache/gnome-desktop-thumbnailer/gstreamer-1.0
4.0K    ./cache/ibus-table
4.0K    ./cache/thunderbird/cr0cu095.default
4.0K    ./cache/thunderbird/osdzvhoa.default-release/cache2/doomed
4.0K    ./cache/tracker3/files/errors
4.0K    ./cache/update-manager-core
```

```
4.0K    ./thunderbird/osdzvhoa.default-release/minidumps
4.0K    ./thunderbird/osdzvhoa.default-release/security_state
4.0K    ./thunderbird/osdzvhoa.default-release/storage/permanent/chrome/idb/3870112724rsegmnoittet-es.files
4.0K    ./thunderbird/Pending Pings
4.0K    ./Videos
8.0K    ./cache/evolution/addressbook
8.0K    ./cache/evolution/calendar
8.0K    ./cache/evolution/mail
8.0K    ./cache/evolution/memos
8.0K    ./cache/evolution/sources
8.0K    ./cache/evolution/tasks
8.0K    ./cache/gnome-desktop-thumbnailer
8.0K    ./cache/mesa_shader_cache/01
8.0K    ./cache/mesa_shader_cache/02
8.0K    ./cache/mesa_shader_cache/0a
8.0K    ./cache/mesa_shader_cache/0b
8.0K    ./cache/mesa_shader_cache/15
8.0K    ./cache/mesa_shader_cache/16
8.0K    ./cache/mesa_shader_cache/18
8.0K    ./cache/mesa_shader_cache/1a
8.0K    ./cache/mesa_shader_cache/1e
8.0K    ./cache/mesa_shader_cache/28
8.0K    ./cache/mesa_shader_cache/2b
8.0K    ./cache/mesa_shader_cache/2c
8.0K    ./cache/mesa_shader_cache/32
8.0K    ./cache/mesa_shader_cache/34
8.0K    ./cache/mesa_shader_cache/35
8.0K    ./cache/mesa_shader_cache/36
8.0K    ./cache/mesa_shader_cache/3c
8.0K    ./cache/mesa_shader_cache/3e
8.0K    ./cache/mesa_shader_cache/42
8.0K    ./cache/mesa_shader_cache/4a
8.0K    ./cache/mesa_shader_cache/4c
8.0K    ./cache/mesa_shader_cache/53
8.0K    ./cache/mesa_shader_cache/55
8.0K    ./cache/mesa_shader_cache/5c
8.0K    ./cache/mesa_shader_cache/61
8.0K    ./cache/mesa_shader_cache/64
8.0K    ./cache/mesa_shader_cache/6b
```

```

84K ./snap/firefox/common/.mozilla/firefox/bg52yhfo.default/storage/default/https++mail.google.com/cache/morgue/200
84K ./snap/snap-store/582/.local/share/icons/ubuntu-mono-dark
88K ./thunderbird/osdzvhoa.default-release/storage/permanent/chrome/idb
92K ./local/share/evolution/addressbook/system
92K ./snap/firefox/common/.mozilla/firefox/bg52yhfo.default/storage/default/https++mail.google.com/cache/morgue/18
92K ./snap/firefox/common/.mozilla/firefox/bg52yhfo.default/storage/default/https++mail.google.com/cache/morgue/250
92K ./snap/snap-store/582/.local/share/icons/ubuntu-mono-light
96K ./snap/firefox/common/.mozilla/firefox/bg52yhfo.default/storage/default/https++mail.google.com/cache/morgue/72
96K ./thunderbird/osdzvhoa.default-release/storage/permanent/chrome
100K ./local/share/evolution/addressbook
100K ./snap/firefox/common/.mozilla/firefox/bg52yhfo.default/storage/default/https++chat-dl.google.com/cache/morgue/219
100K ./snap/firefox/common/.mozilla/firefox/bg52yhfo.default/storage/default/https++chat.google.com/cache/morgue/143
100K ./thunderbird/osdzvhoa.default-release/storage/permanent
104K ./config/libreoffice/4/user/config
104K ./snap/snapd-desktop-integration/10
104K ./snap/snapd-desktop-integration/common.cache
104K ./thunderbird/osdzvhoa.default-release/storage
108K ./snap/firefox/common/.mozilla/firefox/bg52yhfo.default/storage/default/https++codeforces.com/cache
108K ./snap/firefox/common/.mozilla/firefox/bg52yhfo.default/storage/default/https++tecadmin.net/ls
108K ./snap/snapd-desktop-integration/common
112K ./snap/firefox/common/.mozilla/firefox/bg52yhfo.default/storage/default/https++chat-dl.google.com/cache/morgue
112K ./snap/firefox/common/.mozilla/firefox/bg52yhfo.default/storage/default/https++chat.google.com/cache/morgue
116K ./snap/firefox/common/.mozilla/firefox/bg52yhfo.default/storage/default/https++tecadmin.net
128K ./config/libreoffice/4/user/database/biblio
136K ./snap/libreoffice/4/user/database
144K ./snap/firefox/common/.mozilla/firefox/bg52yhfo.default/datareporting/archived/2022-04
144K ./snap/firefox/common/.mozilla/firefox/bg52yhfo.default/storage/default/https++tutorialsinhand.com/cache/morgue
148K ./snap/firefox/common/.mozilla/firefox/bg52yhfo.default/features/{98cdffd9-6f09-450a-9bd0-7a6da3e536ca}
148K ./snap/firefox/common/.mozilla/firefox/bg52yhfo.default/storage/default/https++www.youtube.com/cache
152K ./config/libreoffice/4/user/extensions
152K ./local/share/evolution
152K ./snap/firefox/common/.mozilla/firefox/bg52yhfo.default/features
156K ./snap/firefox/common/.mozilla/firefox/bg52yhfo.default/sessionstore-backups
160K ./snap/firefox/common/.mozilla/firefox/bg52yhfo.default/storage/default/https++mail.google.com/cache/morgue/7
168K ./snap/firefox/common/.mozilla/firefox/bg52yhfo.default/storage/default/https++mail.google.com/cache/morgue/117
168K ./snap/firefox/common/.mozilla/firefox/bg52yhfo.default/storage/default/https++mail.google.com/cache/morgue/185
180K ./cache/thumbnails/large
180K ./snap/firefox/common/.mozilla/firefox/bg52yhfo.default/storage/default/https++mail.google.com/cache/morgue/189
184K ./snap/firefox/common/.mozilla/firefox/bg52yhfo.default/storage/default/https++mail.google.com/ldb
188K ./snap/firefox/common/.mozilla/firefox/bg52yhfo.default/storage/default/https++codeforces.com
192K ./cache/bus
192K ./snap-store/582/.local/share/glib-2.0/schemas
196K ./cache/bus
196K ./snap-store/582/.local/share/glib-2.0
204K ./snap/firefox/common/.mozilla/firefox/bg52yhfo.default/storage/default/https++mail.google.com/cache/morgue/62
208K ./snap/firefox/common/.mozilla/firefox/bg52yhfo.default/storage/default/https++chat.google.com/cache
216K ./snap/firefox/common/.mozilla/firefox/bg52yhfo.default/storage/default/https++tutorialsinhand.com/cache
216K ./snap/snapd-desktop-integration
220K ./snap/firefox/common/.mozilla/firefox/bg52yhfo.default/storage/default/https++chat-dl.google.com/cache
228K ./cache/thumbnails
228K ./snap/firefox/common/.mozilla/firefox/bg52yhfo.default/storage/default/https++chat-dl.google.com
232K ./snap/firefox/common/.mozilla/firefox/bg52yhfo.default/storage/default/https++chat.google.com
240K ./snap/firefox/common/.mozilla/firefox/bg52yhfo.default/storage/default/https++tutorialsinhand.com

```

```

1.3M ./Downloads
1.3M ./snap/firefox/common/.cache/mesa_shader_cache
1.3M ./snap/snap-store/common/.cache/gnome-software/odrs
1.4M ./snap/firefox/common/.cache.mozilla/firefox/bg52yhfo.default/personality-provider
1.4M ./snap/firefox/common/.mozilla/firefox/bg52yhfo.default/gmp-gmpopenh264
1.4M ./snap/firefox/common/.mozilla/firefox/bg52yhfo.default/gmp-gmpopenh264/1.8.1.1
2.1M ./config/libreoffice
2.1M ./config/libreoffice/4/user
2.3M ./config
2.5M ./snap/firefox/common/.mozilla/firefox/bg52yhfo.default/security_state
2.8M ./thunderbird
2.8M ./thunderbird/osdzvhoa.default-release
3.1M ./Documents/ITW1/Assignment3
3.6M ./cache/thunderbird
3.6M ./cache/thunderbird/osdzvhoa.default-release
3.6M ./cache/thunderbird/osdzvhoa.default-release/startupCache
4.5M ./Documents
4.5M ./Documents/ITW1
5.0M ./Pictures
5.0M ./Pictures/Screenshots
5.5M ./snap/snap-store/common/.cache/gnome-software/appstream
7.6M ./snap/snap-store/common/.cache/gnome-software
7.8M ./snap-store/common
7.8M ./snap-store/common/.cache
8.1M ./snap/firefox/common/.mozilla/firefox/bg52yhfo.default/storage/default/https++mail.google.com/cache/morgue
8.5M ./snap/firefox/common/.mozilla/firefox/bg52yhfo.default/storage/permanent
8.5M ./snap/firefox/common/.mozilla/firefox/bg52yhfo.default/storage/permanent/chrome
8.5M ./snap/firefox/common/.mozilla/firefox/bg52yhfo.default/storage/permanent/chrome/ldb
8.6M ./snap/snap-store
9.1M ./snap/firefox/common/.mozilla/firefox/bg52yhfo.default/storage/default/https++mail.google.com/cache
9.3M ./snap/firefox/common/.mozilla/firefox/bg52yhfo.default/storage/default/https++mail.google.com
12M ./cache/tracker3
12M ./cache/tracker3/files
13M ./snap/firefox/common/.cache.mozilla/firefox/bg52yhfo.default/safefrowsing/google4
13M ./snap/firefox/common/.mozilla/firefox/bg52yhfo.default/storage/default
14M ./snap/firefox/common/.cache.mozilla/firefox/bg52yhfo.default/startupCache
15M ./snap/firefox/common/.cache.mozilla/firefox/bg52yhfo.default/safefrowsing
19M ./cache
22M ./snap/firefox/common/.mozilla/firefox/bg52yhfo.default/storage
51M ./snap/firefox/common/.mozilla/firefox/bg52yhfo.default/extensions
94M ./snap/firefox/common/.mozilla
94M ./snap/firefox/common/.mozilla/firefox
94M ./snap/firefox/common/.mozilla/firefox/bg52yhfo.default
614M ./snap/firefox/common/.cache.mozilla/firefox/bg52yhfo.default/cache2
614M ./snap/firefox/common/.cache.mozilla/firefox/bg52yhfo.default/cache2/entries
644M ./snap/firefox/common/.cache.mozilla
644M ./snap/firefox/common/.cache.mozilla/firefox
644M ./snap/firefox/common/.cache.mozilla/firefox/bg52yhfo.default
646M ./snap/firefox/common/.cache
739M ./snap/firefox/common
740M ./snap/firefox
748M ./snap
783M .
ruchpottah@ruchpottah-HP-Laptop-14s-er0xxx:~$ 

```

14) Write a shell script which takes input as a string on a terminal and check whether it is palindrome or not a palindrome.

The screenshot shows a terminal window with the following content:

```
Open ▾  q14.sh
~/Documents/ITW1

1 #!/bin/bash
2 echo "Enter a string: "
3 read input
4 reverse=""
5 l=${#input}
6 for (( i=$l-1; i>=0; i-- ))
7 do
8     reverse="$reverse${input:$i:1}"
9 done
10 if [ $input == $reverse ]
11 then
12     echo "$input is palindrome"
13 else
14     echo "$input is not palindrome"
15 fi
```

q14.sh

```
ruchpottah@ruchpottah-HP-Laptop-14s-er0xxx:~/Documents/ITW1$ gedit q14.sh
ruchpottah@ruchpottah-HP-Laptop-14s-er0xxx:~/Documents/ITW1$ cat q14.sh
#!/bin/bash
echo "Enter a string: "
read input
reverse=""
l=${#input}
for (( i=$l-1; i>=0; i-- ))
do
    reverse="$reverse${input:$i:1}"
done
if [ $input == $reverse ]
then
    echo "$input is palindrome"
else
    echo "$input is not palindrome"
fi
ruchpottah@ruchpottah-HP-Laptop-14s-er0xxx:~/Documents/ITW1$ bash ./q14.sh
Enter a string:
ok55well
ok55well is not palindrome
ruchpottah@ruchpottah-HP-Laptop-14s-er0xxx:~/Documents/ITW1$ bash ./q14.sh
Enter a string:
malayalam
malayalam is palindrome
ruchpottah@ruchpottah-HP-Laptop-14s-er0xxx:~/Documents/ITW1$
```

15) Write a shell script to check the given year is leap year or not a leap year.

The screenshot shows a terminal window with the following details:

- File menu: Open, New
- Title bar: q15.sh, ~/Documents/ITW1
- Content area:

```
1 #!/bin/sh
2 echo "Enter the year :"
3 read y
4 a=`expr $y % 4`
5 b=`expr $y % 100`
6 c=`expr $y % 400`
7 if [ $a -eq 0 -a $b -ne 0 -o $c -eq 0 ]
8 then
9 echo "Year $y is a leap year"
10 else
11 echo "Year $y is not a leap year"
12 fi
```

q15.sh

```
ruchpottah@ruchpottah-HP-Laptop-14s-er0xxx:~/Documents/ITW1$ gedit q15.sh
ruchpottah@ruchpottah-HP-Laptop-14s-er0xxx:~/Documents/ITW1$ cat q15.sh
#!/bin/sh
echo "Enter the year :"
read y
a=`expr $y % 4`
b=`expr $y % 100`
c=`expr $y % 400`
if [ $a -eq 0 -a $b -ne 0 -o $c -eq 0 ]
then
echo "Year $y is a leap year"
else
echo "Year $y is not a leap year"
fi
ruchpottah@ruchpottah-HP-Laptop-14s-er0xxx:~/Documents/ITW1$ bash ./q15.sh
Enter the year :
2020
Year 2020 is a leap year
ruchpottah@ruchpottah-HP-Laptop-14s-er0xxx:~/Documents/ITW1$ bash ./q15.sh
Enter the year :
1900
Year 1900 is not a leap year
ruchpottah@ruchpottah-HP-Laptop-14s-er0xxx:~/Documents/ITW1$ bash ./q15.sh
Enter the year :
2021
Year 2021 is not a leap year
ruchpottah@ruchpottah-HP-Laptop-14s-er0xxx:~/Documents/ITW1$ bash ./q15.sh
Enter the year :
2000
Year 2000 is a leap year
ruchpottah@ruchpottah-HP-Laptop-14s-er0xxx:~/Documents/ITW1$ 
```

16) Write a shell script to display the list of prime number. It take input as “How many prime number:” from the user. Eg: How many prime number: 4 then it display 2,3,5,7.



```
Open + q16.sh ~/Documents/ITW1
1 #!/bin/bash
2 echo How many prime numbers:
3 read n
4 echo The first $n prime numbers are:
5 echo 2
6 i=3
7 for (( ctr=2;ctr<=$n;i++ ))
8 do
9 for (( num=2; num< $i; num++ ))
10 do
11 if [ `expr $i \% $num` == 0 ]
12 then
13 break
14 fi
15 done
16 if [ $num == $i ]
17 then
18 echo $i
19 ((ctr++))
20 fi
21 done
```

q16.sh

```
ruchpottah@ruchpottah-HP-Laptop-14s-er0xxx:~/Documents/ITW1$ gedit q16.sh
ruchpottah@ruchpottah-HP-Laptop-14s-er0xxx:~/Documents/ITW1$ cat q16.sh
#!/bin/bash
echo How many prime numbers:
read n
echo The first $n prime numbers are:
echo 2
i=3
for (( ctr=2;ctr<=$n;i++ ))
do
for (( num=2; num< $i; num++ ))
do
if [ `expr $i \% $num` == 0 ]
then
break
fi
done
if [ $num == $i ]
then
echo $i
((ctr++))
fi
done
ruchpottah@ruchpottah-HP-Laptop-14s-er0xxx:~/Documents/ITW1$ bash ./q16.sh
How many prime numbers:
5
The first 5 prime numbers are:
2
3
5
7
11
ruchpottah@ruchpottah-HP-Laptop-14s-er0xxx:~/Documents/ITW1$ bash ./q16.sh
How many prime numbers:
4
The first 4 prime numbers are:
2
3
5
7
ruchpottah@ruchpottah-HP-Laptop-14s-er0xxx:~/Documents/ITW1$ 
```

17) 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.

```
Open ▾ q17.sh
~/Documents/ITW1

1 #!/bin/bash
2 str=(a b c d e f g h i j k l m n o p q r s t u v w x y z A B C D E F G H I J K L M N O P Q R S T U V W X Y Z 0 1 2 3 4 5 6 7 8 9)
3 length=$((8+$RANDOM%10))
4 passwd=""
5 for i in ${seq 1 $length}
6 do
7 val=$((RANDOM%(26+26+10)))
8 passwd="$passwd${str[$val]}"
9 done
10 echo Generated password: $passwd
```

q17.sh

```
ruchpottah@ruchpottah-HP-Laptop-14s-er0xxx:~/Documents/ITW1$ gedit q17.sh
ruchpottah@ruchpottah-HP-Laptop-14s-er0xxx:~/Documents/ITW1$ cat q17.sh
#!/bin/bash
str=(a b c d e f g h i j k l m n o p q r s t u v w x y z A B C D E F G H I J K L M N O P Q R S T U V W X Y Z 0 1 2 3 4 5 6 7 8 9)
length=$((8+$RANDOM%10))
passwd=""
for i in ${seq 1 $length}
do
val=$((RANDOM%(26+26+10)))
passwd="$passwd${str[$val]}"
done
echo Generated password: $passwd
ruchpottah@ruchpottah-HP-Laptop-14s-er0xxx:~/Documents/ITW1$ bash ./q17.sh
Generated password: 17hAqfms5LcC
ruchpottah@ruchpottah-HP-Laptop-14s-er0xxx:~/Documents/ITW1$ bash ./q17.sh
Generated password: 56qGAdyq
ruchpottah@ruchpottah-HP-Laptop-14s-er0xxx:~/Documents/ITW1$ bash ./q17.sh
Generated password: JqvBRRsbkie1bJ
ruchpottah@ruchpottah-HP-Laptop-14s-er0xxx:~/Documents/ITW1$ 
```

18) Write a shell script to reverse the input digits. Also add a command to duplicate empty lines in a file?



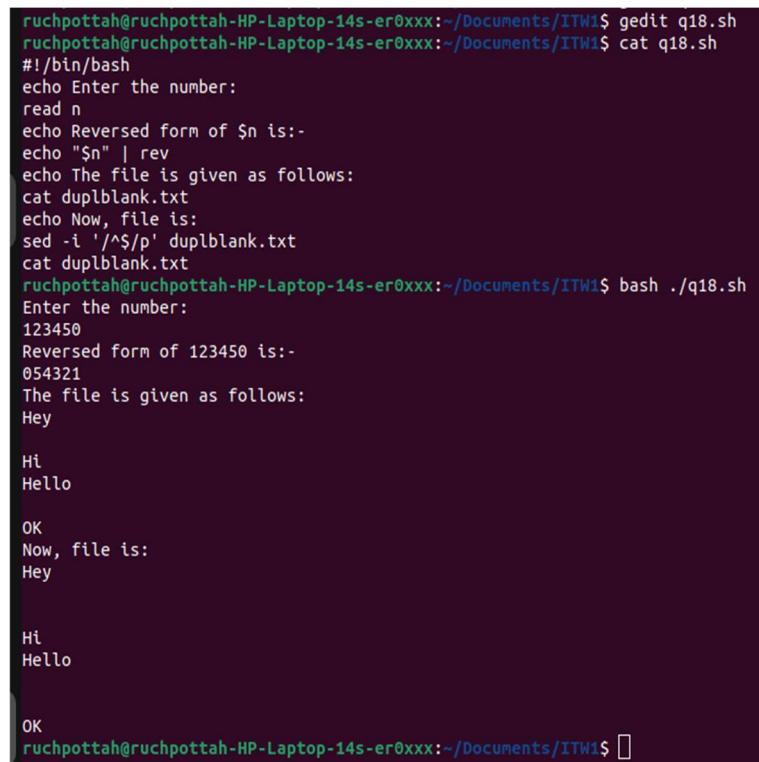
```
Open q18.sh
1 #!/bin/bash
2 echo Enter the number:
3 read n
4 echo Reversed form of $n is:-
5 echo "$n" | rev
6 echo The file is given as follows:
7 cat duplblank.txt
8 echo Now, file is:
9 sed -i '/^$/p' duplblank.txt
10 cat duplblank.txt
```

q18.sh



```
Open duplblank.txt
1 Hey
2
3 Hi
4 Hello
5
6 OK
```

duplblank.txt (originally)



```
ruchpottah@ruchpottah-HP-Laptop-14s-er0xxx:~/Documents/ITW1$ gedit q18.sh
ruchpottah@ruchpottah-HP-Laptop-14s-er0xxx:~/Documents/ITW1$ cat q18.sh
#!/bin/bash
echo Enter the number:
read n
echo Reversed form of $n is:-
echo "$n" | rev
echo The file is given as follows:
cat duplblank.txt
echo Now, file is:
sed -i '/^$/p' duplblank.txt
cat duplblank.txt
ruchpottah@ruchpottah-HP-Laptop-14s-er0xxx:~/Documents/ITW1$ bash ./q18.sh
Enter the number:
123450
Reversed form of 123450 is:-
054321
The file is given as follows:
Hey

Hi
Hello

OK
Now, file is:
Hey

Hi
Hello

OK
ruchpottah@ruchpottah-HP-Laptop-14s-er0xxx:~/Documents/ITW1$
```



```
Open duplblank.txt
1 Hey
2
3
4 Hi
5 Hello
6
7
8 OK
```

duplblank.txt (after changes)