OS LABSHEET 2

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1. Create a file **demo** with the following contents

   Student Alice Essentials 20 PSAT 22 Maths 34 Cultural 25 English 70

   Student Bob Essentials 23 PSAT 21 Maths 32 Cultural 18 English 94

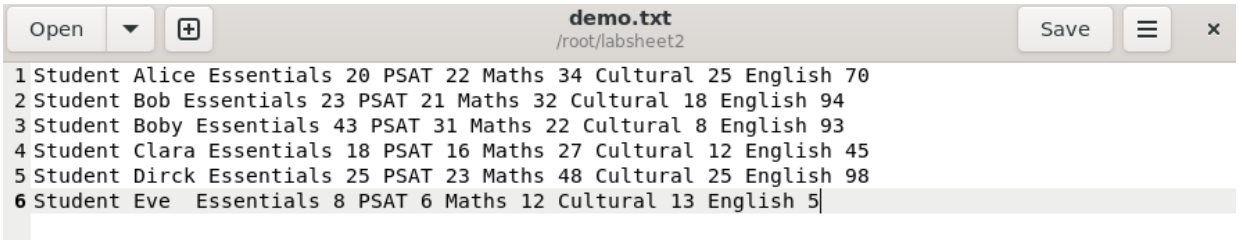
   Student Boby Essentials 43 PSAT 31 Maths 22 Cultural 8 English 93

   Student Clara Essentials 18 PSAT 16 Maths 27 Cultural 12 English 45

   Student Dirck Essentials 25 PSAT 23 Maths 48 Cultural 25 English 98

   Student Eve Essentials 8 PSAT 6 Maths 12 Cultural 13 English 5

```
root@anuvind:~/labsheet2# gedit demo.txt
```



2. Find the marks obtained by Clara in all the subjects

```
root@anuvind:~/labsheet2# grep Clara demo.txt
Student Clara Essentials 18 PSAT 16 Maths 27 Cultural 12 English 45
```

3. Print the marks for essentials in the increasing order

```
root@anuvind:~/labsheet2# cat demo.txt | cut -d" " -f 4 | sort -n
8
18
20
23
25
43
```

4. Find the maximum marks scored in PSAT

```
root@anuvind:~/labsheet2# cat demo.txt | cut -d" " -f 6 | sort -n | tail -1
31
```

5. Find the minimum marks obtained in Cultural

```
root@anuvind:~/labsheet2# cat demo.txt | cut -d" " -f 10 | sort -n | head -1
8
```

6. Save the marks obtained by all the students in maths into a file and display it in the terminal using a single command

```
root@anuvind:~/labsheet2# cat demo.txt | cut -d" " -f 8 >> mathmarks.txt
root@anuvind:~/labsheet2# cat mathmarks.txt
34
32
22
27
48
12
```

7. Print the first 3 letters of all student names.

```
root@anuvind:~/labsheet2# cat demo.txt | cut -c9-11
Ali
Bob
Bob
Cla
Dir
Eve
```

8. Print the contents of file **demo** in terminal with all alphabets in capital letters.

```
root@anuvind:~/labsheet2# cat demo.txt | tr a-z A-Z
STUDENT ALICE ESSENTIALS 20 PSAT 22 MATHS 34 CULTURAL 25 ENGLISH 70
STUDENT BOB ESSENTIALS 23 PSAT 21 MATHS 32 CULTURAL 18 ENGLISH 94
STUDENT BOBY ESSENTIALS 43 PSAT 31 MATHS 22 CULTURAL 8 ENGLISH 93
STUDENT CLARA ESSENTIALS 18 PSAT 16 MATHS 27 CULTURAL 12 ENGLISH 45
STUDENT DIRCK ESSENTIALS 25 PSAT 23 MATHS 48 CULTURAL 25 ENGLISH 98
STUDENT EVE ESSENTIALS 8 PSAT 6 MATHS 12 CULTURAL 13 ENGLISH 5
```

9. Print all student names after deleting the letter ‘a’

```
root@anuvind:~/labsheet2# cat demo.txt | cut -d" " -f 2 | tr -d a
Alice
Bob
Boby
Clr
Dirck
Eve
```

10. Count the number of lines, words and characters in demo file after removing the letter 'S'

```
root@anuvind:~/labsheet2# cat demo.txt | tr -d S | wc
      6      72     387
```

11. Find the number of students with their names containing the letter a, e or i

```
root@anuvind:~/labsheet2# cat demo.txt | cut -d" " -f 2 | grep -E 'a|e|i' | wc -l
4
```

12. Find the marks of students whose names starts with 'b' (case insensitive)

```
root@anuvind:~/labsheet2# cat demo.txt | cut -d" " -f 2,4,6,8,10,12 | grep ^B
Bob 23 21 32 18 94
Boby 43 31 22 8 93
```

13. Find the names of students whose names starts with 'b' and ends with 'y' (case insensitive)

```
root@anuvind:~/labsheet2# cat demo.txt | cut -d" " -f 2 | grep ^B | grep y$
Boby
```

Shell Programming

1. Write a shell program to perform the following actions in the given order.
   a. Create a directory hierarchy in your home folder

Test1 ➡ Test2 ➡ Test3

```
Open
1 #!/bin/sh
2 mkdir -p Test1/Test2/Test3
```

   b. Create a file file1 in directory Test3 with the contents same as output of the command ls -l

```
3 ls -l | cat >Test1/Test2/Test3/file1
```

   c. Go to directory Test3

```
4 cd Test1/Test2/Test3
```

d. Find the names of all files and folders in file1

```
5 echo "names of files and folders in file1 : "
6 cat file1 | tail -n +2 | rev | cut -d " " -f 1 | rev
```

```
names of files and folders in file1 :
Lab1
OS
Test1
countfinal.txt
demo.txt
file.sh
labsheet2
main
snap
test1.txt
```

e. Find the names of all files and folders starting with d(case insensitive)

```
8 echo "names of files and folders starting with d : "
9 cat file1 | tail -n +2 | rev | cut -d " " -f 1 | rev | grep -i d
```

```
names of files and folders starting with d :
demo.txt
```

f. Print all words of file1 on a separate line.

```
11 echo "all words of file1 : "
12 cat file1 | tail -n +2 | tr -s ' '
```

```
all words of file1 :
drwxr-xr-x 2 root root 4096 Nov 26 12:00 Lab1
drwxr-xr-x 2 root root 4096 Nov 26 12:00 OS
drwxr-xr-x 3 root root 4096 Dec 1 22:47 Test1
-rw-r--r-- 1 root root 191 Nov 26 13:35 countfinal.txt
-rw-r--r-- 1 root root 0 Dec 1 22:49 demo.txt
-rwxr-xr-x 1 root root 402 Dec 1 22:50 file.sh
drwxr-xr-x 2 root root 4096 Dec 1 13:55 labsheet2
drwxr-xr-x 3 root root 4096 Nov 26 12:09 main
drwx------ 4 root root 4096 Nov 26 12:20 snap
-rw-r--r-- 1 root root 41 Nov 26 12:50 test1.txt
```

g. Go back to your home directory.

```
13 cd ~
```

Full code :

Open | file.sh /root | Save

```
#!/bin/sh
mkdir -p Test1/Test2/Test3
ls -l | cat >Test1/Test2/Test3/file1
cd Test1/Test2/Test3
echo "names of files and folders in file1 : "
cat file1 | tail -n +2 | rev | cut -d " " -f 1 | rev
echo "\n"
echo "names of files and folders starting with d : "
cat file1 | tail -n +2 | rev | cut -d " " -f 1 | rev | grep -i d
echo "\n"
echo "all words of file1 : "
cat file1 | tail -n +2 | tr -s ' '
cd ~
```

2. Write a shell program to perform the following actions in the given order.
   a. Create a file **numericdata** with the following contents

      Karunagappally 34567 7864 6785

      Kollam 56754 6754 7654

      Vallikkavu 54328 7548 45675

      Trivandrum 16423 6654 6754

      Ernakulam 28796 8549 9875

      Kayamkulam 35589 75892 3451

      kottayam 45557 6773 6547

      tirukulum 45675 56476 7896

      (Hint : First field is referred as Place second as code1 third as code2 and fourth as code3)

Open /root

```
#!/bin/sh
printf "Karunagappally 34567 7864 6785\n\
Kollam 56754 6754 7654\n\
Vallikkavu 54328 7548 45675\n\
Trivandrum 16423 6654 6754\n\
Ernakulam 28796 8549 9875\n\
Kayamkulam 35589 75892 3451\n\
kottayam 45557 6773 6547\n\
tirukulum 45675 56476 7896\n" > numericdata.txt
```

   b. Display the details of Places that starts with ‘T’(case sensitive)

```
11 echo "details of places that starts with T :"
12 cat numericdata.txt | grep ^T
13 echo "\n"
```

```
details of places that starts with T :
Trivandrum 16423 6654 6754
```

c. Display code3 in sorted order(ascending) of the places that start with ‘K’(case insensitive)

```
15 echo "code3 in sorted order(ascending) of the places that start with ‘K’ : "
16 cat numericdata.txt | cut -d " " -f1 | grep -i ^k | cut -d " " -f4 | sort -n
17 echo "\n"
```

```
code3 in sorted order(ascending) of the places that start with ‘K’ :
Karunagappally
Kayamkulam
Kollam
kottayam
```

d. Filter code2 that starts with 6 and ends with 4

```
19 echo "code2 that starts with 6 and ends with 4 : "
20 cat numericdata.txt | cut -d " " -f3 | grep ^6 | grep 4$
21 echo "\n"
```

```
code2 that starts with 6 and ends with 4 :
6754
6654
```

e. Filter code2 having one or more occurrence of the digit 6.

```
23 echo "code2 having one or more occurrence of the digit 6 :  "
24 cat numericdata.txt | cut -d " " -f3 | grep -E '6+'
25 echo "\n"
```

```
code2 having one or more occurrence of the digit 6 :
7864
6754
6654
6773
56476
```

f. Filter all code1 having one or more occurrence of the digit 5.

```
27 echo "code1 having one or more occurrence of the digit 5 : "
28 cat numericdata.txt | cut -d " " -f2 | grep -E '5+'
29
```

```
code1 having one or more occurrence of the digit 5 :
34567
56754
54328
35589
45557
45675
```

Full code:

/root

```
1 #!/bin/sh
2 printf "Karunagappally 34567 7864 6785\n\
3 Kollam 56754 6754 7654\n\
4 Vallikkavu 54328 7548 45675\n\
5 Trivandrum 16423 6654 6754\n\
6 Ernakulam 28796 8549 9875\n\
7 Kayamkulam 35589 75892 3451\n\
8 kottayam 45557 6773 6547\n\
9 tirukulum 45675 56476 7896\n" > numericdata.txt
10
11 echo "details of places that starts with T :"
12 cat numericdata.txt | grep ^T
13 echo "\n"
14
15 echo "code3 in sorted order(ascending) of the places that start with 'K' : "
16 cat numericdata.txt | cut -d " " -f1 | grep -i ^k | cut -d " " -f4 | sort -n
17 echo "\n"
18
19 echo "code2 that starts with 6 and ends with 4 : "
20 cat numericdata.txt | cut -d " " -f3 | grep ^6 | grep 4$
21 echo "\n"
22
23 echo "code2 having one or more occurrence of the digit 6 :  "
24 cat numericdata.txt | cut -d " " -f3 | grep -E '6+'
25 echo "\n"
26
27 echo "code1 having one or more occurrence of the digit 5 : "
28 cat numericdata.txt | cut -d " " -f2 | grep -E '5+'
29
```