JAIN
DEEMED-TO-BE UNIVERSITY

SCHOOL OF COMPUTER SCIENCE AND IT

DEPARTMENT OF BACHELOR OF COMPUTER APPLICATIONS

Introduction to Linux

CIA (FINAL)

Subject Code: 20BCA5D21

Class: I Year I Semester

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Question 01 : Create a data file called 'employee' in the format given below:

a. EmpCode Character
b. EmpName Character
c. Grade Character
d. Years of experience Numeric
e. Basic Pay Numeric

For example:

A001	ARJUN	E1	01	12000.00
A006	Anand	E1	01	12450.00
A010	Rajesh	E2	03	14500.00
A002	Mohan	E2	02	13000.00
A005	John	E2	01	14500.00
A009	Denial Smith	E2	04	17500.00
A004	Williams	E1	01	12000.00

```
A001    ARJUN          E1      01      12000.00
A006    Anand          E1      01      12450.00
A010    Rajesh         E2      03      14500.00
A002    Mohan          E2      02      13000.00
A005    John           E2      01      14500.00
A009    Denial Smith   E2      04      17500.00
A004    Williams       E1      01      12000.00
```

Perform the following operations on the file:

⇒ Sort the file on EmpCode.

Code & Output:

```
gboi3122@biist-VirtualBox:~/Desktop$ sort -k1 employee.dat | tr '_' ' '
A001    ARJUN          E1      01      12000.00
A002    Mohan          E2      02      13000.00
A004    Williams       E1      01      12000.00
A005    John           E2      01      14500.00
A006    Anand          E1      01      12450.00
A009    Denial Smith   E2      04      17500.00
A010    Rajesh         E2      03      14500.00
```

⇒ Sort the file on: - Decreasing order of basic pay.

Code & Output:

```
gboi3122@biist-VirtualBox:~/Desktop$ sort -k5 -r employee.dat | tr '_' ' '
A009    Denial Smith   E2      04      17500.00
A010    Rajesh         E2      03      14500.00
A005    John           E2      01      14500.00
A002    Mohan          E2      02      13000.00
A006    Anand          E1      01      12450.00
A004    Williams       E1      01      12000.00
A001    ARJUN          E1      01      12000.00
```

⇒ Sort the file on: - Increasing order of years of experience

Code & Output:

```
gboi3122@biist-VirtualBox:~/Desktop$ sort -k4 employee.dat | tr '_' ' '
A001    ARJUN           E1      01      12000.00
A004    Williams        E1      01      12000.00
A006    Anand           E1      01      12450.00
A005    John            E2      01      14500.00
A002    Mohan           E2      02      13000.00
A010    Rajesh          E2      03      14500.00
A009    Denial Smith    E2      04      17500.00
```

⇒ Display the number of employees whose details are included in the file.

Code & Output:

```
gboi3122@biist-VirtualBox:~/Desktop$ echo -n "Employee = "; cat employee.dat | wc -l
Employee = 7
```

⇒ Display all records with 'smith' a part of the employee name.

Code & Output:

```
gboi3122@biist-VirtualBox:~/Desktop$ awk '/Smith/ {print $0}' employee.dat | tr '_' ' '
A009    Denial Smith    E2      04      17500.00
```

⇒ Display all records with EmpName starting with 'B'.

Code & Output:

```
gboi3122@biist-VirtualBox:~/Desktop$ awk '/[B]/ {print $0}' employee.dat
gboi3122@biist-VirtualBox:~/Desktop$
```

⇒ Display the records on employees whose grade is E2 and have work experience of 2 to 5 years.

Code & Output:

```
gboi3122@biist-VirtualBox:~/Desktop$ awk '$3=="E2" && ($4>=02 && $4<=5) {print $0}' employee.dat | tr '_' ' '
A010    Rajesh          E2      03      14500.00
A002    Mohan           E2      02      13000.00
A009    Denial Smith    E2      04      17500.00
```

⇒ Save the names of all employees whose basic pay is between 10000 and 15000 in a file ‘employee1’

Code & Output:

```
gboi3122@biist-VirtualBox:~/Desktop$ awk '$5>=10000.00 && $5<=15000.00 {print $0}' employee.dat
A001    ARJUN           E1      01      12000.00
A006    Anand           E1      01      12450.00
A010    Rajesh          E2      03      14500.00
A002    Mohan           E2      02      13000.00
A005    John            E2      01      14500.00
A004    Williams        E1      01      12000.00
```

⇒ Display records of all employees who are not in grade E2.

Code & Output:

```
gboi3122@biist-VirtualBox:~/Desktop$ awk '$3!="E2" {print $0}' employee.dat
A001    ARJUN           E1      01      12000.00
A006    Anand           E1      01      12450.00
A004    Williams        E1      01      12000.00
```

Question 2 : WAP to take a file as a command-line argument and reverse the contents of the file and save it in a new file.

Code:

```
#!/bin/sh
if [ -e $1 ]
then
        echo " Contents of the File $1: "
        cat $1
        echo " Reversing the File: "
        tac $1
        echo "Saving the Reversed File as a New File ..."
        tac $1 | cat > reverse.txt
else
        echo "The File doesn't Exist"
fi
```

Output:

```
gboi3122@biist-VirtualBox:~/Desktop$ vi lexp5.sh
gboi3122@biist-VirtualBox:~/Desktop$ . lexp5.sh employee.dat | tr '_' ' '
 Contents of the File employee.dat:
A001            ARJUN               E1      01      12000.00
A006            Anand               E1      01      12450.00
A010            Rajesh              E2      03      14500.00
A002            Mohan               E2      02      13000.00
A005            John                E2      01      14500.00
A009            Denial Smith        E2      04      17500.00
A004            Williams            E1      01      12000.00

 Reversing the File:

A004            Williams            E1      01      12000.00
A009            Denial Smith        E2      04      17500.00
A005            John                E2      01      14500.00
A002            Mohan               E2      02      13000.00
A010            Rajesh              E2      03      14500.00
A006            Anand               E1      01      12450.00
A001            ARJUN               E1      01      12000.00
Saving the Reversed File as a New File ...
```

Question 3 : WAP which displays the following menu and executes the option selected by the user: - 1. ls -l 2. pwd 3. ps -fe

Code:

```
#!/bin/bash
while true
do
        clear
        echo "MENU"
        echo "1. List"
        echo "2. pwd"
        echo "3. Show all processes"
        echo "0. Exit"
        read -p "Enter Option: " opt
        case $opt in
                1) ls -l
                        sleep 10
                        ;;
                2) pwd
                        sleep 10
                        ;;
                3) ps -fe
                        sleep 10
                        ;;
                0) echo "Quitting the menu"
                        sleep 3
                        break
                        ;;
                *) echo "Invalid Input"
                        sleep 3
        esac
done
```

Output:

```
MENU
1. List
2. pwd
3. Show all processes
0. Exit
Enter Option: 1
total 24
drwxrwxr-x 5 gboi3122 gboi3122 4096 Dec 13 19:33 course
-rwxrwxr-x 1 gboi3122 gboi3122  229 Dec 13 23:42 lexp5.sh
-rw-rw-r-- 1 gboi3122 gboi3122  345 Dec 14 00:11 lexp6.sh
-rw-rw-r-- 1 gboi3122 gboi3122  260 Dec 14 00:21 lexp7.sh
-rw-rw-r-- 1 gboi3122 gboi3122   97 Dec 14 01:07 lexp8.sh
-rw-rw-r-- 1 gboi3122 gboi3122  358 Dec 14 02:07 lexp9.sh
-rw-rw-r-- 1 gboi3122 gboi3122    0 Dec 14 01:40 txt.old
```

```
MENU
1. List
2. pwd
3. Show all processes
0. Exit
Enter Option: 2
/home/gboi3122/Desktop
```

```
MENU
1. List
2. pwd
3. Show all processes
0. Exit
Enter Option: 0
Quitting the menu
gboi3122@biist-VirtualBox:~/Desktop$
```

```
MENU
1. List
2. pwd
3. Show all processes
0. Exit
Enter Option: 3
UID          PID    PPID  C STIME TTY          TIME CMD
root           1       0  0 00:39 ?        00:00:01 /sbin/init splash
root           2       0  0 00:39 ?        00:00:00 [kthreadd]
root           3       2  0 00:39 ?        00:00:00 [rcu_gp]
root           4       2  0 00:39 ?        00:00:00 [rcu_par_gp]
root           6       2  0 00:39 ?        00:00:00 [kworker/0:0H-kblockd]
root           9       2  0 00:39 ?        00:00:00 [mm_percpu_wq]
root          10       2  0 00:39 ?        00:00:00 [ksoftirqd/0]
root          11       2  0 00:39 ?        00:00:01 [rcu_sched]
root          12       2  0 00:39 ?        00:00:00 [migration/0]
root          13       2  0 00:39 ?        00:00:00 [idle_inject/0]
root          14       2  0 00:39 ?        00:00:00 [cpuhp/0]
root          15       2  0 00:39 ?        00:00:00 [cpuhp/1]
root          16       2  0 00:39 ?        00:00:00 [idle_inject/1]
root          17       2  0 00:39 ?        00:00:00 [migration/1]
root          18       2  0 00:39 ?        00:00:00 [ksoftirqd/1]
root          20       2  0 00:39 ?        00:00:00 [kworker/1:0H-kblockd]
root          21       2  0 00:39 ?        00:00:00 [cpuhp/2]
root          22       2  0 00:39 ?        00:00:00 [idle_inject/2]
root          23       2  0 00:39 ?        00:00:00 [migration/2]
root          24       2  0 00:39 ?        00:00:00 [ksoftirqd/2]
root          26       2  0 00:39 ?        00:00:00 [kworker/2:0H-kblockd]
root          27       2  0 00:39 ?        00:00:00 [cpuhp/3]
root          28       2  0 00:39 ?        00:00:00 [idle_inject/3]
root          29       2  0 00:39 ?        00:00:00 [migration/3]
root          30       2  0 00:39 ?        00:00:00 [ksoftirqd/3]
root          32       2  0 00:39 ?        00:00:00 [kworker/3:0H-kblockd]
root          33       2  0 00:39 ?        00:00:00 [cpuhp/4]
root          34       2  0 00:39 ?        00:00:00 [idle_inject/4]
root          35       2  0 00:39 ?        00:00:00 [migration/4]
root          36       2  0 00:39 ?        00:00:00 [ksoftirqd/4]
root          38       2  0 00:39 ?        00:00:00 [kworker/4:0H-kblockd]
root          39       2  0 00:39 ?        00:00:00 [cpuhp/5]
root          40       2  0 00:39 ?        00:00:00 [idle_inject/5]
root          41       2  0 00:39 ?        00:00:00 [migration/5]
root          42       2  0 00:39 ?        00:00:00 [ksoftirqd/5]
root          44       2  0 00:39 ?        00:00:00 [kworker/5:0H-kblockd]
root          45       2  0 00:39 ?        00:00:00 [kdevtmpfs]
root          46       2  0 00:39 ?        00:00:00 [netns]
root          47       2  0 00:39 ?        00:00:00 [rcu_tasks_kthre]
```

-- THE END --