



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 --



