

St. Francis Institute of Technology, Mumbai-400 103.

Department of Information Technology

A.Y. 2023-2024

Class: SE-ITA/B, Semester: IV

Subject: **UNIX LAB**

Experiment – 8: Shell script and sed programming.

1. **Aim:** To study and implement shell script programming and sed.

2. **Objectives:**

- To understand shell script programming and sed.
- To develop sed shell scripts.

3. **Outcomes:** After study of this experiment, the student will be able to

- Develop shell scripts using sed.

4. **Prerequisite:** Knowledge of Shell scripts.

5. **Requirements:** Personal Computer, Ubuntu OS, Text Editor, LibreOffice.

6. **Pre-Experiment Exercise:**

Brief Theory:

sed:

sed is a stream editor. A stream editor is used to perform basic text transformations on an input stream (a file or input from a pipeline). While in some ways similar to an editor which permits scripted edits (such as ed), sed works by making only one pass over the input(s), and is consequently more efficient. But it is sed's ability to filter text in a pipeline which particularly distinguishes it from other editors. With sed, we can edit complete files without actually having to open it.

sed uses instructions to act on text. An instruction combines an **address** for selecting lines, with an **action** to be taken on them.

Syntax:

sed options ‘address action’ file(s)

Addressing in sed is done in two ways:

- By one or two line numbers.
- By specifying a /-enclosed pattern which occurs in a line.

The action can either be a simple display or an editing function like insertion, deletion or substitution of text.

Laboratory Exercise

A. Procedure

1. Write a shell program to generate multiplication table of a number upto a given range.
2. Write a shell program to count the number of files in a directory.
3. Write a shell program using sed to perform line addressing.
4. Write a shell program using sed to perform context addressing.
5. Write a shell program using sed to perform substitution.

B. Result/Program code Screenshots

7. Post-Experiments Exercise

A. Extended Theory:

Nil

B. Questions:

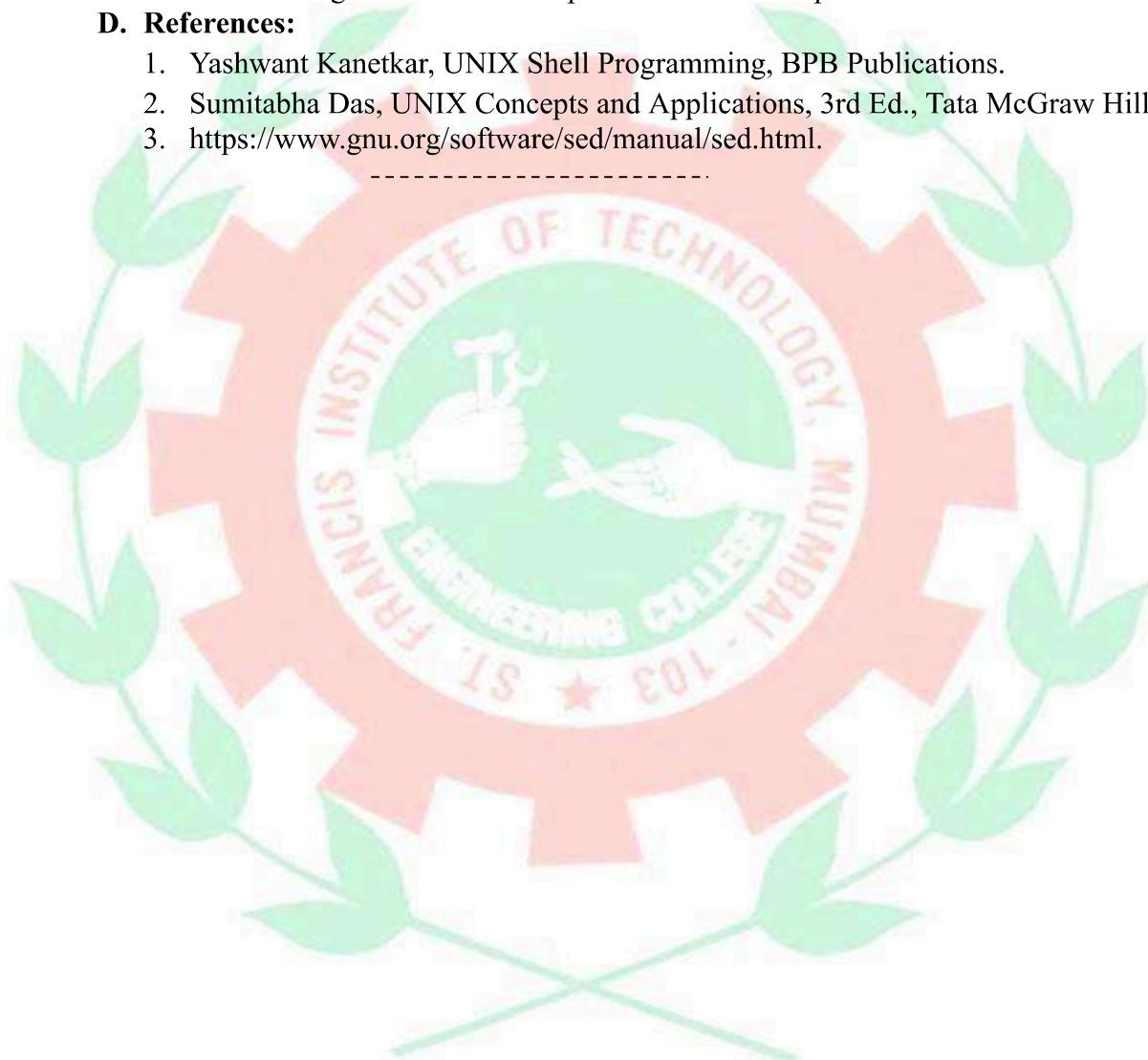
1. Write a sed command to duplicate each line in a file in Unix.

C. Conclusion:

1. Write what was performed in the experiment.
2. Mention few applications of what was studied.
3. Write the significance of the topic studied in the experiment.

D. References:

1. Yashwant Kanetkar, UNIX Shell Programming, BPB Publications.
2. Sumitabha Das, UNIX Concepts and Applications, 3rd Ed., Tata McGraw Hill.
3. <https://www.gnu.org/software/sed/manual/sed.html>.



Name: Vishal Rajesh Mahajan

Exp: 8

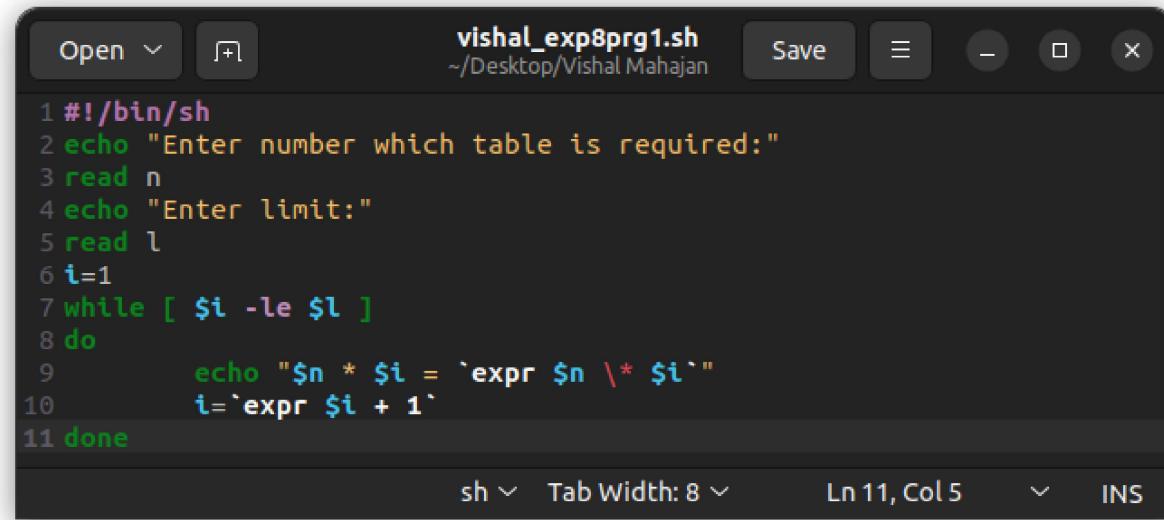
Class: SE IT A

Roll No: 63

Experiment – 8: Shell script and sed programming.

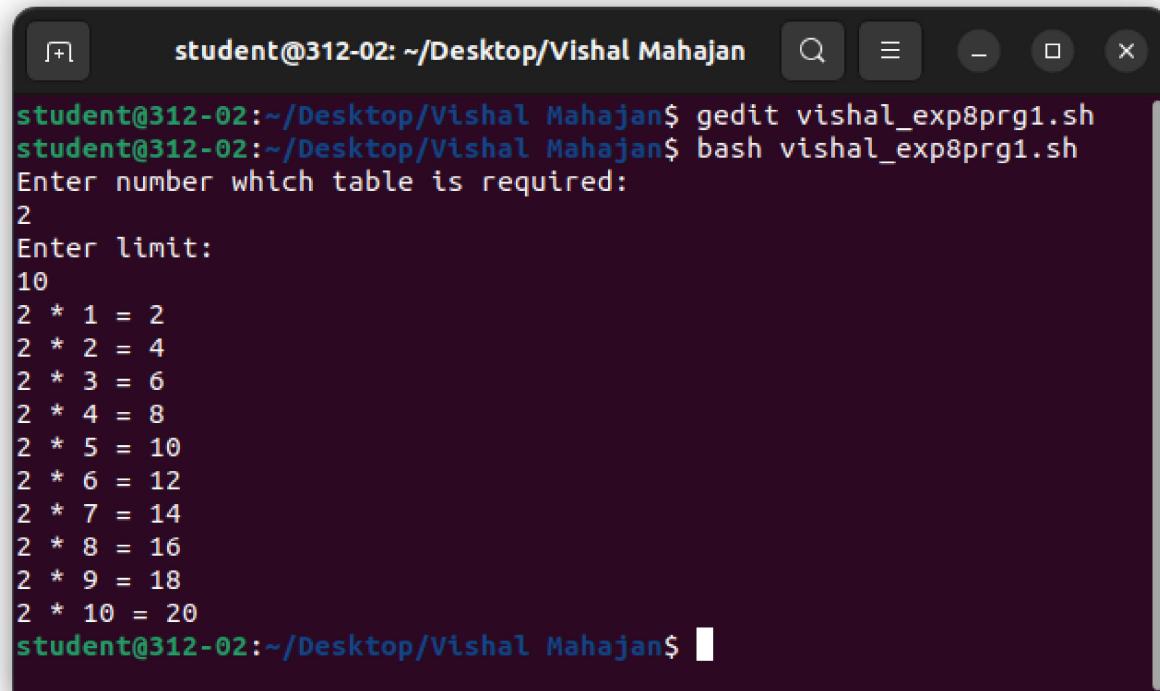
Laboratory Exercise

1. Write a shell program to generate multiplication table of a number upto a given range.



```
Open v F+ v vishal_exp8prg1.sh ~/Desktop/Vishal Mahajan Save = - x
1 #!/bin/sh
2 echo "Enter number which table is required:"
3 read n
4 echo "Enter limit:"
5 read l
6 i=1
7 while [ $i -le $l ]
8 do
9     echo "$n * $i = `expr $n \* $i`"
10    i=`expr $i + 1`
11 done
sh v Tab Width: 8 v Ln 11, Col 5 v INS
```

Code of Program 1



```
student@312-02: ~/Desktop/Vishal Mahajan$ gedit vishal_exp8prg1.sh
student@312-02: ~/Desktop/Vishal Mahajan$ bash vishal_exp8prg1.sh
Enter number which table is required:
2
Enter limit:
10
2 * 1 = 2
2 * 2 = 4
2 * 3 = 6
2 * 4 = 8
2 * 5 = 10
2 * 6 = 12
2 * 7 = 14
2 * 8 = 16
2 * 9 = 18
2 * 10 = 20
student@312-02: ~/Desktop/Vishal Mahajan$
```

Output of Program 1

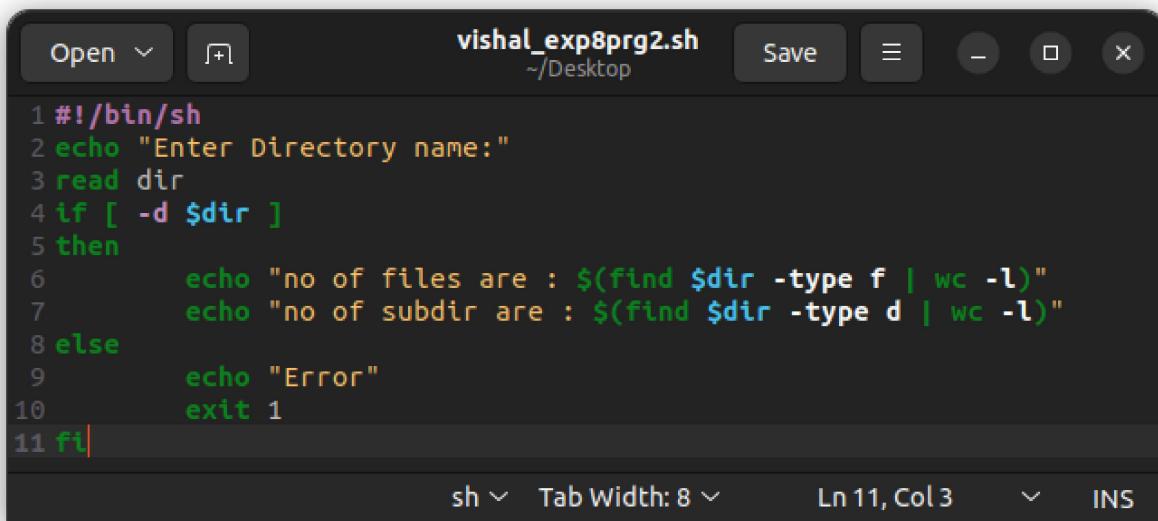
Name: Vishal Rajesh Mahajan

Exp: 8

Class: SE IT A

Roll No: 63

2. Write a shell program to count the number of files in a directory.

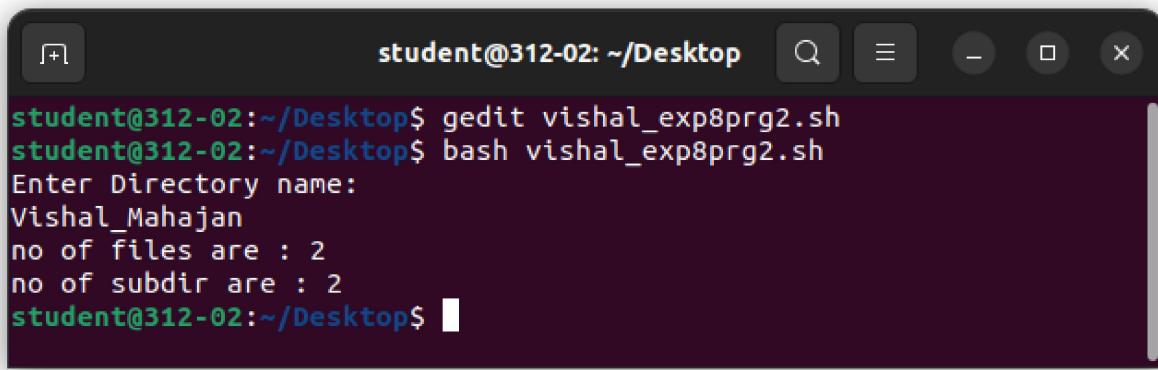


The screenshot shows a terminal window with the following details:

- File name: vishal_exp8prg2.sh
- Location: ~/Desktop
- Code content:

```
1 #!/bin/sh
2 echo "Enter Directory name:"
3 read dir
4 if [ -d $dir ]
5 then
6     echo "no of files are : $(find $dir -type f | wc -l)"
7     echo "no of subdir are : $(find $dir -type d | wc -l)"
8 else
9     echo "Error"
10    exit 1
11 fi
```
- Bottom status bar: sh ~ Tab Width: 8 ~ Ln 11, Col 3 ~ INS

Code of Program 2



The screenshot shows a terminal window with the following details:

- User: student@312-02
- Location: ~/Desktop
- Command: gedit vishal_exp8prg2.sh
- Command: bash vishal_exp8prg2.sh
- Output:

```
Enter Directory name:
Vishal_Mahajan
no of files are : 2
no of subdir are : 2
```

Output of Program 2

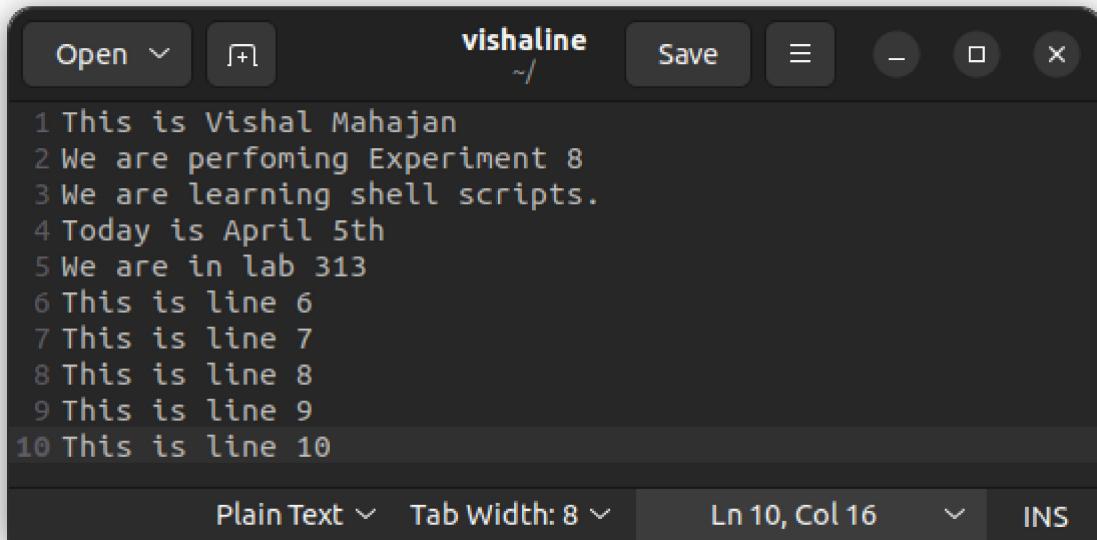
Name: Vishal Rajesh Mahajan

Exp: 8

Class: SE IT A

Roll No: 63

3. Write a shell program using sed to perform line addressing.



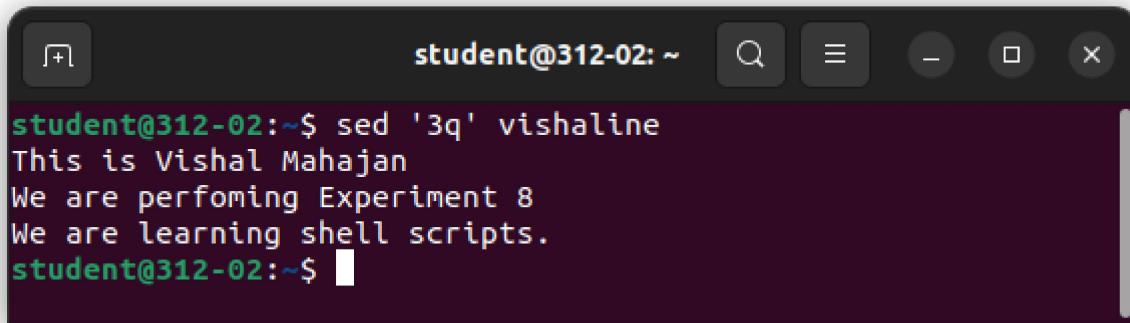
vishaline
~/

```
1 This is Vishal Mahajan
2 We are perfoming Experiment 8
3 We are learning shell scripts.
4 Today is April 5th
5 We are in lab 313
6 This is line 6
7 This is line 7
8 This is line 8
9 This is line 9
10 This is line 10
```

Plain Text ▾ Tab Width: 8 ▾ Ln 10, Col 16 ▾ INS

Vishaline text file

3.1. Write a sed program to quit after reading first three line of a file.



student@312-02: ~

```
student@312-02:~$ sed '3q' vishaline
This is Vishal Mahajan
We are perfoming Experiment 8
We are learning shell scripts.
student@312-02:~$ █
```

Terminal screenshot of 3.1

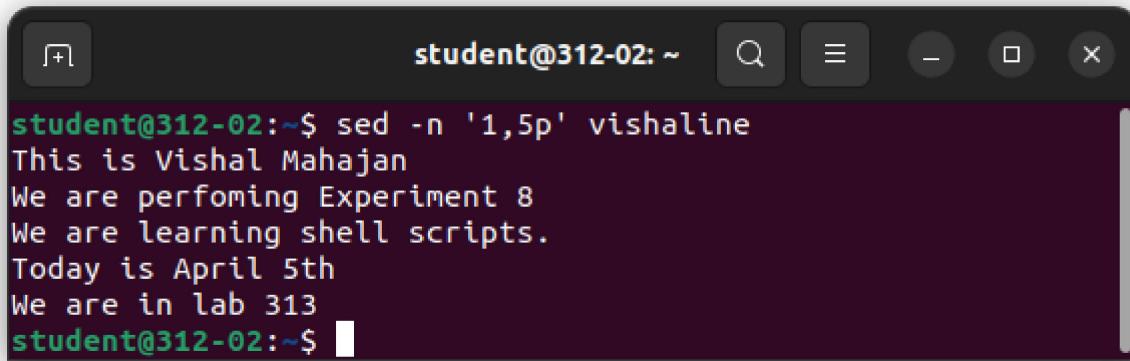
Name: Vishal Rajesh Mahajan

Exp: 8

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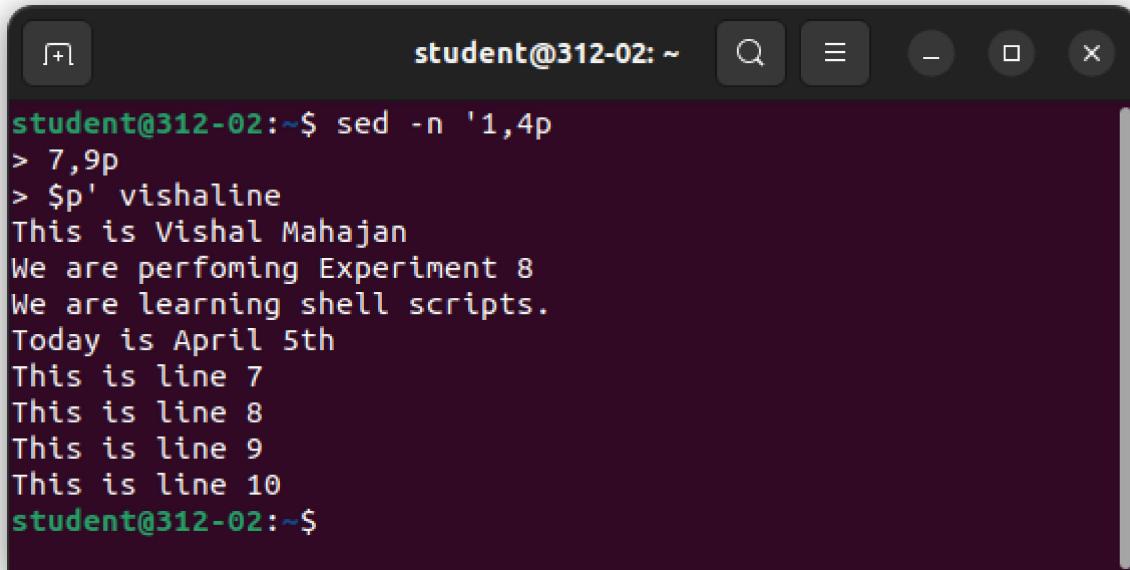
3.2. Write a sed program to print first five line of a file



```
student@312-02:~$ sed -n '1,5p' vishaline
This is Vishal Mahajan
We are performing Experiment 8
We are learning shell scripts.
Today is April 5th
We are in lab 313
student@312-02:~$
```

Terminal screenshot of 3.2

3.3 Write a sed program to display 1-4 , 7-9 and last line.



```
student@312-02:~$ sed -n '1,4p
> 7,9p
> $p' vishaline
This is Vishal Mahajan
We are performing Experiment 8
We are learning shell scripts.
Today is April 5th
This is line 7
This is line 8
This is line 9
This is line 10
student@312-02:~$
```

Terminal screenshot of 3.3

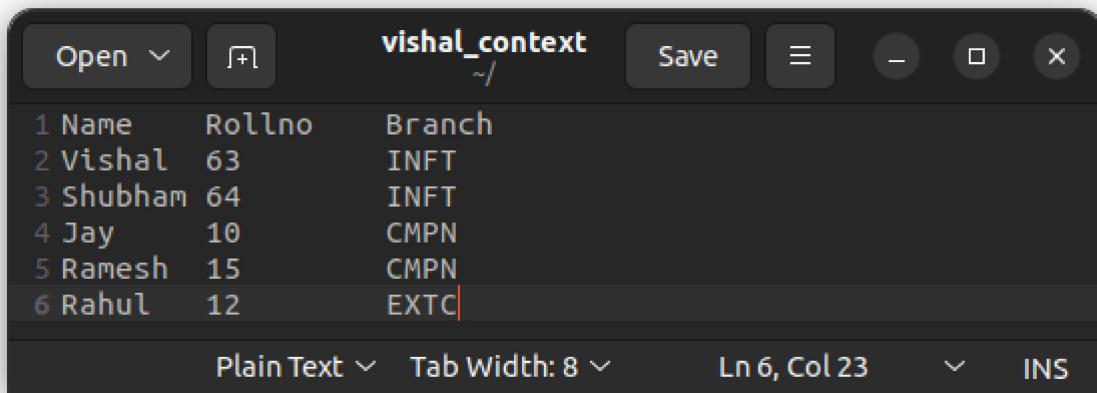
Name: Vishal Rajesh Mahajan

Exp: 8

Class: SE IT A

Roll No: 63

4. Write a shell program using sed to perform context addressing.



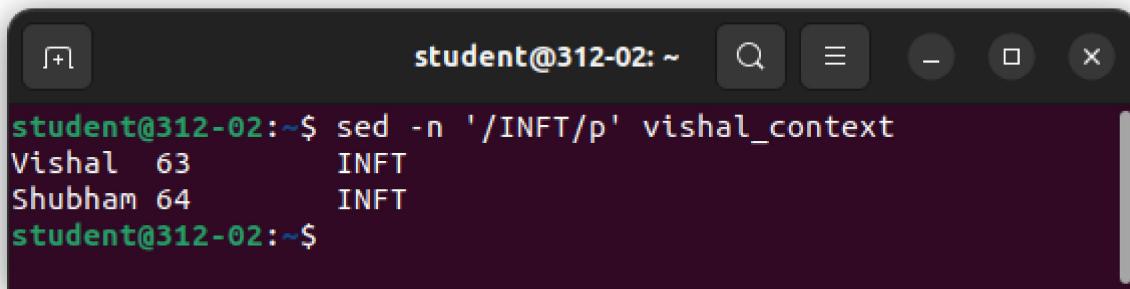
The screenshot shows a dark-themed text editor window titled "vishal_context". The file contains the following data:

	Name	Rollno	Branch
1	Vishal	63	INFT
2	Shubham	64	INFT
3	Jay	10	CMPN
4	Ramesh	15	CMPN
5	Rahul	12	EXTC

Below the editor are status indicators: "Plain Text", "Tab Width: 8", "Ln 6, Col 23", and "INS".

Vishal_context addressing file

4.1 Write a sed command to display all lines containing INFT



The screenshot shows a terminal window with the prompt "student@312-02:~\$". The user has run the command "sed -n '/INFT/p' vishal_context". The output is:

```
student@312-02:~$ sed -n '/INFT/p' vishal_context
Vishal 63          INFT
Shubham 64         INFT
student@312-02:~$
```

Terminal screenshot of 4.1

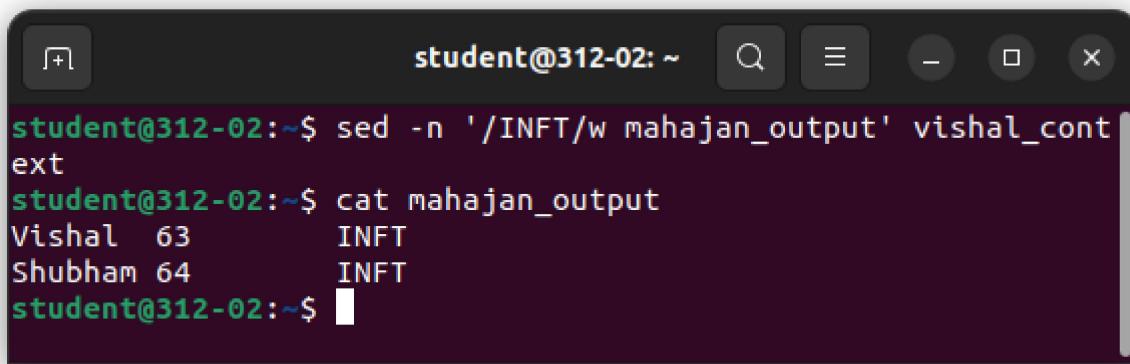
Name: Vishal Rajesh Mahajan

Exp: 8

Class: SE IT A

Roll No: 63

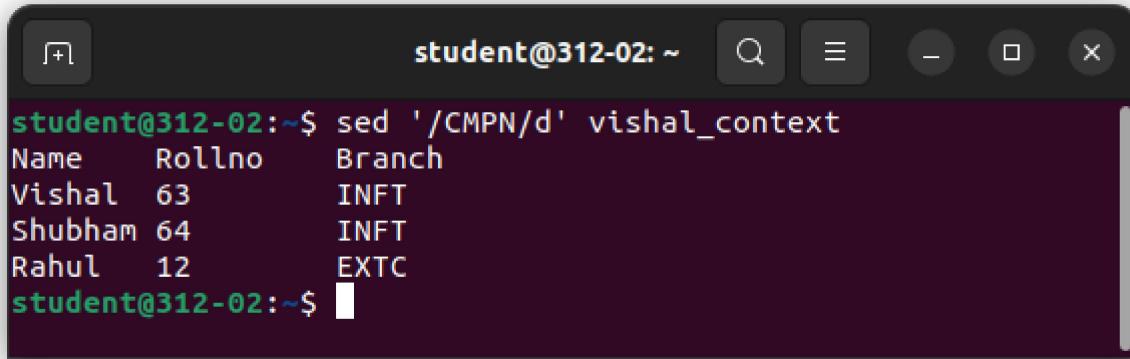
4.2 Write a sed program to write selected line onto a Output file



```
student@312-02:~$ sed -n '/INFT/w mahajan_output' vishal_context
student@312-02:~$ cat mahajan_output
Vishal 63          INFT
Shubham 64          INFT
student@312-02:~$
```

Terminal screenshot of 4.2

4.3 Write a sed command to delete a selected line



```
student@312-02:~$ sed '/CMPN/d' vishal_context
Name    Rollno   Branch
Vishal  63      INFT
Shubham 64      INFT
Rahul   12      EXTC
student@312-02:~$
```

Terminal screenshot of 4.3

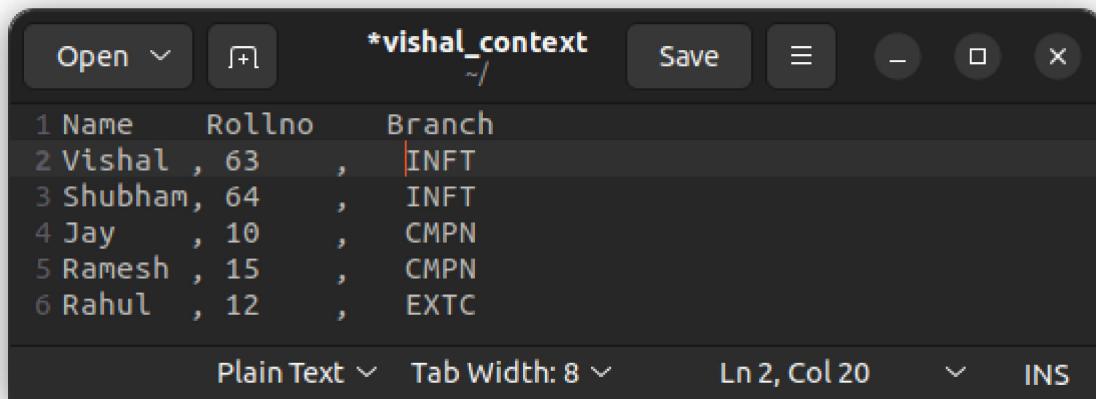
Name: Vishal Rajesh Mahajan

Exp: 8

Class: SE IT A

Roll No: 63

5. Write a shell program using sed to perform substitution.



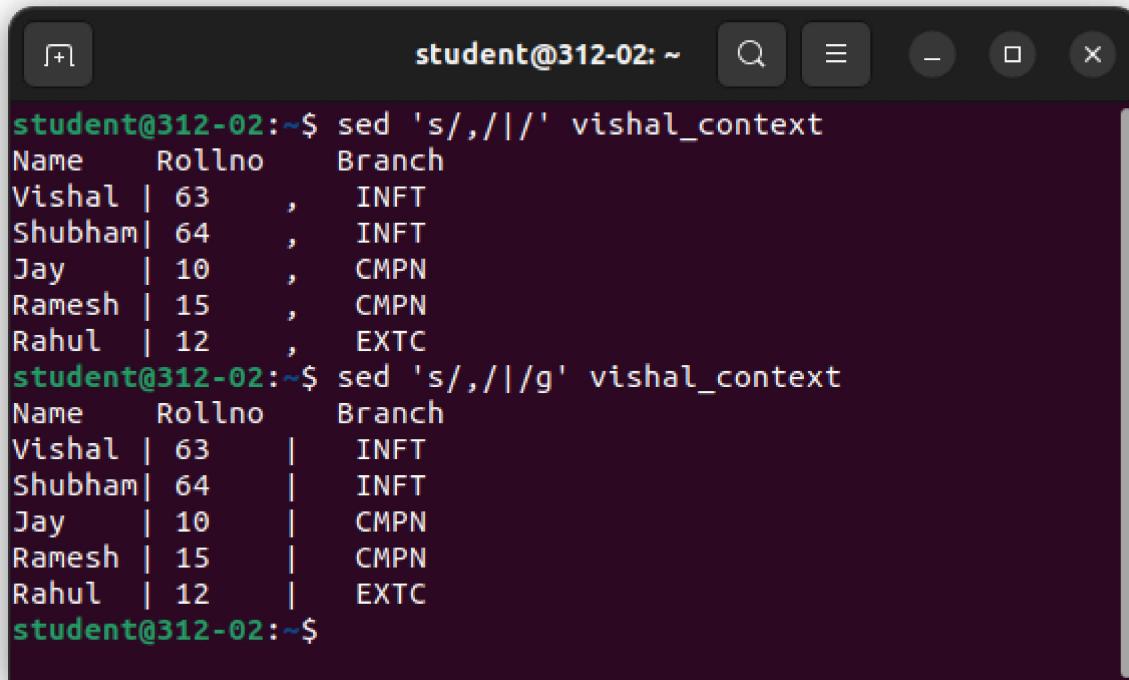
The screenshot shows a code editor window titled '*vishal_context'. The file contains the following data:

	Name	Rollno	Branch
1	Vishal	63	INFT
2	Shubham	64	INFT
3	Jay	10	CMPN
4	Ramesh	15	CMPN
5	Rahul	12	EXTC

At the bottom of the editor, there are status indicators: Plain Text, Tab Width: 8, Ln 2, Col 20, and INS.

Updated Vishal_context file

5.1. Write sed program to the comma with pip operator in a file.



```
student@312-02:~$ sed 's/,/|/' vishal_context
Name Rollno Branch
Vishal | 63 , INFT
Shubham| 64 , INFT
Jay | 10 , CMPN
Ramesh | 15 , CMPN
Rahul | 12 , EXTC
student@312-02:~$ sed 's/,/|/g' vishal_context
Name Rollno Branch
Vishal | 63 | INFT
Shubham| 64 | INFT
Jay | 10 | CMPN
Ramesh | 15 | CMPN
Rahul | 12 | EXTC
student@312-02:~$
```

Terminal screenshot of 5.1

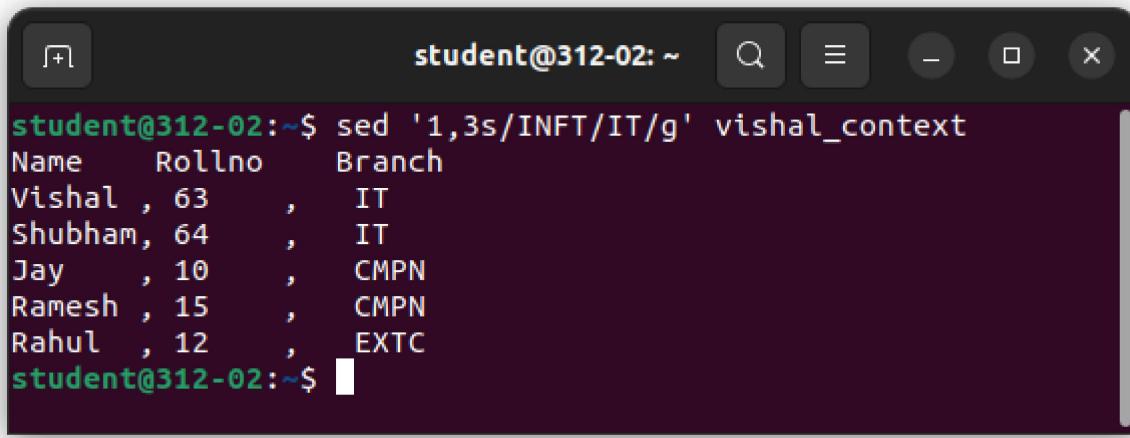
Name: Vishal Rajesh Mahajan

Exp: 8

Class: SE IT A

Roll No: 63

5.2. Write sed command to replace the word INFT by IT in the first three lines of a File



```
student@312-02:~$ sed '1,3s/INFT/IT/g' vishal_context
Name    Rollno    Branch
Vishal , 63      ,  IT
Shubham, 64      ,  IT
Jay     , 10      ,  CMPN
Ramesh , 15      ,  CMPN
Rahul   , 12      ,  EXTC
student@312-02:~$
```

Terminal screenshot of 5.2

Name: Vishal Rajesh Mahajan

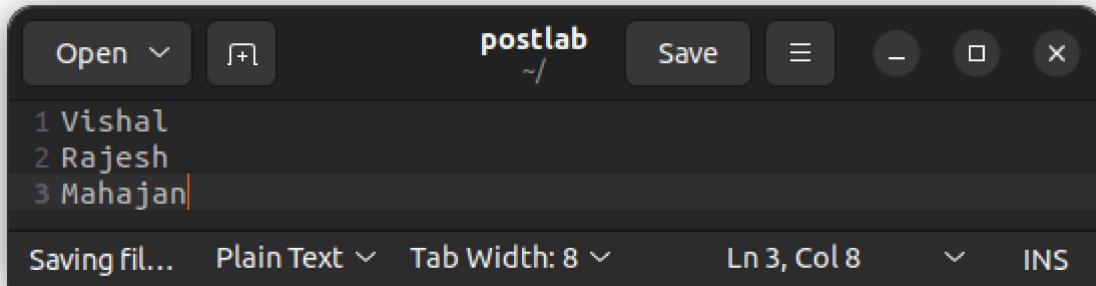
Exp: 8

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Roll No: 63

Post Experiment Exercise

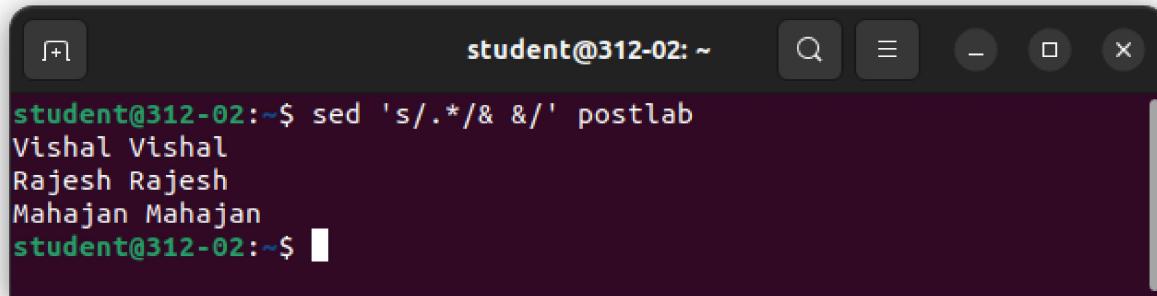
1. Write a sed command to duplicate each line in a file in Unix.



```
1 Vishal
2 Rajesh
3 Mahajan|
```

Saving fil... Plain Text Tab Width: 8 Ln 3, Col 8 INS

Postlab File



```
student@312-02:~$ sed 's/.*/& &/' postlab
Vishal Vishal
Rajesh Rajesh
Mahajan Mahajan
student@312-02:~$
```

Terminal screenshot of PostLab