

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 – 7: Shell scripts -I.

1. **Aim:** To study and implement basic Shell scripting.
2. **Objectives:**
 - To understand shell variables and shell programming.
 - To develop shell scripts.
3. **Outcomes:** After study of this experiment, the student will be able to
 - Develop shell scripts for simple tasks.
4. **Prerequisite:** UNIX shell.
5. **Requirements:** Personal Computer, Ubuntu OS, Text Editor, LibreOffice.

6. Pre-Experiment Exercise:

Brief Theory:

Shell Script

Shell is a program which interprets user commands through CLI like Terminal. The Bourne shell, bash shell and the C shell are the most used shells in Unix. Unix commands may also be executed non-interactively in the form of a Shell program or a Shell Script. The script is a series of commands that will be run together.

It can combine lengthy and repetitive sequences of commands into a single and simple script, which can be stored and executed anytime. This reduces the effort required by the end user. Typical operations performed by shell scripts include file manipulation, program execution, and printing text.

Creating and executing a shell script

Steps in creating a Shell Script:

1. **Create a file using a gedit editor** (or any other editor).
2. Name the script file with **extension .sh**
3. **Start** the script with **#!/bin/sh**
4. Write some code.
5. Save the script file as filename.sh
6. Give the shell permission to execute it.
7. For **executing** the script type **bash filename.sh**

An example shell script

The following example shows a simple shell script that lists the contents of the current directory and also shows the path of the current directory.

```
#!/bin/sh
ls
pwd
```

7. Laboratory Exercise

A. Procedure

1. Write a shell script to display a list of users currently logged in.
2. Write a shell script to perform arithmetic operations.
3. Write a shell script to copy contents of one file to another.

B. Result/Program code Screenshots

8. Post-Experiments Exercise

A. Extended Theory:

Nil

B. Questions:

1. Write a shell script to check whether a number is even or odd.
2. When to use shell scripts?
3. Where is the bash program located on your system?
4. How to find the current shell which you are using 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.guru99.com/introduction-to-shell-scripting.html>.
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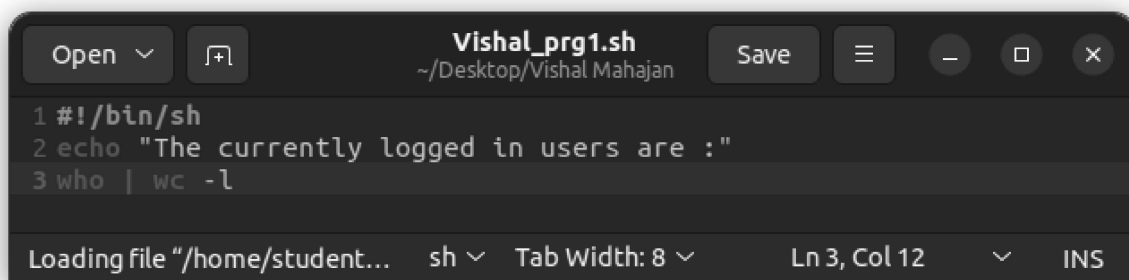
Name: Vishal Rajesh Mahajan
Class: SE IT A

Exp: 7
Roll No: 63

Experiment – 7: Shell scripts -I

7.Laboratory Exercise

Q1. Write a shell script to display a list of users currently logged in.

A screenshot of a text editor window titled 'Vishal_prg1.sh' with the path '~/Desktop/Vishal Mahajan'. The editor contains three lines of shell script: '1 #!/bin/sh', '2 echo "The currently logged in users are :"', and '3 who | wc -l'. The status bar at the bottom shows 'Loading file "/home/student...', 'sh', 'Tab Width: 8', 'Ln 3, Col 12', and 'INS'.

Code of Program 1

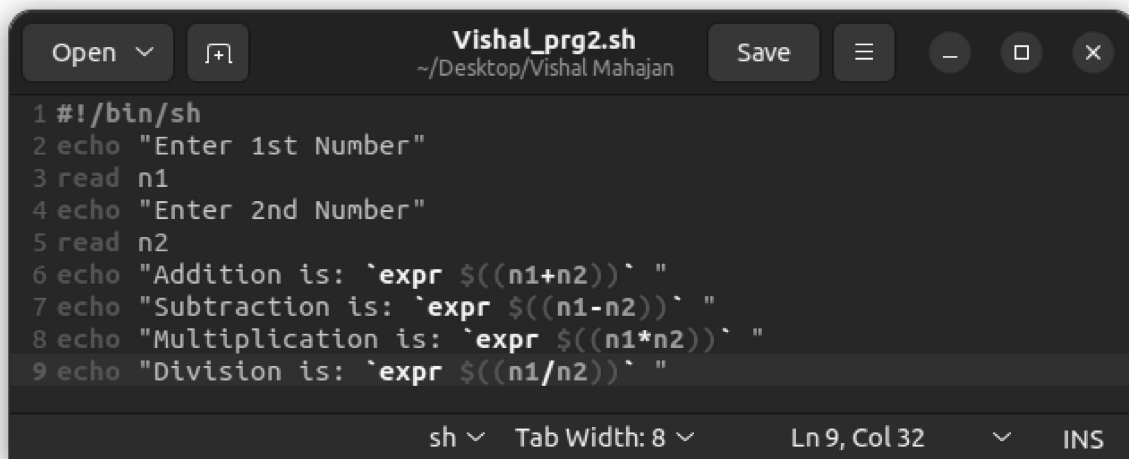
A screenshot of a terminal window with the title 'student@312-02: ~/Desktop/Vishal Mahajan'. The terminal shows the user running 'gedit Vishal_prg1.sh' and then 'bash Vishal_prg1.sh'. The output of the script is displayed: 'The currently logged in users are :', followed by a line containing the number '1'. The prompt 'student@312-02:~/Desktop/Vishal Mahajan\$' is visible at the end.

Output of Program 1

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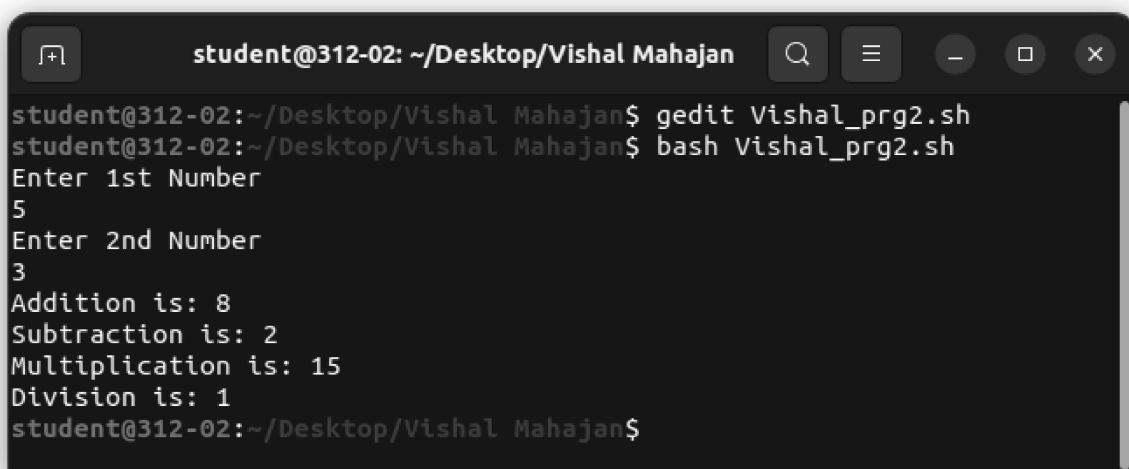
2. Write a shell script to perform arithmetic operations.



```
1#!/bin/sh
2echo "Enter 1st Number"
3read n1
4echo "Enter 2nd Number"
5read n2
6echo "Addition is: `expr $((n1+n2))` "
7echo "Subtraction is: `expr $((n1-n2))` "
8echo "Multiplication is: `expr $((n1*n2))` "
9echo "Division is: `expr $((n1/n2))` "
```

sh Tab Width: 8 Ln 9, Col 32 INS

Code of Program 2



```
student@312-02: ~/Desktop/Vishal Mahajan
student@312-02:~/Desktop/Vishal Mahajan$ gedit Vishal_prg2.sh
student@312-02:~/Desktop/Vishal Mahajan$ bash Vishal_prg2.sh
Enter 1st Number
5
Enter 2nd Number
3
Addition is: 8
Subtraction is: 2
Multiplication is: 15
Division is: 1
student@312-02:~/Desktop/Vishal Mahajan$
```

Output of Program 2

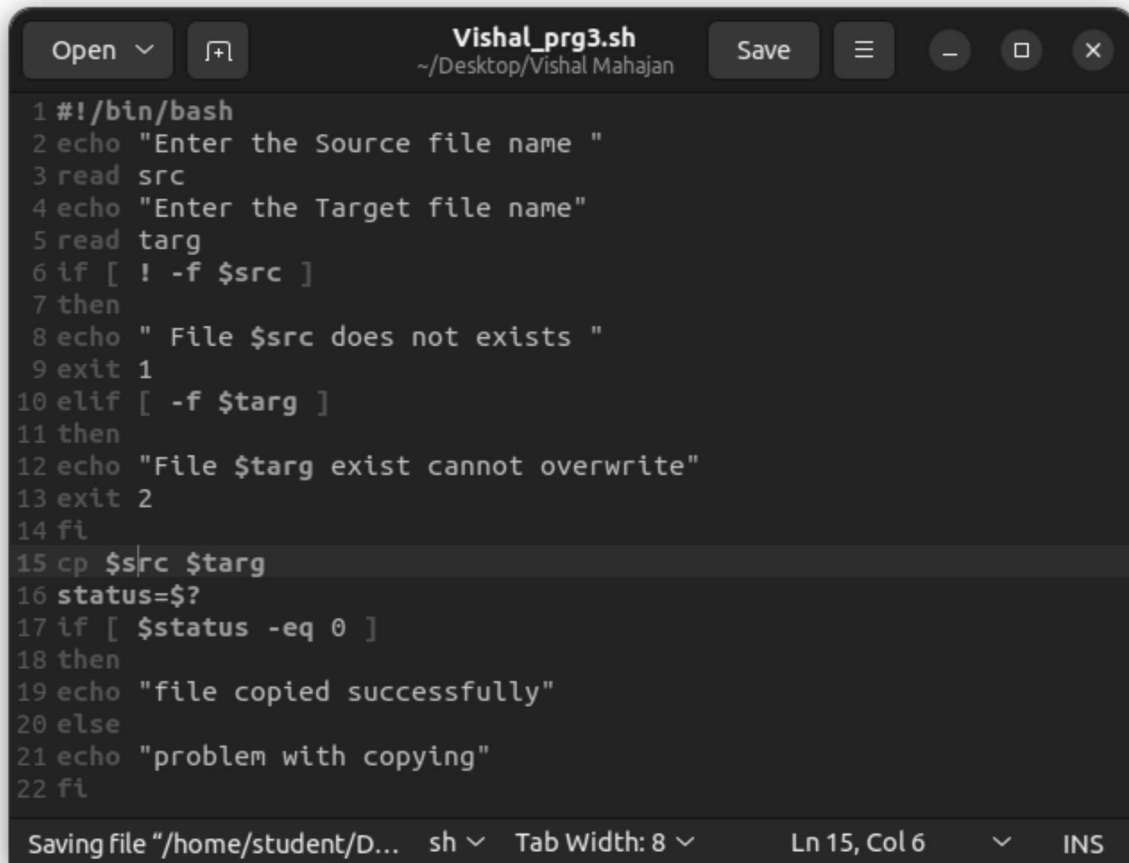
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Exp: 7

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3. Write a shell script to copy contents of one file to another.



```
1#!/bin/bash
2echo "Enter the Source file name "
3read src
4echo "Enter the Target file name"
5read targ
6if [ ! -f $src ]
7then
8echo " File $src does not exists "
9exit 1
10elif [ -f $targ ]
11then
12echo "File $targ exist cannot overwrite"
13exit 2
14fi
15cp $src $targ
16status=$?
17if [ $status -eq 0 ]
18then
19echo "file copied successfully"
20else
21echo "problem with copying"
22fi
```

Saving file "/home/student/D... sh ▾ Tab Width: 8 ▾ Ln 15, Col 6 ▾ INS

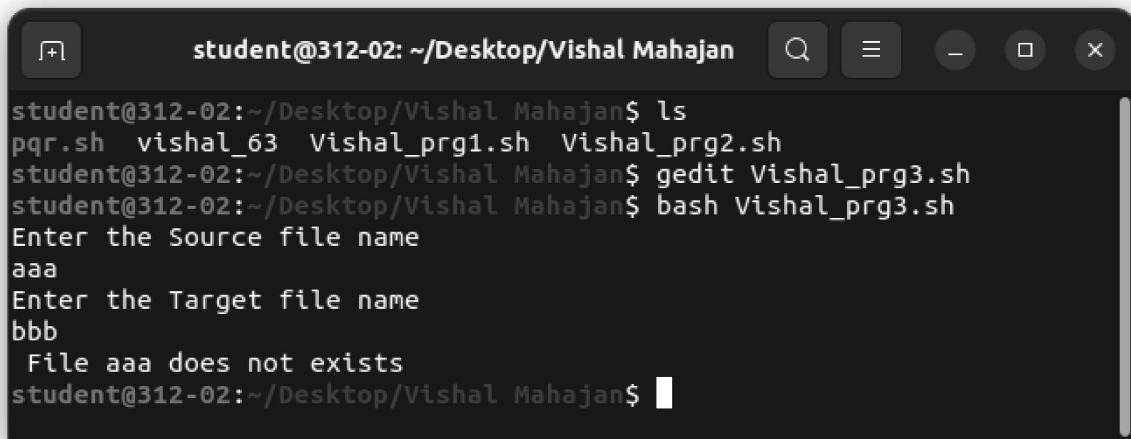
Code of Program 3

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Scenario of Output of Program 3:

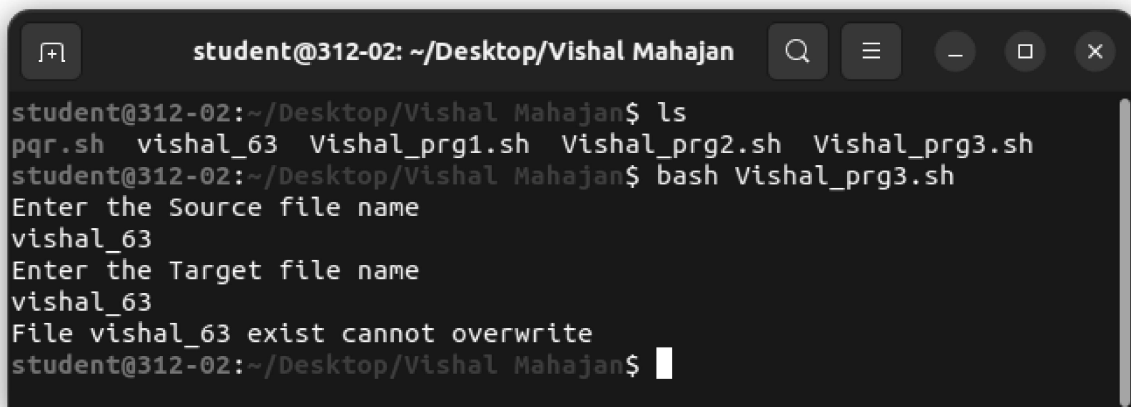
1. When source file does not exist



```
student@312-02: ~/Desktop/Vishal Mahajan
student@312-02:~/Desktop/Vishal Mahajan$ ls
pqr.sh vishal_63 Vishal_prg1.sh Vishal_prg2.sh
student@312-02:~/Desktop/Vishal Mahajan$ gedit Vishal_prg3.sh
student@312-02:~/Desktop/Vishal Mahajan$ bash Vishal_prg3.sh
Enter the Source file name
aaa
Enter the Target file name
bbb
File aaa does not exists
student@312-02:~/Desktop/Vishal Mahajan$
```

Output of Program 3 Scenario : when source file does not exist

2. When file with target name already exists



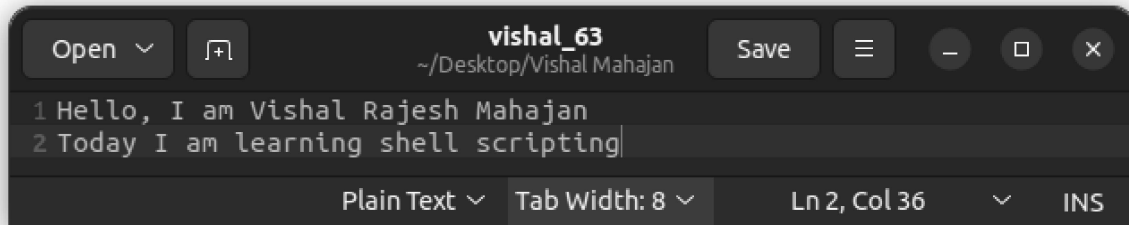
```
student@312-02: ~/Desktop/Vishal Mahajan
student@312-02:~/Desktop/Vishal Mahajan$ ls
pqr.sh vishal_63 Vishal_prg1.sh Vishal_prg2.sh Vishal_prg3.sh
student@312-02:~/Desktop/Vishal Mahajan$ bash Vishal_prg3.sh
Enter the Source file name
vishal_63
Enter the Target file name
vishal_63
File vishal_63 exist cannot overwrite
student@312-02:~/Desktop/Vishal Mahajan$
```

Output of Program 3 Scenario : When file with target name already exists

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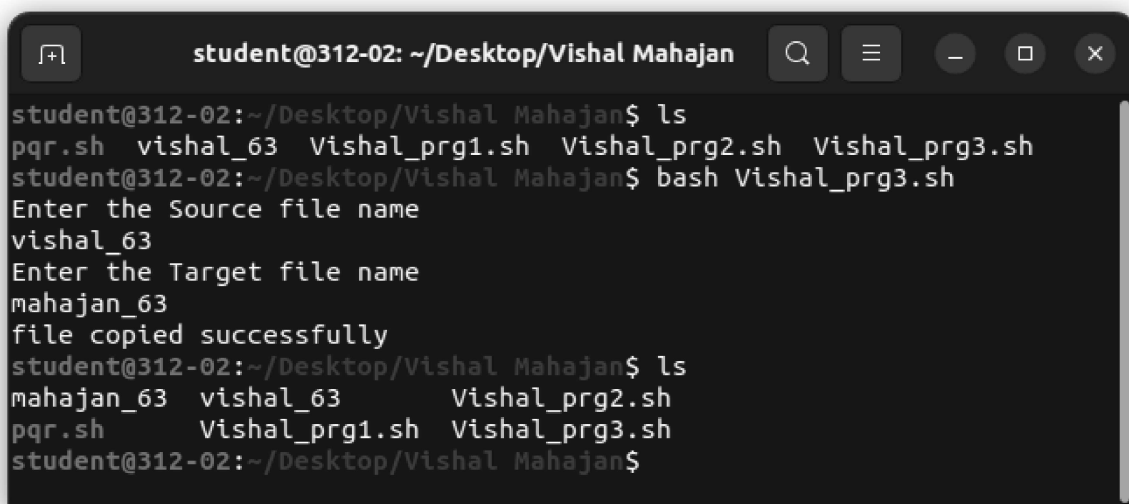
Exp: 7
Roll No: 63

3. When it copies successfully



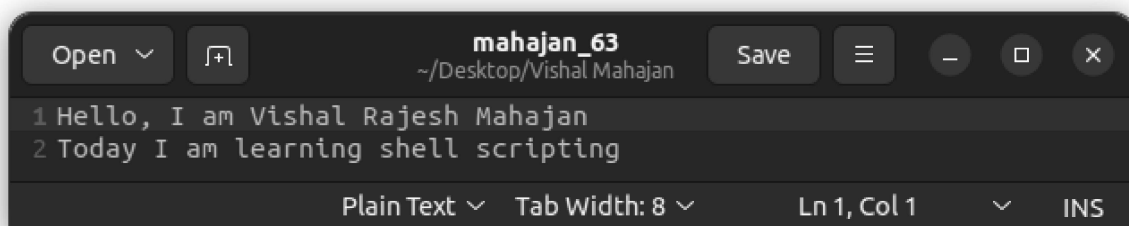
```
Open  [icon] vishal_63 ~/Desktop/Vishal Mahajan Save [icon] [icon] [icon] [icon]
1 Hello, I am Vishal Rajesh Mahajan
2 Today I am learning shell scripting
Plain Text  Tab Width: 8  Ln 2, Col 36  INS
```

Source file of Program 3 Scenario : When it copies successfully



```
[icon] student@312-02: ~/Desktop/Vishal Mahajan [icon] [icon] [icon] [icon]
student@312-02:~/Desktop/Vishal Mahajan$ ls
pqr.sh vishal_63 Vishal_prg1.sh Vishal_prg2.sh Vishal_prg3.sh
student@312-02:~/Desktop/Vishal Mahajan$ bash Vishal_prg3.sh
Enter the Source file name
vishal_63
Enter the Target file name
mahajan_63
file copied successfully
student@312-02:~/Desktop/Vishal Mahajan$ ls
mahajan_63 vishal_63 Vishal_prg2.sh
pqr.sh Vishal_prg1.sh Vishal_prg3.sh
student@312-02:~/Desktop/Vishal Mahajan$
```

Output of Program 3 Scenario : When it copies successfully



```
Open  [icon] mahajan_63 ~/Desktop/Vishal Mahajan Save [icon] [icon] [icon] [icon]
1 Hello, I am Vishal Rajesh Mahajan
2 Today I am learning shell scripting
Plain Text  Tab Width: 8  Ln 1, Col 1  INS
```

Target file of Program 3 Scenario : When it copies successfully

Name: Vishal Rajesh Mahajan

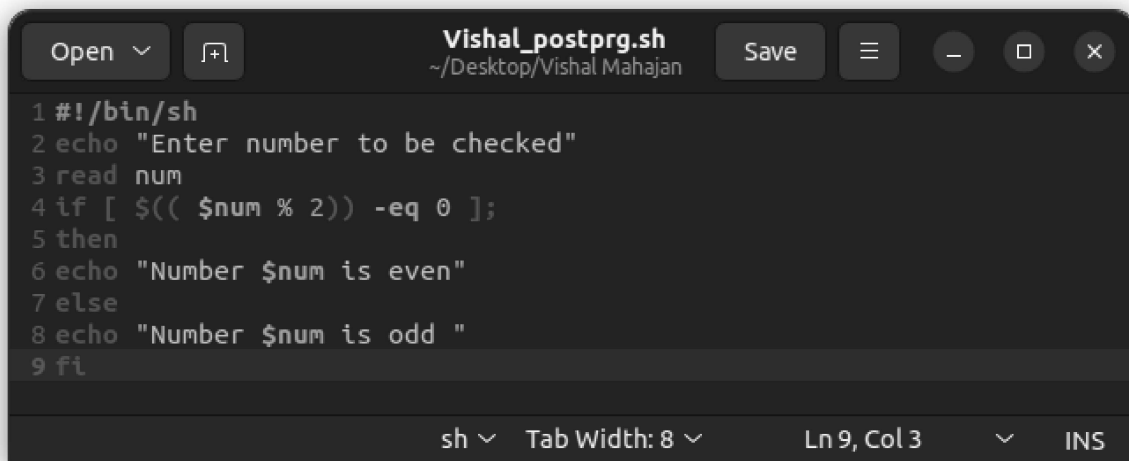
Exp: 7

Class: SE IT A

Roll No: 63

8. Post-Experiments Exercise

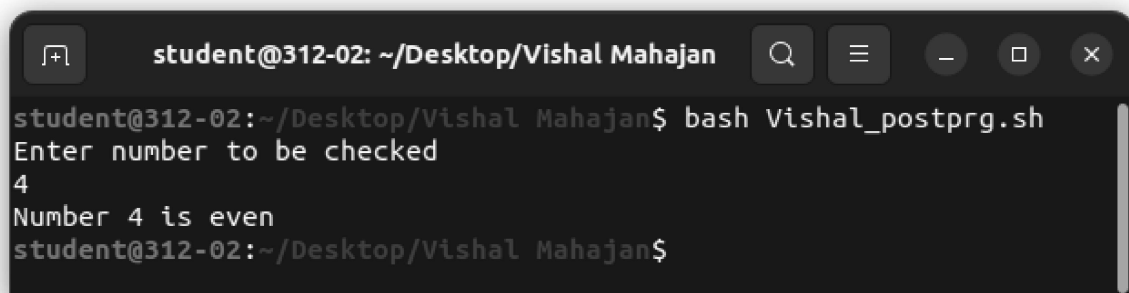
1. Write a shell script to check whether a number is even or odd.



```
1#!/bin/sh
2echo "Enter number to be checked"
3read num
4if [ $(( $num % 2)) -eq 0 ];
5then
6echo "Number $num is even"
7else
8echo "Number $num is odd "
9fi
```

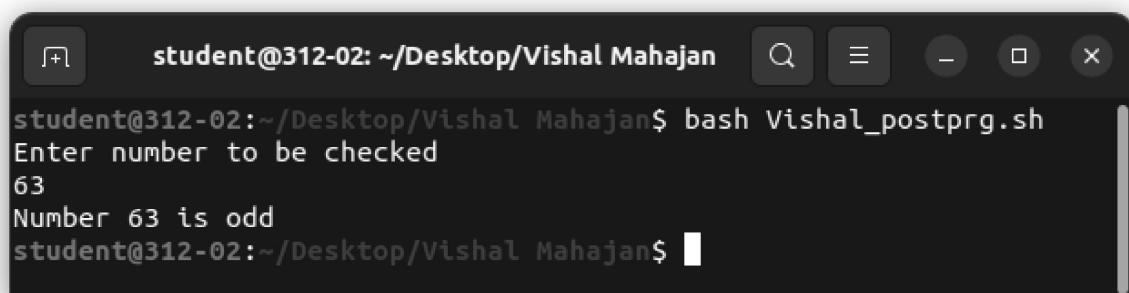
sh Tab Width: 8 Ln 9, Col 3 INS

Code of Post Exp Program



```
student@312-02: ~/Desktop/Vishal Mahajan
student@312-02:~/Desktop/Vishal Mahajan$ bash Vishal_postprg.sh
Enter number to be checked
4
Number 4 is even
student@312-02:~/Desktop/Vishal Mahajan$
```

Output of Post Exp Program when input is even



```
student@312-02: ~/Desktop/Vishal Mahajan
student@312-02:~/Desktop/Vishal Mahajan$ bash Vishal_postprg.sh
Enter number to be checked
63
Number 63 is odd
student@312-02:~/Desktop/Vishal Mahajan$
```

Output of Post Exp Program when input is odd