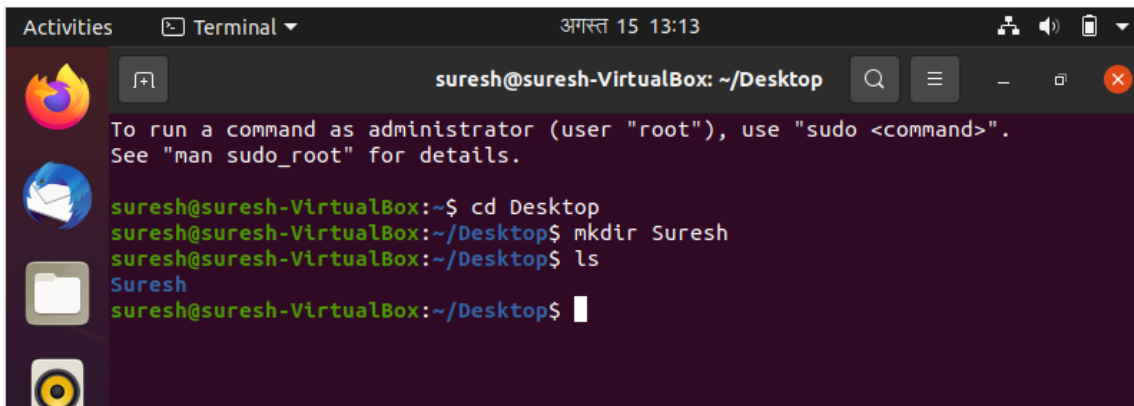


## Lab 2-Implementing: Shell commands

Steps-

1. Open terminal- either from search menu or press **CTRL+ALT+T**.
2. Change your directory location to Desktop using command **cd Desktop**.
3. Make a folder name called "*your name*" using command **mkdir yourname**.
4. Ensure your directory is created or not by using **ls** command. (ls is used for list directory/file)

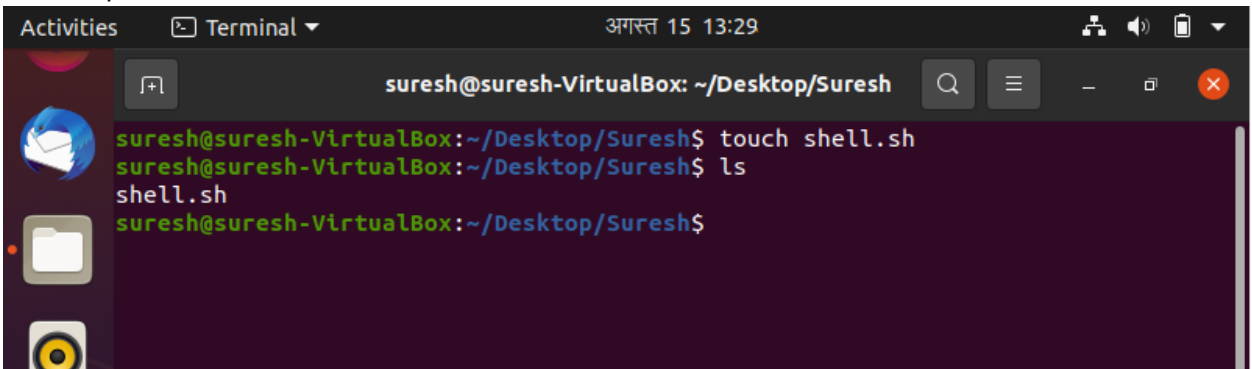


A terminal window titled 'Terminal' with the date 'अगस्त 15 13:13'. The prompt is 'suresh@suresh-VirtualBox: ~/Desktop'. It shows the execution of 'cd Desktop', 'mkdir Suresh', and 'ls', which lists 'Suresh'.

```
suresh@suresh-VirtualBox: ~/Desktop
To run a command as administrator (user "root"), use "sudo <command>".
See "man sudo_root" for details.

suresh@suresh-VirtualBox:~$ cd Desktop
suresh@suresh-VirtualBox:~/Desktop$ mkdir Suresh
suresh@suresh-VirtualBox:~/Desktop$ ls
Suresh
suresh@suresh-VirtualBox:~/Desktop$
```

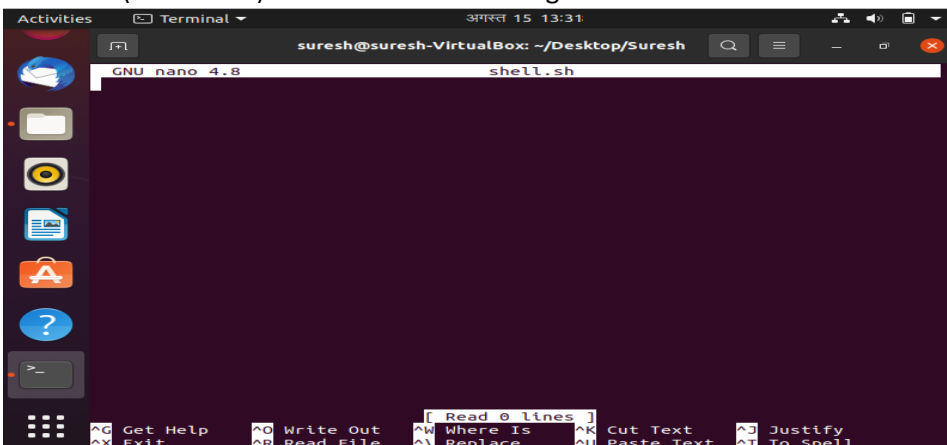
5. Using touch command we create .sh file inside the folder you created just above in order to run shell scripts.



A terminal window titled 'Terminal' with the date 'अगस्त 15 13:29'. The prompt is 'suresh@suresh-VirtualBox: ~/Desktop/Suresh'. It shows the execution of 'touch shell.sh' and 'ls', which lists 'shell.sh'.

```
suresh@suresh-VirtualBox: ~/Desktop/Suresh
suresh@suresh-VirtualBox:~/Desktop/Suresh$ touch shell.sh
suresh@suresh-VirtualBox:~/Desktop/Suresh$ ls
shell.sh
suresh@suresh-VirtualBox:~/Desktop/Suresh$
```

6. Use nano (text editor) to edit shell.sh file using command **nano shell.sh**

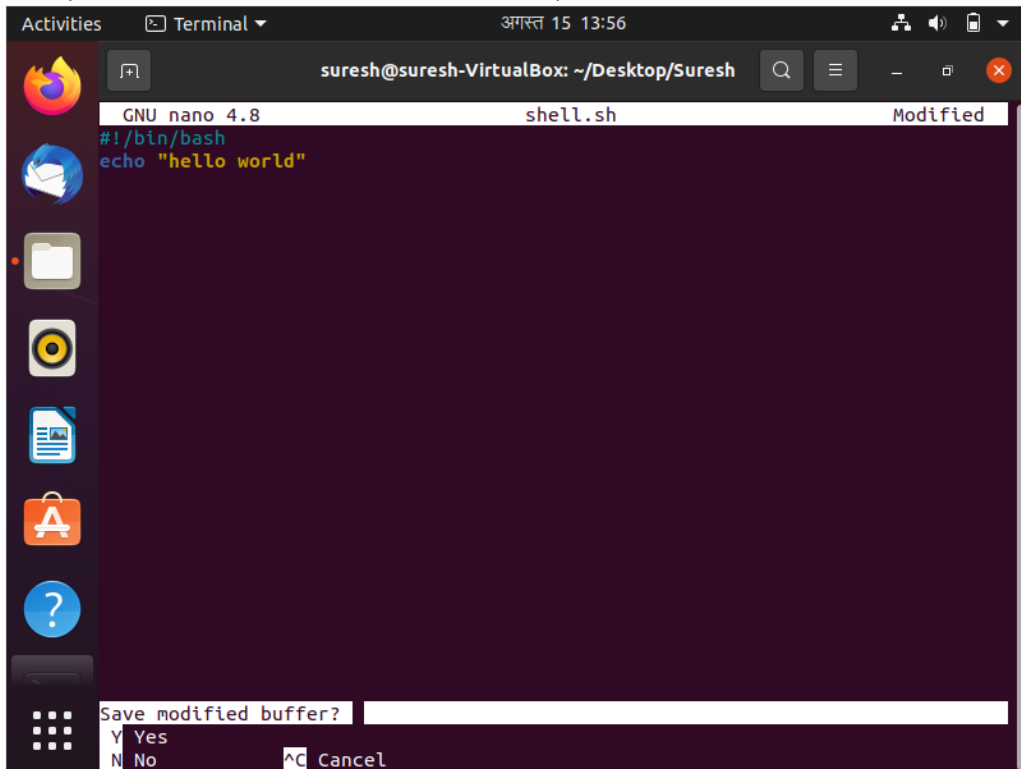


A terminal window titled 'Terminal' with the date 'अगस्त 15 13:31'. The prompt is 'suresh@suresh-VirtualBox: ~/Desktop/Suresh'. It shows the execution of 'nano shell.sh', opening the nano text editor. The editor title is 'GNU nano 4.8 shell.sh'. The bottom status bar shows various keyboard shortcuts.

```
suresh@suresh-VirtualBox: ~/Desktop/Suresh
GNU nano 4.8 shell.sh

[ Read 0 lines ]
^G Get Help  ^O Write Out  ^W Where Is   ^K Cut Text   ^J Justify
^X Exit      ^R Read File  ^_ Replace    ^U Paste Text ^T To Spell
```

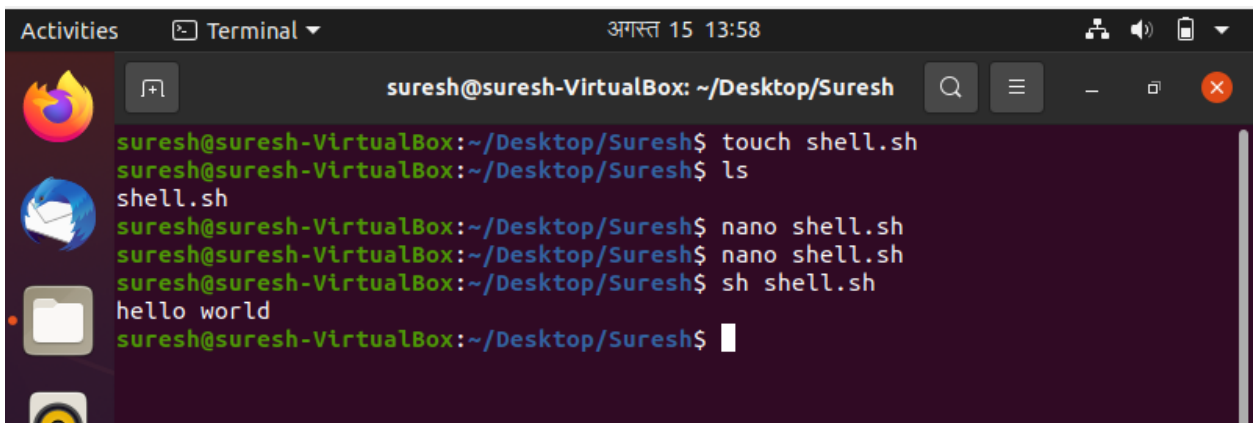
7. **#!/bin/bash** is header file for shell scripts like header files in C-programming. Now let's "hello world" program first using **echo "hello world"** then press CTRL X to exit from text editor and press 'Y' to save it.



```
Activities Terminal ॐ अगस्त 15 13:56
suresh@suresh-VirtualBox: ~/Desktop/Suresh
GNU nano 4.8 shell.sh Modified
#!/bin/bash
echo "hello world"

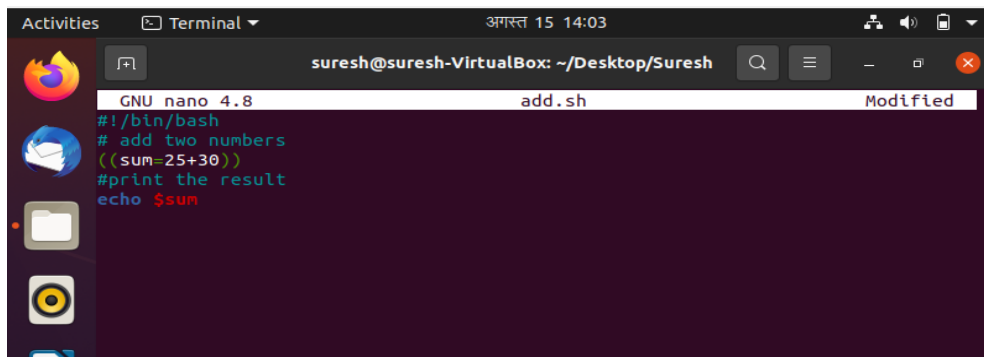
Save modified buffer?
Y Yes
N No ^C Cancel
```

8. To run the file enter command **sh filename.sh** or **bash filename.sh**



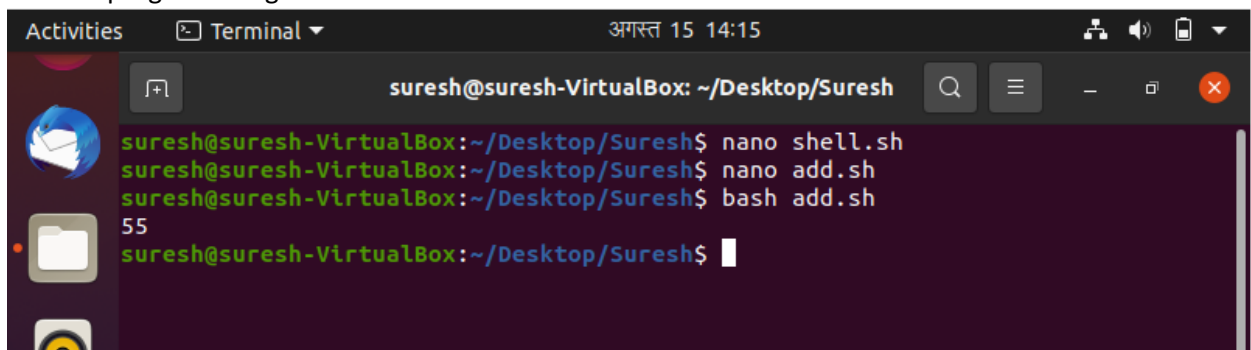
```
Activities Terminal ॐ अगस्त 15 13:58
suresh@suresh-VirtualBox: ~/Desktop/Suresh
suresh@suresh-VirtualBox:~/Desktop/Suresh$ touch shell.sh
suresh@suresh-VirtualBox:~/Desktop/Suresh$ ls
shell.sh
suresh@suresh-VirtualBox:~/Desktop/Suresh$ nano shell.sh
suresh@suresh-VirtualBox:~/Desktop/Suresh$ nano shell.sh
suresh@suresh-VirtualBox:~/Desktop/Suresh$ sh shell.sh
hello world
suresh@suresh-VirtualBox:~/Desktop/Suresh$
```

9. Similarly write a program to add two numeric value.



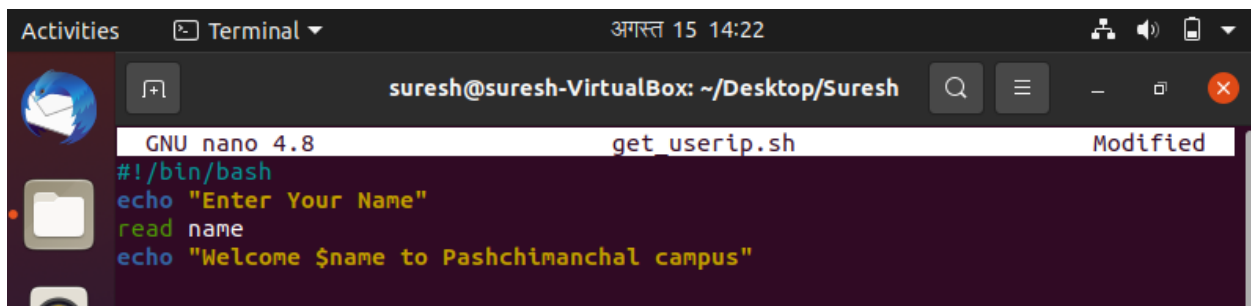
```
GNU nano 4.8 add.sh Modified
#!/bin/bash
# add two numbers
((sum=25+30))
#print the result
echo $sum
```

10. Run the program using **bash add.sh**



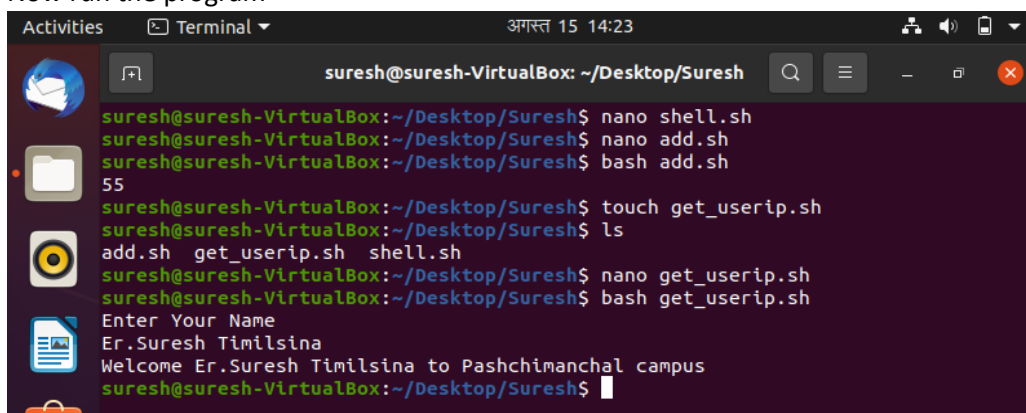
```
suresh@suresh-VirtualBox: ~/Desktop/Suresh
suresh@suresh-VirtualBox:~/Desktop/Suresh$ nano shell.sh
suresh@suresh-VirtualBox:~/Desktop/Suresh$ nano add.sh
suresh@suresh-VirtualBox:~/Desktop/Suresh$ bash add.sh
55
suresh@suresh-VirtualBox:~/Desktop/Suresh$
```

11. Get User Input:



```
GNU nano 4.8 get_userip.sh Modified
#!/bin/bash
echo "Enter Your Name"
read name
echo "Welcome $name to Pashchimanchal campus"
```

Now run the program



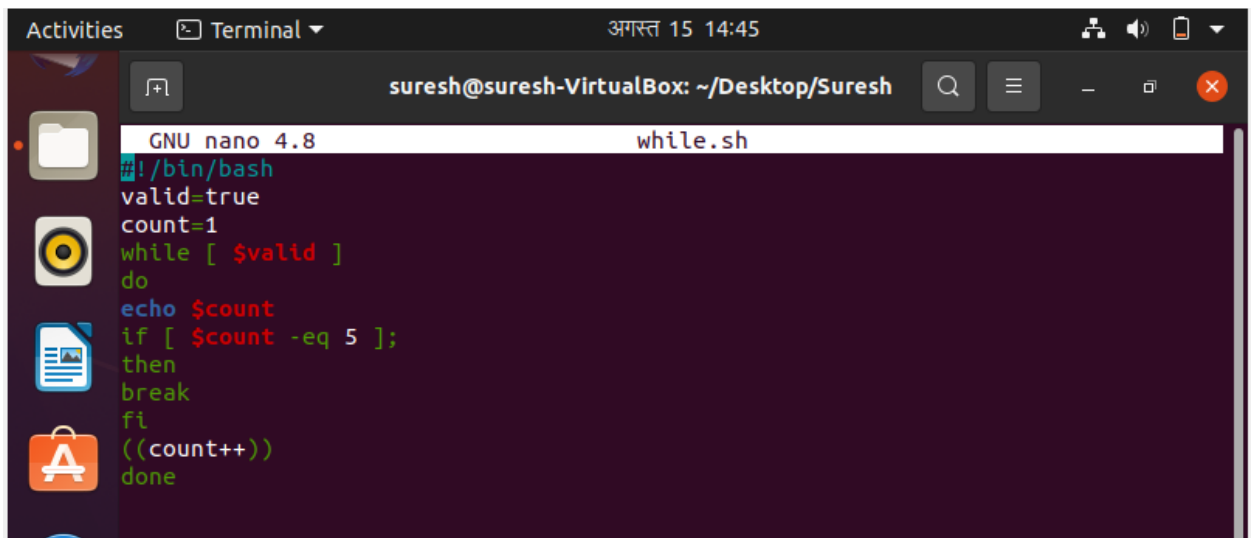
```
suresh@suresh-VirtualBox:~/Desktop/Suresh$ nano shell.sh
suresh@suresh-VirtualBox:~/Desktop/Suresh$ nano add.sh
suresh@suresh-VirtualBox:~/Desktop/Suresh$ bash add.sh
55
suresh@suresh-VirtualBox:~/Desktop/Suresh$ touch get_userip.sh
suresh@suresh-VirtualBox:~/Desktop/Suresh$ ls
add.sh  get_userip.sh  shell.sh
suresh@suresh-VirtualBox:~/Desktop/Suresh$ nano get_userip.sh
suresh@suresh-VirtualBox:~/Desktop/Suresh$ bash get_userip.sh
Enter Your Name
Er.Suresh Timilsina
Welcome Er.Suresh Timilsina to Pashchimanchal campus
suresh@suresh-VirtualBox:~/Desktop/Suresh$
```

## Lab 1 Assignment

1. Implement the functions to display date, time, calendar.
2. Implement a program to ask two numbers from user and display the result.

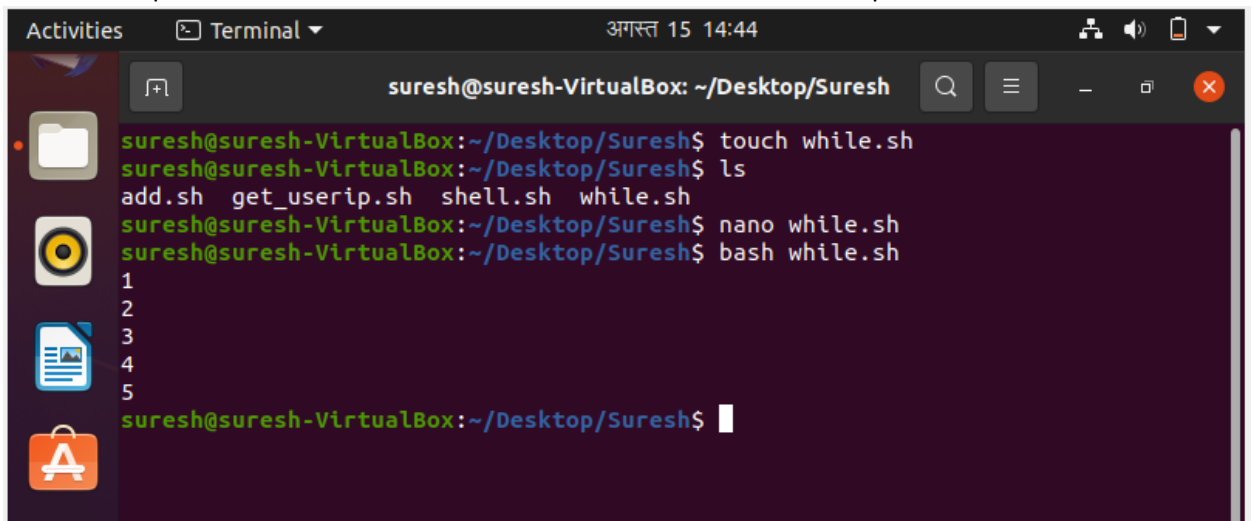
**Lab 2 Shell programming: write simple functions, basic tests, loops, patterns.**

### 1. Implementing While loop



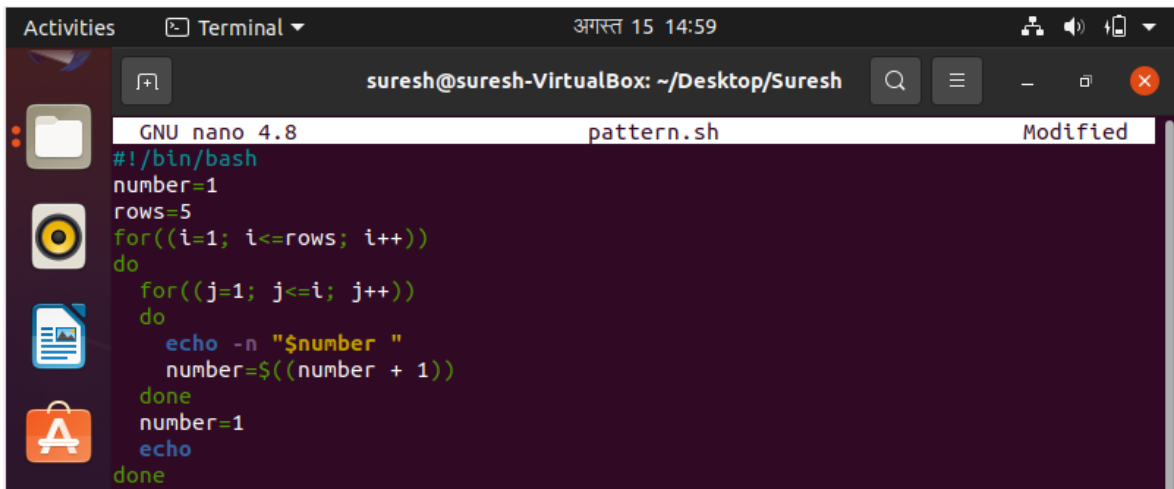
```
GNU nano 4.8      while.sh
#!/bin/bash
valid=true
count=1
while [ $valid ]
do
echo $count
if [ $count -eq 5 ];
then
break
fi
((count++))
done
```

In the example, while loop will iterate for 5 times. The value of count variable will increment by 1 in each step. When the value of count variable will 5 then the while loop will terminate.



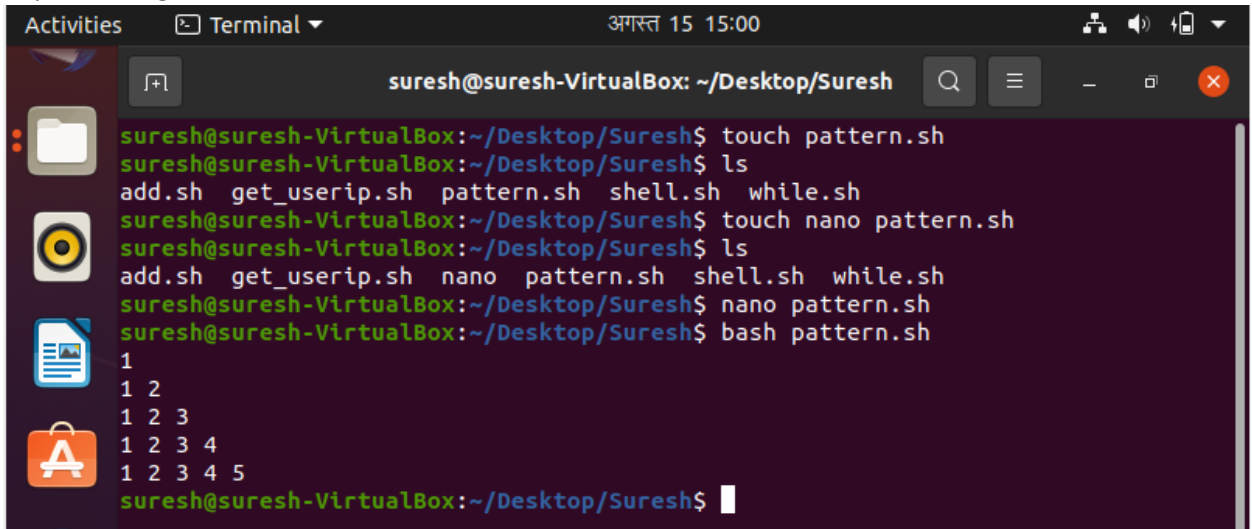
```
suresh@suresh-VirtualBox: ~/Desktop/Suresh
suresh@suresh-VirtualBox:~/Desktop/Suresh$ touch while.sh
suresh@suresh-VirtualBox:~/Desktop/Suresh$ ls
add.sh  get_userip.sh  shell.sh  while.sh
suresh@suresh-VirtualBox:~/Desktop/Suresh$ nano while.sh
suresh@suresh-VirtualBox:~/Desktop/Suresh$ bash while.sh
1
2
3
4
5
suresh@suresh-VirtualBox:~/Desktop/Suresh$
```

## 2. Implementing pattern



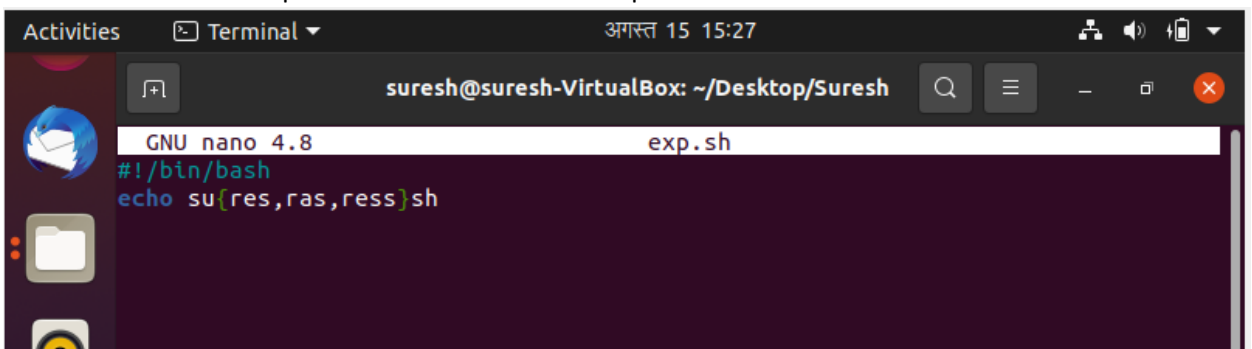
```
GNU nano 4.8 pattern.sh Modified
#!/bin/bash
number=1
rows=5
for((i=1; i<=rows; i++))
do
    for((j=1; j<=i; j++))
    do
        echo -n "$number "
        number=$((number + 1))
    done
    number=1
    echo
done
```

Implementing result



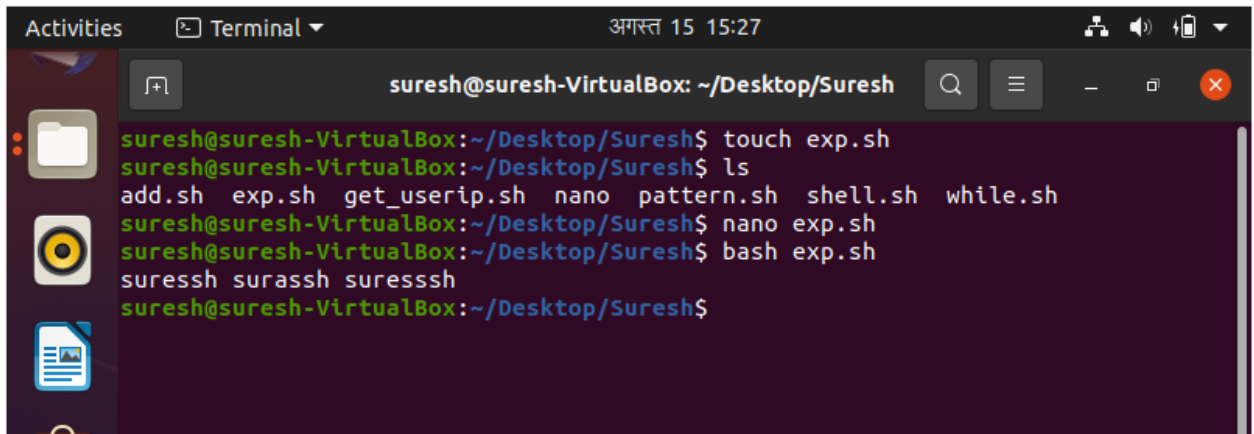
```
suresh@suresh-VirtualBox: ~/Desktop/Suresh
suresh@suresh-VirtualBox:~/Desktop/Suresh$ touch pattern.sh
suresh@suresh-VirtualBox:~/Desktop/Suresh$ ls
add.sh get_userip.sh pattern.sh shell.sh while.sh
suresh@suresh-VirtualBox:~/Desktop/Suresh$ touch nano pattern.sh
suresh@suresh-VirtualBox:~/Desktop/Suresh$ ls
add.sh get_userip.sh nano pattern.sh shell.sh while.sh
suresh@suresh-VirtualBox:~/Desktop/Suresh$ nano pattern.sh
suresh@suresh-VirtualBox:~/Desktop/Suresh$ bash pattern.sh
1
1 2
1 2 3
1 2 3 4
1 2 3 4 5
suresh@suresh-VirtualBox:~/Desktop/Suresh$
```

3. Expansion: Brace expansion is a mechanism by which arbitrary strings may be generated. Patterns to be brace-expanded take the form of an optional PREAMBLE.



```
GNU nano 4.8 exp.sh
#!/bin/bash
echo su{res,ras,ress}sh
```

Result:

A terminal window titled 'Terminal' with a date and time of 'अगस्त 15 15:27'. The window shows a user named 'suresh' in a 'VirtualBox' environment, working in the directory '~/Desktop/Suresh'. The user has created a file 'exp.sh' using the 'touch' command. They then listed the files in the directory, showing 'add.sh', 'exp.sh', 'get\_userip.sh', 'nano', 'pattern.sh', 'shell.sh', and 'while.sh'. Next, they opened 'exp.sh' with 'nano' and entered the command 'bash exp.sh'. The output of the script is 'suressh surassh suresssh'.

```
suresh@suresh-VirtualBox: ~/Desktop/Suresh
suresh@suresh-VirtualBox:~/Desktop/Suresh$ touch exp.sh
suresh@suresh-VirtualBox:~/Desktop/Suresh$ ls
add.sh  exp.sh  get_userip.sh  nano  pattern.sh  shell.sh  while.sh
suresh@suresh-VirtualBox:~/Desktop/Suresh$ nano exp.sh
suresh@suresh-VirtualBox:~/Desktop/Suresh$ bash exp.sh
suressh surassh suresssh
suresh@suresh-VirtualBox:~/Desktop/Suresh$
```

## Lab 2 Assignment

1. Implement switch case statement for day representation.
2. Implement for loop for print prime number between 20-50 in bash program.