

Sister Nivedita University

Department of Computer Science and Engineering

A Satyam Roychowdhury initiative



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Stream: Computer Science and Engineering

Semester: 4th

Year: 2nd

Enrollment Number: 1911100001111

Topic: Lab Assignment - 3 (Operating Systems)

Topic: Shell Programming

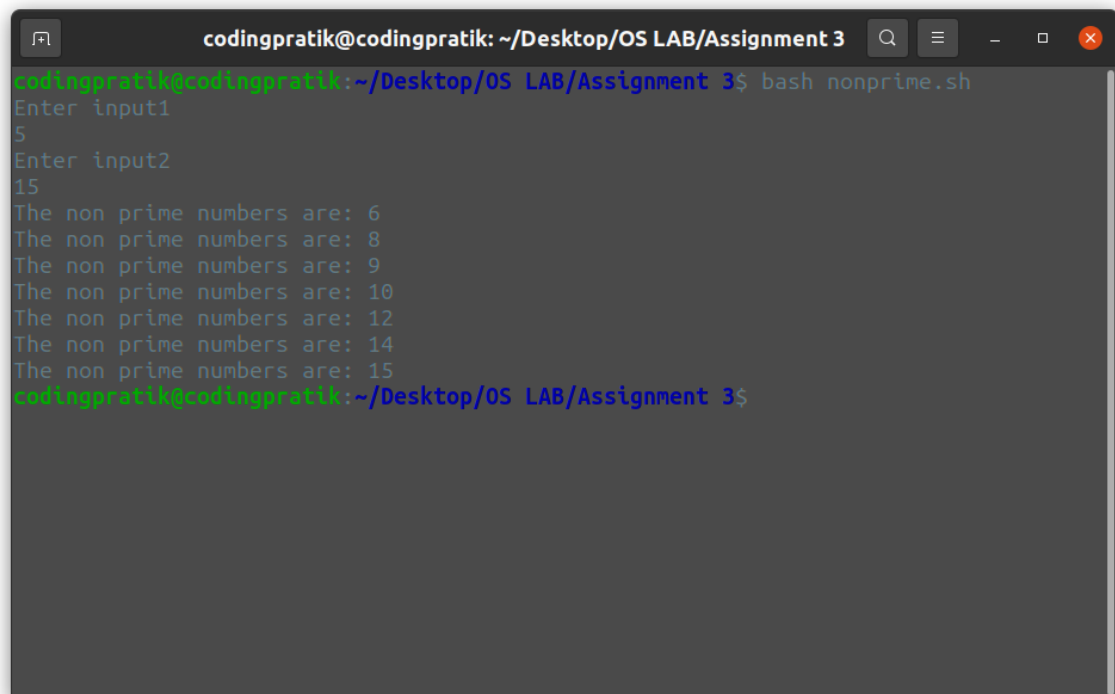
Date of Submission: 14/04/2021

1. Write a Shell script to take two numbers as range from the terminal and print non-prime numbers between the given range.

Ans:

```
echo "Enter input1"
read x
echo "Enter input2"
read y
for a in $(seq $x $y)
do
k=0
for i in $(seq 2 $(expr $a - 1))
do
    if [ $(expr $a % $i) -eq 0 ]
    then
        k=1
        break
    fi
done

if [ $k -eq 1 ]
then
echo "The non prime numbers are: $a"
fi
done
```

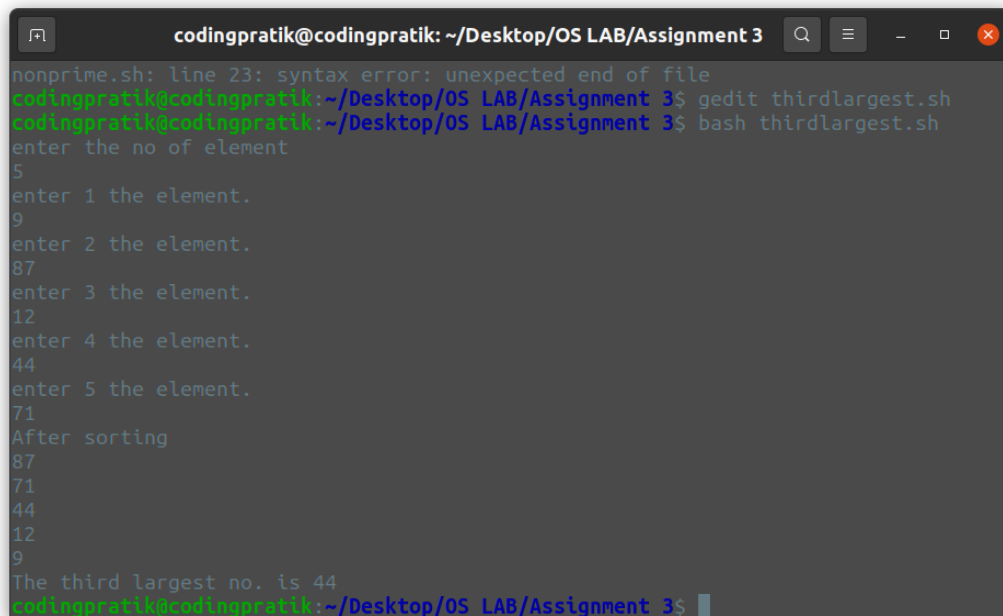
A terminal window titled 'codingpratik@codingpratik: ~/Desktop/OS LAB/Assignment 3' is shown. The user has executed 'bash nonprime.sh'. The script prompts for 'Enter input1' (5) and 'Enter input2' (15). It then prints non-prime numbers between 5 and 15: 6, 8, 9, 10, 12, 14, and 15. The prompt returns to 'codingpratik@codingpratik: ~/Desktop/OS LAB/Assignment 3\$'.

```
codingpratik@codingpratik: ~/Desktop/OS LAB/Assignment 3$ bash nonprime.sh
Enter input1
5
Enter input2
15
The non prime numbers are: 6
The non prime numbers are: 8
The non prime numbers are: 9
The non prime numbers are: 10
The non prime numbers are: 12
The non prime numbers are: 14
The non prime numbers are: 15
codingpratik@codingpratik: ~/Desktop/OS LAB/Assignment 3$
```

2. Write a Shell script to take 'n' number of elements in an array and print the third largest number. Value of 'n' must be taken from the terminal.

Ans:

```
echo "enter the no of element"
read n1
for (( i=0; i<$n1; i++ ))
do
    echo "enter `expr $i + 1` the element."
    read a[$i]
done
for (( i=0; i<$n1; i++ ))
do
    for (( j=`expr $i + 1`; j<$n1; j++ ))
    do
        if [ ${a[$i]} -gt ${a[$j]} ]
        then
            x=${a[$i]}
            a[$i]=${a[$j]}
            a[$j]=$x
        fi
    done
done
echo "After sorting"
for (( i=$n1; i>0; i-- ))
do
    echo ${a[`expr $i - 1`]}
done
echo "The third largest no. is ${a[2]}"
```



```
codingpratik@codingpratik: ~/Desktop/OS LAB/Assignment 3
nonprime.sh: line 23: syntax error: unexpected end of file
codingpratik@codingpratik: ~/Desktop/OS LAB/Assignment 3$ gedit thirdlargest.sh
codingpratik@codingpratik: ~/Desktop/OS LAB/Assignment 3$ bash thirdlargest.sh
enter the no of element
5
enter 1 the element.
9
enter 2 the element.
87
enter 3 the element.
12
enter 4 the element.
44
enter 5 the element.
71
After sorting
87
71
44
12
9
The third largest no. is 44
codingpratik@codingpratik: ~/Desktop/OS LAB/Assignment 3$
```

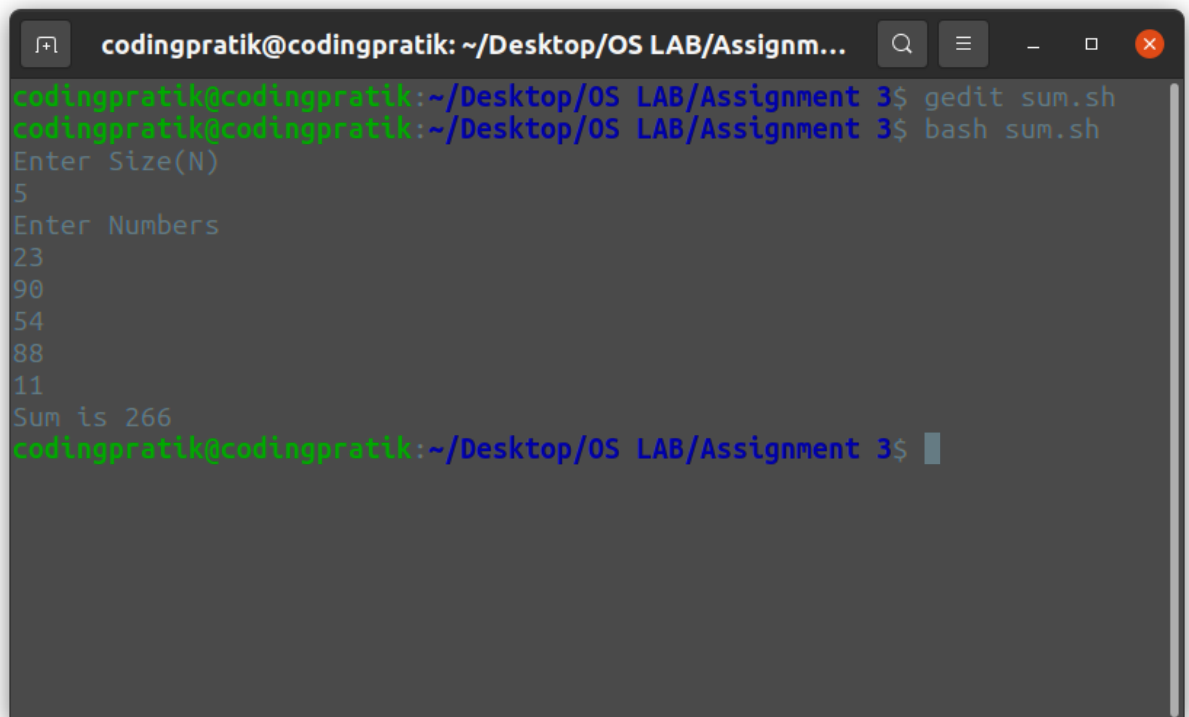
3. Store 'n' number of elements in an array and find out the sum of the array elements. Value of 'n' must be taken from the terminal.

Ans:

```
echo "Enter Size(N)"
read N
i=1
sum=0

echo "Enter Numbers"
while [ $i -le $N ]
do
    read num
    sum=$((sum + num))
    i=$((i + 1))
done

echo "Sum is $sum"
```



```
codingpratik@codingpratik: ~/Desktop/OS LAB/Assignm...
codingpratik@codingpratik:~/Desktop/OS LAB/Assignment 3$ gedit sum.sh
codingpratik@codingpratik:~/Desktop/OS LAB/Assignment 3$ bash sum.sh
Enter Size(N)
5
Enter Numbers
23
90
54
88
11
Sum is 266
codingpratik@codingpratik:~/Desktop/OS LAB/Assignment 3$
```

4. Write a shell program that will accept 10 numbers from the terminals and will search the position of a given no in the supplied no.

Ans:

```
echo "Enter the limit:"
read n
echo "Enter the numbers"
for(( i=0 ;i<n; i++ ))
do
read m
a[i]=$m
done
  for(( i=1; i<n; i++ ))
do
  for(( j=0; j<n-i; j++))
do
  if [ ${a[$j]} -gt ${a[$j+1]} ]

then

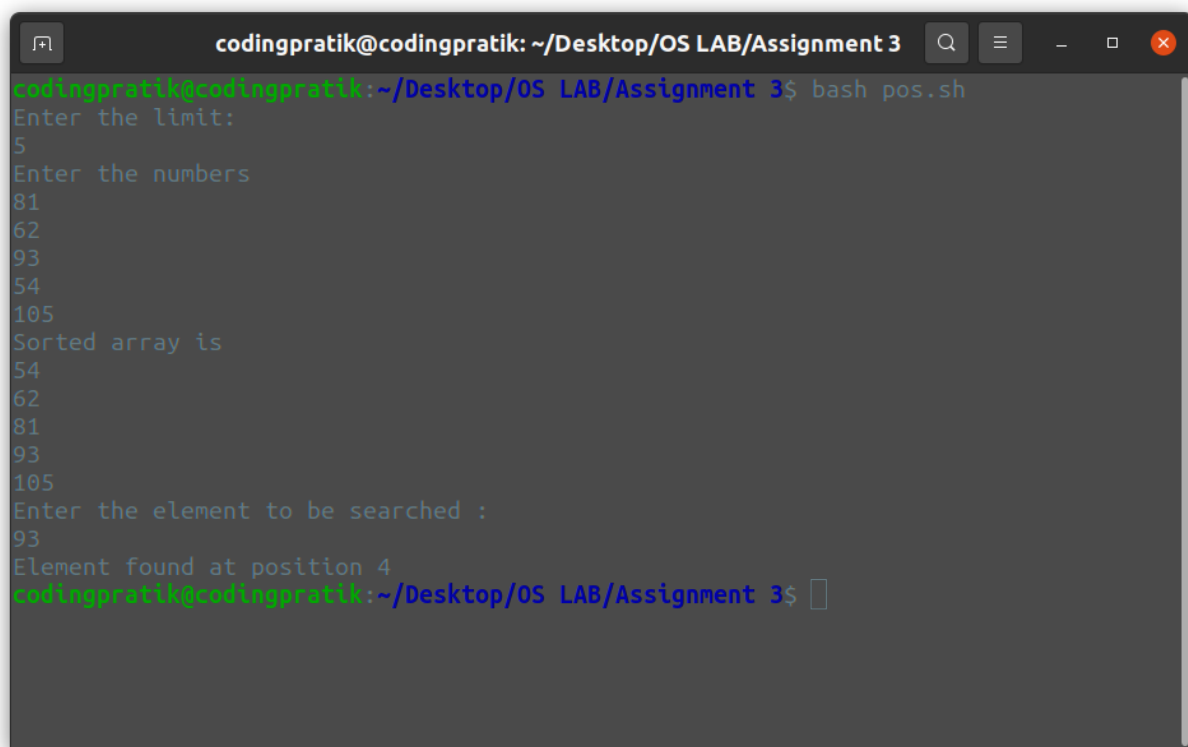
    t=${a[$j]}

    a[$j]=${a[$j+1]}

    a[$j+1]=$t

fi
done
done
  echo "Sorted array is"
  for(( i=0; i<n; i++ ))
do
  echo ${a[$i]}
done
  echo "Enter the element to be searched :"
read s
l=0
c=0
u=$((n-1))
  while [ $l -le $u ]
do
  mid=$(( ( $l+$u )/2 ))
  if [ $s -eq ${a[$mid]} ]
```

```
then
c=1
break
elif [ $s -lt ${a[$mid]} ]
then
u=$((mid-1))
else
l=$((mid+1))
fi
done
if [ $c -eq 1 ]
then
echo "Element found at position $((mid+1))"
else
echo "Element not found"
fi
```

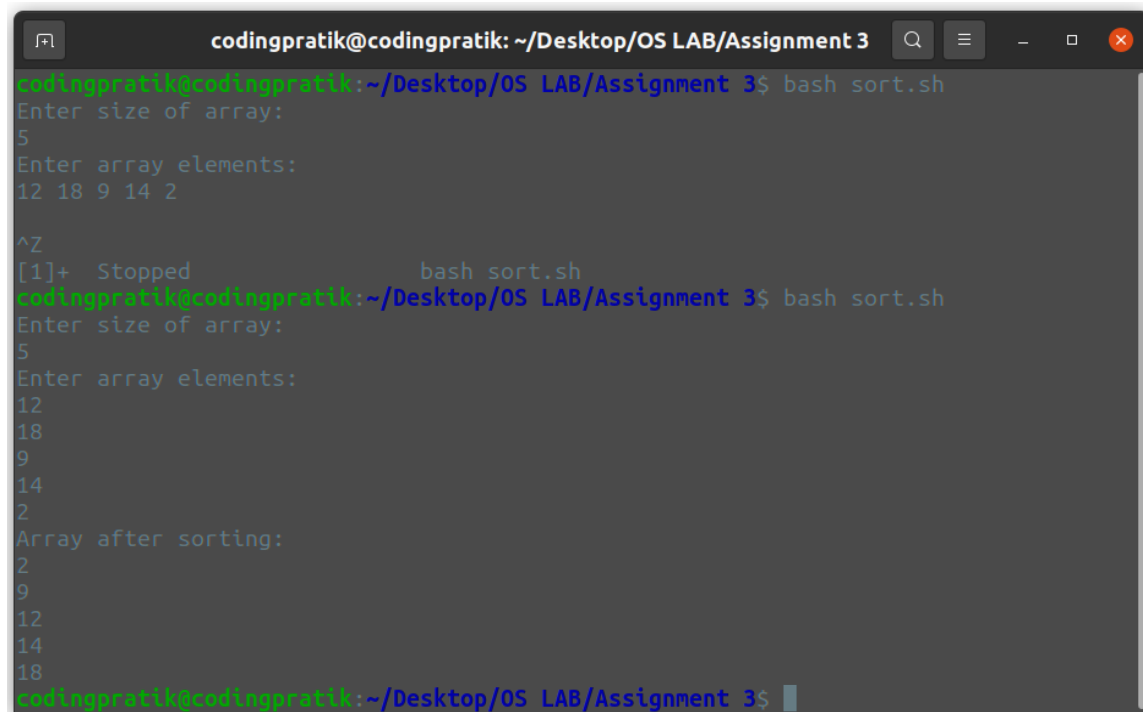


```
codingpratik@codingpratik: ~/Desktop/OS LAB/Assignment 3
codingpratik@codingpratik:~/Desktop/OS LAB/Assignment 3$ bash pos.sh
Enter the limit:
5
Enter the numbers
81
62
93
54
105
Sorted array is
54
62
81
93
105
Enter the element to be searched :
93
Element found at position 4
codingpratik@codingpratik:~/Desktop/OS LAB/Assignment 3$
```

5. Write a shell program to sort a list of 'n' numbers. Value of 'n' must be taken from the terminal.

Ans:

```
echo "Enter size of array: "  
read n  
echo "Enter array elements: "  
for ((i=0; i<n; i++))  
do  
  read a[$i]  
done  
for ((i=0; i<n; i++))  
do  
  for ((j=i; j<n; j++))  
  do  
    if [ ${a[$i]} -gt ${a[$j]} ]  
  then  
    temp=${a[$i]}  
    a[$i]=${a[$j]}  
    a[$j]=$temp  
  fi  
done  
done  
echo "Array after sorting: "  
for ((i=0; i<n; i++))  
do  
  echo ${a[$i]}  
done
```



The screenshot shows a terminal window titled "codingpratik@codingpratik: ~/Desktop/OS LAB/Assignment 3". The user runs the command `bash sort.sh`. The script prompts for the size of the array (5) and the array elements (12 18 9 14 2). It then sorts the array and displays the sorted elements: 2, 9, 12, 14, 18. The terminal output is as follows:

```
codingpratik@codingpratik:~/Desktop/OS LAB/Assignment 3$ bash sort.sh  
Enter size of array:  
5  
Enter array elements:  
12 18 9 14 2  
^Z  
[1]+  Stopped                  bash sort.sh  
codingpratik@codingpratik:~/Desktop/OS LAB/Assignment 3$ bash sort.sh  
Enter size of array:  
5  
Enter array elements:  
12  
18  
9  
14  
2  
Array after sorting:  
2  
9  
12  
14  
18  
codingpratik@codingpratik:~/Desktop/OS LAB/Assignment 3$
```

While pasting the code from editor to google docs, there could be some minor formatting error, so I have pushed all these codes of this assignment to github.

GitHub Link: https://github.com/PratikChakraborty10/Shell_Script_Assignment_3

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