

OS-Lab

Lab#3

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Shell Scripts:

T-1

```
#!/bin/sh
```

```
read -p "Enter your Basic Salary: " basicSalary
```

```
c1=1500
```

```
da=0
```

```
hra=0
```

```
if [ "$basicSalary" -lt "$c1" ]; then
```

```
    hra=$(echo "0.1 * $basicSalary" | bc)
```

```
    da=$(echo "0.9 * $basicSalary" | bc)
```

```
elif [ "$basicSalary" -ge "$c1" ]; then
```

```
    hra=500
```

```
    da=$(echo "0.98 * $basicSalary" | bc)
```

```
else
```

```
    echo "Invalid Input"
```

```
    exit 1
```

```
fi
```

```
grossSalary=$(echo "$basicSalary + $hra + $da" | bc)
```

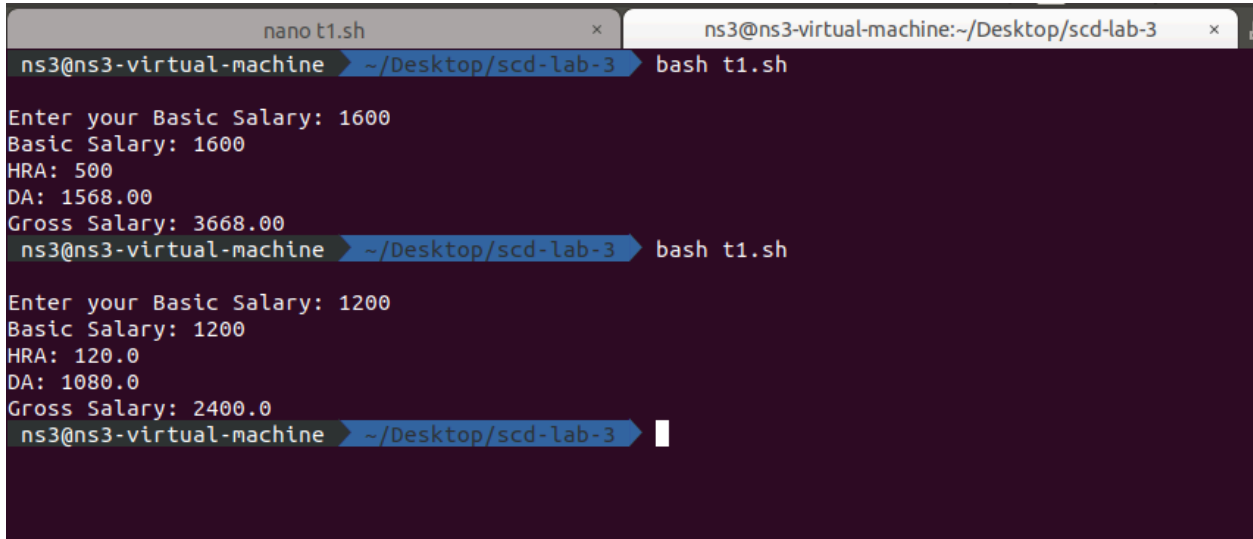
```
echo "Basic Salary: $basicSalary"
```

```
echo "HRA: $hra"
```

```
echo "DA: $da"
```

```
echo "Gross Salary: $grossSalary"
```

Output:



```
nano t1.sh x ns3@ns3-virtual-machine:~/Desktop/scd-lab-3 x
ns3@ns3-virtual-machine ~/Desktop/scd-lab-3 bash t1.sh
Enter your Basic Salary: 1600
Basic Salary: 1600
HRA: 500
DA: 1568.00
Gross Salary: 3668.00
ns3@ns3-virtual-machine ~/Desktop/scd-lab-3 bash t1.sh
Enter your Basic Salary: 1200
Basic Salary: 1200
HRA: 120.0
DA: 1080.0
Gross Salary: 2400.0
ns3@ns3-virtual-machine ~/Desktop/scd-lab-3
```

Task-2

```
#!/bin/sh
```

```
read -p "Enter Number 1: " num1
read -p "Enter Number 2: " num2
```

```
isArm() {
    OrigNum="$1"
    local num="$1"
    rem=0
    res=0
    while [ "$OrigNum" -ne 0 ]; do
        rem=$(( OrigNum % 10 ))
        res=$(( res + rem * rem * rem ))
        OrigNum=$(( OrigNum / 10 ))
    done

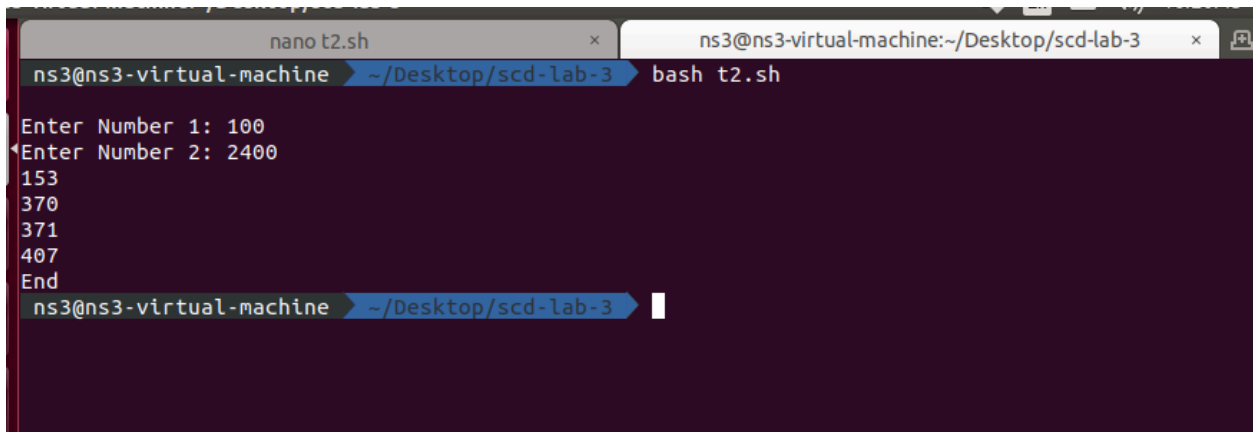
    if [ "$res" -eq "$num" ]; then
        echo 1
    else
        echo 0
    fi
}
```

```
while [ "$num1" -le "$num2" ]; do
```

```
result=$(isArm "$num1")
if [ "$result" -eq 1 ]; then
    echo "$num1"
fi
num1=$(( num1 + 1 ))
done

echo "End"
```

Output:



```
nano t2.sh x ns3@ns3-virtual-machine:~/Desktop/scd-lab-3 x
ns3@ns3-virtual-machine ~/Desktop/scd-lab-3 bash t2.sh
Enter Number 1: 100
Enter Number 2: 2400
153
370
371
407
End
ns3@ns3-virtual-machine ~/Desktop/scd-lab-3
```

T-3

```
#!/bin/sh
```

```
read -p "Enter three numbers: " num1 num2 num3
```

```
smallest=$num1
```

```
if [ "$num2" -lt "$smallest" ]; then
    smallest=$num2
fi
```

```
if [ "$num3" -lt "$smallest" ]; then
    smallest=$num3
fi
```

```
echo "The smallest number is: $smallest"
```

```
ns3@ns3-virtual-machine > ~/Desktop/scd-lab-3 > bash t3.sh  
Enter three numbers: 12 14 15  
The smallest number is: 12  
ns3@ns3-virtual-machine > ~/Desktop/scd-lab-3 > |
```

T-4

```
#!/bin/sh
```

```
for i in 1 2 3  
do  
    for j in 0 1 2 3  
    do  
        for k in 0 1 2 3  
        do  
            echo "$i$j$k"  
        done  
    done  
done
```

```
nano t4.sh × ns3@ns3-virtual-machine:~/Desktop/scd-lab-3
ns3@ns3-virtual-machine ~/Desktop/scd-lab-3 bash t4.sh
100
101
102
103
110
111
112
113
120
121
122
123
130
131
132
133
200
201
202
203
210
211
212
213
220
221
222
223
230
231
232
233
300
301
302
303
310
311
312
313
320
321
322
323
```

T-5

```
#!/bin/sh
```

```
is_prime() {
    local num=$1
    if [ "$num" -le 1 ]; then
        return 1
    fi
```

```

for i in $(seq 2 $((num / 2)))
do
    if [ $((num % i)) -eq 0 ]; then
        return 1
    fi
done
return 0
}

is_palindromic() {
    local num=$1
    local rev=$(echo "$num" | rev)
    [ "$num" = "$rev" ]
}

read -p "Enter a number: " n
n=$((n + 1))

while true
do
    if is_prime "$n" && is_palindromic "$n"; then
        echo "The smallest palindromic prime greater than the number is: $n"
        break
    fi
    n=$((n + 1))
done

```

```

ns3@ns3-virtual-machine: ~/Desktop/scd-lab-3
ns3@ns3-virtual-machine ~$ bash t5.sh
Enter a number: 12
The smallest palindromic prime greater than the number is: 101
ns3@ns3-virtual-machine ~$

```

T-6

```
#!/bin/sh
```

```

echo "Enter numbers separated by spaces:"
read -a numbers

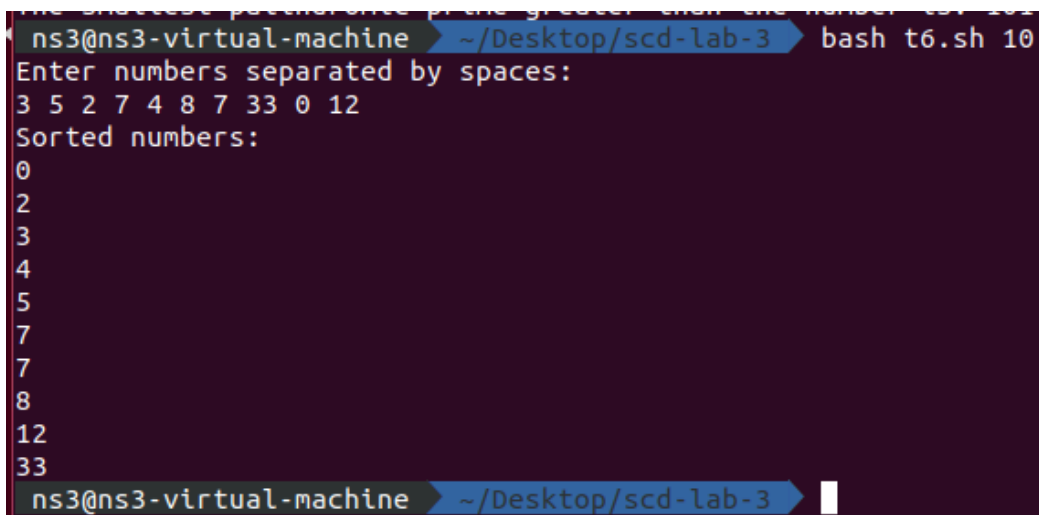
```

```

for ((i = 0; i < ${#numbers[@]}; i++))
do
    for ((j = i + 1; j < ${#numbers[@]}; j++))
    do
        if [ "${numbers[i]}" -gt "${numbers[j]}" ]; then
            temp="${numbers[i]}"
            numbers[i]="${numbers[j]}"
            numbers[j]="$temp"
        fi
    done
done

echo "Sorted numbers:"
for num in "${numbers[@]}"
do
    echo "$num"
done

```



```

ns3@ns3-virtual-machine ~$ bash t6.sh 10
Enter numbers separated by spaces:
3 5 2 7 4 8 7 33 0 12
Sorted numbers:
0
2
3
4
5
7
7
8
12
33
ns3@ns3-virtual-machine ~$

```

T-7

```
#!/bin/sh
```

```

read -p "Enter the numbers separated by spaces: " -a array
read -p "Enter the number to search for: " search

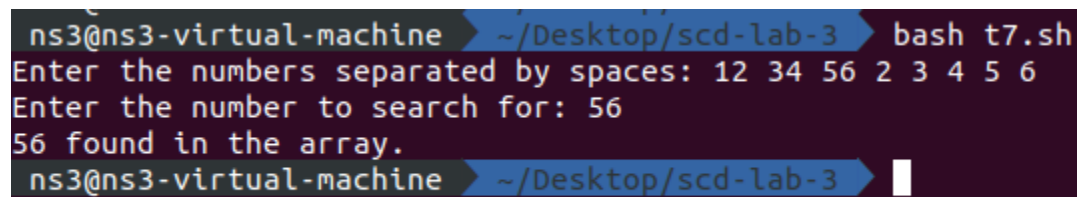
```

```

found=0
for num in "${array[@]}"
do
    if [ "$num" -eq "$search" ]; then
        found=1
        break
    fi
done

if [ "$found" -eq 1 ]; then
    echo "$search found in the array."
else
    echo "$search not found in the array."
fi

```



```

ns3@ns3-virtual-machine ~/Desktop/scd-lab-3 bash t7.sh
Enter the numbers separated by spaces: 12 34 56 2 3 4 5 6
Enter the number to search for: 56
56 found in the array.
ns3@ns3-virtual-machine ~/Desktop/scd-lab-3

```

T-8

```
#!/bin/sh
```

```
read -p "Enter the number of rows: " n
```

```

for ((i = 1; i <= n; i++))
do
    for ((j = 1; j <= i; j++))
    do
        echo -n "$i "
    done
    echo
done

```


so found in the array.

```
ns3@ns3-virtual-machine ~/Desktop/scd-lab-3 bash t8.sh
Enter the number of rows: 5
1
2 2
3 3 3
4 4 4 4
5 5 5 5 5
ns3@ns3-virtual-machine ~/Desktop/scd-lab-3 s
```

T-9

```
#!/bin/sh
```

```
for file in "$@"
```

```
do
```

```
    if [ -f "$file" ]; then
```

```
        tr 'a-z' 'A-Z' < "$file" > "${file}.upper"
```

```
        echo "$file converted to uppercase."
```

```
    else
```

```
        echo "$file does not exist."
```

```
    fi
```

```
done
```

```
ns3@ns3-virtual-machine ~/Desktop/scd-lab-3 touch f1 f2
ns3@ns3-virtual-machine ~/Desktop/scd-lab-3 echo "abc lower" > f1 f2
ns3@ns3-virtual-machine ~/Desktop/scd-lab-3 bash t9.sh
ns3@ns3-virtual-machine ~/Desktop/scd-lab-3 bash t9.sh f1 f2
f1 converted to uppercase.
f2 converted to uppercase.
ns3@ns3-virtual-machine ~/Desktop/scd-lab-3 cat f1 f2
abc lower f2
ns3@ns3-virtual-machine ~/Desktop/scd-lab-3 ls
f1 f1.upper f2 f2.upper t1.sh t2.sh t3.sh t4.sh t5.sh t6.sh t7.sh t8.sh t9.sh
ns3@ns3-virtual-machine ~/Desktop/scd-lab-3 cat f2.upper&& cat f1.upper
ABC LOWER F2
ns3@ns3-virtual-machine ~/Desktop/scd-lab-3 cat f1.upper
ABC LOWER F2
ns3@ns3-virtual-machine ~/Desktop/scd-lab-3
```

T-10