OS-Lab

Lab#3

Name: Anas-Altaf

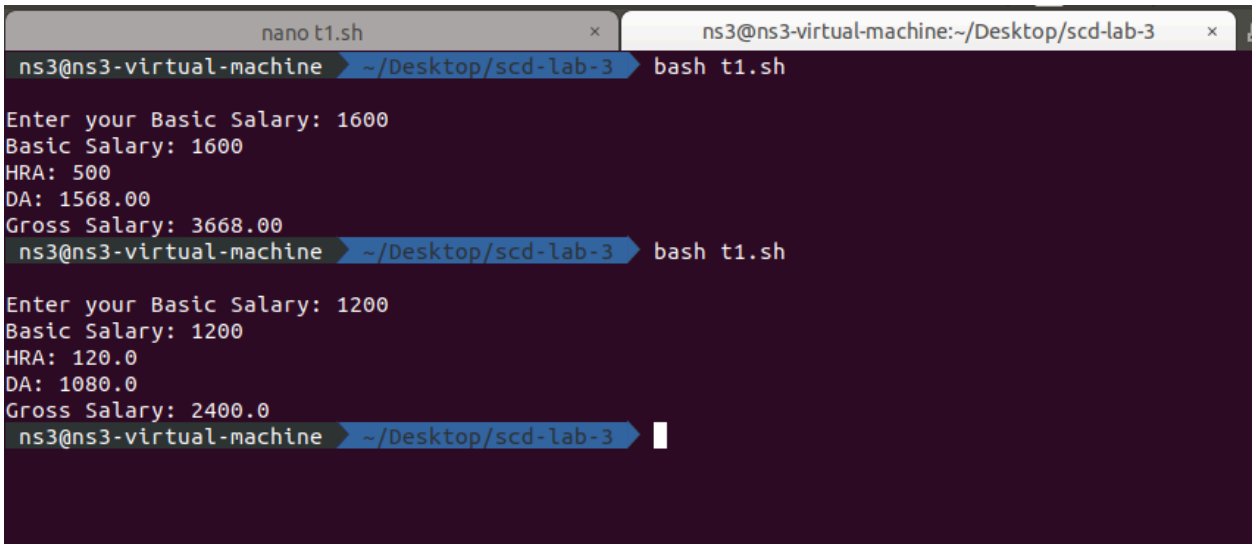
Roll.no: 22f-3639

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:

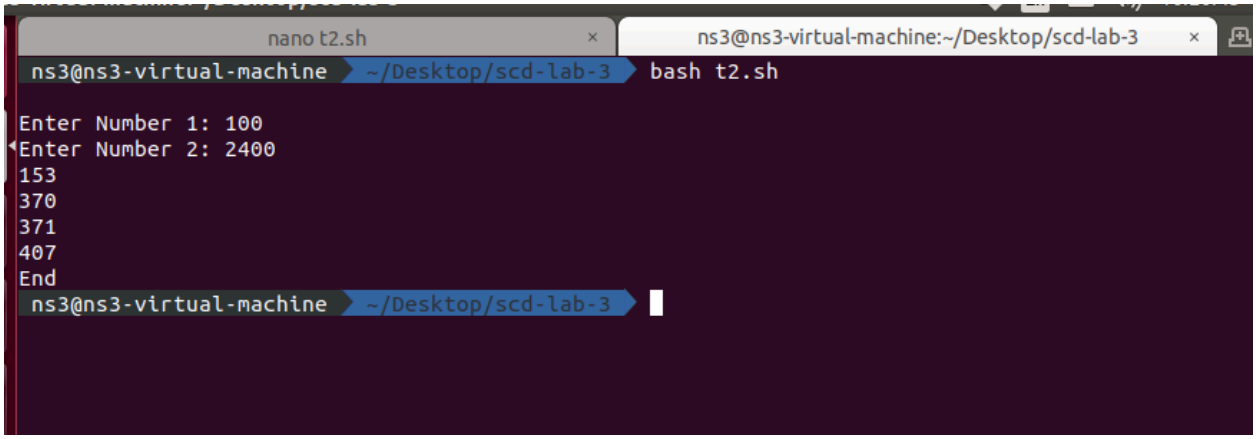


Task-2

```
#!/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
```

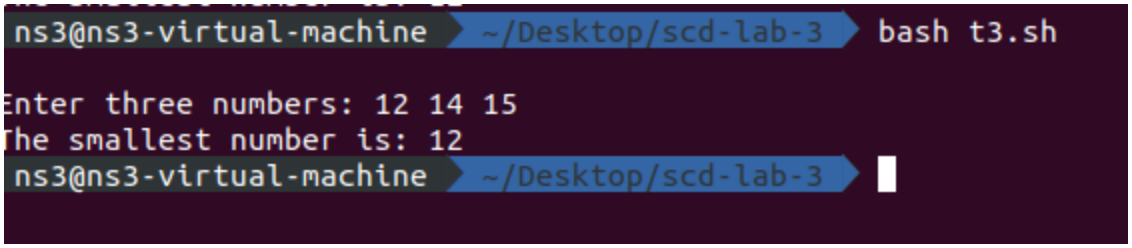
```
    result=$(isArm "$num1")
    if [ "$result" -eq 1 ]; then
        echo "$num1"
    fi
    num1=$(( num1 + 1 ))
done

echo "End"
```

Output:



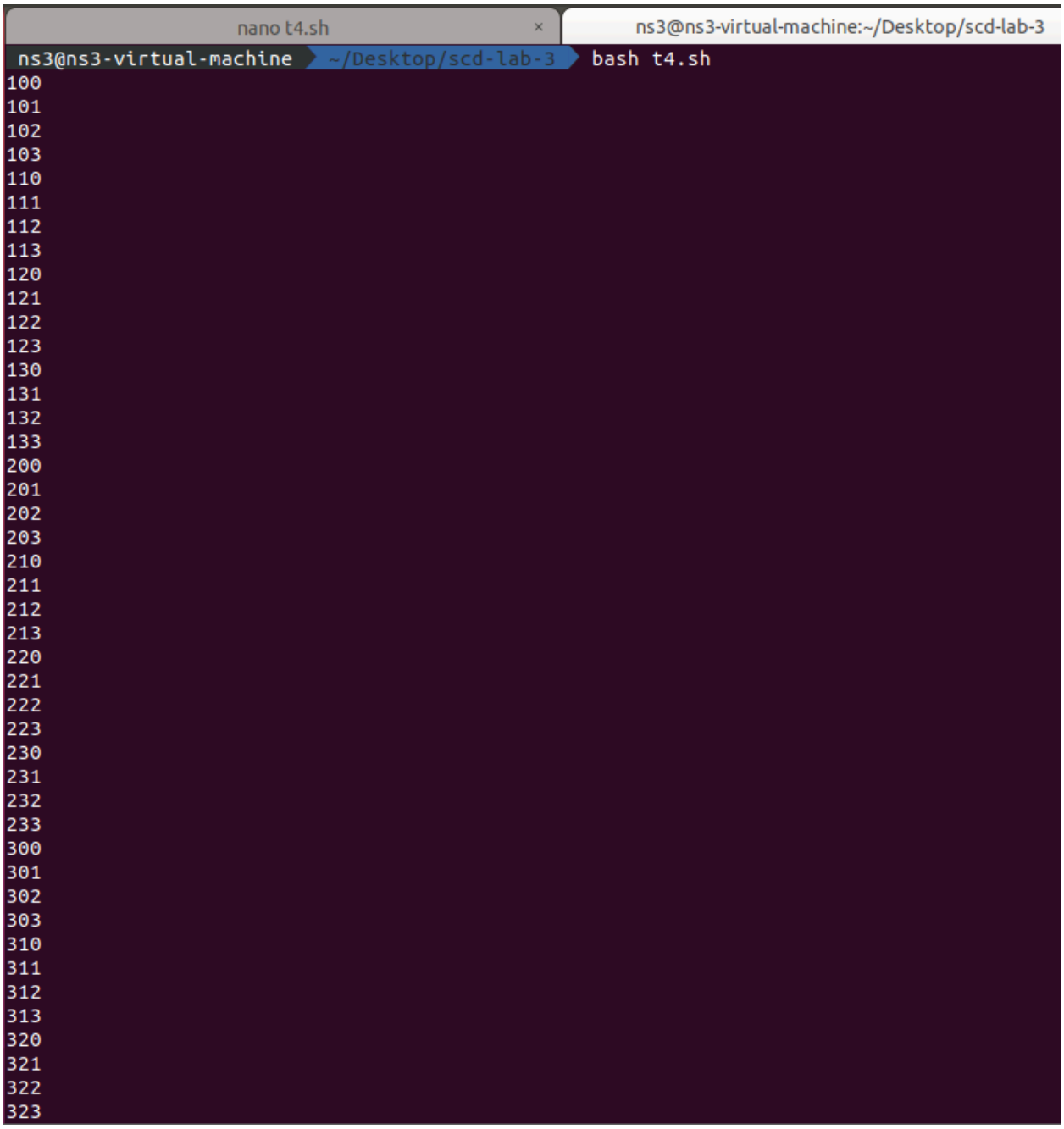
T-3

```
#!/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"
```



T-4

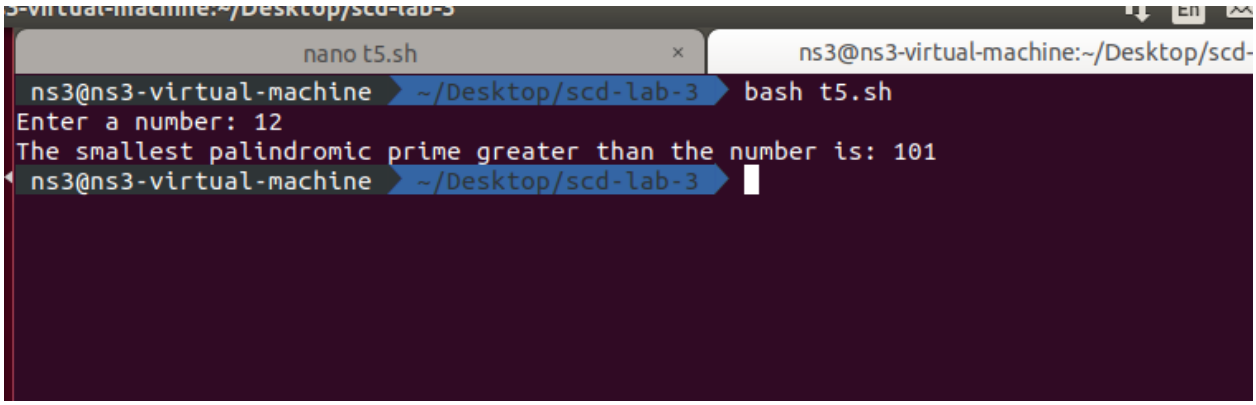
```
#!/bin/sh

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
```



T-5

```
#!/bin/sh

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

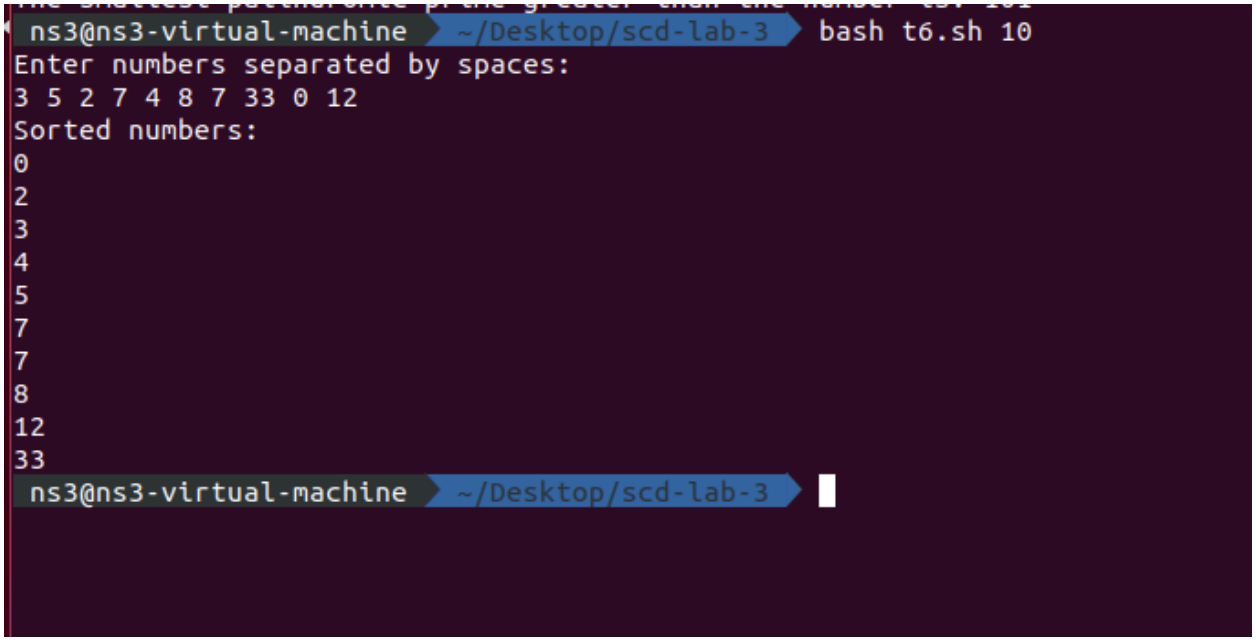
```
    for i in $(seq 2 $((num / 2)))
    do
        if [ $((num % i)) -eq 0 ]; then
            return 1
        fi
    done
    return 0
}

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
```



T-6

```
#!/bin/sh

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

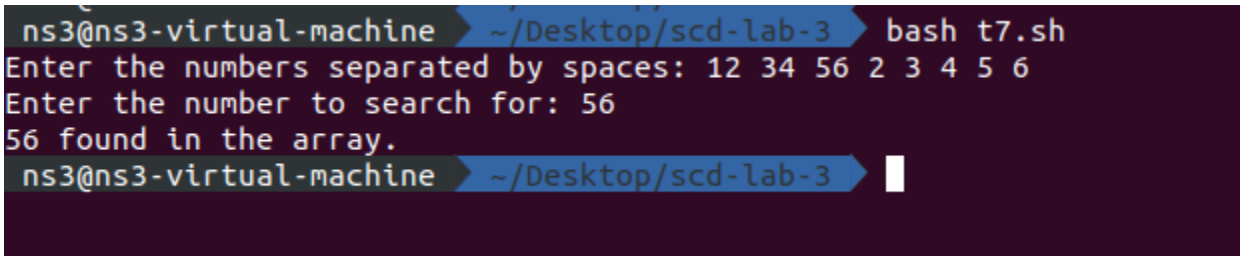
```
for ((i = 0; i < ${#numbers[@]}; i++))
do
    for ((j = i + 1; j < ${#numbers[@]}; j++))
    do
        if [ "${numbers[i]}" -gt "${numbers[j]}" ]; then
            temp="${numbers[i]}"
            numbers[i]="${numbers[j]}"
            numbers[j]="$temp"
        fi
    done
done

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



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
```



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