DEPARTMENT OF INFORMATION TECHNOLOGY

INSTITUTE OF ENGINEERING AND TECHNOLOGY , INDORE

LAB ASSIGNMENT OF OPERATING SYSTEM

SUBJECT CODE: 4ITRC2

LAB ASSIGNMENT - 03

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CLASS : BE 2ND YEAR IT-B

1. To find Largest of Three Numbers


```
To run a command as administrator (user "root"), use "sudo <command>".
See "man sudo_root" for details.

vboxuser@ubundu12:~$  #!/bin/bash
echo "Enter three numbers: "
read num1 num2 num3
if [ $num1 -gt $num2 ] && [ $num1 -gt $num3 ]; then
   echo "$num1 is the largest"
elif [ $num2 -gt $num3 ]; then
   echo "$num2 is the largest"
else
   echo "$num3 is the largest"
fi
Enter three numbers:
3 6 8
8 is the largest
vboxuser@ubundu12:~$
```

2. To find a year is leap year or not.


```
To run a command as administrator (user "root"), use "sudo <command>".
See "man sudo_root" for details.

vboxuser@ubundu12:~$ #!/bin/bash
echo "Enter a year: "
read year
if [ $(($year % 400)) -eq 0 ] || { [ $(($year % 100)) -ne 0 ] && [ $(($year % 4)) -eq 0 ]; }; then
   echo "$year is a leap year."
else
   echo "$year is not a leap year."
fi
Enter a year:
2023
2023 is not a leap year.
vboxuser@ubundu12:~$ 23
```

3. To input angles of a triangle and find out whether it is valid triangle or not


```
To run a command as administrator (user "root"), use "sudo <command>".
See "man sudo_root" for details.

vboxuser@ubundu12:~$ #!/bin/bash
echo "Enter three angles of a triangle: "
read angle1 angle2 angle3
sum=$((angle1 + angle2 + angle3))
if [ $sum -eq 180 ]; then
   echo "The triangle is valid."
else
   echo "The triangle is not valid."
fi
Enter three angles of a triangle:
20 13 90
The triangle is not valid.
vboxuser@ubundu12:~$
```

4. To check whether a character is alphabet, digit or special character.

```
To run a command as administrator (user "root"), use "sudo <command>".
See "man sudo_root" for details.

vboxuser@ubundu12:~$ #!/bin/bash
echo "Enter a character: "
read char
if [[ "$char" =~ [a-zA-Z] ]]; then
  echo "$char is an alphabet."
elif [[ "$char" =~ [0-9] ]]; then
  echo "$char is a digit."
else
  echo "$char is a special character."
fi
Enter a character:
RAhul
RAhul is an alphabet.
vboxuser@ubundu12:~$
```

5. To calculate profit or loss

```
To run a command as administrator (user "root"), use "sudo <command>".
See "man sudo_root" for details.

vboxuser@ubundu12:~$ #!/bin/bash
echo "Enter cost price: "
read cost_price
echo "Enter selling price: "
read selling_price
if [ $selling_price -gt $cost_price ]; then
  profit=$((selling_price - cost_price))
  echo "Profit: $profit"
elif [ $cost_price -gt $selling_price ]; then
  loss=$((cost_price - selling_price))
  echo "Loss: $loss"
else
  echo "No profit, no loss."
fi
Enter cost price:
450
Enter selling price:
150
Loss: 300
vboxuser@ubundu12:~$
```

6. To print all even and odd number from 1 to 10


```
To run a command as administrator (user "root"), use "sudo <command>".
See "man sudo_root" for details.

vboxuser@ubundu12:~$ #!/bin/bash
echo "Even numbers from 1 to 10: "
for i in {1..10}; do
  if [ $(($i % 2)) -eq 0 ]; then
    echo $i
  fi
done

echo "Odd numbers from 1 to 10: "
for i in {1..10}; do
  if [ $(($i % 2)) -ne 0 ]; then
    echo $i
  fi
done
Even numbers from 1 to 10:
2
4
6
8
10
Odd numbers from 1 to 10:
1
3
5
7
9
vboxuser@ubundu12:~$
```

7. To print table of a given number


```
To run a command as administrator (user "root"), use "sudo <command>".
See "man sudo_root" for details.

vboxuser@ubundu12:~$ #!/bin/bash
echo "Enter a number to print its table: "
read num
for i in {1..10}; do
  echo "$num * $i = $(($num * $i))"
done
Enter a number to print its table:
3
3 * 1 = 3
3 * 2 = 6
3 * 3 = 9
3 * 4 = 12
3 * 5 = 15
3 * 6 = 18
3 * 7 = 21
3 * 8 = 24
3 * 9 = 27
3 * 10 = 30
vboxuser@ubundu12:~$
```

8. To find factorial of a given integer

```
To run a command as administrator (user "root"), use "sudo <command>".
See "man sudo_root" for details.

vboxuser@ubundu12:~$ #!/bin/bash
echo "Enter a number: "
read num
fact=1
for ((i=1; i<=num; i++)); do
  fact=$((fact * i))
done
echo "Factorial of $num is $fact"
Enter a number:
6
Factorial of 6 is 720
vboxuser@ubundu12:~$
```

9. To print sum of all even numbers from 1 to 10.

```
To run a command as administrator (user "root"), use "sudo <command>".
See "man sudo_root" for details.

vboxuser@ubundu12:~$ #!/bin/bash
sum=0
for i in {1..10}; do
  if [ $(($i % 2)) -eq 0 ]; then
    sum=$((sum + i))
  fi
done
echo "Sum of even numbers from 1 to 10 is $sum"
Sum of even numbers from 1 to 10 is 30
vboxuser@ubundu12:~$
```

10. To print sum of digit of any number.

```
To run a command as administrator (user "root"), use "sudo <command>".
See "man sudo_root" for details.

vboxuser@ubundu12:~$ #!/bin/bash
echo "Enter a number: "
read num
sum=0
while [ $num -gt 0 ]; do
  digit=$((num % 10))
  sum=$((sum + digit))
  num=$((num / 10))
done
echo "Sum of digits is $sum"
Enter a number:
30
Sum of digits is 3
vboxuser@ubundu12:~$
```

11. To make a basic calculator which performs addition, subtraction, Multiplication, division

```
vboxuser@ubundu12:~$ #!/bin/bash
echo "Enter first number: "
read num1
echo "Enter second number: "
read num2
echo "Select operation: "
echo "1. Addition"
echo "2. Subtraction"
echo "3. Multiplication"
echo "4. Division"
read choice

case $choice in
  1) echo "Addition: $(($num1 + $num2))" ;;
  2) echo "Subtraction: $(($num1 - $num2))" ;;
  3) echo "Multiplication: $(($num1 * $num2))" ;;
  4) echo "Division: $(($num1 / $num2))" ;;
  *) echo "Invalid choice" ;;
esac
Enter first number:
23
Enter second number:
30
Select operation:
1. Addition
2. Subtraction
3. Multiplication
4. Division
1
Addition: 53
```

12. To print days of a week.

```
To run a command as administrator (user "root"), use "sudo <command>".
See "man sudo_root" for details.

vboxuser@ubundu12:~$ #!/bin/bash
echo "Enter a number (1-7): "
read num
case $num in
  1) echo "Sunday" ;;
  2) echo "Monday" ;;
  3) echo "Tuesday" ;;
  4) echo "Wednesday" ;;
  5) echo "Thursday" ;;
  6) echo "Friday" ;;
  7) echo "Saturday" ;;
  *) echo "Invalid input, enter a number between 1 and 7." ;;
esac
Enter a number (1-7):
2
Monday
vboxuser@ubundu12:~$
```
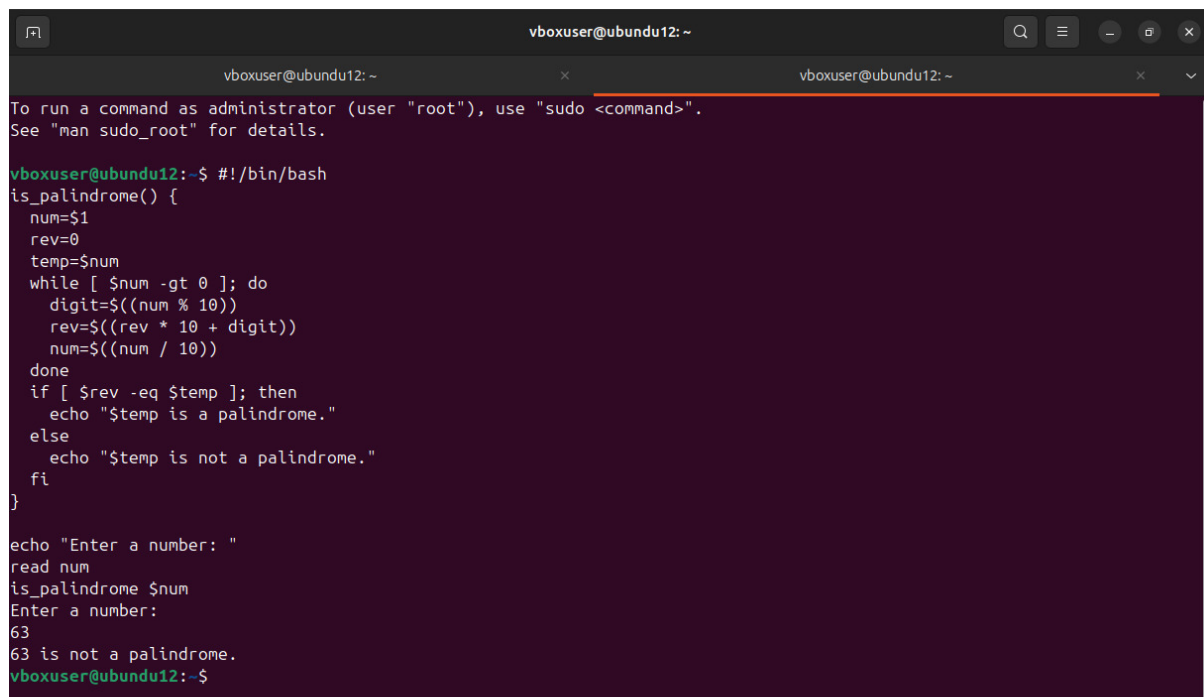
13. To print starting 4 months having 31 days.

```
To run a command as administrator (user "root"), use "sudo <command>".
See "man sudo_root" for details.

vboxuser@ubundu12:~$ #!/bin/bash
echo "The first 4 months having 31 days are: January, March, May, July."
The first 4 months having 31 days are: January, March, May, July.
vboxuser@ubundu12:~$
```

14. Using functions,

a. To find given number is Amstrong number or not

```
To run a command as administrator (user "root"), use "sudo <command>".
See "man sudo_root" for details.

vboxuser@ubundu12:~$ #!/bin/bash
is_armstrong() {
  num=$1
  sum=0
  temp=$num
  while [ $num -gt 0 ]; do
    digit=$((num % 10))
    sum=$((sum + digit * digit * digit))
    num=$((num / 10))
  done
  if [ $sum -eq $temp ]; then
    echo "$temp is an Armstrong number."
  else
    echo "$temp is not an Armstrong number."
  fi
}

echo "Enter a number: "
read num
is_armstrong $num
Enter a number:
3
3 is not an Armstrong number.
vboxuser@ubundu12:~$
```

b. To find whether a number is palindrome or not


```
To run a command as administrator (user "root"), use "sudo <command>".
See "man sudo_root" for details.

vboxuser@ubundu12:~$ #!/bin/bash
is_palindrome() {
  num=$1
  rev=0
  temp=$num
  while [ $num -gt 0 ]; do
    digit=$((num % 10))
    rev=$((rev * 10 + digit))
    num=$((num / 10))
  done
  if [ $rev -eq $temp ]; then
    echo "$temp is a palindrome."
  else
    echo "$temp is not a palindrome."
  fi
}

echo "Enter a number: "
read num
is_palindrome $num
Enter a number:
63
63 is not a palindrome.
vboxuser@ubundu12:~$
```

c. To print Fibonacci series upto n terms

```
To run a command as administrator (user "root"), use "sudo <command>".
See "man sudo_root" for details.

vboxuser@ubundu12:~$ #!/bin/bash
fibonacci() {
  n=$1
  a=0
  b=1
  echo "Fibonacci Series up to $n terms: "
  for ((i=0; i<n; i++)); do
    echo -n "$a "
    fn=$((a + b))
    a=$b
    b=$fn
  done
  echo
}

echo "Enter the number of terms: "
read n
fibonacci $n
Enter the number of terms:
5
Fibonacci Series up to 5 terms:
0 1 1 2 3
vboxuser@ubundu12:~$
```

d. To find given number is prime or composite


```
To run a command as administrator (user "root"), use "sudo <command>".
See "man sudo_root" for details.

vboxuser@ubundu12:~$ #!/bin/bash
is_prime_or_composite() {
  num=$1
  if [ $num -le 1 ]; then
    echo "$num is neither prime nor composite."
    return
  fi
  for ((i=2; i<=num/2; i++)); do
    if [ $(($num % $i)) -eq 0 ]; then
      echo "$num is a composite number."
      return
    fi
  done
  echo "$num is a prime number."
}

echo "Enter a number: "
read num
is_prime_or_composite $num
Enter a number:
6
6 is a composite number.
vboxuser@ubundu12:~$
```

e. To convert a given decimal number to binary equivalent

```
vboxuser@ubundu12:~$ #!/bin/bash
decimal_to_binary() {
  num=$1
  binary=""
  while [ $num -gt 0 ]; do
    binary=$(($num % 2))$binary
    num=$((num / 2))
  done
  echo "Binary representation is $binary"
}

echo "Enter a decimal number: "
read num
decimal_to_binary $num
Enter a decimal number:
12
Binary representation is 1100
vboxuser@ubundu12:~$
```