

Operating System

Lab Assignment – III

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1. To find Largest of Three Numbers

```
Apr 7 11:00
vboxuser@ubuntu12: ~
To run a command as administrator (user "root"), use "sudo <command>".
See "man sudo_root" for details.

vboxuser@ubuntu12:~$ #!/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 "$num3 is the largest"
fi
Enter three numbers:
3 6 8
8 is the largest
vboxuser@ubuntu12:~$
```

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

```
vboxuser@ubuntu12: ~
To run a command as administrator (user "root"), use "sudo <command>".
See "man sudo_root" for details.

vboxuser@ubuntu12:~$ #!/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@ubuntu12:~$ 23
```

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

```
vboxuser@ubuntu12: ~
To run a command as administrator (user "root"), use "sudo <command>".
See "man sudo_root" for details.

vboxuser@ubuntu12:~$ #!/bin/bash
echo "Enter three angles of a triangle: "
read angle1 angle2 angle3
sum=$((angle1 + angle2 + angle3))
if [ $sum -eq 180 ]; then
    echo "The triangle is valid."
else
    echo "The triangle is not valid."
fi
Enter three angles of a triangle:
20 13 90
The triangle is not valid.
vboxuser@ubuntu12:~$
```

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

```
vboxuser@ubundu12: ~  
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

```
vboxuser@ubundu12: ~  
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

```
vboxuser@ubuntu12: ~  
To run a command as administrator (user "root"), use "sudo <command>".  
See "man sudo_root" for details.  
  
vboxuser@ubuntu12:~$ #!/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 $i  
    fi  
done  
Even numbers from 1 to 10:  
2  
4  
6  
8  
10  
Odd numbers from 1 to 10:  
1  
3  
5  
7  
9  
vboxuser@ubuntu12:~$
```

7. To print table of a given number

```
vboxuser@ubuntu12: ~  
To run a command as administrator (user "root"), use "sudo <command>".  
See "man sudo_root" for details.  
  
vboxuser@ubuntu12:~$ #!/bin/bash  
echo "Enter a number to print its table: "  
read num  
for i in {1..10}; do  
    echo "$num * $i = $((num * i))"  
done  
Enter a number to print its table:  
3  
3 * 1 = 3  
3 * 2 = 6  
3 * 3 = 9  
3 * 4 = 12  
3 * 5 = 15  
3 * 6 = 18  
3 * 7 = 21  
3 * 8 = 24  
3 * 9 = 27  
3 * 10 = 30  
vboxuser@ubuntu12:~$
```

8. To find factorial of a given integer

```
vboxuser@ubuntu12: ~  
To run a command as administrator (user "root"), use "sudo <command>".  
See "man sudo_root" for details.  
  
vboxuser@ubuntu12:~$ #!/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 $fact"  
Enter a number:  
6  
Factorial of 6 is 720  
vboxuser@ubuntu12:~$
```

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

```
vboxuser@ubuntu12: ~  
To run a command as administrator (user "root"), use "sudo <command>".  
See "man sudo_root" for details.  
  
vboxuser@ubuntu12:~$ #!/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 $sum"  
Sum of even numbers from 1 to 10 is 30  
vboxuser@ubuntu12:~$
```

10. To print sum of digit of any number.

```
vboxuser@ubuntu12: ~  
To run a command as administrator (user "root"), use "sudo <command>".  
See "man sudo_root" for details.  
  
vboxuser@ubuntu12:~$ #!/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 $sum"  
Enter a number:  
30  
Sum of digits is 3  
vboxuser@ubuntu12:~$
```

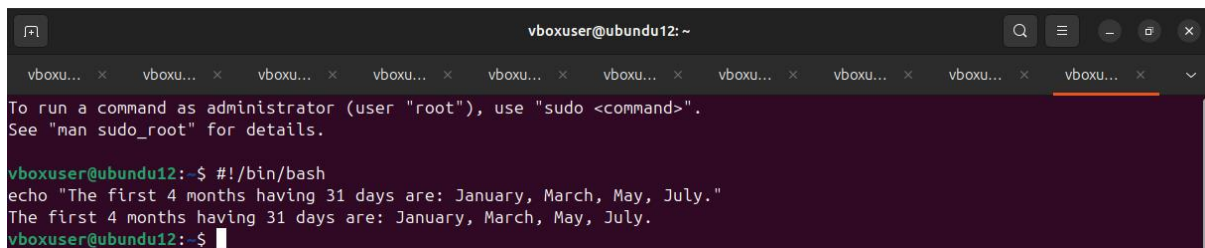
11. To make a basic calculator which performs addition, subtraction, Multiplication, division

```
vboxuser@ubuntu12: ~  
vboxuser... x vboxuser... x vboxuser... x vboxuser... x vboxuser... x vboxuser... x vboxuser... x vboxuser... x  
vboxuser@ubuntu12:~$ #!/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: $((num1 / num2))" ;;  
  *) echo "Invalid choice" ;;  
esac  
Enter first number:  
23  
Enter second number:  
30  
Select operation:  
1. Addition  
2. Subtraction  
3. Multiplication  
4. Division  
1  
Addition: 53  
vboxuser@ubuntu12:~$
```

12. To print days of a week.

```
vboxuser@ubuntu12: ~  
vboxuser... x vboxuser... x vboxuser... x vboxuser... x vboxuser... x vboxuser... x vboxuser... x vboxuser... x  
To run a command as administrator (user "root"), use "sudo <command>".  
See "man sudo_root" for details.  
  
vboxuser@ubuntu12:~$ #!/bin/bash  
echo "Enter a number (1-7): "  
read num  
case $num in  
  1) echo "Sunday" ;;  
  2) echo "Monday" ;;  
  3) echo "Tuesday" ;;  
  4) echo "Wednesday" ;;  
  5) echo "Thursday" ;;  
  6) echo "Friday" ;;  
  7) echo "Saturday" ;;  
  *) echo "Invalid input, enter a number between 1 and 7." ;;  
esac  
Enter a number (1-7):  
2  
Monday  
vboxuser@ubuntu12:~$
```

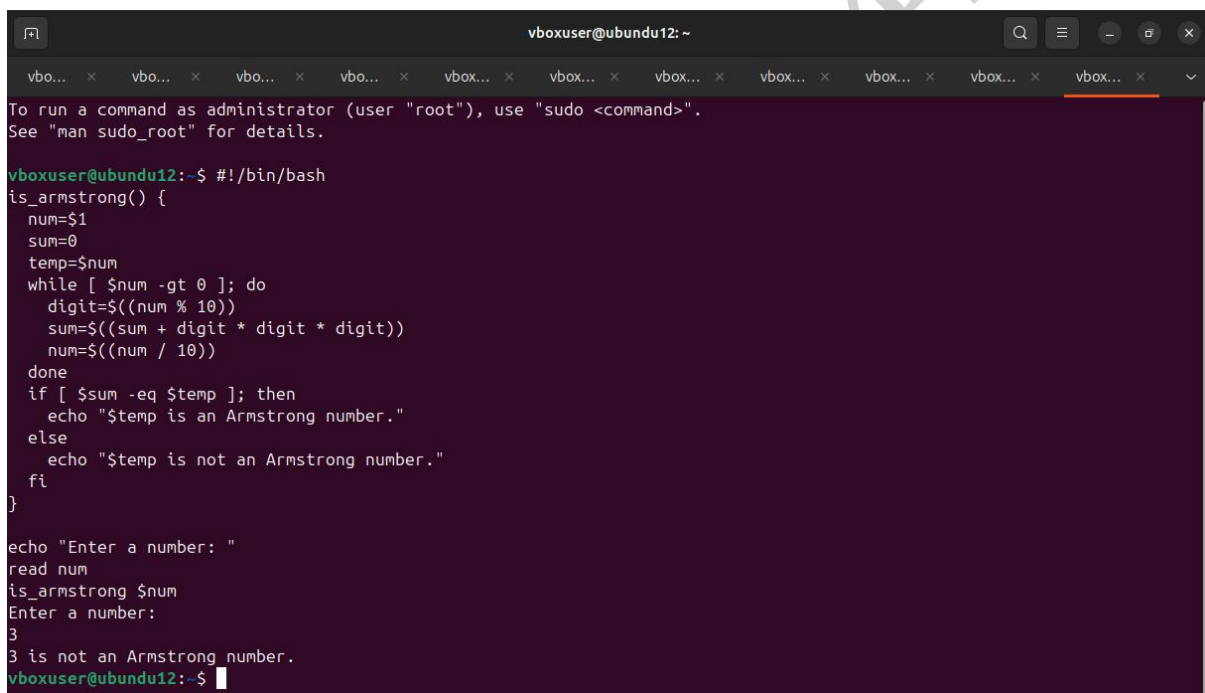
13. To print starting 4 months having 31 days.



```
vboxuser@ubuntu12: ~  
To run a command as administrator (user "root"), use "sudo <command>".  
See "man sudo_root" for details.  
  
vboxuser@ubuntu12:~$ #!/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@ubuntu12:~$
```

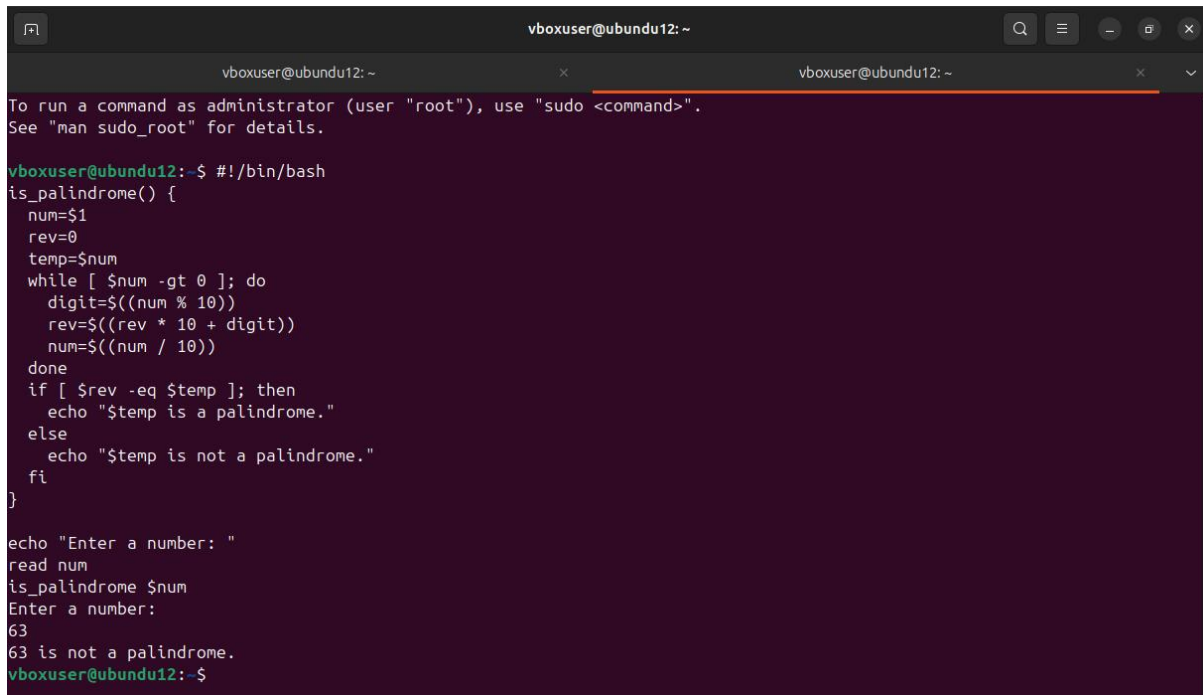
14. Using functions,

a. To find given number is Armstrong number or not



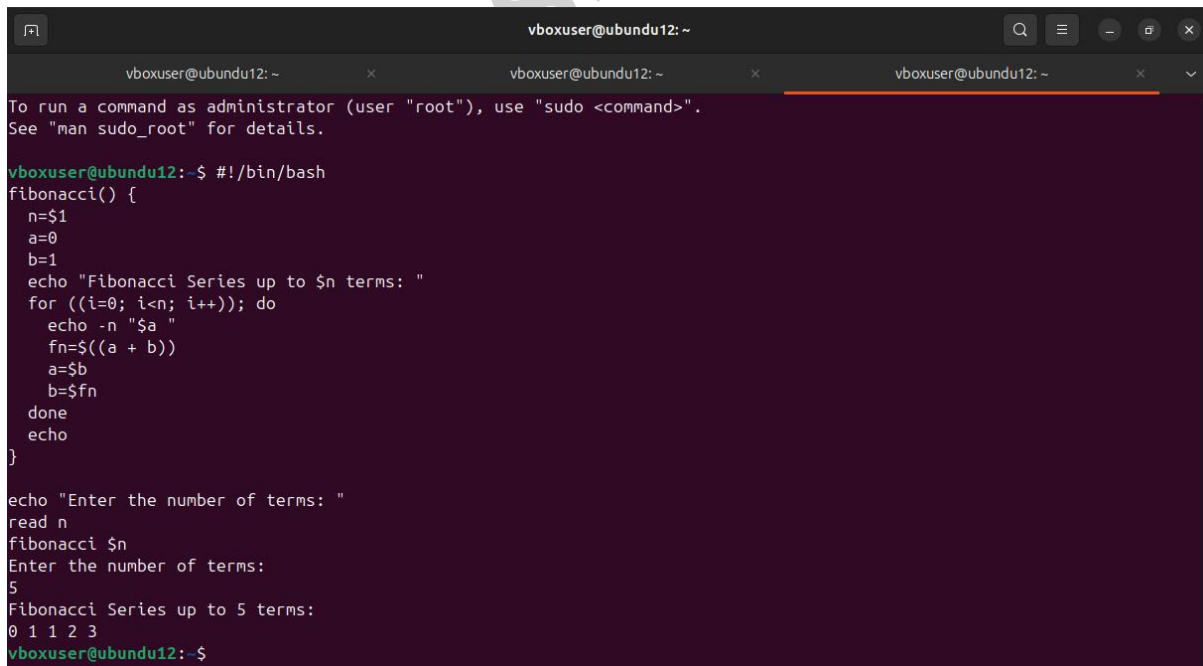
```
vboxuser@ubuntu12: ~  
To run a command as administrator (user "root"), use "sudo <command>".  
See "man sudo_root" for details.  
  
vboxuser@ubuntu12:~$ #!/bin/bash  
is_armstrong() {  
    num=$1  
    sum=0  
    temp=$num  
    while [ $num -gt 0 ]; do  
        digit=$((num % 10))  
        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 $num  
Enter a number:  
3  
3 is not an Armstrong number.  
vboxuser@ubuntu12:~$
```


b. To find whether a number is palindrome or not



```
vboxuser@ubuntu12: ~  
To run a command as administrator (user "root"), use "sudo <command>".  
See "man sudo_root" for details.  
  
vboxuser@ubuntu12:~$ #!/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 $num  
Enter a number:  
63  
63 is not a palindrome.  
vboxuser@ubuntu12:~$
```

c. To print Fibonacci series upto n terms



```
vboxuser@ubuntu12: ~  
To run a command as administrator (user "root"), use "sudo <command>".  
See "man sudo_root" for details.  
  
vboxuser@ubuntu12:~$ #!/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 $n  
Enter the number of terms:  
5  
Fibonacci Series up to 5 terms:  
0 1 1 2 3  
vboxuser@ubuntu12:~$
```


d. To find given number is prime or composite

```
vboxuser@ubuntu12: ~  
To run a command as administrator (user "root"), use "sudo <command>".  
See "man sudo_root" for details.  
  
vboxuser@ubuntu12:~$ #!/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 $num  
Enter a number:  
6  
6 is a composite number.  
vboxuser@ubuntu12:~$
```

e. To convert a given decimal number to binary equivalent

```
vboxuser@ubuntu12: ~  
To run a command as administrator (user "root"), use "sudo <command>".  
See "man sudo_root" for details.  
  
vboxuser@ubuntu12:~$ #!/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 $num  
Enter a decimal number:  
12  
Binary representation is 1100  
vboxuser@ubuntu12:~$
```