

Assignment 2 – (Jatin Singh Bisht, ECE, 21105039)

Ques1: Program to identify whether the given number is positive or negative.

```
jbisht@JATIN: /mnt/d/operati x + v
D:\operating-sys>wsl
jbisht@JATIN: /mnt/d/operating-sys$ mkdir Assignment2
jbisht@JATIN: /mnt/d/operating-sys$ cd Assignment2
jbisht@JATIN: /mnt/d/operating-sys/Assignment2$ cat > program1.sh
#program to check the polarity of an integer

echo "Enter a an integer"
read num

if [ $num -gt 0 ]; then
    echo "$num is an positive integer"
elif [ $num -lt 0 ]; then
    echo "$num is a negative integer"
else
    echo "$num is a bipolar integer"
fi
jbisht@JATIN: /mnt/d/operating-sys/Assignment2$ bash program1.sh
Enter a an integer
0
0 is a bipolar integer
jbisht@JATIN: /mnt/d/operating-sys/Assignment2$ bash program1.sh
Enter a an integer
23
23 is an positive integer
jbisht@JATIN: /mnt/d/operating-sys/Assignment2$ bash program1.sh
Enter a an integer
-2
-2 is a negative integer
```

Ques2: Program to find the largest and smallest of three numbers.

```
jbisht@JATIN: /mnt/d/operati x + v
jbisht@JATIN: /mnt/d/operating-sys/Assignment2$ cat > program2.sh
#program to find the largest and smallest of three numbers taken as input from user

echo "Enter num a"
read a

echo "Enter num b"
read b

echo "Enter num c"
read c

max=$a
min=$a

if [ $b -gt $max ]; then max=$b; fi
if [ $c -gt $max ]; then max=$c; fi

if [ $b -lt $min ]; then min=$b; fi
if [ $c -lt $min ]; then min=$c; fi

echo "max number : $max"
echo "min number : $min"
jbisht@JATIN: /mnt/d/operating-sys/Assignment2$ bash program2.sh
Enter num a
13
Enter num b
23
Enter num c
8
max number : 23
min number : 8
```

Ques3: Program to find the sum and average of N numbers.

```
jbisht@JATIN: /mnt/d/operati x + v
jbisht@JATIN: /mnt/d/operating-sys/Assignment2$ cat > program3.sh
#program to find average of N numbers

echo "Enter value of N"
read n

sum=0

echo "Enter the numbers:"
for ((i=1; i<=n; i++)); do
    read num
    sum=$((sum+num))
done

avg=$((echo "$sum / $n" | bc -l))
echo "Sum: $sum"
echo "average: $avg"
jbisht@JATIN: /mnt/d/operating-sys/Assignment2$ bash program3.sh
Enter value of N
5
Enter the numbers:
1
2
3
4
5
Sum: 15
average: 3.000000000000000000000000
```

Ques4: Program to find the factorial of the given number.

```
jbisht@JATIN: /mnt/d/operati x + v
jbisht@JATIN:/mnt/d/operating-sys/Assignment2$ cat > program4.sh
#Program to find factorial of a number

echo "Enter a number:"
read num
fact=1

for ((i=1; i<=num; i++)); do
    fact=$((echo "$fact * $i" | bc))
done

echo "Factorial of $num is $fact"
jbisht@JATIN:/mnt/d/operating-sys/Assignment2$ bash program4.sh
Enter a number:
5
Factorial of 5 is 120
jbisht@JATIN:/mnt/d/operating-sys/Assignment2$ bash program4.sh
Enter a number:
45
Factorial of 45 is 119622220865480194561963161495657715064383733760000000000
jbisht@JATIN:/mnt/d/operating-sys/Assignment2$ bash program4.sh
Enter a number:
7
Factorial of 7 is 5040
```

Ques5: Program to find the sequence of odd numbers present up to given n number.

```
jbisht@JATIN: /mnt/d/operati x + v
jbisht@JATIN:/mnt/d/operating-sys/Assignment2$ cat > program5.sh
#Program to find first N odd numbers

echo "Enter the value of n:"
read n

for ((i=1; i<=n; i+=2)); do
    echo $i
done
jbisht@JATIN:/mnt/d/operating-sys/Assignment2$ bash program5.sh
Enter the value of n:
10
1
3
5
7
9
```

Ques6: Program to find the sum of series using shell programming. $S=1^2+2^2+3^2+\dots+n^2$.

```
jbisht@JATIN: /mnt/d/operati x + v
jbisht@JATIN:/mnt/d/operating-sys/Assignment2$ cat > program6.sh
#Program to find sum of series  $S=1^2+2^2+3^2+\dots+n^2$ 

echo "Enter the value of n:"
read n
sum=0

for ((i=1; i<=n; i++)); do
    sum=$((sum + i * i))
done

echo "Sum of the series is $sum"
jbisht@JATIN:/mnt/d/operating-sys/Assignment2$ bash program6.sh
Enter the value of n:
10
Sum of the series is 385
```

Ques7: Program to perform the arithmetic operation using switch case.

```
jbisht@JATIN: /mnt/d/operati x + v
jbisht@JATIN:/mnt/d/operating-sys/Assignment2$ cat > program7.sh
#Program to perform arithmetic operation using switch case

echo "Enter two numbers:"
read a b
echo "Choose operation: 1. Add 2. Subtract 3. Multiply 4. Divide"
read op

case $op in
  1) echo "Result: $((a + b))" ;;
  2) echo "Result: $((a - b))" ;;
  3) echo "Result: $((a * b))" ;;
  4) echo "Result: $(echo "scale=2; $a / $b" | bc)" ;;
  *) echo "Invalid option" ;;
esac

jbisht@JATIN:/mnt/d/operating-sys/Assignment2$ bash program7.sh
Enter two numbers:
2 3
Choose operation: 1. Add 2. Subtract 3. Multiply 4. Divide
1
Result: 5
jbisht@JATIN:/mnt/d/operating-sys/Assignment2$ bash program7.sh
Enter two numbers:
2 3
Choose operation: 1. Add 2. Subtract 3. Multiply 4. Divide
2
Result: -1
jbisht@JATIN:/mnt/d/operating-sys/Assignment2$ bash program7.sh
Enter two numbers:
2 3
Choose operation: 1. Add 2. Subtract 3. Multiply 4. Divide
3
Result: 6
jbisht@JATIN:/mnt/d/operating-sys/Assignment2$ bash program7.sh
Enter two numbers:
2 3
Choose operation: 1. Add 2. Subtract 3. Multiply 4. Divide
4
Result: .66
jbisht@JATIN:/mnt/d/operating-sys/Assignment2$ bash program7.sh
Enter two numbers:
2 3
Choose operation: 1. Add 2. Subtract 3. Multiply 4. Divide
5
Invalid option
```

Ques8: Program to find the length of the string.

```
jbisht@JATIN: /mnt/d/operati x + v
jbisht@JATIN:/mnt/d/operating-sys/Assignment2$ cat > program8.sh
#Program to find length of given string.

echo "Enter a string:"
read str

echo "Length of the $str is: ${#str}"
jbisht@JATIN:/mnt/d/operating-sys/Assignment2$ bash program8.sh
Enter a string:
Sunshine
Length of the Sunshine is: 8
```

Ques9: Program to perform various pattern search using file.

```
jbisht@JATIN:/mnt/d/operati x + v
jbisht@JATIN:/mnt/d/operating-sys/Assignment2$ cat > program9.sh
#Program to find a pattern in file

echo "Enter the file name:"
read file

if [ ! -f "$file" ]; then
    echo "File does not exist. Please check the file name."
    exit 1
fi

echo "Enter the pattern to search: "
read pattern

if grep -nE "$pattern" "$file"; then
    echo "Pattern found in the file."
else
    echo "Pattern not found."
fi

jbisht@JATIN:/mnt/d/operati x + v
jbisht@JATIN:/mnt/d/operating-sys/Assignment2$ cat > file1.txt
Once upon a time
There lived a ghost
He was known to be a killer
And feared the most
Ah, ah, ah-ah-ah
Ah, ah, ah-ah-ah
Ah, ah, ah-ah-ah
Ah, ah, ah-ah-ah
Ah, ah, ah-ah-ah
Ah, ah, ah-ah-ah
Ah, ah, ah-ah-ah
Ah, ah, ah-ah-ah
The eagle is comin'
You better start runnin'
His blood is rushin'
Stunnin' and gunnin'
The eagle is comin'
You better start runnin'
His blood is rushin'
Stunnin' and gunnin'
Oh, oh
Oh, oh
Oh, oh
Oh, oh
Oh, oh
Oh, oh
Oh, oh
Oh, oh
Once upon a time
There lived a ghost
He was known to be a killer
And feared the most
jbisht@JATIN:/mnt/d/operating-sys/Assignment2$ bash program9.sh
Enter the file name:
file1.txt
Enter the pattern to search:
ghost
2:There lived a ghost
29:There lived a ghost
Pattern found in the file.
```

Ques10: Program to perform sum of series using switch case.

```
jbisht@JATIN:/mnt/d/operati x + v
jbisht@JATIN:/mnt/d/operating-sys/Assignment2$ cat > program10.sh
#Program to find sum of series of first N numbers of given pattern.

echo "Choose a series:
1. 1+2+3+...+n
2. 1*2*3*...+n
3. 1*2*3*...+n"
read choice
echo "Enter the value of n:"
read n

case $choice in
    1)
        # Formula: Sum = n * (n + 1) / 2
        sum=$((n * (n + 1) / 2))
        echo "Sum of the series: $sum"
        ;;
    2)
        # Formula: Sum = n * (n + 1) * (2n + 1) / 6
        sum=$((n * (n + 1) * (2 * n + 1) / 6))
        echo "Sum of the squares: $sum"
        ;;
    3)
        # Formula: Sum = (n * (n + 1) / 2)^2
        temp=$((n * (n + 1) / 2))
        sum=$((temp * temp))
        echo "Sum of the cubes: $sum"
        ;;
    *)
        echo "Invalid choice"
        ;;
esac

jbisht@JATIN:/mnt/d/operating-sys/Assignment2$ bash program10.sh
Choose a series:
1. 1+2+3+...+n
2. 1*2*3*...+n
3. 1*2*3*...+n
1
Enter the value of n:
5
Sum of the series: 15
jbisht@JATIN:/mnt/d/operating-sys/Assignment2$ bash program10.sh
Choose a series:
1. 1+2+3+...+n
2. 1*2*3*...+n
3. 1*2*3*...+n
2
Enter the value of n:
5
Sum of the squares: 55
jbisht@JATIN:/mnt/d/operating-sys/Assignment2$ bash program10.sh
Choose a series:
1. 1+2+3+...+n
2. 1*2*3*...+n
3. 1*2*3*...+n
3
Enter the value of n:
5
Sum of the cubes: 225
```

Ques11: Program to find the palindrome of a given number.

```
jbisht@JATIN: /mnt/d/operati x + v
jbisht@JATIN:/mnt/d/operating-sys/Assignment2$ cat > program11.sh
#Program to check if a number is palindrome.

echo "Enter a number:"
read num
rev=$(echo $num | rev)

if [ "$num" == "$rev" ]; then
    echo "$num is a palindrome."
else
    echo "$num is not a palindrome."
fi
jbisht@JATIN:/mnt/d/operating-sys/Assignment2$ bash program11.sh
Enter a number:
123456
123456 is not a palindrome.
jbisht@JATIN:/mnt/d/operating-sys/Assignment2$ bash program11.sh
Enter a number:
123454321
123454321 is a palindrome.
```

Ques12: Program to check whether a login is connected or not.

```
jbisht@JATIN: /mnt/d/operati x + v
jbisht@JATIN:/mnt/d/operating-sys/Assignment2$ cat > program12.sh
#Program to check if a login is connected

echo "Enter the username:"
read user

if who | grep -qw "$user"; then
    echo "User $user is connected."
else
    echo "User $user is not connected."
fi
jbisht@JATIN:/mnt/d/operating-sys/Assignment2$ bash program12.sh
Enter the username:
jbisht
User jbisht is connected.
jbisht@JATIN:/mnt/d/operating-sys/Assignment2$ bash program12.sh
Enter the username:
rahul
User rahul is not connected.
```