EXPERIMENT -4 : SHELL SCRIPTING COMMANDS

1) Shell Script to print half pyramids using numbers.

```
om-college@OM-M-PATEL-MACBOOK-M1-AIR os-lab % nano halfpyramid.sh
om-college@OM-M-PATEL-MACBOOK-M1-AIR os-lab % chmod 777  halfpyramid.sh
om-college@OM-M-PATEL-MACBOOK-M1-AIR os-lab % cat halfpyramid.sh
#!/bin/bash
echo "Enter the number"
read num
for((i=1;i<=num;i++))
do
        for((j=1;j<=i;j++))
        do
                echo -n "$j"
        done
        echo ""
done
om-college@OM-M-PATEL-MACBOOK-M1-AIR os-lab % ./halfpyramid.sh
Enter the number
3
1
12
123
```

2) Write a shell script that changes text to uppercase.

```
om-college@OM-M-PATEL-MACBOOK-M1-AIR os-lab % nano q12.sh
om-college@OM-M-PATEL-MACBOOK-M1-AIR os-lab % chmod 777 q12.sh
om-college@OM-M-PATEL-MACBOOK-M1-AIR os-lab % cat q12.sh
#! /bin/bash
echo "Hello World!" |tr 'a-z' 'A-Z'

om-college@OM-M-PATEL-MACBOOK-M1-AIR os-lab % ./q12.sh
HELLO WORLD!
```

3) Write a shell script to find the reverse of a given number.

```
om-college@OM-M-PATEL-MACBOOK-M1-AIR os-lab % nano q13.sh
om-college@OM-M-PATEL-MACBOOK-M1-AIR os-lab % chmod 777 q13.sh
om-college@OM-M-PATEL-MACBOOK-M1-AIR os-lab % cat q13.sh
#! /bin/bash
echo "Enter a number:"
read n
echo "Entered number is $n" reversen=0
while [ $n -gt 0 ]
do
r=$(( n % 10 ))
reversen=$(( reversen * 10 + $r )) n=$(( n / 10 ))
done
echo "Reversed number is $reversen"

om-college@OM-M-PATEL-MACBOOK-M1-AIR os-lab % ./q13.sh
Enter a number:
12345
Entered number is 12345 reversen=0
Reversed number is 54321
om-college@OM-M-PATEL-MACBOOK-M1-AIR os-lab % ./q13.sh
Enter a number:
7383757781
Entered number is 7383757781 reversen=0
Reversed number is 1877573837
```

4) Write a shell script to find the sum of floating point numbers.

```
om-college@OM-M-PATEL-MACBOOK-M1-AIR os-lab % nano q14.sh
om-college@OM-M-PATEL-MACBOOK-M1-AIR os-lab % chmod 777 q14.sh
om-college@OM-M-PATEL-MACBOOK-M1-AIR os-lab % cat q14.sh
#!/bin/bash
echo "Enter the number of elements:"
read n
sum=0.0
echo "Enter the elements:"
for((i=0;i<n;i++))
do
        read num
        sum=`echo $sum + $num | bc`
done
echo "The sum of the elements is: $sum"
om-college@OM-M-PATEL-MACBOOK-M1-AIR os-lab % ./q14.sh
Enter the number of elements:
2
Enter the elements:
13
21
The sum of the elements is: 34
om-college@OM-M-PATEL-MACBOOK-M1-AIR os-lab % ./q14.sh
Enter the number of elements:
3
Enter the elements:
-12
32
33.3
The sum of the elements is: 53.3
```

5) Write a shell script to make the following operations menu based:

a) Addition

b) Subtraction

c) Multiplication

d) Division

```
om-college@OM-M-PATEL-MACBOOK-M1-AIR os-lab % nano q15.sh
om-college@OM-M-PATEL-MACBOOK-M1-AIR os-lab % chmod 777 q15.sh
om-college@OM-M-PATEL-MACBOOK-M1-AIR os-lab % cat q15.sh
#!/bin/bash
echo "Operation Menu"
echo "1. Addition"
echo "2. Subtraction"
echo "3. Multiplication"
echo "4. Division"
echo "Enter your choice:"
read ch
echo "Enter two numbers:"
read num1
read num2
case $ch in
        1) result=`echo $num1 + $num2 | bc`
                echo "Addition of two numbers is: $result" ;;
        2) result=`echo $num1 - $num2 | bc`
                echo "Subtraction of two numbers is: $result" ;;
        3) result=`echo $num1 \* $num2 | bc`
                echo "Multiplication of two numbers is: $result" ;;
        4) result=`echo "scale=2; $num1 / $num2" | bc`
                echo "Division of two numbers is: $result" ;;
        *) echo "Invalid Choice" ;;
esac
om-college@OM-M-PATEL-MACBOOK-M1-AIR os-lab % ./q15.sh
Operation Menu
1. Addition
2. Subtraction
3. Multiplication
4. Division
Enter your choice:
4
Enter two numbers:
25
5
Division of two numbers is: 5.00
om-college@OM-M-PATEL-MACBOOK-M1-AIR os-lab % ./q15.sh
Operation Menu
1. Addition
2. Subtraction
3. Multiplication
4. Division
Enter your choice:
2
Enter two numbers:
25
5
Subtraction of two numbers is: 20
```

6) Write a shell script to find the sum of all digits for a given number.

```
om-college@OM-M-PATEL-MACBOOK-M1-AIR os-lab % nano q16.sh
om-college@OM-M-PATEL-MACBOOK-M1-AIR os-lab % chmod 777 q16.sh
om-college@OM-M-PATEL-MACBOOK-M1-AIR os-lab % cat q16.sh
#! /bin/bash
echo "Enter a number:"
read n
echo "Entered number is $n"
while [ $n -gt 0 ]
do
x=$(( n % 10 ))
sumn=$(( sumn + $x ))
n=$(( n / 10 ))
done
echo "Sum of digits of number is $sumn"

om-college@OM-M-PATEL-MACBOOK-M1-AIR os-lab % ./q16.sh
Enter a number:
2132
Entered number is 2132
Sum of digits of number is 8
om-college@OM-M-PATEL-MACBOOK-M1-AIR os-lab %
```

7) Write a shell script to find the factorial of a given no.

```
om-college@OM-M-PATEL-MACBOOK-M1-AIR os-lab % nano q17.sh
om-college@OM-M-PATEL-MACBOOK-M1-AIR os-lab % chmod 777 q17.sh
om-college@OM-M-PATEL-MACBOOK-M1-AIR os-lab % cat q17.sh
#!/bin/bash
echo "Enter the number:"
read num
fact=1
for((i=1;i<=num;i++))
do
        fact=`echo $fact \* $i | bc`
done
echo "The factorial of $num is: $fact"
om-college@OM-M-PATEL-MACBOOK-M1-AIR os-lab % ./q17.sh
Enter the number:
7
The factorial of 7 is: 5040
```

9) Write a shell script which prints “invalid no. of arguments”

if more than 5 command line arguments otherwise print “valid no. of arguments”.

```
om-college@OM-M-PATEL-MACBOOK-M1-AIR os-lab % nano q19.sh
om-college@OM-M-PATEL-MACBOOK-M1-AIR os-lab % chmod 777 q19.sh
om-college@OM-M-PATEL-MACBOOK-M1-AIR os-lab % cat q19.sh
#! /bin/bash
echo $1 $2 $3 $4 $5
if [ $# -eq 5 ]
then
echo "Valid arguments"
else
echo "Invalid arguments"
fi

om-college@OM-M-PATEL-MACBOOK-M1-AIR os-lab % ./q19.sh

Invalid arguments
```

8) Write a shell script to find the largest of three numbers and also find the total average.

```
om-college@OM-M-PATEL-MACBOOK-M1-AIR os-lab % nano q18.sh
om-college@OM-M-PATEL-MACBOOK-M1-AIR os-lab % chmod 777 q18.sh
om-college@OM-M-PATEL-MACBOOK-M1-AIR os-lab % cat q18.sh
#!/bin/bash
echo "Enter the three numbers:"
read num1
read num2
read num3
if [ $num1 -gt $num2 ]
then
        if [ $num1 -gt $num3 ]
        then
                echo "The largest number is: $num1"
        else
                echo "The largest number is: $num3"
        fi
else
        if [ $num2 -gt $num3 ]
        then
                echo "The largest number is: $num2"
        else
                echo "The largest number is: $num3"
        fi
fi

sum=`echo $num1 + $num2 + $num3 | bc`
echo "The sum of the numbers is: $sum"
avg=`echo "scale=2; $sum / 3" | bc`
echo "The average of the numbers is: $avg"
om-college@OM-M-PATEL-MACBOOK-M1-AIR os-lab % ./q18.sh
Enter the three numbers:
12
32
42
The largest number is: 42
The sum of the numbers is: 86
The average of the numbers is: 28.66
```

10) Write a shell script to find the max. and min. number from the given data set passed by command line argument.

```
om-college@OM-M-PATEL-MACBOOK-M1-AIR os-lab % nano q20.sh
om-college@OM-M-PATEL-MACBOOK-M1-AIR os-lab % chmod 777 q20.sh
om-college@OM-M-PATEL-MACBOOK-M1-AIR os-lab % cat q20.sh

#!/bin/bash
# Script to find minimum and maximum numbers from the given set

# Check if arguments are passed or not
if [ $# -eq 0 ]
then
    echo "No arguments passed"
    exit 1
fi

# Initialize min and max variables
max=${1}
min=${1}

# Loop through all arguments
for i in $@
do
    # Check if argument is greater than max
    if [ ${i} -gt ${max} ]
    then
        max=${i}
    fi

    # Check if argument is less than min
    if [ ${i} -lt ${min} ]
    then
        min=${i}
    fi
done

# Print max and min values
echo "Max: ${max}"
echo "Min: ${min}"
om-college@OM-M-PATEL-MACBOOK-M1-AIR os-lab % ./q20.sh 25 67 77
Max: 77
Min: 25
```