ASSIGNMENT 3

**Aim:** To create shell scripts for the following questions.

**To perform:** To code and solve the following.

**To Submit:** Give shell scripts for following:

**Q 1: 1. To find Largest of Three Numbers.**

read -p "Enter three numbers: " a b c

if (( a >= b && a >= c )); then

echo "$a is largest"

elseif (( b >= a && b >= c )); then

echo "$b is largest"

else

echo "$c is largest"

fi

**Q 2: To find a year is leap year or not.**

read -p "Enter a year: " year

if (( year % 400 == 0 || (year % 4 == 0 && year % 100 != 0) )); then

echo "$year is a leap year"

else

echo "$year is not a leap year"

fi

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

read -p "Enter three angles: " a b c

sum=$((a + b + c))

if (( sum == 180 && a > 0 && b > 0 && c > 0 )); then

echo "Valid triangle"

else

echo "Invalid triangle"

fi

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

read -p "Enter a character: " char

if [[ $char =~ [A-Za-z] ]]; then

echo "Alphabet"

elif [[ $char =~ [0-9] ]]; then

echo "Digit"

else

echo "Special Character"

fi

**Q 5:** **To calculate profit or loss.**

read -p "Enter cost price: " cp

read -p "Enter selling price: " sp

if (( sp > cp )); then

echo "Profit: $((sp - cp))"

elif (( cp > sp )); then

echo "Loss: $((cp - sp))"

else

echo "No profit, no loss"

fi

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

echo "Even numbers:"

for i in {1..10}; do

(( i % 2 == 0 )) && echo -n "$i "

done

echo -e "\nOdd numbers:"

for i in {1..10}; do

(( i % 2 != 0 )) && echo -n "$i "

done

echo

**7. To print table of a given number.**

read -p "Enter a number: " n

for i in {1..10}; do

echo "$n x $i = $((n \* i))"

done

**8. To find factorial of a given integer .**

read -p "Enter a number: " num

fact=1

for (( i=1; i<=num; i++ )); do

fact=$((fact \* i))

done

echo "Factorial of $num is $fact"

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

sum=0

for i in {1..10}; do

(( i % 2 == 0 )) && sum=$((sum + i))

done

echo "Sum of even numbers from 1 to 10: $sum"

**10. To print sum of digit of any number.**

read -p "Enter a number: " num

sum=0

while (( num != 0 )); do

digit=$((num % 10))

sum=$((sum + digit))

num=$((num / 10))

done

echo "Sum of digits: $sum"

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

read -p "Enter first number: " a

read -p "Enter operator (+ - \\* /): " op

read -p "Enter second number: " b

case $op in

+) echo "$a + $b = $((a + b))";;

-) echo "$a - $b = $((a - b))";;

\\*) echo "$a \* $b = $((a \* b))";;

/) echo "$a / $b = $((a / b))";;

\*) echo "Invalid operator";;

esac

**12. To print days of a week.**

days=(Sunday Monday Tuesday Wednesday Thursday Friday Saturday)

for day in "${days[@]}"; do

echo "$day"

done

**13. To print starting 4 months having 31 days.**

months=(January March May July)

for month in "${months[@]}"; do

echo "$month"

done

**14. Using functions,**

**a. To find given number is Amstrong number or not.**

is\_armstrong() {

num=$1

sum=0

temp=$num

while (( temp > 0 )); do

digit=$((temp % 10))

sum=$((sum + digit\*\*3))

temp=$((temp / 10))

done

(( sum == num )) && echo "Armstrong" || echo "Not Armstrong"

}

read -p "Enter number: " n

is\_armstrong $n

**b. To find whether a number is palindrome or not.**

is\_palindrome() {

num=$1

rev=0

temp=$num

while (( temp > 0 )); do

digit=$((temp % 10))

rev=$((rev \* 10 + digit))

temp=$((temp / 10))

done

(( rev == num )) && echo "Palindrome" || echo "Not Palindrome"

}

read -p "Enter number: " n

is\_palindrome $n

**c. To print Fibonacci series upto n terms.**

fibonacci() {

a=0

b=1

for (( i=0; i<$1; i++ )); do

echo -n "$a "

fn=$((a + b))

a=$b

b=$fn

done

echo

}

read -p "Enter terms: " n

fibonacci $n

**d. To find given number is prime or composite e. To convert a given decimal number to binary equivalent.**

is\_prime() {

n=$1

if (( n <= 1 )); then

echo "Neither Prime nor Composite"

return

fi

for (( i=2; i<=n/2; i++ )); do

if (( n % i == 0 )); then

echo "Composite"

return

fi

done

echo "Prime"

}

read -p "Enter number: " num

is\_prime $num