**4ITRC2 Operating System Lab**

**Lab 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**:

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

echo "Enter three numbers:"

read a b c

if [[ $a -ge $b && $a -ge $c ]]; then

echo "$a is the largest"

elif [[ $b -ge $a && $b -ge $c ]]; then

echo "$b is the largest"

else

echo "$c is the largest"

fi

1. **To find a year is leap year or not.**

echo "Enter a year:"

read 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

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

echo "Enter three angles:"

read 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

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

echo "Enter a character:"

read char

if [[ $char =~ [a-zA-Z] ]]; then

echo "Alphabet"

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

echo "Digit"

else

echo "Special character"

fi

1. **To calculate profit or loss**

echo "Enter cost price and selling price:"

read cp sp

if (( sp > cp )); then

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

elif (( cp > sp )); then

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

else

echo "No profit no loss"

fi

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

echo "Even numbers:"

for i in {1..10}; do

if (( i % 2 == 0 )); then

echo -n "$i "

fi

done

echo -e "\nOdd numbers:"

for i in {1..10}; do

if (( i % 2 != 0 )); then

echo -n "$i "

fi

done

echo

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

echo "Enter a number:"

read n

for ((i=1; i<=10; i++)); do

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

done

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

echo "Enter a number:"

read n

fact=1

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

fact=$((fact \* i))

done

echo "Factorial of $n is $fact"

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

sum=0

for ((i=2; i<=10; i+=2)); do

sum=$((sum + i))

done

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

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

echo "Enter a number:"

read n

sum=0

while ((n != 0)); do

digit=$((n % 10))

sum=$((sum + digit))

n=$((n / 10))

done

echo "Sum of digits: $sum"

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

Division

echo "Enter two numbers:"

read a b

echo "Choose operation (+, -, \*, /):"

read op

case $op in

+) echo "Result: $((a + b))" ;;

-) echo "Result: $((a - b))" ;;

\\*) echo "Result: $((a \* b))" ;;

/) echo "Result: $((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" "August" "October" "December")

echo "First four months with 31 days:"

for ((i=0; i<4; i++)); do

echo "${months[i]}"

done

**14. Using functions,**

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

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

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

**d. To find given number is prime or composite**

**e. To convert a given decimal number to binary equivalent**

amstrong() {

echo "Enter number:"

read num

n=$num

sum=0

while ((n != 0)); do

d=$((n % 10))

sum=$((sum + d \* d \* d))

n=$((n / 10))

done

[[ $sum -eq $num ]] && echo "Armstrong number" || echo "Not Armstrong"

}

palindrome() {

echo "Enter number:"

read n

rev=0

num=$n

while ((n != 0)); do

d=$((n % 10))

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

n=$((n / 10))

done

[[ $rev -eq $num ]] && echo "Palindrome" || echo "Not Palindrome"

}

fibonacci() {

echo "Enter number of terms:"

read n

a=0

b=1

echo -n "$a $b "

for ((i=3; i<=n; i++)); do

c=$((a + b))

echo -n "$c "

a=$b

b=$c

done

echo

}

prime\_check() {

echo "Enter number:"

read n

if ((n <= 1)); then

echo "Not prime"

return

fi

for ((i=2; i\*i<=n; i++)); do

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

echo "Composite"

return

fi

done

echo "Prime"

}

decimal\_to\_binary() {

echo "Enter a decimal number:"

read n

echo -n "Binary: "

echo "obase=2; $n" | bc

}