**4ITRC2 Operating System Lab**

**Lab Assignment 3**

**Q: Give shell scripts for following**:

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

#!/bin/bash

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.**

#!/bin/bash

echo "Enter 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**

#!/bin/bash

echo "Enter three angles:"

read a b c

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

if [ $sum -eq 180 ] && [ $a -gt 0 ] && [ $b -gt 0 ] && [ $c -gt 0 ]; then

echo "Valid triangle"

else

echo "Invalid triangle"

fi

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

#!/bin/bash

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**

#!/bin/bash

echo "Enter cost price:"

read cp

echo "Enter selling price:"

read sp

if [ $sp -gt $cp ]; then

profit=$((sp - cp))

echo "Profit of Rs. $profit"

elif [ $cp -gt $sp ]; then

loss=$((cp - sp))

echo "Loss of Rs. $loss"

else

echo "No profit no loss"

fi

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

#!/bin/bash

echo "Even numbers:"

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

if (( i % 2 == 0 )); then echo $i; fi

done

echo "Odd numbers:"

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

if (( i % 2 != 0 )); then echo $i; fi

done

1. To print table of a given number

#!/bin/bash

echo "Enter a number:"

read n

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

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

done

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

#!/bin/bash

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.**

#!/bin/bash

sum=0

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

sum=$((sum + i))

done

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

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

#!/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"

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

#!/bin/bash

echo "Enter two numbers:"

read a b

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

read op

case $op in

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

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

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

/)

if [ $b -ne 0 ]; then

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

else

echo "Cannot divide by zero"

fi ;;

\*) echo "Invalid operation" ;;

esac

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

#!/bin/bash

echo "Days of the week:"

days=("Sunday" "Monday" "Tuesday" "Wednesday" "Thursday" "Friday" "Saturday")

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

echo "$day"

done

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

#!/bin/bash

echo "Months with 31 days:"

echo -e "January\nMarch\nMay\nJuly"

1. **Using functions,** 
   1. **To find given number is Amstrong number or not**

#!/bin/bash

is\_armstrong() {

num=$1

sum=0

temp=$num

while [ $temp -gt 0 ]; do

digit=$((temp % 10))

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

temp=$((temp / 10))

done

if [ $sum -eq $num ]; then

echo "$num is an Armstrong number"

else

echo "$num is not an Armstrong number"

fi

}

echo "Enter number:"

read n

is\_armstrong $n

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

#!/bin/bash

is\_palindrome() {

num=$1

reverse=0

temp=$num

while [ $temp -gt 0 ]; do

digit=$((temp % 10))

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

temp=$((temp / 10))

done

if [ $reverse -eq $num ]; then

echo "$num is a palindrome"

else

echo "$num is not a palindrome"

fi

}

echo "Enter a number:"

read n

is\_palindrome $n

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

#!/bin/bash

echo "Enter number of terms:"

read n

a=0

b=1

echo "Fibonacci Series:"

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

echo -n "$a "

fn=$((a + b))

a=$b

b=$fn

done

echo

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

#!/bin/bash

echo "Enter a number:"

read n

if [ $n -lt 2 ]; then

echo "$n is neither prime nor composite"

exit

fi

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

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

echo "$n is composite"

exit

fi

done

echo "$n is prime"

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

#!/bin/bash

echo "Enter a decimal number:"

read dec

bin=""

while [ $dec -gt 0 ]; do

rem=$((dec % 2))

bin="$rem$bin"

dec=$((dec / 2))

done

echo "Binary: $bin"