**Operating System**

**(4ITRC2)**

**IT IV Semester**

*Submitted by*

**Raghav Agrawal**

**23I4056**

**IT ‘A’**

*Submitted to*

**Jasneet Kaur Mam**

Institute of Engineering and Technology

Devi Ahilya Vishwavidhyalaya, Indore (M.P.) India

**(**[www.iet.dauniv.ac.in](http://www.iet.dauniv.ac.in)**)**

**Session 2023-2027**

**Assignment III**

Shell Scripts of the following given questions are as follows :

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. **Leap Year or Not–**

echo "Enter year:"

read year

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

echo "$year is a Leap Year"

else

echo "$year is not a Leap Year"

fi

1. **To find input angles of 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 -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-**

echo "Enter a character:"

read ch

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

echo "Alphabet"

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

echo "Digit"

else

echo "Special character"

fi

1. **To calculate profit and loss**

echo "Enter cost price and selling price:"

read cp sp

if [ $sp -gt $cp ]; then

profit=$((sp - cp))

echo "Profit of $profit"

elif [ $sp -lt $cp ]; then

loss=$((cp - sp))

echo "Loss of $loss"

else

echo "No profit no loss"

fi

1. **To calculate even and odd number from 1 to 10.**

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

1. **To print table to a number**

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 factorial of 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. **Sum of even numbers from 1 to 10**

Thank You

sum=0

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

sum=$((sum + i))

done

echo "Sum of even numbers: $sum"

1. **Sum of digits**

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: $sum"

1. **Basic Calculator**

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))" ;;

/)

if [ $b -ne 0 ]; then

echo "Result: $((a / b))"

else

echo "Division by zero not allowed"

fi ;;

\*) echo "Invalid operator" ;;

esac

1. **Print days of week**

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

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

echo $day

done

1. **Print Starting 4 months having 31 days**

months=("January" "March" "May" "July" "August" "October" "December")

echo "First 4 months with 31 days:"

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

echo "${months[i]}"

done

1. **Using Functions**
2. **Armstrong number**

is\_armstrong() {

num=$1

sum=0

n=$num

while [ $n -gt 0 ]; do

digit=$((n % 10))

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

n=$((n / 10))

done

if [ $sum -eq $num ]; then

echo "$num is an Armstrong number"

else

echo "$num is not an Armstrong number"

fi

}

read -p "Enter number: " num

is\_armstrong $num

1. **Palindrome**

is\_palindrome() {

num=$1

rev=0

n=$num

while [ $n -gt 0 ]; do

digit=$((n % 10))

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

n=$((n / 10))

done

if [ $rev -eq $num ]; then

echo "$num is a Palindrome"

else

echo "$num is not a Palindrome"

fi

}

read -p "Enter number: " num

is\_palindrome $num

1. **Fibonacci Series**

fibonacci() {

n=$1

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

}

read -p "Enter number of terms: " n

fibonacci $n

1. **Prime or Composite**

is\_prime() {

num=$1

if [ $num -lt 2 ]; then

echo "Not prime"

return

fi

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

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

echo "$num is Composite"

return

fi

done

echo "$num is Prime"

}

read -p "Enter number: " num

is\_prime $num

1. **Decimal to Binary**

to\_binary() {

num=$1

bin=""

while [ $num -gt 0 ]; do

rem=$((num % 2))

bin="$rem$bin"

num=$((num / 2))

done

echo "Binary: $bin"

}

read -p "Enter decimal number: " num

to\_binary $num

***Thank You***