Lab assignment 3

Name – Abhinav Bagri

Roll no. – 23I4102

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

1. To find Largest of Three Numbers

* **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.

* **Leap Year Check**

echo "Enter a 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 input angles of a triangle and find out whether it is valid triangle or not

* **Valid Triangle Check**

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"

Name – Abhinav Bagri

Roll no. – 23I4102

else

echo "Invalid triangle"

fi

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

* **Character Type Check**

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 or loss

* **Profit or Loss Calculation**

echo "Enter cost price:"

read cp

echo "Enter selling price:"

read sp

if [ $sp -gt $cp ]; then

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

elif [ $cp -gt $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

Name – Abhinav Bagri

Roll no. – 23I4102

* **Print Even and Odd from 1 to 10**

echo "Even numbers:"

for i in {1..10}; do

if [ $((i%2)) -eq 0 ]; then

echo $i

fi

done

echo "Odd numbers:"

for i in {1..10}; do

if [ $((i%2)) -ne 0 ]; then

echo $i

fi

done

1. To print table of a given number

* **Table of a Given Number**

echo "Enter a number:"

read n

for i in {1..10}; do

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

done

1. To find factorial of a given integer

* **Factorial of 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 sum of all even numbers from 1 to 10.

Name – Abhinav Bagri

Roll no. – 23I4102

* **Sum of Even Numbers from 1 to 10**

sum=0

for i in {1..10}; do

if [ $((i%2)) -eq 0 ]; then

sum=$((sum + i))

fi

done

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

1. To print sum of digit of any number.

* **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 is $sum"

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

* **Basic Calculator**

echo "Enter two numbers:"

read a b

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

read op

case $op in

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

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

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

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

Name – Abhinav Bagri

Roll no. – 23I4102

\*) echo "Invalid operation" ;;

esac

1. To print days of a week.

* **Print 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.

* **First 4 Months with 31 Days**

months=("January" "March" "May" "July")

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

echo "$m"

done

14. Using functions,

**a. Armstrong Number**

is\_armstrong() {

num=$1

sum=0

temp=$num

while [ $temp -gt 0 ]; do

digit=$((temp % 10))

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

temp=$((temp / 10))

done

if [ $sum -eq $num ]; then

Name – Abhinav Bagri

Roll no. – 23I4102

echo "Armstrong number"

else

echo "Not an Armstrong number"

fi

}

is\_armstrong 153

**b. Palindrome Number**

is\_palindrome() {

num=$1

rev=0

temp=$num

while [ $temp -gt 0 ]; do

digit=$((temp % 10))

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

temp=$((temp / 10))

done

if [ $rev -eq $num ]; then

echo "Palindrome number"

else

echo "Not a palindrome"

fi

}

is\_palindrome 121

**c. Fibonacci Series up to n Terms**

Name – Abhinav Bagri

Roll no. – 23I4102

fibonacci() {

n=$1

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

}

fibonacci 10

**d. Prime or Composite**

is\_prime() {

n=$1

if [ $n -lt 2 ]; then

echo "Neither prime nor composite"

return

fi

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

if [ $((n % i)) -eq 0 ]; then

echo "Composite"

return

fi

Name – Abhinav Bagri

Roll no. – 23I4102

done

echo "Prime"

}

is\_prime 7

**e. Decimal to Binary Conversion**

decimal\_to\_binary() {

num=$1

bin=""

while [ $num -gt 0 ]; do

bin=$((num % 2))$bin

num=$((num / 2))

done

echo "Binary: $bin"

}

decimal\_to\_binary 10