**SAMPLE SHELL SCRIPT PROGRAMS**

**1.Shell script to check for leap year**

*#!/bin/bash*  
  
read -p "Enter a year: " year  
  
if [[ $((year % 4)) -eq 0 ]]; then  
 if [[ $((year % 100)) -eq 0 ]]; then  
 if [[ $((year % 400)) -eq 0 ]]; then  
 echo "$year is a leap year."  
 else  
 echo "$year is not a leap year."  
 fi  
 else  
 echo "$year is a leap year."  
 fi  
else  
 echo "$year is not a leap year."  
fi

**2.Write a shell script to display the multiplication table of any number**

#!/bin/bash

#enter a number

echo -n "enter a number: "

read num

#display multiplication table

echo "multiplication table for $num: "

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

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

done

**3.Shell script to perform arithmetic operations using functions**

#!/bin/bash

# Function to add two numbers

add() {

local num1=$1

local num2=$2

echo $((num1 + num2))

}

# Function to subtract two numbers

subtract() {

local num1=$1

local num2=$2

echo $((num1 - num2))

}

# Function to multiply two numbers

multiply() {

local num1=$1

local num2=$2

echo $((num1 \* num2))

}

# Function to divide two numbers

divide() {

local num1=$1

local num2=$2

if [ "$num2" -eq 0 ]; then

echo "Error: Division by zero"

return 1

fi

echo $((num1 / num2))

}

# Main script

echo "Enter two numbers:"

read num1 num2

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

read operation

case $operation in

+) result=$(add "$num1" "$num2") ;;

-) result=$(subtract "$num1" "$num2") ;;

\\*) result=$(multiply "$num1" "$num2") ;;

/) result=$(divide "$num1" "$num2") ;;

\*) echo "Invalid operation" ; exit 1;;

esac

echo "Result: $result"

**4.Shell script to reverse a number**

#!/bin/bash

echo enter n

read n

num=0

while [ $n -gt 0 ]

do

num=$(expr $num \\* 10)

k=$(expr $n % 10)

num=$(expr $num + $k)

n=$(expr $n / 10)

done

echo number is $num

**5.Shell script to accept employee details and calculate DA, HRA, TA, PF**

#!/bin/bash

# Accept employee details

echo "Enter Employee Name:"

read name

echo "Enter Employee ID:"

read emp\_id

echo "Enter Basic Salary:"

read basic\_salary

# Calculate allowances and deductions

da=$(echo "$basic\_salary \* 0.10" | bc)

hra=$(echo "$basic\_salary \* 0.15" | bc)

ta=$(echo "$basic\_salary \* 0.05" | bc)

pf=$(echo "$basic\_salary \* 0.12" | bc)

# Calculate gross and net salary

gross\_salary=$(echo "$basic\_salary + $da + $hra + $ta" | bc)

net\_salary=$(echo "$gross\_salary - $pf" | bc)

# Display results

echo "-----------------------------------------"

echo "Employee Name : $name"

echo "Employee ID : $emp\_id"

echo "Basic Salary : $basic\_salary"

echo "DA (10%) : $da"

echo "HRA (15%) : $hra"

echo "TA (5%) : $ta"

echo "PF (12%) : $pf"

echo "Gross Salary : $gross\_salary"

echo "Net Salary : $net\_salary"

echo "-----------------------------------------"

The bc (Basic Calculator) command-line tool in Linux/Unix is used for **arithmetic operations**, especially when you need **floating-point (decimal) calculations**, which the shell cannot handle by default.