**Q1.**

#!/bin/bash

echo "Program to read two numbers and Display result of the two variables"

echo "Enter a value for A ::"

read a

echo "Enter a value for B ::"

read b

echo "Values for A is ::" $a

echo "Values for B is ::" $b

sum=`expr $a + $b`

sub=`expr $a - $b`

mul=`expr $a \\* $b`

div=`expr $a / $b`

rem=`expr $a % $b`

echo "Sum of a and b are :: " $sum

echo "Subtraction of a and b are :: " $sub

echo "Multiplication of a and b are :: " $mul

echo "Division of a and b are :: " $div

echo "Remainder of a and b are :: " $rem

**Output**

Program to read two numbers and Display result of the two variables

Enter a value for A ::

6

Enter a value for B ::

2

Value for A is :: 6

Value for B is :: 2

Sum of a and b are :: 8

Subtraction of a and b are :: 4

Multiplication of a and b are :: 12

Division of a and b are :: 3

Remainder of a and b are :: 0

**Q2.**

#!/bin/bash

# This script performs floating-point arithmetic on two numbers

echo "Enter a value for A (floating point):"

read a

echo "Enter a value for B (floating point):"

read b

echo "Value for A is: $a"

echo "Value for B is: $b"

sum=$(echo "$a + $b" | bc)

sub=$(echo "$a - $b" | bc)

mul=$(echo "$a \* $b" | bc)

if [ "$b" != "0" ]; then

div=$(echo "scale=2; $a / $b" | bc) # scale=2 limits the result to 2 decimal places

else

div="undefined (division by zero)"

fi

echo "Sum of A and B is: $sum"

echo "Subtraction of A and B is: $sub"

echo "Multiplication of A and B is: $mul"

echo "Division of A and B is: $div"

**Output**

Enter a value for A (floating point):

5.6

Enter a value for B (floating point):

2.4

Value for A is: 5.6

Value for B is: 2.4

Sum of A and B is: 8.0

Subtraction of A and B is: 3.2

Multiplication of A and B is: 13.44

Division of A and B is: 2.33

**Q3.**

#!/bin/bash

echo "Enter Ramesh's basic salary: "

read basic\_salary

da=$(echo "scale=2; $basic\_salary \* 0.40" | bc)

hra=$(echo "scale=2; $basic\_salary \* 0.20" | bc)

gross\_salary=$(echo "scale=2; $basic\_salary + $da + $hra" | bc)

echo "Ramesh's basic salary is: $basic\_salary"

echo "Dearness Allowance (40% of basic salary) is: $da"

echo "House Rent Allowance (20% of basic salary) is: $hra"

echo "Ramesh's gross salary is: $gross\_salary"

**Output**

Enter Ramesh's basic salary:

5000

Ramesh's basic salary is: 5000

Dearness Allowance (40% of basic salary) is: 2000

House Rent Allowance (20% of basic salary) is: 1000

Ramesh's gross salary is: 8000

**Q4.**

#!/bin/bash

# Program to calculate the sum of digits of a five-digit number

echo "Enter a five-digit number:"

read number

sum=0

while [ $number -gt 0 ]

do

digit=$((number % 10))

sum=$((sum + digit))

number=$((number / 10))

done

echo "The sum of the digits is: $sum"

**Output**

Enter a five-digit number:

12345

The sum of the digits is: 15

**Q5.**

#!/bin/bash

echo "Enter the cost price of the item: "

read cost\_price

echo "Enter the selling price of the item: "

read selling\_price

if [ $(echo "$selling\_price > $cost\_price" | bc) -eq 1 ]; then

profit=$(echo "$selling\_price - $cost\_price" | bc)

echo "The seller has made a profit of: $profit"

elif [ $(echo "$selling\_price < $cost\_price" | bc) -eq 1 ]; then

loss=$(echo "$cost\_price - $selling\_price" | bc)

echo "The seller has incurred a loss of: $loss"

else

echo "No profit or loss. The selling price is equal to the cost price."

fi

**Output**

Enter the cost price of the item:

100

Enter the selling price of the item:

120

The seller has made a profit of: 20

**Q6.**

#!/bin/bash

if [ -z "$1" ]; then

year=$(date +%Y) # Get the current year

else

year=$1 # Use the year provided as an argument

fi

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

**Output**

./leap\_year.sh 2020

2020 is a leap year.

**Q7.**

#!/bin/bash

echo "Enter internal marks (out of 25): "

read internal\_marks

echo "Enter attendance percentage: "

read attendance\_percentage

if [ $internal\_marks -ge 20 ] && [ $(echo "$attendance\_percentage >= 75" | bc) -eq 1 ]; then

echo "Allowed for Semester"

else

echo "Not allowed"

fi

**Output**

Enter internal marks (out of 25):

22

Enter attendance percentage:

80

Allowed for Semester

**Q8.**

#!/bin/bash

if [ $# -ne 3 ]; then

echo "Please provide exactly three numbers as arguments."

exit 1

fi

num1=$1

num2=$2

num3=$3

if [ $num1 -le $num2 ] && [ $num1 -le $num3 ]; then

smallest=$num1

elif [ $num2 -le $num1 ] && [ $num2 -le $num3 ]; then

smallest=$num2

else

smallest=$num3

fi

echo "The smallest number is: $smallest"

**Output**

./small3.sh 5 8 3

The smallest number is: 3

**Q9.**

#! /bin/bash

echo "Enter the value of a"

read a

echo "Length of the variable a is : ${#a}"

if [ ${#a} -gt 1 ]

then

    echo "Value of $a is greater than 1"

else

   if [[ "$a" == [a-z] ]]

   then

          echo "lower case"

   elif [[ "$a" == [A-Z] ]]

   then

          echo "Upper case"

   elif [[ "$a" == [0-9] ]]

   then

          echo "It is a number"

   else

          echo "Special character"

   fi

fi

**Output**

Enter the value of a

a

Length of the variable a is : 1

lower case

**Q10.**

#! /bin/bash

echo "Enter the day"

read day

case $day in

Monday | monday | mon | Mon )

echo "DOS class 5-6 pm" ;;

Tuesday | tuesday | tue | Tue )

echo "No class" ;;

Wednesday | wednesday | wed | Wed )

echo "DOS class 5-6 pm" ;;

Thursday | thursday | thu | Thu )

echo "DOS Lab 9-11 am" ;;

Friday | friday | fri | Fri )

echo "No class" ;;

Saturday | saturday | sat | Sat )

echo "DOS class 9-10 am" ;;

Sunday | sunday | sun | Sun )

echo "Holiday" ;;

\*) echo "Invalid Input";;

esac

**Output**

Enter the day

Monday

DOS class 5-6 pm

Enter the day

tue

No class

Enter the day

Sun

Holiday

**Q11.**

#!/bin/bash

if [ $# -ne 2 ]; then

echo "Please provide two file names as arguments."

exit 1

fi

file1=$1

file2=$2

if [ ! -f "$file1" ]; then

echo "File $file1 does not exist."

exit 1

fi

if [ ! -f "$file2" ]; then

echo "File $file2 does not exist."

exit 1

fi

if cmp -s "$file1" "$file2"; then

echo "Files $file1 and $file2 have same content."

rm "$file2"

echo "So $file2 is deleted."

else

echo "Files $file1 and $file2 have different content."

fi

**Output**

$ ./filechk.sh file1.txt file2.txt

Files file1.txt and file2.txt have same content.

So file2.txt is deleted.

**Q12.**

#!/bin/bash

if [ $# -ne 3 ]; then

echo "Invalid input. Enter input in the following format: op1 operator op2"

exit 1

fi

op1=$1

operator=$2

op2=$3

case $operator in

"+")

result=$(echo "$op1 + $op2" | bc)

echo "$op1 + $op2 = $result"

;;

"-")

result=$(echo "$op1 - $op2" | bc)

echo "$op1 - $op2 = $result"

;;

"\*")

result=$(echo "$op1 \* $op2" | bc)

echo "$op1 \* $op2 = $result"

;;

"/")

if [ "$op2" -eq 0 ]; then

echo "Error: Division by zero"

else

result=$(echo "$op1 / $op2" | bc)

echo "$op1 / $op2 = $result"

fi

;;

\*)

echo "Invalid Input. Please use one of the following operators: +, -, \*, /"

;;

Esac

**Output**

./calx.sh 5 + 3 ./calx.sh 10 - 4

5 + 3 = 8 10 - 4 = 6

./calx.sh 6 \* 7 ./calx.sh 20 / 4

6 \* 7 = 42 20 / 4 = 5