

//Q1>>1. Write a shell script iaop to perform integer arithmetic on two numbers, where the value of the two numbers will be given during runtime.

```
#!/bin/bash

# Prompt for input
echo "Enter the first number:"
read num1
echo "Enter the second number:"
read num2

# Perform and display all operations
echo "Results of arithmetic operations:"
echo "Addition: $((num1 + num2))"
echo "Subtraction: $((num1 - num2))"
echo "Multiplication: $((num1 * num2))"

# Check for division or modulus by zero
if [ $num2 -ne 0 ]; then
    echo "Division: $((num1 / num2))"
    echo "Modulus: $((num1 % num2))"
else
    echo "Division: Undefined (cannot divide by zero)"
    echo "Modulus: Undefined (cannot find modulus with zero)"
fi
```

//Q2>>2. Write a shell script faop to perform floating point arithmetic on two numbers, where the value of the two numbers will be given during runtime.

```
#!/bin/bash

# Prompt for input
echo "Enter the first number:"
read num1
echo "Enter the second number:"
read num2

# Perform and display all operations
echo "Results of floating-point arithmetic operations:"
echo "Addition: $(echo "$num1 + $num2" | bc)"
echo "Subtraction: $(echo "$num1 - $num2" | bc)"
echo "Multiplication: $(echo "$num1 * $num2" | bc)"

if (( $(echo "$num2 != 0" | bc -l) )); then
    echo "Division: $(echo "scale=2; $num1 / $num2" | bc)"
else
    echo "Division: Undefined (cannot divide by zero)"
fi
```

//Q3>> 3. Ramesh's basic salary is input through the keyboard. His dearness allowance is 40% of basic salary, and house rent allowance is 20% of basic salary. Write a program to calculate his gross salary.

```
#!/bin/bash

# Prompt for basic salary input
echo "Enter the basic salary:"
read basic_salary

# Calculate allowances
da=$(echo "scale=2; $basic_salary * 0.40" | bc)
hra=$(echo "scale=2; $basic_salary * 0.20" | bc)

# Calculate gross salary
gross_salary=$(echo "scale=2; $basic_salary + $da + $hra" | bc)

# Display results
echo "Gross Salary: $gross_salary"
```

//Q4>>4. If a five digit number is input given through the keyboard during runtime, write a program to calculate the sum of its digits.

```
#!/bin/bash

# Prompt for a five-digit number
echo "Enter a five-digit number:"
read num

# Initialize sum to 0
sum=0

# Calculate sum of digits
while [ $num -gt 0 ]; do
    digit=$((num % 10))
    sum=$((sum + digit))
    num=$((num / 10))
done

# Display the result
echo "Sum of digits: $sum"
```

//Q5>>5. If cost price and selling price of an item is input through the keyboard, write a program to determine whether the seller has made profit or incurred loss. Also determine how much profit was made or loss incurred.

```
#!/bin/bash

# Prompt for cost price and selling price
echo "Enter the cost price:"
read cost_price
echo "Enter the selling price:"
```

```

read selling_price

# Calculate profit or loss
if (( selling_price > cost_price )); then
    profit=$((selling_price - cost_price))
    echo "Profit: $profit"
elif (( selling_price < cost_price )); then
    loss=$((cost_price - selling_price))
    echo "Loss: $loss"
else
    echo "No profit, no loss."
fi

```

//Q6>>6. Write a shell script which receives any year from the keyboard and determines, whether the year is a leap year or not. If no argument is supplied the current year should be assumed.

```

#!/bin/bash

# Check if a year is provided as an argument
if [ -z "$1" ]; then
    year=$(date +%Y) # Current year
else
    year=$1
fi

# Determine if the year is a leap 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

```

//Q7>>7. Write a shell script allow that will display a message to enter internal mark and percentage in attendance, if the entered mark is greater than equal to 20 and entered percentage in attendance is greater that equal to 75 then display the message Allowed for Semester otherwise display the message Not allowed.

```

#!/bin/bash

# Prompt for internal marks and attendance percentage
echo "Enter internal marks (out of 25):"
read marks
echo "Enter attendance percentage:"
read attendance

# Check conditions
if (( marks >= 20 && attendance >= 75 )); then
    echo "Allowed for Semester"
else
    echo "Not Allowed for Semester" fi

```

//Q8>> 8. Write a shell script small3 that will compare three numbers passed as command line arguments and display the smallest one.

```
#!/bin/bash
```

```
# Prompt for three numbers
```

```
echo "Enter the first number:"
```

```
read num1
```

```
echo "Enter the second number:"
```

```
read num2
```

```
echo "Enter the third number:"
```

```
read num3
```

```
# Determine the smallest number
```

```
if (( num1 <= num2 && num1 <= num3 )); then
```

```
    echo "Smallest number is: $num1"
```

```
elif (( num2 <= num1 && num2 <= num3 )); then
```

```
    echo "Smallest number is: $num2"
```

```
else
```

```
    echo "Smallest number is: $num3"
```

```
fi
```

//Q8>>9. Write a shell script check_char which will display one message to enter a character and according to the character entered it will display appropriate message from the following options: • You entered a lower case alphabet • You entered an upper case alphabet. • You have entered a digit. • You have entered a special symbol. • You have entered more than one character.

```
#!/bin/bash
```

```
# Prompt for input
```

```
echo "Enter a character:"
```

```
read char
```

```
# Check the length of input
```

```
if [ ${#char} -ne 1 ]; then
```

```
    echo "You have entered more than one character."
```

```
else
```

```
    # Classify the character
```

```
    case $char in
```

```
        [a-z]) echo "You entered a lower case alphabet." ;;
```

```
        [A-Z]) echo "You entered an upper case alphabet." ;;
```

```
        [0-9]) echo "You have entered a digit." ;;
```

```
        *)     echo "You have entered a special symbol." ;;
```

```
    esac
```

```
fi
```

//Q10>>10. Write a shell script class_time which will display one message to enter a day and according to the day entered it will display the DOS class time along with the room information or the message "No class on day_name" or "Holiday" for Sunday.

```
#!/bin/bash
```

```
# Prompt for input
```

```
echo "Enter a day of the week (e.g., Monday):"
```

```
read day
```

```
# Convert to lowercase for comparison
```

```
day=$(echo "$day" | tr '[:upper:]' '[:lower:]')
```

```
# Check the day
```

```
case $day in
```

```
    monday) echo "DOS Class: 10:00 AM - 11:00 AM, Room: 101" ;;
```

```
    wednesday) echo "DOS Class: 2:00 PM - 3:00 PM, Room: 202" ;;
```

```
    friday) echo "DOS Class: 11:00 AM - 12:00 PM, Room: 303" ;;
```

```
    sunday) echo "Holiday" ;;
```

```
    *) echo "No class on $day" ;;
```

```
esac
```

//Q11>>11. Write a shell script filechk that will take two file names as command line arguments, and check whether the content of two files are same or not . If contents of two files are same, then it will display the message: Files filename1 and filename2 have same content. then delete the second file and display the message: So filename2 is deleted. Otherwise display the message: Files filename1 and filename2 have different content.

```
#!/bin/bash
```

```
# Prompt for file names
```

```
echo "Enter the first file name:"
```

```
read file1
```

```
echo "Enter the second file name:"
```

```
read file2
```

```
# Check if both files exist
```

```
if [ ! -f "$file1" ] || [ ! -f "$file2" ]; then
```

```
    echo "One or both files do not exist."
```

```
    exit 1
```

```
fi
```

```
# Compare files
```

```
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
```

//Q12>> 12. Write a shell script calculator that will take three command line arguments, where the first argument will specify the first operand, second argument will specify the operator and the third argument will specify the second operand and display the output of the arithmetic operation specified in the following format: op1 operator op2 = result .
#!/bin/bash

Prompt for inputs

echo "Enter the first operand:"

read op1

echo "Enter the operator (+, -, x, /, %, ^):"

read operator

echo "Enter the second operand:"

read op2

Perform the calculation

case \$operator in

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

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

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

/)

if ((\$(echo "\$op2 == 0" | bc -l))); then

echo "Error: Division by zero is not allowed."

exit 1

fi

result=\$(echo "scale=2; \$op1 / \$op2" | bc) ;;

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

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

*)

echo "Invalid operator"

echo "Valid operators are: + - x / % ^"

exit 1 ;;

esac

Display the result

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