NAME: <u>MAHBOOB ALI</u>

<u>ID:</u>   <u>**BIT-24S-027**</u>

<div align="center">

<u>**LAB 04**</u>

Tasks Related to Arithmetic Operators

</div>

1. Write a Python program to take two numbers as input and
   perform all arithmetic operations on them.

```python
print("1. Perform all arithmetic operations on two numbers:")

# Taking two numbers as input
num1 = float(input("Enter the first number: "))
num2 = float(input("Enter the second number: "))

# Performing the arithmetic operations
addition = num1 + num2
subtraction = num1 - num2
multiplication = num1 * num2
division = num1 / num2 if num2 != 0 else "undefined (cannot divide by zero)"
modulus = num1 % num2 if num2 != 0 else "undefined (cannot find modulus with zero)"
exponentiation = num1 ** num2

# Printing the results
print(f"\nAddition: {num1} + {num2} = {addition}")
print(f"Subtraction: {num1} - {num2} = {subtraction}")
print(f"Multiplication: {num1} * {num2} = {multiplication}")
print(f"Division: {num1} / {num2} = {division}")
print(f"Modulus: {num1} % {num2} = {modulus}")
print(f"Exponentiation: {num1} ** {num2} = {exponentiation}")
```

```
1. Perform all arithmetic operations on two numbers:
Enter the first number: 10
Enter the second number: 5

Addition: 10.0 + 5.0 = 15.0
Subtraction: 10.0 - 5.0 = 5.0
Multiplication: 10.0 * 5.0 = 50.0
Division: 10.0 / 5.0 = 2.0
Modulus: 10.0 % 5.0 = 0.0
Exponentiation: 10.0 ** 5.0 = 100000.0
```

2. Create a function that takes two numbers and returns their sum, difference, product, and quotient.

```python
print("2. Function to return sum, difference, product, and quotient:")


# Function to perform all arithmetic operations
def arithmetic_operations(num1, num2):
    sum_result = num1 + num2
    difference = num1 - num2
    product = num1 * num2
    quotient = num1 / num2 if num2 != 0 else "undefined (cannot divide by zero)"

    return sum_result, difference, product, quotient


# Taking input from the user
num1 = float(input("Enter the first number: "))
num2 = float(input("Enter the second number: "))


# Calling the function and unpacking the results
sum_result, difference, product, quotient = arithmetic_operations(num1, num2)


# Displaying the results
print(f"\nSum: {sum_result}")
print(f"Difference: {difference}")
print(f"Product: {product}")
```

Output:

```
2. Function to return sum, difference, product, and quotient:
Enter the first number: Enter the second number:
Sum: 6.0
Difference: 0.0
Product: 9.0
Quotient: 1.0
```

3. Write a Python script to find the remainder when one number is divided by another.

```python
print("3. Find the remainder when one number is divided by another:")

# Taking two numbers as input
num1 = float(input("Enter the first number: "))
num2 = float(input("Enter the second number: "))

# Finding the remainder using modulus operator
if num2 != 0:
    remainder = num1 % num2
    print(f"The remainder when {num1} is divided by {num2} is: {remainder}")
else:
    print("Error: Division by zero is not allowed.")
```

Output:

```
3. Find the remainder when one number is divided by another:
Enter the first number: Enter the second number: The remainder when 3.0 is divided by 3.0 is: 0.0
```

4. Write a program to calculate the area of a circle using the
   formula: Area = π * r^2.

```python
python

import math

print("4. Calculate the area of a circle:")

# Taking the radius as input
radius = float(input("Enter the radius of the circle: "))

# Calculating the area of the circle
area = math.pi * radius ** 2

# Displaying the result
print(f"The area of the circle with radius {radius} is: {area}")
```

Output:

4. Calculate the area of a circle:
Enter the radius of the circle: The area of the circle with radius 3.0 is: 28.274333882308138

5. Implement a program that takes a number as input and returns its square and cube using exponentiation.

```python
print("5. Find the square and cube of a number:")

# Taking the number as input
num = float(input("Enter a number: "))

# Calculating the square and cube using exponentiation
square = num ** 2
cube = num ** 3

# Displaying the results
print(f"The square of {num} is: {square}")
print(f"The cube of {num} is: {cube}")
```

Output:

```
5. Find the square and cube of a number:
Enter a number: The square of 3.0 is: 9.0
The cube of 3.0 is: 27.0
```

6. Create a simple calculator in Python that allows the user to choose an operation (addition, subtraction, etc.) and inputs two numbers.

```python
print("6. Simple Calculator")

# Displaying the menu of operations
print("Select operation:")
print("1. Addition")
print("2. Subtraction")
print("3. Multiplication")
print("4. Division")
print("5. Modulus")
print("6. Exponentiation")

# Taking the user's choice of operation
operation = input("Enter choice (1/2/3/4/5/6): ")

# Taking input for the two numbers
num1 = float(input("Enter the first number: "))
num2 = float(input("Enter the second number: "))

# Performing the chosen operation
if operation == '1':
    result = num1 + num2
    print(f"{num1} + {num2} = {result}")
elif operation == '2':
    result = num1 - num2
    print(f"{num1} - {num2} = {result}")
```

```python
elif operation == '3':
    result = num1 * num2
    print(f"{num1} * {num2} = {result}")
elif operation == '4':
    if num2 != 0:
        result = num1 / num2
        print(f"{num1} / {num2} = {result}")
    else:
        print("Error: Cannot divide by zero.")
elif operation == '5':
    if num2 != 0:
        result = num1 % num2
        print(f"{num1} % {num2} = {result}")
    else:
        print("Error: Cannot find modulus by zero.")
elif operation == '6':
    result = num1 ** num2
    print(f"{num1} ^ {num2} = {result}")
else:
    print("Invalid input! Please choose a valid operation.")
```

```
6. Simple Calculator
Select operation:
1. Addition
2. Subtraction
3. Multiplication
4. Division
5. Modulus
6. Exponentiation
Enter choice (1/2/3/4/5/6): 3
Enter the first number: 5
Enter the second number: 4
5.0 * 4.0 = 20.0
```