	Marwadi University **Faculty of Engineering & Technology** **Department of Information and Communication Technology**
Subject: Programming With Python (01CT1309)	**Aim:** Write a program to perform different arithmetic operations on numbers in python.
Experiment No: 01	**Date:**	**Enrollment No: 92400133055**

Aim: Write a program to perform different arithmetic operations on numbers in python.

IDE:

Arithmetic operations are fundamental to programming, and Python provides straightforward operators to perform these calculations. Let's revisit these basic arithmetic operations, which you've likely encountered in your math classes, and see how they can be used in Python.

Types of Arithmetic Operators in Python

Arithmetic operators in Python are fundamental tools used for performing basic mathematical operations. Here are the primary types of arithmetic operators:

- Addition
- Subtraction
- Multiplication
- Division
- Modulus
- Exponentiation
- Floor Division

Let's take a closer look at each of these operators to understand them better.

Addition

The addition operator in Python is "+". It is used to add or sum two values.

Python Code:

num1, num2 = 10, 30

sum= num1+num2

print("The sum of",num1,"and",num2,"is:",sum)

Output:

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```
Class Tutorials  >    lab_2.py  > ...
  1     num1, num2 = 10, 30
  2     sum= num1+num2
  3     print("The sum of",num1,"and",num2,"is:",sum)
```

```
PROBLEMS    OUTPUT    DEBUG CONSOLE    TERMINAL    PORTS

PS E:\SEM 3\PWP> python -u "e:\SEM 3\PWP\Class Tutorials\lab_2.py"
The sum of 10 and 30 is: 40
 PS E:\SEM 3\PWP>
```

Subtraction

The subtraction operator in Python is "-". It is used to subtraction or difference two values.

num1, num2 = 10, 30

sub= num1-num2

print("The subtraction of",num1,"and",num2,"is:",sub)

output:

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```
5    num1, num2 = 10, 30
6    sub= num1-num2
7    print("The subtraction of",num1,"and",num2,"is:",sub)
```

PROBLEMS   OUTPUT   DEBUG CONSOLE   TERMINAL   PORTS

```
● PS E:\SEM 3\PWP> python -u "e:\SEM 3\PWP\Class Tutorials\lab_2.py"
  The subtraction of 10 and 30 is: -20
○ PS E:\SEM 3\PWP>
```

Multiplication

The Arithmetic Operator in Python for multiplication is "*". With this operator, we can find the product of two values.

num1, num2 = 10, 30

product= num1*num2

print("The product of",num1,"and",num2,"is:",product)

Output:

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```
10    num1, num2 = 10, 30
11    product= num1*num2
12    print("The product of",num1,"and",num2,"is:",product)
```

PROBLEMS   OUTPUT   DEBUG CONSOLE   TERMINAL   PORTS

```
PS E:\SEM 3\PWP> python -u "e:\SEM 3\PWP\Class Tutorials\lab_2.py"
The product of 10 and 30 is: 300
PS E:\SEM 3\PWP>
```

Division

The "/" operator is the division operator in Python. We can find the quotient when the first operand is divided by the second.

num1, num2 = 10, 30

div = num1/num2

print("The division of",num1,"and",num2,"is:",div)

Output:

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```
14    num1, num2 = 10, 30
15    div = num1/num2
16    print("The division of",num1,"and",num2,"is:",div)
17
```

PROBLEMS   OUTPUT   DEBUG CONSOLE   TERMINAL   PORTS

```
PS E:\SEM 3\PWP> python -u "e:\SEM 3\PWP\Class Tutorials\lab_2.py"
● The division of 10 and 30 is: 0.3333333333333333
○ PS E:\SEM 3\PWP>
```

Modulus

The "%" operator is the division operator in Python. Using this, we can find the remainder when the first operand is divided by the second.

num1, num2 = 10, 30

rem = num1%num2

print("The reminder of",num1,"and",num2,"is:",rem)

Output:

```
18    num1, num2 = 10, 30
19    rem = num1%num2
20    print("The reminder of",num1,"and",num2,"is:",rem)
21    |
```

PROBLEMS   OUTPUT   DEBUG CONSOLE   TERMINAL   PORTS

```
PS E:\SEM 3\PWP> python -u "e:\SEM 3\PWP\Class Tutorials\lab_2.py"
▶ The reminder of 10 and 30 is: 10
○ PS E:\SEM 3\PWP>
```

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Exponentiation

The exponentiation operator in Python is denoted by "**". It is used to raise the power of the first operand to the power of the second.

num1, num2 = 10, 3

exp = num1**num2

print("The exponentiation of",num1,"and",num2,"is:",exp)

Output:

```
23    num1, num2 = 10, 3
24    exp = num1**num2
25    print("The exponentiation of",num1,"and",num2,"is:",exp)
26
```

```
PROBLEMS    OUTPUT    DEBUG CONSOLE    TERMINAL    PORTS

PS E:\SEM 3\PWP> python -u "e:\SEM 3\PWP\Class Tutorials\lab_2.py"
● The exponentiation of 10 and 3 is: 1000
○ PS E:\SEM 3\PWP>
```

Floor Division

It is denoted by "//" in Python. We use it to find the floor of the quotient when the first operand is divided by the second.

num1, num2 = 10, 3

floordiv = num1//num2

print("The Floor Division of",num1,"and",num2,"is:",floordiv)

Output:

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```
27    num1, num2 = 10, 3
28    floordiv = num1//num2
29    print("The Floor Division of",num1,"and",num2,"is:",floordiv)
```

PROBLEMS   OUTPUT   DEBUG CONSOLE   TERMINAL   PORTS

```
PS E:\SEM 3\PWP> python -u "e:\SEM 3\PWP\Class Tutorials\lab_2.py"
● The Floor Division of 10 and 3 is: 3
○ PS E:\SEM 3\PWP>
```

Task:

x = 8

y = 3

mod = x % y

print (mod)

Output:

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```
31    x = 8
32    y = 3
33    mod = x % y
34    print (mod)
```

PROBLEMS   OUTPUT   DEBUG CONSOLE   TERMINAL   PORTS

```
PS E:\SEM 3\PWP> python -u "e:\SEM 3\PWP\Class Tutorials\lab_2.py"
2
PS E:\SEM 3\PWP>
```

a = -5

b = 2

res1 = a % b

print (res1)

Output:

```
36    a = -5
37    b = 2
38    res1 = a % b
39    print (res1)
```

PROBLEMS   OUTPUT   DEBUG CONSOLE   TERMINAL   PORTS

```
PS E:\SEM 3\PWP> python -u "e:\SEM 3\PWP\Class Tutorials\lab_2.py"
1
PS E:\SEM 3\PWP>
```

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m = 5

n = -2

res2 = m % n

print (res2)

Output:

```
42    m = 5
43    n = -2
44    res2 = m % n
45    print (res2)
```

PROBLEMS   OUTPUT   DEBUG CONSOLE   TERMINAL   PORTS

```
PS E:\SEM 3\PWP> python -u "e:\SEM 3\PWP\Class Tutorials\lab_2.py"
● -1
○ PS E:\SEM 3\PWP>
```

e = -5

f = -2

res3 = e % f

print (res3)

Output:

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Experiment No: 01	**Date:**		**Enrollment No: 92400133055**

```
47    e = -5
48    f = -2
49    res3 = e % f
50    print (res3)
```

PROBLEMS   OUTPUT   DEBUG CONSOLE   TERMINAL   PORTS

● PS E:\SEM 3\PWP> python -u "e:\SEM 3\PWP\Class Tutorials\lab_2.py"
  -1
○ PS E:\SEM 3\PWP>

Order of precedence of Arithmetic operators in Python

Arithmetic Operators in Python follow a basic order of precedence. When more than one operator is used, they are executed according to this order:

Operator	Purpose
()	Parentheses
**	Exponent
%, *, /, //	Modulos, Multiplication, Division and Floor division
+, -	Addition and Subtraction

The operator listed at the top of the table will be executed first.

print (((5 + 4) / 3) * 2)

Output:

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```
53    print (((5 + 4) / 3) * 2)
```

PROBLEMS   OUTPUT   DEBUG CONSOLE   TERMINAL   PORTS

```
PS E:\SEM 3\PWP> python -u "e:\SEM 3\PWP\Class Tutorials\lab_2.py"
6.0
PS E:\SEM 3\PWP>
```

x = 3

y = 4

z = 6

print(x*y//z)

print(x*(y//z))

Output:

```
55    x = 3
56    y = 4
57    z = 6
58    print(x*y//z)
59    print(x*(y//z))
```

PROBLEMS   OUTPUT   DEBUG CONSOLE   TERMINAL   PORTS

```
PS E:\SEM 3\PWP> python -u "e:\SEM 3\PWP\Class Tutorials\lab_2.py"
2
0
PS E:\SEM 3\PWP>
```

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x = 2

y = 3

z = 2

print(x**y**z)

print((x**y)**z)

Output

```
61    x = 2
62    y = 3
63    z = 2
64    print(x**y**z)
65    print((x**y)**z)
```

PROBLEMS   OUTPUT   DEBUG CONSOLE   TERMINAL   PORTS

```
PS E:\SEM 3\PWP> python -u "e:\SEM 3\PWP\Class Tutorials\lab_2.py"
512
64
```

Post Lab

Write a python code for calculating the Area and Perimeter of a Rectangle

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Experiment No: 01	**Date:**	**Enrollment No: 92400133055**

```
1   #Question 1
2   print("Enter measurements for rectangle:")
3   length = float(input("Enter length: "))
4   width = float(input("Enter width: "))
5   area = length * width
6   perimeter = 2 * (length + width)
7   print("Area =", area)
8   print("Perimeter =", perimeter)
```

PROBLEMS ①   OUTPUT   DEBUG CONSOLE   TERMINAL   PORTS

```
● PS E:\SEM 3\PWP> python -u "e:\SEM 3\PWP\Class Tutorials\post_lab_2.py"
  Enter measurements for rectangle:
  Enter length: 5
  Enter width: 6
  Area = 30.0
  Perimeter = 22.0
○ PS E:\SEM 3\PWP> ▌
```

Write a python code for testing if a number is even or odd

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```
11    num = int(input("Enter a number: "))
12    if num==0:
13        print("Neither even nor odd")
14    elif num % 2 == 0:
15        print("Even Number")
16    else:
17        print("Odd Number")
```

PROBLEMS **1**   OUTPUT   DEBUG CONSOLE   TERMINAL   PORTS

```
PS E:\SEM 3\PWP> python -u "e:\SEM 3\PWP\Class Tutorials\post_lab_2.py"
Enter a number: 0
Neither even nor odd
PS E:\SEM 3\PWP> python -u "e:\SEM 3\PWP\Class Tutorials\post_lab_2.py"
Enter a number: 6
Even Number
PS E:\SEM 3\PWP>
```

Write a python code for calculate the area and volume of the Cube.

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```python
19     #Question 3
20     side = float(input("Enter side of cube: "))
21     surfaceArea = 6*(side**2)
22     vol = side**3
23     print("Surface Area =", surfaceArea)
24     print("Volume =", vol)
```

PROBLEMS 1   OUTPUT   DEBUG CONSOLE   TERMINAL   PORTS

```
PS E:\SEM 3\PWP> python -u "e:\SEM 3\PWP\Class Tutorials\post_lab_2.py"
Enter side of cube: 5
Surface Area = 150.0
Volume = 125.0
PS E:\SEM 3\PWP> 
```

Write a python code to solve the equation z = (x+y)*(x-y)

```python
26     #Question 4
27     x = int(input("Enter x: "))
28     y = int(input("Enter y: "))
29     z = (x + y)*(x - y)
30     print("z =", z)
```

PROBLEMS 1   OUTPUT   DEBUG CONSOLE   TERMINAL   PORTS

```
PS E:\SEM 3\PWP> python -u "e:\SEM 3\PWP\Class Tutorials\post_lab_2.py"
Enter x: 4
Enter y: 7
z = -33
PS E:\SEM 3\PWP> 
```

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Write a python code to solve the equation z = (x+y)*(x+y)-2xy; write a comment on it.

```python
32    #Question 5
33    x = int(input("Enter x: "))
34    y = int(input("Enter y: "))
35    z = (x + y)*(x + y) - 2*x*y
36    print("z =", z) ## Here z = x^2 + y^2
```

PROBLEMS 1   OUTPUT   DEBUG CONSOLE   TERMINAL   PORTS

```
PS E:\SEM 3\PWP> python -u "e:\SEM 3\PWP\Class Tutorials\post_lab_2.py"
Enter x: 3
Enter y: 2
z = 13
PS E:\SEM 3\PWP>
```

Write a python code for Converting Celsius to Fahrenhit

```python
39    cel = float(input("Enter temperature in Celsius: "))
40    fahrenheit = (cel * 9/5) + 32
41    print(cel, "degree Celcius =", fahrenheit, "degree FarenheitS")
```

PROBLEMS 1   OUTPUT   DEBUG CONSOLE   TERMINAL   PORTS

```
PS E:\SEM 3\PWP> python -u "e:\SEM 3\PWP\Class Tutorials\post_lab_2.py"
Enter temperature in Celsius: 0
0.0 degree Celcius = 32.0 degree FarenheitS
PS E:\SEM 3\PWP>
```

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