

# lab 01

In [1]:

```
1 num1 = float(input(" Please Enter the First Value Number 1: "))
2 num2 = float(input(" Please Enter the Second Value Number 2: "))
3
4
5 # Add Two Numbers
6 add = num1 + num2
7
8 sub = num1 - num2
9
10
11 multi = num1 * num2
12
13
14 div = num1 / num2
15
16 # Modulus of num1 and num2
17 mod = num1 % num2
18
19 # Exponent of num1 and num2
20 expo = num1 ** num2
21
22 print("The Sum of {0} and {1} = {2}".format(num1, num2, add))
23 print("The Subtraction of {0} from {1} = {2}".format(num2, num1, sub))
24 print("The Multiplication of {0} and {1} = {2}".format(num1, num2, multi))
25 print("The Division of {0} and {1} = {2}".format(num1, num2, div))
26 print("The Modulus of {0} and {1} = {2}".format(num1, num2, mod))
27 print("The Exponent Value of {0} and {1} = {2}".format(num1, num2, expo))
```

```
Please Enter the First Value Number 1: 10
Please Enter the Second Value Number 2: 20
The Sum of 10.0 and 20.0 = 30.0
The Subtraction of 20.0 from 10.0 = -10.0
The Multiplication of 10.0 and 20.0 = 200.0
The Division of 10.0 and 20.0 = 0.5
The Modulus of 10.0 and 20.0 = 10.0
The Exponent Value of 10.0 and 20.0 = 1e+20
```

In

```
[51]: 1 # To Display a basic calculator
2 # Function to add two numbers
3 def add(num1, num2):
4     return num1 + num2
5
6 # Function to subtract two numbers
7 def subtract(num1, num2):
8     return num1 - num2
9
10 # Function to multiply two numbers
11 def multiply(num1, num2):
12     return num1 * num2
13
14 # Function to divide two numbers
15 def divide(num1, num2):
16     return num1 / num2
17
18 print("Please select operation -\n" \
19       "1. Add\n" \
20       "2. Subtract\n" \
21       "3. Multiply\n" \
22       "4. Divide\n")
23
24
25 # Take input from the user
26 select = int(input("Select operations form 1, 2, 3, 4 :"))
27
28 number_1 = int(input("Enter first number: "))
29 number_2 = int(input("Enter second number: "))
30
31 if select == 1:
32     print(number_1, "+", number_2, "=",
33           add(number_1, number_2))
34
35 elif select == 2:
36     print(number_1, "-", number_2, "=",
37           subtract(number_1, number_2))
38
39 elif select == 3:
40     print(number_1, "*", number_2, "=",
41           multiply(number_1, number_2))
42
43 elif select == 4:
44     print(number_1, "/", number_2, "=",
45           divide(number_1, number_2))
46 else:
47     print("Invalid input")
```

Please select operation -

1. Add
2. Subtract
3. Multiply

## 4. Divide

Select operations form 1, 2, 3, 4 :4

Enter first number: 2

Enter second number: 3

2 / 3 = 0.6666666666666666

```
In [52]: 1 # c) Calculate the net salary of an employee
2 name= str(input("Enter name of employee:")) 3
basic=float(input("Enter Basic Salary :"))
4 da=float(basic*0.25)
5 hra=float(basic*0.15)
6 pf=float((basic+da)*0.12)
7 ta=float(basic*0.075)
8 netpay=float(basic+da+hra+ta)
9 grosspay=float(netpay-pf)
10
11 print("\n\n") 12 print("S A L A R Y   D E T A I L E D   B
R E A K U P ") 13
print("=====") 14
print(" NAME OF EMPLOYEE : ",name) 15 print(" BASIC SALARY :
",basic) 16 print(" DEARNESS ALLOW. : ",da) 17 print(" HOUSE
RENT ALLOW.: ",hra) 18 print(" TRAVEL ALLOW. : ",ta) 19
print("=====") 20
print(" NET SALARY PAY : ",netpay) 21 print(" PROVIDENT FUND
: ",pf) 22
print("=====") 23
print(" GROSS PAYMENT : ",grosspay) 24
print("=====")
```

Enter name of employee: pranav

Enter Basic Salary :50000

```
S A L A R Y   D E T A I L E D   B R E A K U P
=====
NAME OF EMPLOYEE :  pranav
BASIC SALARY :  50000.0
DEARNESS ALLOW. :  12500.0
HOUSE RENT ALLOW.:  7500.0
TRAVEL ALLOW. :  3750.0
=====
NET SALARY PAY :  73750.0
PROVIDENT FUND :  7500.0
=====
GROSS PAYMENT :  66250.0
=====
```

```
[53]: 1 # d) Print factorial of n numbers
2 num = int(input("Enter a number: "))
3 factorial = 1    4 if num < 0:
```

In

```

5     print(" Factorial does not exist for negative numbers")
6     elif num == 0:
7         print("The factorial of 0 is 1")      8
    else:
9         for i in range(1,num + 1):
10            factorial = factorial*i
11            print("The factorial
              of",num,"is",factorial)

```

Enter a number: 5

In [54]:

The factorial of 5 is 120

```

1  # e)   Circulate the values of n variables
2  n = int(input("Enter number of values : "))
3  list1 = []
4  for val in range(0,n,3):
5      ele = int(input("Enter integer : "))
6      list1.append(ele)
7  print("Circulating the elements of list ", list1)
8  for val in range(0,n,1):
9      ele = list1.pop(0)
10     list1.append(ele)
11     print(list1)

```

Enter number of values : 5

Enter integer : 2

Enter integer : 3

Circulating the elements of list [2, 3]

[3, 2]

[2, 3]

[3, 2]

[2, 3]

[3, 2]

In

```
[55]: 1 # Python program to check if year is a Leap year or not
2
3 year=int(input("Enter the year: "))
4
5 # To get year (integer input) from the user
6 # year = int(input("Enter a year: "))
7
8     # divided by 100 means century year (ending with
9     00)
10    # century year divided by 400 is Leap year 10 if
11    (year % 400 == 0) and (year % 100 == 0):
12    print("{0} is a leap year".format(year))
13
14 # not divided by 100 means not a century year
15 # year divided by 4 is a Leap year
16 elif (year % 4 ==0) and (year % 100 != 0):
17    print("{0} is a leap year".format(year))
18
19 # if not divided by both 400 (century year)
20    and 4 (not century year)
21 # year is not Leap year 20 else:
22    print("{0} is not a leap year".format(year))
```

Enter the year: 2016

In [56]:

2016 is a leap year

```
1 # g) If the given number is Palindrome or not
2 num=int(input("Enter a number: "))
3 temp=num
4 rev=0
5 while(num>0):
6     dig=num%10
7     rev=rev*10+dig
8     num=num//10
9 if(temp==rev):
10    print("The number is palindrome!")
11 else:
12    print("Not a palindrome!")
```

Enter a number: 203

Not a palindrome!

In

```
[57]: 1 #perform 2x2 matrix operations using python Library
      2 #import numpy
      3 import numpy as np
      4 mat1=np.array([[12,11],[32,31]])
      5 mat2=np.array([[34,55],[17,30]])
      6 print("Matrix1\n",mat1)
      7 print("Matrix2\n",mat2)
      8
      9 #addition
     10 print ("\nAddition of two matrices: ")
     11 print (np.add(mat1,mat2))
     12
     13 #multiplication
     14 print ("\nMultiplication of two matrices: ")
     15 print (np.multiply(mat1,mat2))
     16
     17 #transpose
     18 print("Transpose of 2x2 matrix:\n",mat1.T)
```

```
Matrix1
[[12 11]
 [32 31]]
```

```
Matrix2
[[34 55]
 [17 30]]
```

```
Addition of two matrices:
[[46 66]
 [49 61]]
```

```
Multiplication of two matrices:
[[408 605]
 [544 930]] Transpose of
2x2 matrix:
[[12 32]
 [11 31]]
```

In

[58]:

```
1 List_Size = int(input("Enter the list Size: "))
2 Position = 0
3 aList=[]
4 while(Position < List_Size):
5     avalue=int(input("Enter a value "))
6     aList.append(avalue)
7     Position+=1
8
9 print(aList)
10 aList.append(0)
11 avalue=int(input("Enter a card to insert ")) # a new card
12
13 Position = List_Size-1
14 while(Position >=0):
15     if(avalue<aList[Position]):
16         aList[Position+1]=aList[Position]
17         aList[Position]=0
18     else:
19         aList[Position+1]=avalue
20         break
21
22     Position-=1
23
24 print(aList)
```

Enter the list Size: 5

Enter a value 2

Enter a value 3

Enter a value 6

Enter a value 9

Enter a value 8

[2, 3, 6, 9, 8]

Enter a card to insert 5

In

In [59]:

```
[2, 3, 5, 6, 9, 8]
```

```
1 a=open("C:\\Users\\pranav \\OneDrive\\Desktop\\ pranav.txt", 'r')
2 line = 0
3 word = 0
4 character = 0
5 #count = 0
6 for count, line in enumerate(a):
7     character = character +len(line)
8     words = line.split ( )
9     word = word + len(words)
10
11 #print('Number of line', line)
12 print('Number of character', character)
13 print('Number of words', word)
14 print('Total Number of lines:', count + 1)
15
```

Number of character 38

Number of words 7

Total Number of lines: 1

[60]:

```
1 #read
2 aa=open("C:\\Users\\pranav \\OneDrive\\Desktop\\ pranav.txt", 'r')
3 for line in aa:
4     print(line)
5
6 #Splitting line in a text line:
7 aa=open("C:\\Users\\pranav \\OneDrive\\Desktop\\ pranav.txt", 'r+')
8 for line in aa:
9     words=line.split()
10    print(words)
11
12
13
```

```
this file is pranav.txtto add more lines ['this', 'file',
'is', pranav.txtto', 'add', 'more', 'lines']
```



In  
In  
[48]:

```
1  
2 #write to a file  
3 aa=open("C:\\Users\\pranav \\OneDrive\\Desktop\\pranav.txt", 'w+')  
4 aa.write('this file is pranav.txt')  
5 aa.write('to add more lines')  
6 aa.close()  
7
```

In  
[61]:

```
1 #copy the contents of one file to another  
2 source=open("C:\\Users\\pranav \\OneDrive\\Desktop\\pranav.txt", 'r')  
3 destination=open("C:\\Users\\pranav \\OneDrive\\Desktop\\pranav.txt" , 'w')  
4 for line in source:  
5     destination.write(line)  
6 source.close()  
7 destination.close()
```

```
1
```

In [ ]: