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1. Write and execute simple python Program.

AIM: To write and execute simple python Program.

PROGRAM:

```
num1 =int(input("enter num1="))
num2 = int(input("enter num2="))
Sum = num1 + num2
print(num1, "+", num2, "=", Sum)
```

INPUT OUTPUT:

```
enter num1=8976
enter num2=365
8976 + 365 = 9341

...Program finished with exit code 0
Press ENTER to exit console.
```

2. Write /execute simple „Python“ program: Develop minimum 2 programs using different data types (numbers, string, tuple, list, dictionary).

AIM: To Write /execute simple „Python“ program: Develop minimum 2 programs using different data types (numbers, string, tuple, list, dictionary).

PROGRAM:

```
a = 5
print(a, "is of type", type(a))
a = 2.0
print(a, "is of type", type(a))
a= 1+2j
print(a, "is complex number?", isinstance(1+2j,complex))
s = "This is a string"
print(s)
s = "A multiline
string"
print(s)
a = [5,10,15,20,25,30,35,40]
print("a[2] = ", a[2])
print("a[0:3] = ", a[0:3])
print("a[5:] = ", a[5:])
t = (5,'program', 1+3j)
print("t[1] = ", t[1])
print("t[0:3] = ", t[0:3])
```

```
print("a = ", a)
print(type(a))
d = {1:'value','key':2}
print(type(d))
print("d[1] = ", d[1])
print("d['key'] = ", d['key'])
```

INPUT OUTPUT:

```
5 is of type <class 'int'>
2.0 is of type <class 'float'>
(1+2j) is complex number? True
This is a string
A multiline
string
a[2] = 15
a[0:3] = [5, 10, 15]
a[5:] = [30, 35, 40]
t[1] = program
t[0:3] = (5, 'program', (1+3j))
a = [5, 10, 15, 20, 25, 30, 35, 40]
<class 'list'>
<class 'dict'>
d[1] = value
d['key'] = 2

...Program finished with exit code 0
Press ENTER to exit console. █
```

3. Write /execute simple „Python“ program: Develop minimum 2 programs using Arithmetic Operators, exhibiting data type conversion.

AIM: To Write /execute simple „Python“ program: Develop minimum 2 programs using Arithmetic Operators, exhibiting data type conversion.

PROGRAM:

```
a=int(input("Enter a value :"))
b=int(input("Enter b value :"))
sum=a+b
diff=a-b
mul=a*b
div=a/b
mod=a%b
print("Sum is",sum)
print("integer is",int(sum))
print("Float is ",float(sum))
print("String is ",str(sum))
print("Complex is ",complex(sum))
print("Difference is",diff)
print("integer is",int(diff))
print("Float is ",float(diff))
print("String is ",str(diff))
print("Complex is ",complex(diff))
print("Product is",mul)
print("integer is",int(mul))
print("Float is ",float(mul))
print("String is ",str(mul))
print("Complex is ",complex(mul))
print("Division is",div)
print("integer is",int(div))
print("Float is ",float(div))
print("String is ",str(div))
print("Complex is ",complex(div))
print("Modulus is",mod)
print("integer is",int(mod))
print("Float is ",float(mod))
print("String is ",str(mod))
print("Complex is ",complex(mod))
```

INPUT OUTPUT:

```
Enter a value :90
Enter b value :10
Sum is 100
integer is 100
Float is 100.0
String is 100
Complex is (100+0j)
Difference is 80
integer is 80
Float is 80.0
String is 80
Complex is (80+0j)
Product is 900
integer is 900
Float is 900.0
String is 900
Complex is (900+0j)
Division is 9.0
integer is 9
Float is 9.0
String is 9.0
Complex is (9+0j)
Modulus is 0
integer is 0
Float is 0.0
String is 0
Complex is 0j
```

```
...Program finished with exit code 0
Press ENTER to exit console.[]
```

4. a) Write simple programs to convert U.S. dollars to Indian rupees.

AIM: To write simple programs to convert U.S. dollars to Indian rupees.

PROGRAM:

```
dollars = float(input("Please enter dollars:"))
rupees = dollars * 82.43
print(rupees, " Rupees")
```

INPUT OUTPUT:

```
Please enter dollars:500
41215.0  Rupees

...Program finished with exit code 0
Press ENTER to exit console. █
```

- b) Write simple programs to convert bits to Megabytes, Gigabytes and Terabytes

AIM: To write simple programs to convert bits to Megabytes, Gigabytes and Terabytes

PROGRAM:

```
b = float(input("Enter bit: "))
B=float(b/(2**3))
KB = float(b/((2**3)*(2**10)))
MB = float(b/((2**3)*(2**20)))
GB = float(b/((2**3)*(2**30)))
TB = float(b/((2**3)*(2**40)))
print("Byte is ",B)
print("Kilo Byte is ",KB)
print("Mega Byte is ",MB)
print("Giga Byte is ",GB)
print("Tera Byte is ",TB)
```

INPUT OUTPUT:

```
Enter bit: 1
Byte is  0.125
Kilo Byte is  0.0001220703125
Mega Byte is  1.1920928955078125e-07
Giga Byte is  1.1641532182693481e-10
Tera Byte is  1.1368683772161603e-13

...Program finished with exit code 0
Press ENTER to exit console. █
```

5. Write simple programs to calculate the area and perimeter of the square, and the volume & perimeter of the cone.

AIM:To write simple programs to calculate the area and perimeter of the square, and the volume & perimeter of the cone.

PROGRAM:

```
side = float(input("Enter side of the square: "))
area = side*side
perimeter = 4*side
print("Area of square = ", area)
print("Perimeter of square = ", perimeter)
import math
radius = float(input('Please Enter the Radius of a Cone: '))
height = float(input('Please Enter the Height of a Cone: '))
Volume = (1.0/3) * math.pi * radius * radius * height
p=2*math.pi*radius
print("\n perimeter of a Cone = %.2f" %p)
print(" The Volume of a Cone = %.2f" %Volume);
```

INPUT OUTPUT:

```
Enter side of the square: 5
Area of square = 25.0
Perimeter of square = 20.0
Please Enter the Radius of a Cone: 5
Please Enter the Height of a Cone: 5

perimeter of a Cone = 31.42
The Volume of a Cone = 130.90

...Program finished with exit code 0
Press ENTER to exit console.[]
```

6. Write program to: (i) Determine whether a given number is odd or even.

AIM:To write program to Determine whether a given number is odd or even.

PROGRAM:

```
n=int(input("Enter a value: "))
if n%2==0:
    print("Number is Even",n)
else:
    print("Number is Odd",n)
```

INPUT OUTPUT:

```
Enter a value: 11
Number is Odd 11

...Program finished with exit code 0
Press ENTER to exit console.[]
```

```
Enter a value: 10
Number is Even 10

...Program finished with exit code 0
Press ENTER to exit console.[]
```

(ii) Find the greatest of the three numbers using conditional operators.

AIM: To Find the greatest of the three numbers using conditional operators.

PROGRAM:

```
A = int (input ("Enter A value: "))
B = int (input ("Enter B value: "))
C = int (input ("Enter C value: "))
grt=(A if(A>B and A>C) else
      (B if(B>A and B>C) else C))
print("Largest number among " + str(A) + " , " + str(B) + " and " + str(C) + " is " +
str(grt))
```

INPUT OUTPUT:

```
Enter A value: 48
Enter B value: 36
Enter C value: 37
Largest number among 48 , 36 and 37 is 48

...Program finished with exit code 0
Press ENTER to exit console.□
```

7. Write a program to:
a) Find factorial of a given number.

AIM: To Write a program to Find factorial of a given number.

PROGRAM:

```
num = int(input("Enter a number: "))  
factorial = 1  
if num < 0:  
    print(" Factorial does not exist for negative numbers")  
elif num == 0:  
    print("The factorial of 0 is 1")  
else:  
    for i in range(1,num + 1):  
        factorial = factorial*i  
    print("The factorial of",num,"is",factorial)
```

INPUT OUTPUT:

```
Enter a number: 5  
The factorial of 5 is 120  
  
...Program finished with exit code 0  
Press ENTER to exit console. █
```

b) Generate multiplication table up to 10 for numbers 1 to 5

AIM: To Generate multiplication table up to 10 for numbers 1 to 5

PROGRAM:

```
for i in range (1,6):
    for j in range (1,11):
        print (i , "x", j, "=", i*j)
```

INPUT OUTPUT:

1 x 1 = 1	3 x 1 = 3
1 x 2 = 2	3 x 2 = 6
1 x 3 = 3	3 x 3 = 9
1 x 4 = 4	3 x 4 = 12
1 x 5 = 5	3 x 5 = 15
1 x 6 = 6	3 x 6 = 18
1 x 7 = 7	3 x 7 = 21
1 x 8 = 8	3 x 8 = 24
1 x 9 = 9	3 x 9 = 27
1 x 10 = 10	3 x 10 = 30
2 x 1 = 2	4 x 1 = 4
2 x 2 = 4	4 x 2 = 8
2 x 3 = 6	4 x 3 = 12
2 x 4 = 8	4 x 4 = 16
2 x 5 = 10	4 x 5 = 20
2 x 6 = 12	4 x 6 = 24
2 x 7 = 14	4 x 7 = 28
2 x 8 = 16	4 x 8 = 32
2 x 9 = 18	4 x 9 = 36
2 x 10 = 20	4 x 10 = 40
	5 x 1 = 5
	5 x 2 = 10
	5 x 3 = 15
	5 x 4 = 20
	5 x 5 = 25
	5 x 6 = 30
	5 x 7 = 35
	5 x 8 = 40
	5 x 9 = 45
	5 x 10 = 50

... Program finished
Press ENTER to exit

8. Write a program to:

i) Find factorial of a given number.

```
def factorial(num):
    factorial = 1
    if num < 0:
        print(" Factorial does not exist for negative numbers")
    elif num == 0:
        print("The factorial of 0 is 1")
    else:
        for i in range(1,num + 1):
            factorial = factorial*i
        print("The factorial of",num,"is",factorial)
num = int(input("Enter a number: "))
factorial(num)
```

```
Enter a number: 5
The factorial of 5 is 120
```

ii) Generate multiplication table upto 10 for numbers 1 to 5
using functions.

AIM: To Generate multiplication table up to 10 for numbers 1 to 5

PROGRAM:

```
def table():
    for i in range (1,6):
        for j in range (1,11):
            print (i , "x", j, "=", i*j)
table()
```

INPUT OUTPUT:

```
1 x 1 = 1
1 x 2 = 2
1 x 3 = 3
1 x 4 = 4
1 x 5 = 5
1 x 6 = 6
1 x 7 = 7
1 x 8 = 8
1 x 9 = 9
1 x 10 = 10
2 x 1 = 2
2 x 2 = 4
2 x 3 = 6
2 x 4 = 8
2 x 5 = 10
2 x 6 = 12
2 x 7 = 14
2 x 8 = 16
2 x 9 = 18
2 x 10 = 20
3 x 1 = 3
3 x 2 = 6
3 x 3 = 9
3 x 4 = 12
3 x 5 = 15
3 x 6 = 18
3 x 7 = 21
3 x 8 = 24
3 x 9 = 27
3 x 10 = 30
4 x 1 = 4
4 x 2 = 8
4 x 3 = 12
4 x 4 = 16
4 x 5 = 20
4 x 6 = 24
4 x 7 = 28
4 x 8 = 32
4 x 9 = 36
4 x 10 = 40
5 x 1 = 5
5 x 2 = 10
5 x 3 = 15
5 x 4 = 20
5 x 5 = 25
5 x 6 = 30
5 x 7 = 35
5 x 8 = 40
5 x 9 = 45
5 x 10 = 50
```

9. Write a program to:

i) Find factorial of a given number using recursion.

AIM: To write a program to find factorial of a given number.

PROGRAM:

```
def factorial(n):
    return 1 if (n==1 or n==0) else n * factorial(n - 1)
num = 5
print("Factorial of",num,"is",factorial(num))
```

INPUT OUTPUT:

```
factorial of 5 is 120
```

ii) Generate Fibonacci sequence up to 100 using recursion.

PROGRAM:

```
def recur_fibo(n):
    if n <= 1:
        return n
    else:
        return(recur_fibo(n-1) + recur_fibo(n-2))
```

```
nterms = 12
```

```
if nterms <= 0:
```

```
    print("Please enter a positive integer")else:
```

```
    print("Fibonacci sequence:")
```

```
    for i in range(nterms):
```

```
        print(recur_fibo(i))
```

INPUT OUTPUT:

Fibonacci sequence:

```
0
1
1
2
3
5
8
13
21
34
```

10. Write a program to print factors of a given number

AIM: To write a program to print Factors

PROGRAM:

```
num=int(input("enter a number"))
factors=[]
for i in range(1,num+1):
    if num%i==0:
        factors.append(i)

print ("Factors of {} = {}".format(num,factors))
```

INPUT OUTPUT:

```
enter a number64
Factors of 64 = [1, 2, 4, 8, 16, 32, 64]

...Program finished with exit code 0
Press ENTER to exit console.
```

11. File Input/output: Write a program to: i) To create simple file and write “Hello World” in it. ii) To open a file in write mode and append Hello world at the end of a file.

AIM: Write a program to: i) To create simple file and write “Hello World” in it.

PROGRAM:

```
f=open('demo.txt','w')
f.write('Hello World')
f.close()
f=open('demo.txt','r')
print(f.read())
f.close()
```

INPUT OUTPUT:

```
Hello World

... Program finished with exit code 0
Press ENTER to exit console.[]
```

12. Write a program to: Create a list, add element to list, delete element from the lists.

AIM: To write a program to: Create a list, add element to list, delete element from the lists.

PROGRAM:

```
list=[1,2,3,4,5]
print(list)
list.insert(3,8)
print(list)
list.remove(3)
print(list)
```

INPUT OUTPUT:

```
[1, 2, 3, 4, 5]
[1, 2, 3, 8, 4, 5]
[1, 2, 8, 4, 5]

... Program finished with exit code 0
Press ENTER to exit console.[]
```

13. Write a program to: Sort the list, reverse the list and counting elements in a list.

AIM: To write a program to: Sort the list, reverse the list and counting elements in a list.

PROGRAM:

```
list=[4,9,2,0,7,4,9,2,0,7,4,9,2,0,7]
print(list)
list.sort()
print(list)
list.reverse()
print(list)
count=list.count(0)
print(count)
print(len(list))
```

INPUT OUTPUT:

```
[4, 9, 2, 0, 7, 4, 9, 2, 0, 7, 4, 9, 2, 0, 7]
[0, 0, 0, 2, 2, 2, 4, 4, 4, 7, 7, 7, 9, 9, 9]
[9, 9, 9, 7, 7, 7, 4, 4, 4, 2, 2, 2, 0, 0, 0]
3
15
```

```
...Program finished with exit code 0
Press ENTER to exit console. □
```

14. Write a program to: Create dictionary, add element to dictionary, delete element from the dictionary.

AIM: To write a program to: Create dictionary, add element to dictionary, delete element from the dictionary.

PROGRAM:

```
Dict = {}
print("Empty Dictionary: ")
print(Dict)
print(type(Dict))
Dict[0] = 'Geeks'
Dict[1] = 'Teja'
Dict[2] = 'For'
Dict[3] = 1
print("\nDictionary after adding 3 elements: ")
print(Dict)
del Dict[1]
print(Dict)
Dict.clear()
print(Dict)
```

INPUT OUTPUT:

```
Empty Dictionary:
{}

<class 'dict'>

Dictionary after adding 3 elements:
{0: 'Geeks', 1: 'Teja', 2: 'For', 3: 1}
{0: 'Geeks', 2: 'For', 3: 1}
{}

...Program finished with exit code 0
Press ENTER to exit console. █
```

15. Write a program to: To calculate average, mean, median, and standard deviation of numbers in a list.

AIM: To write a program to: To calculate average, mean, median, and standard deviation of numbers in a list.

PROGRAM:

```
import statistics
list = [12, 24, 36, 48, 60]
print("List : " + str(list))
st_dev = statistics.pstdev(list)
print("Standard deviation of the given list: " + str(st_dev))

n_num = [1, 2, 3, 4, 5]
n = len(n_num)

get_sum = sum(n_num)
mean = get_sum / n

print("Mean / Average is: " + str(mean))

n_num = [1, 2, 3, 4, 5]
n = len(n_num)
n_num.sort()
if n % 2 == 0:
    median1 = n_num[n//2]
    median2 = n_num[n//2 - 1]
    median = (median1 + median2)/2
else:
    median = n_num[n//2]
print("Median is: " + str(median))
```

INPUT OUTPUT:

```
List : [12, 24, 36, 48, 60]
Standard deviation of the given list: 16.97056274847714
Mean / Average is: 3.0
Median is: 3

...Program finished with exit code 0
Press ENTER to exit console.[]
```

16. Write a program to: i) To open a file in read mode and write its contents to another file but replace every occurrence of character „h“ ii) To open a file in read mode and print the number of occurrences of a character „a“.

AIM:To Write a program to :i) To open a file in read mode and write its contents to another file but replace every occurrence of character „h“ ii) To open a file in read mode and print the number of occurrences of a character „a“.

PROGRAM:

```
f=open('demo.txt','a')
f.write(" Welcome to Python")
f.write(" ,Python is easy to learn")
f.close()
import shutil
shutil.copyfile('demo.txt','demo1.txt')
f=open('demo.txt','r')
print(f.read())
f.close()
f=open('demo1.txt','r')
print(f.read())
f.close()
```

INPUT OUTPUT:

```
Welcome to Python ,Python is easy to learn
Welcome to Python ,Python is easy to learn

...Program finished with exit code 0
Press ENTER to exit console.[]
```

17. Write a Program to: Add two complex number using classes and objects.

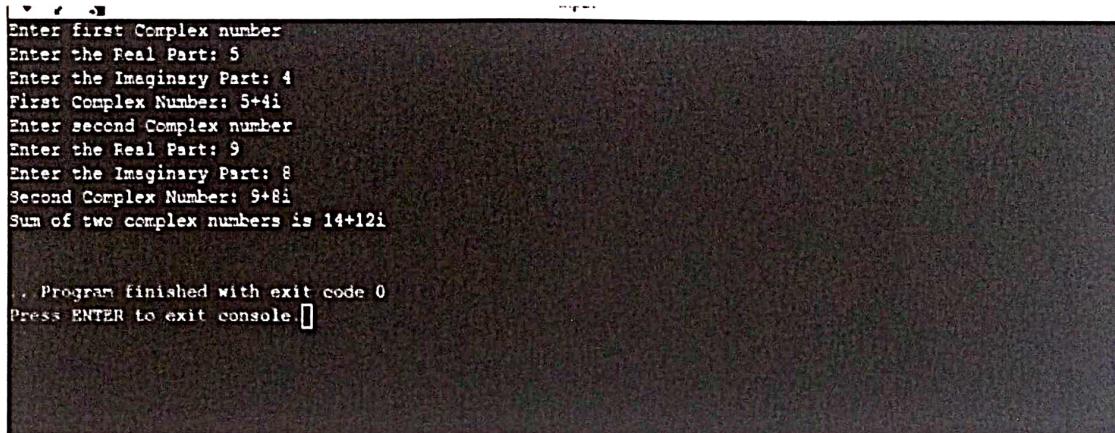
AIM: To Write a Program to: Add two complex number using classes and objects

PROGRAM:

```
class Complex():
    def initComplex(self):
        self.real = int(input("Enter the Real Part: "))
        self.imag = int(input("Enter the Imaginary Part: "))
    def display(self):
        print(self.real,"+",self.imag,"i", sep="")
    def sum(self, C1, C2):
        self.real = C1.real + C2.real
        self.imag = C1.imag + C2.imag
C1 = Complex()
C2 = Complex()
C3 = Complex()
print("Enter first Complex number")
C1.initComplex()
print("First Complex Number: ", end="")
C1.display()
print("Enter second Complex number")
C2.initComplex()
print("Second Complex Number: ", end="")
C2.display()
print("Sum of two complex numbers is ", end="")
```

```
C3.sum(C1,C2)
C3.display()
```

INPUT OUTPUT:



```
Enter first Complex number
Enter the Real Part: 5
Enter the Imaginary Part: 4
First Complex Number: 5+4i
Enter second Complex number
Enter the Real Part: 9
Enter the Imaginary Part: 8
Second Complex Number: 9+8i
Sum of two complex numbers is 14+12i

.. Program finished with exit code 0
Press ENTER to exit console.
```

18. Write a Program to: Subtract two complex number using classes and objects.

AIM: To Write a Program to: Subtract two complex number using classes and objects.
PROGRAM:

```
class Complex():
    def initComplex(self):
        self.real = int(input("Enter the Real Part: "))
        self.imag = int(input("Enter the Imaginary Part: "))
    def display(self):
        print(self.real,"+",self.imag,"i", sep="")
    def sum(self, C1, C2):
        self.real = C1.real - C2.real
        self.imag = C1.imag - C2.imag
C1 = Complex()
C2 = Complex()
C3 = Complex()
print("Enter first Complex number")
C1.initComplex()
print("First Complex Number: ", end="")
C1.display()
print("Enter second Complex number")
C2.initComplex()
print("Second Complex Number: ", end="")
C2.display()
```

```
print("Subtraction of two complex numbers is ", end="")
C3.sum(C1,C2)
C3.display()
```

INPUT OUTPUT:

```
Enter first Complex number
Enter the Real Part: 4
Enter the Imaginary Part: 5
First Complex Number: 4+5i
Enter second Complex number
Enter the Real Part: 7
Enter the Imaginary Part: 2
Second Complex Number: 7+2i
Sum of two complex numbers is -3+3i

...Program finished with exit code 0
Press ENTER to exit console.
```

19. Write a Program to: Create a package and accessing a package.

AIM: To Write a Program to: Create a package and accessing a package.

PROGRAM:

Create MyApp folder in D drive

Create mypackage folder in MyApp

Now create three files __int__.py, greet.py and functionsd .py in mypackage folder

Write the code in __init__.py file

```
from .functions import average, power
from .greet import SayHello
```

Write the code in greet.py

```
def SayHello(name):
    print("Hello ", name)
```

Write the code in functions.py

```
def sum(x,y):
    return x+y
```

```
def average(x,y):
    return (x+y)/2
```

```
def power(x,y):
    return x**y
```

Now goto D drive and go to MyApp folder type python then python IDE appears shown below

```
>>> from mypackage import functions  
>>>functions.power(3,2)
```

Now create test.py file in MYApp folder

Write the code in test.py

```
from mypackage import power, average, SayHello
```

```
SayHello("Swetha")
```

```
x=power(3,2)
```

```
print("power(3,2) : ", x)
```

Goto D drive and MyApp folder type python test.py