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Programs on Basics of Python

1.Write a program to use the mathematical operators.

Code: -

#Write a program to use mathematical operation:

num = int(input("Enter first number: "))

num2 = int(input("Enter second number: "))

print()

print("-----------------Common Mathematical Operation-----------------------------")

print("Sum of Two Number: " ,num + num2)

print("Substraction of two num: ", num -num2)

print("Multiplication of two number: ", num\*num2)

print("Division of two number: ", num / num2)

print("Modulas of two number: ", num%num2)

print("---------------------------------------------------------------------------")

Output: -

#Enter first number: 5

#Enter second number: 12

#-----------------Common Mathematical Operation-----------------------------

#Sum of Two Number: 17

#Substraction of two num: -7

#Multiplication of two number: 60

#Division of two number: 0.4166666666666667

#Modulas of two number: 5

#---------------------------------------------------------------------------

2. write a program to take an input of numbers from the user and print the Fibonacci series to the terminal number.

Code: -

#Write a program to take a input from user and print the fibonacci series to the terminal number:

num = int(input("Enter the terminal number: "))

num1 = 0

num2 = 1

print(num1)

print(num2)

for i in range(0,num):

num3 = num1 + num2

print(num3)

num1 = num2

num2 = num3

Code: -

#Enter the terminal number: 8

#0

#1

#1

#2

#3

#5

#8

#13

#21

#34

3. Write a program to print the factorial of the number input by the user.

Code: -

#Write a program to take a number from user and print its factorial

sum = 1

num = int(input("Enter the number: "))

for i in range(1,num+1):

sum = sum\*i

print("Factorial of a number: ",sum)

Output: -

#Enter the number: 6

#Factorial of a number: 720

4. Write a program to check whether a given number is a prime number or not using loops.

Code: -

#Write a program to check whether a given number is a prime or not using loop

num = int(input("Enter the number: "))

check = False

for i in range(2,num-1):

if num % i == 0:

check = True

break

if check:

print("Number is not prime")

else:

print("Number is prime")

Output: -

#Enter the number: 5

#Number is prime

5. Write a program to demonstrate the importing of modules of python.

Code: -

#Write a program to demostrate the importing of modules of python

def add(a, b):

result = a + b

return result

def mul(a,b):

result = a \* b

return result

def sub(a,b):

result = a - b

return result

import modules

a = int(input("Enter the first number: "))

b = int(input("Enter the second number: "))

num = modules.add(a,b)

print("Sum of a number: ",num)

num1 = modules.mul(a,b)

print("Multiplication of a number: ",num1)

num2 = modules.sub(a,b)

print("Substraction of a two number: ",num2)

#Enter the first number: 5

#Enter the second number: 14

#Sum of a number: 19

#Multiplication of a number: 70

#Substraction of a two number: -9

6. Write a program to demonstrate the use of nested if statements.

Code: -

#Write a program to demonstrate the use of nested if statements.

num1 = int(input("Enter the first number: "))

num2 = int(input("Enter the second number: "))

num3 = int(input("Enter the third number: "))

i = 13

if (num1 > num2):

if (num1 > num3):

print ("Largest no is ", num1)

else:

print("Largest no is ", num3)

else:

if num2 > num3:

print("Largest number is ", num2)

else:

print("Largest no is ", num3)

#Enter the first number: 5

#Enter the second number: 4

#Enter the third number: 78

#Largest no is 78

7. Write a program to demonstrate the use of the else clause.

Code: -

#Write a program to demonstrate the use of the else clause.

num1 = int(input("Enter the first number: "))

num2 = int(input("Enter the second number: "))

if num1 > num2:

print("largest number is : ", num1)

else:

print("largest number is : ", num2)

Output: -

#Enter the first number: 8

#Enter the second number: 45

#largest number is : 45

8. Write a program to illustrate the usage of Tuples.

Code: -

thistuple = ("one", "two", "three","four")

print("Tuple: ")

print(thistuple)

Output: -

#Tuple:

#('one', 'two', 'three', 'four')

9. Write a program for searching an element and sorting a List.

Code: -

# Write a program to search the list and sort the list:

def bubble\_sort(list1):

for i in range(0,len(list1)-1):

for j in range(len(list1)-1):

if(list1[j]>list1[j+1]):

temp = list1[j]

list1[j] = list1[j+1]

list1[j+1] = temp

return list1

list1 = [2,6,1,9,4,3,8,7,5]

num = int(input("Enter the number you want to search: "))

check = False

count = 0

for i in list1:

if num == i:

check = True

break

if check == True:

print("number is found")

else:

print("Number is not found")

print("-----Sorted List----------")

print(bubble\_sort(list1))

Output:-

#Enter the number you want to search: 5

#number is found

#-----Sorted List----------

#[1, 2, 3, 4, 5, 6, 7, 8, 9]

10. Write a program to illustrate the usage of Dictionaries.

Code: -

#Write a program to illustrate the usage of Dictionaries.

d={"one":"1","two":"2","three":"3","count":{"12":"2","5":"prime number"}}

print(d)

print(d["two"])

print(d["count"]["5"])

#output:

#{'one': '1', 'two': '2', 'three': '3', 'count': {'12': '2', '5': 'prime number'}}

#2

#prime number

1. Programs on Statistical Concepts and introduction to Linear Algebra using Python

1.Write a program to find the mean. mode and median of the given range of numbers.

Code: -

# Write a program to find the mean. mode and median of the given range of number.

list1 = [1,2,3,4,5,6,7,8,9,10,2]

sum = 0

for i in list1:

sum = sum + i

print("-----------------------------------------")

mean = sum /len(list1)

print("Mean of the list is: ",mean)

print()

median =int(len(list1)/2)

print("Meadian of the list is: ",list1[median])

print()

mode = max(set(list1), key = list1.count)

print("Mode of the list is: ",mode)

print("-----------------------------------------")

Output:-

#-----------------------------------------

#Mean of the list is: 5.181818181818182

#Meadian of the list is: 6

#Mode of the list is: 2

#-----------------------------------------

2 Write a program to calculate the standard deviation of a given set of numbers.

Code: -

#Write a program to calculate the standard deviation of a given set of numbers.

import math

list1 = [1,2,3,4,5,6,7,8,9,10,2]

list2=[]

sum = 0

for i in list1:

sum = sum + i

mean = int(sum /len(list1))

for i in list1:

diff =abs(int( mean - i))

list2.append(diff)

sum1 = 0

for i in list2:

sum1 = sum1 +(i\*i)

sum1 = sum1/len(list2)

std = math.sqrt(sum1)

print("Standard deviation is: ",std)

Output: -

#Standard deviation is: 2.9232609437842774

3. Write a program to calculate the addition of two 3x 3 matrices.

Code: -

Code: -

#Write a program to calculate the addition of two 3x 3 matrices.

num1 = [[1,2,3],

[4,5,6],

[7,8,9]]

num2= [[11,18,37],

[61,51,44],

[13,42,11]]

result = [[0,0,0],

[0,0,0],

[0,0,0]]

for i in range(len(num1)):

for j in range(len(num1[0])):

result[i][j] = num1[i][j] + num2[i][j]

for r in result:

print(r)

Output: -

#[12, 20, 40]

#[65, 56, 50]

#[20, 50, 20]

4. Write a program to calculate the multiplication of two 3x 3 matrices.

Code: -

#Write a program to calculate the multiplication of two 3x 3 matrices.

num1 = [[15, 4, 13],

[12, 14, 16],

[4, 17, 9]]

num2 = [[3, 12, 4],

[14, 31, 6],

[12, 17, 5]]

Result = [[0, 0, 0],

[0, 0, 0],

[0, 0, 0]]

for m in range(len(num1)):

for n in range(len(num2[0])):

for o in range(len(num2)):

Result[m][n] += num1[m][o] \* num2[o][n]

print("The multiplication result of matrix A and B is: ")

for res in Result:

print(res)

Output: -

#The multiplication result of matrix A and B is:

#[257, 525, 149]

#[424, 850, 212]

#[358, 728, 163]

6. Write a program to calculate the transpose of the given matrix.

Code; -

#Write a program to calculate the transpose of the given matrix.

X = [[1,2],

[3 ,4],

[5 ,6]]

result = [[0,0,0],

[0,0,0]]

for i in range(len(X)):

for j in range(len(X[0])):

result[j][i] = X[i][j]

for r in result:

print(r)

Output: -

#[1, 3, 5]

#[2, 4, 6]