1)

Write a program for implementing this pattern

1

22

333

4444

Program:

for i in range(5):

for j in range(i):

print (i,end=" ")

print()

Output:

1

2 2

3 3 3

4 4 4 4

2)

Write a program to find sum of n numbers.

Test cases:

-1

-10

0

20

Program:

a=int(input("enter value for n"))

num=0

if (a<0):

while(a<=0):

num+=a

a+=1

else:

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

num+=i

print(num)

Output:

enter value for n9

45

3)

Write a program to find whether a given number is a perfect number.

Program:

factor=0

a=int(input("enter a number"))

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

if(a%i==0):

if(i==a):

break

factor+=i

if(a==factor):

print("it is perfect number")

else:

print("it is not a perfect number")

Output:

enter a number3

it is not a perfect number

4)

Write a program to find factorial of a given number.

Test cases:

0

-2

6

Program:

a=int(input("enter a number: "))

fact=1

if a<0:

for i in range(a,0,1):

fact\*=i

else:

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

fact\*=i

print("the factorial is ",fact)

Output:

enter a number: 4

the factorial is 24

5)

write a program to find the eligibility for voting.

sample input

7

output:

you can vote after 11 years

test cases:

21

-0.5

23

ELEVEN

EIGHTEEN

11

Program:

def fun():

try:

age=eval(input("enter your age: "))

if(age>=18):

print("you are eligible for voting")

elif(age>0 and age<18):

print("you will able to vote after {} years ".format(18-age))

else:

print("enter the correct age")

fun()

except NameError:

print("enter the number in integers not in words")

fun()

fun()

Output:

enter your age: 16

you will able to vote after 2 years

6)

Print the following pattern

1

12

123

1234

12345

1234

123

12

1

Program:

n=int(input("enter n number: "))

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

for j in range(i):

print(i,end=' ')

print()

for k in range(n-1,0,-1):

for f in range(k):

print(k,end=' ')

print()

7)

Write a program to calculate the sum of even and odd numbers including its count.

Input:

1. Total number of Inputs

2. Input elements

Output:

1. Odd numbers count

2. Even numbers count

3. Sum of even numbers

4. Sum of odd numbers

Program:

n=int(input("total number of inputs: "))

inputs=[]

even\_sum=[]

odd\_sum=[]

for i in range(n):

n=int(input("enter the number: "))

inputs.append(n)

for i in inputs:

if i%2==0:

even\_sum.append(i)

else:

odd\_sum.append(i)

print("sum of odd",sum(odd\_sum),"sum of even",sum(even\_sum))

print("count of odd numbers: ",len(odd\_sum),"count of even numbers: ",len(even\_sum))

Output:

total number of inputs: 5

enter the number: 1

enter the number: 2

enter the number: 3

enter the number: 4

enter the number: 5

sum of odd 9 sum of even 6

count of odd numbers: 3 count of even numbers: 2

8)

A party has been organised on a cruise. The party is organised for a limited time (T). The number of guests entering (E[i]) and leaving (L[i]) the party at every hour is represented as elements of the array. The task is to find the maximum number of guests present on the cruise at any given instance within T hours.

Input:

5 ---> Value of T

[7,0,5,1,3] ---> E[], element of E[0] to E[N-1], where input each element is separated by new line

[1,2,1,3,4] -----> L[],element of L[0] to L[N-1], where input each element is separated by new line

Output:

8 -----> Maximum number of guests on cruise at an instance.

Program:

E=[]

L=[]

compare=0

time=int(input("enter how many hours"))

for i in range(0,time):

E.append(int(input("enter number of guests entering: ")))

L.append(int(input("enter number of guests leaving: ")))

total=E[i]+L[i]

if total>compare:

compare=total

print("the maximum number of guests present on the cruse at an instance is ",compare)

Output:

enter how many hours5

enter number of guests entering: 2

enter number of guests leaving: 4

enter number of guests entering: 5

enter number of guests leaving: 1

enter number of guests entering: 5

enter number of guests leaving: 8

enter number of guests entering: 7

enter number of guests leaving: 9

enter number of guests entering: 7

enter number of guests leaving: 3

the maximum number of guests present on the cruse at an instance is 16

9)

Most years have 365 days. However, the time required for the Earth to orbit the Sun is actually slightly more than that. As a result, an extra day, February 29, is included in some years to correct for this difference. Such years are referred to as leap years.

The rules for determining whether or not a year is a leap year follow:

Any year that is divisible by 400 is a leap year.

Of the remaining years, any year that is divisible by 100 is not a leap year.

Of the remaining years, any year that is divisible by 4 is a leap year.

All other years are not leap years.

Write a program that reads a year from the user and displays a message indicating

whether or not it is a leap year.

Program:

year=int(input("enter the year: "))

if(year%100==0):

print("it is not leap year")

elif(year%400==0 or year%4==0):

print("it is a leap year")

else:

print("it is not leap year")

Output:

enter the year: 2500

it is not leap year

10)

Write a program that would sort a list of names in alphabetical order ascending or descending. Choice get from the user?

Sample input:

Banana

Carrot

Radish

Apple

Jack

Order(A/D): A

Sample Output:

Apple

Banana

Carrot

Jack

Radish

Program:

elements=[]

n=int(input("enter how many elements: "))

sort=input("Accending or Decending(A/D): ")

for i in range(n):

a=input("enter the element: ")

elements.append(a)

elements.sort()

if sort=='A':

print(elements)

elif sort=='D':

print(elements[::-1])

Output:

enter how many elements: 5

Accending or Decending(A/D): A

enter the element: Banana

enter the element: Carrot

enter the element: Radish

enter the element: Apple

enter the element: Jack

['Apple', 'Banana', 'Carrot', 'Jack', 'Radish']

11)

Find the Mth maximum number and Nth minimum number in a list and then find the sum of it and difference of it

Sample input: [14,16,87,36,25,89,]

M=1

N=3

Sample output:

1rst Maximum number : 89

3rd minimum number: 25

Sum=114

Difference=64

Test Cases:

1.16,16,16,16,16, M=0, N=1

2. [0,0,0,0], M=1, n=2

3. [-12,-78,-35,-42,-85], M=3, n=3

4. [15, 19, 34, 56, 12], M=6, N=3

5. [85, 45, 65, 75, 95], M=5, N=7

Program:

l=[]

n=int(input("enter how many inputs: "))

for i in range(n):

a=int(input("enter element: "))

l.append(a)

l.sort()

n=l[0]

m=l[-1]

print("maximum number: ",m)

print("minimum number: ",n)

print("sum= ",m+n)

print("difference= ",m-n)

Output:

enter how many inputs: 5

enter element: 1

enter element: 4

enter element: 5

enter element: 7

enter element: 9

maximum number: 9

minimum number: 1

sum= 10

difference= 8

12)

Write a program to print the sum of positive and negative untill the user enter’s -1

Program:

i=0

positive=0

negative=0

while i==0:

a=eval(input("enter a number: "))

if a==-1:

break

elif a<0:

negative+=a

elif a>0:

positive+=a

print("sum of positive numbers: ",positive,"sum of negative numbers: ",negative-1)

output:

enter a number: 4

enter a number: 4

enter a number: 5

enter a number: 6

enter a number: -5

enter a number: -7

enter a number: -9

enter a number: -10

enter a number: -1

sum of positive numbers: 19 sum of negative numbers: -32