'''

Write a program to determine largest of three numbers with if and else

a=eval(input("enter 1st number "))

b=eval(input("enter 2nd  number "))

c=eval(input("enter 3rd  number "))

if a>b and a>c :

    print(f"{a} is maximum number ")

elif b>a and b>c:

    print(f"{b} is greater number ")

else:

    print(f"{c} is greater number ")

output:

enter 1st number 45

enter 2nd number 10

enter 3rd number 33

45 is maximum number

Hint: Write multiple  conditions

Write a program to convert celsius temperature to farenheit and vice-versa

1) What is the formula to convert celsius to farenheit ? ---> 1.8 \* temp + 32

2) What is the formula to convert farenheit to celsius ? ---> (temp - 32) / 1.8

# convert celcius to fareheit

temp=float(input("enter temperature "))

Cel\_fh= 1.8 \* temp + 32

print(f"celcis to fahrenheat temp is {Cel\_fh}")

fh\_cel=(temp - 32) / 1.8

print(f"fahrenheat to celcius temp is {fh\_cel}")

''' output : enter temperature 45.4

celcis to fahrenheat temp is 113.72

fahrenheat to celcius temp is 7.444444444444444

Write a program to test a point (x , y) lies in 1st quadrant , 2nd quadrant , 3rd quadrant ,

4th quadrant , x - axis , y - axis or origin

1) What are the values of x and y in 1st quadrant ? ---> Both are +ve

2) What are the values of x and y in 2nd quadrant ? ---> 'x' is -ve and 'y' is +ve

3) What are the values of x and y in 3rd quadrant ? ---> Both are -ve

4) What are the values of x and y in 4th quadrant ? ---> 'x' is +ve and 'y' is -ve

5) What are the values of x and y on x - axis ? ---> 'x' is non-zero and 'y' is 0

6) What are the values of x and y on y - axis ? ---> 'x' is 0 and 'y' is non-zero

7) What are the values of x and y if point is origin ? ---> Both are zeroes

8) Hint: Use if  ..   elif

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#quadrant values

x=eval(input("enter x  value :"))

y=eval(input("enter y value : "))

if x==0 and y!=0 :

    print("present on 'Y-axis' ")

elif x!=0 and y==0:

    print("present on X-axis ")

elif x>0 and y>0 :

    print(f"({x},{y}  are present on 1st Quadrant )")

elif x<0 and y>0:

    print(f"({x},{y}) are present on 2nd Quadrant")

elif  x<0 and y<0:

    print(f"({x},{y} are present on 3rd quadrant )")

elif  x>0 and y<=0:

    print(f"({x},{y} are present on 4th Quadrant )")

elif x==y==0:

    print(f"both are present in origin x={x}, y={y}")

else:

    print("enter valid input ")

#output :

enter x value :1

enter y value : -2

(1,-2 are present on 4th Quadrant )

'''

Write a program to determine largest , smallest and middle of three numbers

a = 10

b = 20

c = 7

max = 20

min = 7

mid = (10 + 20 + 7) - (20 + 7) = 10

#

a = 10

b = 20

c = 7

if a>b and a>c :

    print(f"{a} is maximum number ")

    if b>c :

        print(f"{b}  is middle nmerb")

        print(f"{c} is min number ")

elif b>a and b>c:

    print(f"{b} is max number ")

    if a>c :

        print(f"{a} is middle number ")

        print(f"{c} is min number ")

elif c>a and c>b:

    print(f"{c} is max number ")

    if a>b :

        print(f"{a} is middle number ")

        print(f"{c} is least number ")

else:

    print("all are same ")

output:

20 is max number

10 is middle number

7 is min number

'''

Write a program to determine three sides form a triangle or not

1) Find area if it is an equilateral triangle

What is an equilateral triangle ? ---> All the three sides should be same

What is the area of equilateral triangle ? ---> sqrt(3) / 4 \* a ^ 2

2) Find perimeter if it is an isosceles triangle

What is an isoscles triangle ? ---> Any two sides are same

What is the perimeter of isoscles triangle ? ---> a + b + c

3) Find both if it is scalene triangle

What is a scalene triangle ? ---> All the three sides are different

What is the area of scalene triangle ? ---> sqrt(s \* (s - a) \* (s - b) \* (s - c))

What is the value of 's' ? ---> (a + b + c) / 2

What is the perimeter of scalene triangle ? ---> a + b + c

4) What is the qualification of triangle ? ---> Sum of every two sides should be > 3rd side

5) Hint: Use  nested  if

''' #triangle

import math

side1=float(input("enter 1st side length: "))

side2=float(input("enter 2nd side length: "))

side3=float(input("enter 3rd side length: "))

if (side1+side2>side3) and (side2+side3>side1)  and (side1+side3>side2):

    if side1==side2==side3 :

        print("its an equilateral triangle ")

        area= (math.sqrt(3) / 4) \* side1 \*\* 2

        print("area of equilateral triangle ",area)

    elif  side1==side2   or  side2==side3 or side1==side3:

        print("its an iscoceless triangle ")

        perimetr=side3+side1+side2

        print(f"perimeter of iscoceles triangle is {perimetr}")

    else  :

        print("its a  scalen triangle ")

        s=(side3+side1+side2)/2

        perimetr=side3+side1+side2

        area=math.sqrt(s\*(s-side1)\*(s-side2)\*(s-side3))

        print("perimeter is :",perimetr)

        print("area of scalen triangle is :",area)

else:

 print("its not a triangle ")

output :

enter 1st side length5

enter 2nd side length5

enter 3rd side length5

its an equilateral triangle

area of equilateral triangle 10.825317547305483

Write a program to determine roots of a quadtratic equation a \* x ^ 2 + b \* x + c = 0 where a ! = 0

1) What is the value of discriminant ? ---> b ^ 2 - 4ac

2) What are the roots called if disc > 0 ? ---> Real and distinct

What is the formula for root1 ? ---> (-b + sqrt(disc)) / 2a

What is the formula for root2 ? ---> (-b - sqrt(disc)) / 2a

3) What are the roots called if disc is 0 ? ---> Real and same

What is the formula for root ? ---> -b / 2a

4) What are the roots called if disc < 0 ? ---> Complex (or) Imaginary roots

What is the formula for real part ? ---> -b / 2a

What is the formula for imag part ? ---> sqrt(-disc) / 2a

What is root1 if real part is 3 and imag part is 4 ? ---> 3 + 4j

What is root2 if real part is 3 and imag part is 4 ? --->  3 - 4j

'''

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a=eval(input("enter a value  : "))

b=eval(input("enter b value  :  "))

c=eval(input("enter value for c :  "))

dis=b\*b-(4\*a\*c)

print("disticnt value is ",dis)

if dis>0:

    print(" roots are real and distinct")

    root1=(-b+math.pow(dis,1/2))/(2\*a)

    root2=(-b-math.pow(dis,1/2))/(2\*a)

    print(f"root1={root1}")

    print(f"root2={root2}")

elif dis==0:

    print("roots are real and same")

    root=-b/(2\*a)

    print(f"root={root}")

elif dis<0:

    print("complex or imaginary roots")

    real=-b/(2\*a)

    img=math.sqrt(-dis)/(2\*a)

    print(f"root1={real}+{img}j")

    print(f"root2 = {real}+{img}j")

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Output : enter a value : 1

enter b value : 2

enter value for c : 1

disticnt value is 0

roots are real and same

root=-1.0

'''

Write a program to determine a point (x , y) lies inside , outside or on the circle.

Center is origin and radius is 'r'

1) What is the distance between origin and point (x , y) ? ---> sqrt(x ^ 2 + y ^ 2)

2) Where is the point if distance > raidus ? ---> Outside the circle

3) Where is the point if distance < raidus ? ---> Inside the circle

4) Where is the point if distance and raidus are same ? ---> On  the  circle

'''

#circle

x=float(input("enter x value coordinate : "))

y=float(input("enter y value coordinate : "))

r=float(input("enter radius val : "))

dist=math.sqrt(x\*\*2+y\*\*2)

if dist==r :

    print("On the circle points are ploted ")

elif dist>r :

    print("points are lieing Outside of  Circle ")

elif dist<r :

    print("points are lieing inside of Circle ")

else:

    print("points are on Origin centre ")

Output :

enter x value coordinate : 3

enter y value coordinate : 4

enter radius val : 5

On the circle points are ploted

…………………………………………………………

# Find outputs (Home work)

m = 4

match m:

case 1:

print('One')

case 2:

print('Two')

case 3:

print('Three')

print('Bye')

: Bye // no case 4 in above

# Identify Error

i = 2

match i:

case 1:

print('One')

case \_: # no case number

print('None of the above')

case 2:

print('Two')

print('Bye')

output : no case number are used

# Find outputs (Home work)

m = 2

match m:

case 1:

print('One')

case \_:

print('Hello')

case \_: # one \_ is allowed , 2nd one is invalid

print('Bye')

print('End')

output : 2 defaults are not allowed

# Find outputs (Home work)

m = 1

match m:

case 1:

print('Hyd')

case 1:

print('Sec')

case 1:

print('Cyb')

print('Bye')

output: no duplicates are allowed for assigning case number

# Find outputs (Home work)

ch = 'B'

match ch:

case 'A':

print('Apple')

case 'B':

print('Book')

case 'C':

print('Cafe')

case \_:

print('None of the above')

print('Bye')

output : Book Bye

'''

1) What are the outputs if input is -6 ? ---> Sec

2) What are the outputs if input is 15 ? ---> Two

3) What are the outputs if input is 10.8 ? ---> error // there is no proper index with 10.8

4) What are the outputs if input is 0 ? ---> Cyb

5) What are the outputs if input is -10 ? ---> One

6) What are the outputs if input is 7 ? ---> Hyd

'''

x = eval(input('Enter any number : '))

match x:

case 7 | -6 | 0:

print('Hyd')

print('Sec')

print('Cyb')

case -10 | 15:

print('One')

print('Two')

print('Three')

case \_:

print('India')

print('China')

print('Usa')

# End of match

print('Bye')

'''

1) What is the output when input is (-10 , -20) ? ---> 3rd quadrant

2) What is the output when input is (10 , 0) ? ---> x-axis , y==0

3) What is the output when input is (0 , -20) ? ---> y-axis

4) What is the output when input is (0 , 0) ? ---> origin

5) What is the output when input is (10 , 20 , 30) ? ---> not a point

6) What is the output when input is [10 , 20] ? ---> not a point

7) What is the output when input is [0 , -25] ? ---> not a point

8) What is the output when input is () ? ---> not a point

9) What is the output when input is {10 , 20} ? ---> not a point

10) What is the output when input is (25,) ? ---> not a point

11) What is the output when input is {10 : 20} ? ---> not a point

'''

tpl = eval(input('Enter any point in the form of (x , y) : '))

match tpl:

case (0 , 0):

print('Origin')

case (0 , y):

print('y - axis')

case (x , 0):

print('x - axis')

case (x , y):

print('Quadrant')

case \_:

print('Not  a  point')

'''

Write a program to determine bill amount and input is units

Units Cost

------------------------------------------------------------

First 100 units(0 - 99) Rs. 3.00 / unit

Next 100 units(100 - 199) Rs. 3.50 / unit

Next 200 units(200 - 399) Rs. 4.00 / unit

Next 300 units(400 - 699) Rs. 4.50 / unit

Above 700 units(>= 700) Rs. 5.00 / unit

---------------------------------------------------------------

Let units be 1200

What is the bill amount ? ---> 100 \* 3.00 + 100 \* 3.50 + 200 \* 4.00 + 300 \* 4.50 + 500 \* 5.00

# current bill

unit = eval(input("Enter number of units: "))

match unit:

    case u if u <= 100:

        print(f"{u} units are used")

        bill = u \* 3.00

        print(f"Bill amount for {u} units is: ₹{bill}")

    case u if 101 <= u <= 199:

        print(f"{u} units are used")

        bill = u \* 3.50

        print(f"Bill amount for {u} units is: ₹{bill}")

    case u if 200 <= u <= 399:

        print(f"{u} units are used")

        bill = u \* 4.50

        print(f"Bill amount for {u} units is: ₹{bill}")

    case u if 400 <= u <= 699:

        print(f"{u} units are used")

        bill = u \* 4.50

        print(f"Bill amount for {u} units is: ₹{bill}")

    case u if u >= 700:

        print(f"{u} units are used")

        bill = u \* 5.00

        print(f"Bill amount for {u} units is: ₹{bill}")

    case \_:

        print("Enter a valid number of units")

output :

enter number of units 250

250's are used

bill amount 250 unit's is : 1125.0

Hint: Use match ... case but not if ... else

'''

units = int(input('Enter units : ')) # 75

match units // 100:

case 0:

cost = units \* 3.00

'''

Write a program to print fibonacci series upto x

Let input be 10

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# Fibonacci series up to 10 terms

a, b = 0, 1

i = 0

print("Fibonacci series up to 10 terms:")

while i < 10:

print(a, end=' ')

a, b = b, a + b

i += 1

What are the outputs ? ---> 0 , 1 , 1 , 2 , 3 ,5 , 8

1) What is the formula for 10th term ? ---> 9th term + 8th term

What is the formula for 3rd term ? ---> 2nd term + 1st term

What is the formual for ith term ? ---> (i - 1)th term + (i - 2) term

2) What are the first two terms ? ---> 0 and 1 (No formula)

3) Hint: Use  while  loop

# Find outputs

while True:

print('Hello')

print('Bye')

# Hello Bye

# Find outputs

while False:

print('Hello')

print('Bye')

# Bye

# Find outputs (Home work)

How to print each element of list [10 , 20 , 15 , 18] with for loop

# #each element

l=[10,20,18,15]

for i in l:

        print(f"element in list  is : ",i)

output :

Element is: 10

Element is: 20

Element is: 18

Element is: 15

How to print each character of string 'Hyd' with for loop

* s='Hyd'
* for i in s:
* n=s.count(i)
* print(f" ‘{i}’ is repeated {n} times ")

output :

‘H’ is repeated 1 times

‘y’ is repeated 1 times

‘d’ is repeated 1 times

How to print each element of range(5)  with  for  loop

* for i in range(5):

print(i)

output :

0 1 2 3 4

# Find outputs (Home work)

for x in {10 : 20 , 30 : 40 , 50 : 60} . keys():

print(x) # outputs : 10 30 50

print( )

for x in {10 : 20 , 30 : 40 , 50 : 60} . values():

print(x) # outputs : 20 40 60

print( )

for x in {10 : 20 , 30 : 40 , 50 : 60} . items():

print(x) # outputs : (10 ,20 ), (30 , 40 ),( 50 , 60 )

print()

for x in {10 : 20 , 30 : 40 , 50 : 60}:

print(x) # 10 30 50

# Find outputs (Home work)

a = {10 : 20 , 30 : 40 , 50 : 60}

for x , y in a . items():

print(x , y , sep = '...') # 10…20 30…40 50…60

for x , y in a:

print(x , y ) # error

for x , y in {10 : 20 , 30 : 40 , 50 : 60}:

print(x , y , sep = '...') # error

# Identify error (Home work)

for x in 123:

     print(x)

# error , its not a string

# Find outputs (Home work)

for x in ():

print(x) # nothing will be because its an non empty string

for x in []:

print(x) # nothing will be because its an non empty string

for x in {}:

print(x) # nothing will be because its an non empty string

for x in set():

print(x) # nothing will be because its an non empty string

for x in '':

print(x) # nothing will be because its an non empty string

for x in range(10 , 10):

print(x) # nothing will be printed

for x in range(): # error because no range is specified

print(x)

for x in  (25):

print(x) # error , not printed

# Nested Loop demo program

for i in range(1 , 4):

for j in range(1 , 5):

print(i , j) #

print('Hello')

print('Bye')

# How to print each element and the corresponding index

a = [25 , 10.8 , 'Hyd' , True]

print('Indexed based for loop')

How to print each element and the corresponding index with index based for loop

print('For each loop')

How to print each element and the corresponding index with for ... each loop (Do not use  2nd  variable)

#function

a = [25, 10.8, 'Hyd', True]

for i in range(len(a)):

    print(f"Index: {i}, element: {a[i]}")

for i, val in enumerate(a):

    print(f"Index: {i}, element: {val}")

output : Index: 2, element: Hyd

Index: 3, element: True

Index: 0, element: 25

Index: 1, element: 10.8

Index: 2, element: Hyd

Index: 3, element: True

# How to print list elements in reverse order without slice

a = [25 , 10.8 , 'Hyd' , True]

print('Indexed for loop')

How to print each element of list in reverse order with indexed based for loop

How to print each element of list in reverse order with for each loop (Do not use 2nd variable  and  slice)

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#reverse order

a = [25 , 10.8 , 'Hyd' , True]

print("indexed order is :")

for i in range(len(a)-1, -1, -1):

    print(a[i])

print(" reve order ")

for x in reversed(a):

    print(x)

output :

indexed order is :

True

Hyd

10.8

25

reve order

True

Hyd

10.8

25

'''

Write a program to add two lists and store results in 3rd list

1st list ---> [10 , 20 , 15 , 18]

2nd list ---> [30 , 40 , 35 , 12 , 100 , 200 , 300]

3rd list ? ---> [10 + 30 , 20 + 40 , 15 + 35 , 18 + 12] = [40 , 60 , 50 , 30]

Hint: Use append() method

# program

l1=[10 , 20 , 15 , 18]

l2=[30 , 40 , 35 , 12 , 100 , 200 , 300]

l3=l1+l2

print("result list is :",l3)

#approach 2

l1=[10 , 20 , 15 , 18]

l2=[30 , 40 , 35 , 12 , 100 , 200 , 300]

l3=[]

for i in range(len(l1)):

    l3.append(l1[i]+l2[i])

print("result list is :",l3)

output :

result list is : [40, 60, 50, 30]

'''

a = eval(input('Enter 1st list : '))

b = eval(input('Enter 2nd list : '))

c = []

How to add lists 'a' and 'b' and store results in list 'c' with indexed based for loop

print('3rd list : ' , c)

How to add lists 'a' and 'b' and store results in list 'c' with for each loop (Do not use  2nd  variable)

# How to print list elements from indexes 2 to 4 without slice

a = [25 , 10.8 , 'Hyd' , True , 3 + 4j , None , 'Sec']

print('Indexed for loop')

How to print elements from indexes 2 to 4 of list 'a' with indexed based for loop

How to print elements from indexes 2 to 4 of list 'a' with for each loop without using 2nd variable  and  slice

#program

a = [25 , 10.8 , 'Hyd' , True , 3 + 4j , None , 'Sec']

print("indexed for loop ")

for i in range(2,5):

    print("elements from 2 to 4 is  : " , a[i])

#reverse oreder without slice

c=0

for x in a :

    if c>=2 and c<=4:

        print(x)

    c=c+1

Output :

elements from 2 to 4 is : Hyd

elements from 2 to 4 is : True

elements from 2 to 4 is : (3+4j)

Hyd

True

(3+4j)

# Tricky program

# Find outputs (Home work)

a = [10 , 20 , 15 , 18]

for i in range(len(a)):

a[i] += 1 # [11, 21, 16, 19]

print('a : ' , a) # [10, 20, 15, 18]

b = [10 , 20 , 15 , 18]

for x in b:

x += 1

print('b :  ' ,  b) #b : [11, 21, 16, 19]

b : [10, 20, 15, 18]