In [1]:
```
#1
print("hello word!")
```

```
hello word!
```

In [2]:
```
#2
print(4+5)
```

```
9
```

In [3]:
```
#3
import math
a=25
print(math.sqrt(25))
```

```
5.0
```

In [4]:
```
#4
print("area of triangle")
a=5
b=6
print((5*6)//2)
```

```
area of triangle
15
```

In [5]:
```
#5
a=3
b=4
a,b=b,a
print(a,b)
```

```
4 3
```

In [21]:
```
#6
import math
print("enter the coefficent of quadratic equation")
a=int(input())
b=int(input())
c=int(input())
if ((b*b)-(4*a*c))>0:
    print("real and distinct roots exist")
    r1=(-b + math.sqrt(((b*b)-(4*a*c))))//(2*a)
    r2=(-b - math.sqrt(((b*b)-(4*a*c))))//(2*a)
    print("r1= ",r1 /n,"r2= ",r2)
elif ((b*b)-(4*a*c))==0:
    print("real and same roots are exist")
    r=(-b + math.sqrt((b*b)-(4*a*c)))
    print(r)
else:
    print("roots are imaginary")
    r1=((-b)//(2*a))
    r2=(math.sqrt(abs((b*b)-(4*a*c))))//(2*a)
    print(r1,"+ i",r2)
    print(r1,"- i",r2)
```

```
enter the coefficent of quadratic equation
2
4
```

```
8
roots are imaginary
-1 + i 1.0
-1 - i 1.0
```

In [26]:
```
#7
import random
x=random.randint(1,10)
print(x)
```

```
6
```

In [32]:
```
#8
x=int(input("enter the temp in celcius"))
f=(9/5)*x+32
print(f)
```

```
enter the temp in celcius-40
-40.0
```

In [42]:
```
#9
x=int(input("enter a year"))
if x%100==0:
    if x%400==0:
        print("leap year")
    else:
        print("not leap year")
elif x%4==0:
      print("leap year")
else:
    print("not leap year")
```

```
enter a year2020
leap year
```

In [3]:
```
#10
print("enter three numbers")
x=int(input())
y=int(input())
z=int(input())
if x>y:
    if x>z:
        print("1st number is greater")
    else:
        print("3rd number is greater")
else:
    if y>z:
        print("2nd number is greater")
    else:
        print("3rd number is greater")
```

```
enter three numbers
2
3
4
3rd number is greater
```

In [8]:
```
#11
#odd or even
x=int(input("enter a number"))
if x>0:
    print("number is  positive")
```

```
elif x<0:
    print("number is negative")
else:
    print("number is equal to 0")
```

```
enter a number0
number is equal to 0
```

In [10]:

```
#12
x=int(input("enter a number"))
if x%2==0:
    print("number is even")
else:
    print("number is odd")
```

```
enter a number5
number is odd
```

In [14]:

```
#13
x=int(input("enter a number"))
flag=0
for i in range(2,x):
    if x%i==0:
        flag=1
        break
if flag==1:
    print("numeber is not prime")
else:
    print("number is prime")
```

```
enter a number6
numeber is not prime
```

In [19]:

```
#14
print("enter the lower and upper bound")
l=int(input())
u=int(input())
for i in range(l,u+1):
    flag=0
    for j in range(2,i):
        if i%j==0:
            flag=1
            break
    if flag==0:
        print(i)
    else:
        continue
```

```
enter the lower and upper bound
2
30
2
3
5
7
11
13
17
19
23
29
```

In [22]:

```
#15
```

```
def facto(n):
    if n==1 or n==0:
        return 1
    else:
        x=n*facto(n-1)
        return x
y=int(input("enter a number"))
print(facto(y))
```

```
enter a number4
24
```

In [31]:

```
y=int(input("enter a number"))
x=[print(y,"x",i,"=",y*i) for i in range(1,11) ]
```

```
enter a number5
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
```

In [39]:

```
#16
def fibb(n):
    a,b=0,1
    if n==1:
        return a
    elif n==2:
        return b
    else:
        return fibb(n-2)+fibb(n-1)
x=int(input("nth term of fibonacci series"))
print(fibb(x))
```

```
enter a number till printing a series8
13
```

In [12]:

```
#17
# print series of fibonacci series
#31
def fibb(n,a=0,b=1):
    if n<2 and n>0:
        if n==1:
            print(a)
        else:
            print(a)
            print(b)
    elif n>2:
        c=a+b
        print(c)
        a=b
        b=c
        fibb(n-1,a,b)
x=int(input("enter a number"))
fibb(x)
```

```
enter a number8
1
```

```
2
3
5
8
13
```

In [11]:

```
#18
y=int(input("enter a number"))
x=y
s=0
while x>0:
    r=x%10
    s=s+(r*r*r)
    x=x//10
if s==y:
    print("armstrong")
else:
    print("not armstrong")
```

```
enter a number153
armstrong
```

In [14]:

```
#19
print("enter the range of number")
a=int(input())
y=int(input())
for i in range(a,y+1):
    x=i
    s=0
    while x>0:
        r=x%10
        s=s+(r*r*r)
        x=x//10
    if s==i:
        print(i)
    else:
        continue
```

```
enter the range of number
1
1000
1
153
370
371
407
```

In [17]:

```
#20
#sum of n natural number
n=int(input("enter a number"))
s=n*(n+1)//2
print(s)
```

```
enter a number4
10
```

In [19]:

```
#21
#power of two
def powe(n):
    p=1
    for i in range(n):
        p=p*2
    print(p)
```

```
print("enter the degree of power")
n=int(input())
powe(n)
```

```
enter the degree of power
3
8
```

In [26]:

```
#22
print("enter two numbers")
x=int(input())
y=int(input())
if x%y==0 and y%x==0:
    print("both number divides each other")
elif x%y==0:
    print("1st number is divisible by 2nd")
else:
    print("2nd number is divisible by 1st")
```

```
enter two numbers
2
8
2nd number is divisible by 1st
```

In [27]:

```
#23
print("enter a number")
x=int(input())
print(bin(x))
print(oct(x))
print(hex(x))
```

```
enter a number
344
0b101011000
0o530
0x158
```

In [32]:

```
#24
x=input("enter a charecter")
y=ord(x)#ord()returns unicode
print(y)
```

```
enter a charecterA
65
```

In [2]:

```
#25
def hcf(x,y):
    a=[]
    if x>y:
        g=x
    else:
        g=y
    for i in range(1,g):
        if( x%i==0 and y%i==0):
            a.append(i)
    print(a[-1])
x=int(input())
y=int(input())
hcf(x,y)
#print(z)
```

```
25
35
5
```

In [41]:

```
#26
def lcm(x,y):
    if x>y:
        g=x
    else:
        g=y
    for i in range(g,x*y):
        if( i%x==0 and i%y==0):
            print(i)
            break
        g+=1
x=int(input())
y=int(input())
lcm(x,y)
```

```
10
14
70
```

In [4]:

```
#27
x=int(input("enter a number"))
for i in range(1,x+1):
    if x%i==0:
        print(i)
```

```
enter a number100
1
2
4
5
10
20
25
50
100
```

In [12]:

```
#28
print("enter two number")
x=int(input())
y=int(input())
print("enter your choice")
print("1: addition\n2: substraction\n3: multipication \n4: division")
z=int(input())
if z==1: print(x+y)
elif z==2: print(x-y)
elif z==3: print(x*y)
elif z==4:
        try:
            print(x/y)
        except:
            print("zero division error")
else: print("you have entered wrong choice")
```

```
enter two number
10
5
enter your choice
1: addition
2: substraction
```

```
3: multipication
4: division
1
15
```

In [21]:

```
#29 shuffle a deck of card
import itertools,random
deck=list(itertools.product(range(1,14),["Spade","Heart","Diamond","Club"]))
random.shuffle(deck)
print(deck)
for i in range(5):
    print(deck[i][0],"of", deck[i][1])
```

```
[(3, 'Diamond'), (6, 'Spade'), (12, 'Diamond'), (6, 'Diamond'), (2, 'Heart'), (10,
'Spade'), (10, 'Diamond'), (10, 'Heart'), (3, 'Heart'), (5, 'Spade'), (9, 'Heart'),
(6, 'Club'), (12, 'Club'), (8, 'Club'), (8, 'Spade'), (9, 'Club'), (4, 'Club'), (13,
'Club'), (5, 'Diamond'), (11, 'Spade'), (9, 'Spade'), (11, 'Diamond'), (8, 'Heart'),
(5, 'Club'), (5, 'Heart'), (3, 'Spade'), (13, 'Heart'), (11, 'Heart'), (1, 'Heart'),
(7, 'Spade'), (9, 'Diamond'), (12, 'Heart'), (13, 'Diamond'), (1, 'Club'), (12, 'Spa
de'), (13, 'Spade'), (1, 'Diamond'), (8, 'Diamond'), (2, 'Spade'), (7, 'Club'), (10,
'Club'), (4, 'Diamond'), (2, 'Diamond'), (4, 'Spade'), (6, 'Heart'), (7, 'Heart'),
(7, 'Diamond'), (3, 'Club'), (2, 'Club'), (1, 'Spade'), (11, 'Club'), (4, 'Heart')]
3 of Diamond
6 of Spade
12 of Diamond
6 of Diamond
2 of Heart
```

In [30]:

```
#30
import calendar
print(calendar.month(2022,1))
```

```
    January 2022
Mo Tu We Th Fr Sa Su
                1  2
 3  4  5  6  7  8  9
10 11 12 13 14 15 16
17 18 19 20 21 22 23
24 25 26 27 28 29 30
31
```

In [10]:

```
#31
def fibb(n,a=0,b=1):
    if n<2 and n>0:
        if n==1:
            print(a)
        else:
            print(a)
            print(b)
    elif n>2:
        c=a+b
        print(c)
        a=b
        b=c
        fibb(n-1,a,b)
x=int(input("enter a number"))
fibb(x)
```

```
enter a number8
1
2
3
5
```

```
8
13
```

In [27]:

```
#32
# sum of natural number using recursion
def s_f_n(n):
    s=0
    if n==1:
        return 1
    else:
        s=n+s_f_n(n-1)

    return s
x= int(input("enter a number"))
y=s_f_n(x)
print(y)
```

```
enter a number10
55
```

In [29]:

```
#33
#factorial using recursion
def facto(n):
    if n==0 or n==1:
        return 1
    else:
        return n*facto(n-1)
x=int(input("enter a number"))
y=facto(x)
print(y)
```

```
enter a number5
120
```

In [13]:

```
#34
#decimal to binary
def bina(n):
    k=n
    s=[]
    if n>0:
        bina(n//2)
        r=n%2
        s.append(r)
    for i in s:
        print(i,end="")
x=int(input("enrer a number"))
if x==0:
    print(x)
else:
    bina(x)


    #----------------OR-----------------------
#findBinary(decimal)
#   if (decimal == 0)
#      binary = 0
#   else
#      binary = decimal % 2 + 10 * (findBinary(decimal / 2)
```

```
enrer a number106
1101010
```

In [5]:
```
#35
#adding two matrices
x=[[1,2,3],
   [4,5,6]
  ]
y=[[7,8,9],
   [11,12,13]
  ]
c=[[0,0,0],
   [0,0,0]
  ]
for i in range(len(x)):
    for j in range(len(x[i])):
        c[i][j]=x[i][j]+y[i][j]
print(c)
```

```
[[8, 10, 12], [15, 17, 19]]
```

In [7]:
```
#36
#transpose a matrix
x=[[1,2,3,4],
   [5,6,7,8]]
c=[[0,0],[0,0],
   [0,0],[0,0]]
for i in range(len(x)):
    for j in range(len(x[i])):
        c[j][i]=x[i][j]
print(c)
```

```
[[1, 5], [2, 6], [3, 7], [4, 8]]
```

In [15]:
```
#37
#multipy two matrices
x = [[12, 7, 3],
    [4, 5, 6],
    [7, 8, 9]]

# take a 3x4 matrix
y = [[5, 8, 1, 2],
    [6, 7, 3, 0],
    [4, 5, 9, 1]]
c=[[0,0,0,0],[0,0,0,0],[0,0,0,0]]
for i in range(len(x)):
    for j in range(len(y[0])):
        c[i][j]=0
        for k in range(len(y)):
            c[i][j]=c[i][j]+x[i][k]*y[k][j]
print(c)
```

```
[[114, 160, 60, 27], [74, 97, 73, 14], [119, 157, 112, 23]]
```

In [8]:
```
#38
#string is palimdron or not
x=list(input("enter a string"))
y=[]
for i in range(1,len(x)+1):
    y.append(x[-i])
if y==x:
    print("palindrome")
else:
    print("not palindrome")
```

```
enter a stringhari
not palindrome
```

In [35]:

```
#39
#remove punctuation from a string
x=list(input("enter a sentence"))
for i in x:
    if i== "," or i==".":
        x.remove(i)
for i in x:
    print(i,end="")
```

```
enter a sentencehi, how are. you
hi how are you
```

In [1]:

```
#40
#sort words in alphabetic form
x=list(map(str,input("enter a string").split(" ")))
x.sort()
for i in x:
    print(i,end=" ")
```

```
enter a stringhi are you there
are hi there you
```

In [27]:

```
#41
#illustrate the different operation of set
x={1,2,3,9,4,8,5,24,32,29}
y={14,24,32,56,11,29,1,2,3}
print(x-y)#A-B
print(y-x)#B-A
z=x.union(y)
print(z)
a=x.intersection(y)
print(a)
b=x.symmetric_difference(y)
print(b)
```

```
{8, 9, 4, 5}
{56, 11, 14}
{1, 2, 3, 4, 5, 8, 9, 11, 14, 24, 29, 32, 56}
{32, 1, 2, 3, 24, 29}
{4, 5, 8, 9, 11, 14, 56}
```

In [30]:

```
#42
#count the number of each vowels
x=input("enter a sentence : ")
if "a" in x:
    print("count of a =",x.count("a"))
if "i" in x:
    print("count of i =",x.count("i"))
if "o" in x:
    print("count of o =",x.count("o"))
if "u" in x:
    print("count of u =",x.count("u"))
if "e" in x:
    print("count of e =",x.count("e"))
```

```
enter a sentence : hi there how can i help you in this task management
count of a = 4
count of i = 4
count of o = 2
```

```
count of u = 1
count of e = 5
```

In [32]:

```
#43
#flatten a nested list means multi dimension array or list into a 1D list or array
x=[[1,2,3],[4,5,6],[7,8,9]]
y=[]
for i in x:
    for j in i:
        y.append(j)
print(y)
#you can use numpy or itertools module
```

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

In [55]:

```
#44
#merge two dictionaries
x={
    "fruits":{1:"apple",2:"orange",3:"guava"},
}
y={
    "cars":{1:"audi",2:"honda",3:"huindai"},
    "vegetable":{1:"chilly",2:"onion",3:"pumpkin"}
}
for i in x.values():#accessing values in nested dictionary
    for j in i:
        print(i[j])
y.add(x)
print(y)
```

```
apple
orange
guava
---------------------------------------------------------------------------
AttributeError                            Traceback (most recent call last)
<ipython-input-55-74e4101b9c0a> in <module>
     11     for j in i:
     12         print(i[j])
---> 13 y.add(x)
     14 print(y)

AttributeError: 'dict' object has no attribute 'add'
```

In [51]:

```
#45
#accesing index from list using for loop
x=[6,2,5,63,65,1,]
for i in range(len(x)):
    print("index of",x[i],"=",i)
```

```
index of 6 = 0
index of 2 = 1
index of 5 = 2
index of 63 = 3
index of 65 = 4
index of 1 = 5
```

In [85]:

```
#46 file handling
f= open("abc.txt","w")
f.write("hi this is govind prajapati")
f.close()
f=open("abc.txt","r")
f.close()
f= open("abc.txt","w")
```

```
f.write("Govind \nMahavir \nDivyanshu")
f.close()
f=open("abc.txt","r")
f.read()
f.close()
g=open("body.txt","w")
g.write("how are you.This is your college please keep it clean. \nDo not litter here
g.close()
g=open("body.txt","r")
g.read()
```

Out[85]:
```
'how are you.This is your college please keep it clean. \nDo not litter here and the
re'
```

mail mearging

In [93]:
```
#47
#mail mergin
#create file by name abc.txt and write the name each in new line as in abc.txt
#create a file by name body.txt for body content of the mail
#file name could be your choice
with open("abc.txt","r") as name_file:
    with open("body.txt","r") as body_file:
        body=body_file.read()
        for name in name_file:
            mail= f" Hello {name.split()},\n{body} \n \n"
            with open(name.strip()+".txt","a") as mail_file:
                mail_file.write(mail)
```

In [ ]:
```

```