In [1]:
```
def maximum_num(a,b):
    if(a>=b):
        return a
    else:
        return b
a= int(input())
b=int(input())
print('max num is',maximum_num(a,b))
```

```
5
6
max num is 6
```

In [2]:
```
def adda(a,b):
    return a+b
print(adda(3,4))
```

```
7
```

In [3]:
```
def factorial(a):
    if(a==1 or a==0):
        return 1
    else:
        return a*factorial(a-1)
a = int(input())
print('factorial of a is',factorial(a))
```

```
5
factorial of a is 120
```

In [4]:
```
def sim(p,r,t):
    print('principle',p)
    print('rate',r)
    print('time',t)
    si =  (p*r*t)/100
    print('si',si)

sim(20,5.5,90.98)
```

```
principle 20
rate 5.5
time 90.98
si 100.07800000000002
```

In [5]:
```
def amount(p,r,t,n):
    return (p*(1+r/(100*n))**(n*t))-p
amount(200,3,2,4)
```

Out[5]:
```
12.319769563655171
```

In [6]:
```
def arm(num):
    t=str(num)
    a=len(t)
    sum1=0
    for i in t:
        sum1=sum1+(int(i))**a
    if (sum1==num):
        return True
    else:
        return False
```

```
print(arm(153))
```

```
True
```

In [7]:
```
import math
def radius(num):
    return (math.pi*pow(num,2))
print("area of circle is:",radius(5))
```

```
area of circle is: 78.53981633974483
```

In [8]:
```
def fab(n):
    if(n<=0):
        print("incorrect number")
    elif(n==1):
        return 0
    elif(n==2):
        return 1
    else:
        return fab(n-1)+fab(n-2)
n=int(input('enter number'))
print(fab(n))
```

```
enter number6
5
```

In [4]:
```
import math
def perfect(x):
    s=int(math.sqrt(x))
    return s*s==x
def fab(n):
    return(perfect(5*n*n-4) or (perfect(5*n*n+4)))
a=int(input('enter'))
for i in range(1,a+1):
    if(fab(i)==True):
        print(i,'is a fabonacci number')
    else:
        print(i,'not fabonacci')
```

```
enter5
1 is a fabonacci number
2 is a fabonacci number
3 is a fabonacci number
4 not fabonacci
5 is a fabonacci number
```

In [10]:
```
def square(n):
    sum1=0
    for i in range(1,n+1):
        sum1+=i**2
    return sum1
square(5)
```

Out[10]:
```
55
```

In [11]:
```
def cube(n):
    sum1=0
    for i in range(1,n+1):
        sum1+=i**3
    return sum1
```

In [12]:
```
cube(5)
```

Out[12]:
```
225
```

In [13]:
```
square(5)
```

Out[13]:
```
55
```

In [14]:
```
def ASCII(n):
    a=ord(n)
    return a
ASCII('A')
```

Out[14]:
```
65
```

In [7]:
```
def pali(a):
    return a==a[::-1]
a=str(input('enter word'))
if pali(a):
    print("yes it is palindrome")
else:
    print("not palindrome")
```

```
enter wordmalayalam
yes it is palindrome
```

In [10]:
```
def revers(a):
    return a.split()[::-1]
b="girl good  a is  mayank"
print(revers(b))
l=[]
for i in revers(b):
    l.append(i)
print(" ".join(l))
```

```
['mayank', 'is', 'a', 'good', 'girl']
['mayank', 'is', 'a', 'good', 'girl']
mayank is a good girl
```

In [17]:
```
 a =[1,'string',39]
```

In [18]:
```
a
```

Out[18]:
```
[1, 'string', 39]
```

In [19]:
```
a=[5,2,7,1,0,9]
a.reverse()
```

In [20]:
```
a
```

Out[20]:
```
[9, 0, 1, 7, 2, 5]
```

In [21]:
```
a = ['mayank','ananya','madhuri',1.55,67]
```

In [22]:
```
a
```

Out[22]:
```
['mayank', 'ananya', 'madhuri', 1.55, 67]
```

In [23]:
```
len(a)
```

Out[23]:
```
5
```

In [24]:
```
print('length of list a is',len(a))
```

```
length of list a is 5
```

In [25]:
```
a.reverse()
```

In [26]:
```
a
```

Out[26]:
```
[67, 1.55, 'madhuri', 'ananya', 'mayank']
```

In [27]:
```
b=a
```

In [28]:
```
b
```

Out[28]:
```
[67, 1.55, 'madhuri', 'ananya', 'mayank']
```

In [29]:
```
print('reverse of a is',b)
```

```
reverse of a is [67, 1.55, 'madhuri', 'ananya', 'mayank']
```

In [30]:
```
a = ['mayank','ananya','madhuri',1.55,67]
a.reverse()
b=a
print('reverse of a is',b)
```

```
reverse of a is [67, 1.55, 'madhuri', 'ananya', 'mayank']
```

In [31]:
```
a = ['mayank','ananya','madhuri',1.55,67]
b = []
for i in a:
    b.insert(0,i)
print(b)
```

```
[67, 1.55, 'madhuri', 'ananya', 'mayank']
```

In [32]:
```
suma = 0
a =[1,2,3,45,56]
for i in range(0,len(a)):
    suma=suma+a[i]
print(suma)
```

```
107
```

In [33]:
```
product = 1
a =[1,2,3,45,56]
for i in range(0,len(a)):
    product=product*a[i]
print(product)
```

```
15120
```

In [34]:
```
def multiplylist (mylist):
    p=1
    for i in  range(0,len(mylist)):
        p=p*mylist[i]
    return p
print(multiplylist([1,2,3,4,5]))
```

```
120
```

In [35]:
```
a =[]
b = int (input('enter no '))
for i in range(0,b):
```

```
    c = int(input('enter elements'))
    a.append(c)

print(a)
s=0
for i in range(0,len(a)):
    s=s+a[i]
print(s)
print('sorted and minimum element in a',sorted(a),sorted(a)[0],min(a),max(a))
```

```
enter no 5
enter elements1
enter elements2
enter elements3
enter elements4
enter elements5
[1, 2, 3, 4, 5]
15
sorted and minimum element in a [1, 2, 3, 4, 5] 1 1 5
```

In [36]:
```
a = int(input('enter size'))
b = []
for i in range (0,a):
    c = int(input('enter elements'))
    b.append(c)

print(b)
b.sort()
print(b)
print('2nd largest element of array:',b[a-2])
print('smallest element of array:',b[0])
suma = 0
for i in b:
    suma+=i
print('sum of elements of b:',suma)
```

```
enter size5
enter elements1
enter elements2
enter elements3
enter elements4
enter elements5
[1, 2, 3, 4, 5]
[1, 2, 3, 4, 5]
2nd largest element of array: 4
smallest element of array: 1
sum of elements of b: 15
```

In [11]:
```
 a =[2,1,3,4,5]
suma =0
for i in a:
    suma+=i
print(suma)
```

```
15
```

In [37]:
```
a =[2,1,3,4,5]
suma =0
for i in a:
    suma+=i
print(suma)
```

```
15
```

In [15]:
```
#a very big sum,simple array sum,solve me first,mini-max sum,birthday cake candles,
b=int(input('enter'))
a=[]
sumaa=0
for i in range(0,b):
    c=int(input('enter elements'))
    a.append(c)
    sumaa+=a[i]
print('array:',a)
x=sorted(a)
def array(a):
    maximum =x[b-1]
    count=0
    for i in range(b):
        if a[i]==maximum:
            count+=1
    maxasuma = sumaa-x[0]
    minisuma = sumaa-x[b-1]
    return sum(a) , x,maxasuma,minisuma,count
print(array(a))

def plusminus(a):
    p=n=z=0
    for i in range(b):
        if a[i]>0:
            p+=1
        elif a[i]<0:
            n+=1
        elif a[i]==0:
            z+=1
    return p/b,z/b,n/b
print(plusminus(a))
```

```
enter5
enter elements8
enter elements9
enter elements7
enter elements4
enter elements5
array: [8, 9, 7, 4, 5]
(33, [4, 5, 7, 8, 9], 29, 24, 1)
(1.0, 0.0, 0.0)
```

In [39]:
```
# as rating of challenge is in triplet so array is of 1xa dimension
#compare the triplets question
a=int(input('enter'))
c=[]
d=[]
for i in range(0,a):
    e=int(input('enter elements'))
    c.append(e)
print('alice rating:',c)
for j in range (0,a):
    f=int(input('enter elements'))
    d.append(f)
print('bob rating:',d)
def comparetriplets(c,d):
    alice=bob=0
    for k in range(a):
        if c[k]>d[k]:
            alice+=1

        elif c[k]<d[k]:
```

```
            bob+=1

    return alice,bob
print(comparetriplets(c,d))
```

```
enter1
enter elements2
alice rating: [2]
enter elements3
bob rating: [3]
(0, 1)
```

In [20]:
```
#diagonal difference
a=[]
c= int(input('enter'))

for i in range(c):
    column =[]
    for j in range(c):
        b=int(input('enter elements'))
        column.append(b)
    a.append(column)
print(a)
def diagdiff(a):
    l=0
    r=0
    #n=len(a)
    for i in range(c):
        l+=a[i][i]
        r+=a[i][c-1-i]
    return abs(l-r)
print(diagdiff(a))
```

```
enter3
enter elements87
enter elements67
enter elements54
enter elements2
enter elements3
enter elements56
enter elements98
enter elements12
enter elements45
[[87, 67, 54], [2, 3, 56], [98, 12, 45]]
20
```

In [42]:
```
a=[1,2,3,4,9,6]
print(a[::-1])
```

```
[6, 9, 4, 3, 2, 1]
```

In [26]:
```
#rotation of array
def rotatearray(a,d):
    b=[]
    n=len(a)
#     for i in range (d,n):
#         b.append(a[i])

    for i in range(0,d):
        b.append(a[i])
    a=b.copy()

   ## a[:] = a[d:n]+a[0:d]
    return a
```

```
c=int(input('enter'))
a=[]
for i in range(0,c):
    d=int(input('enter elements'))
    a.append(d)
    a.sort(reverse=True)
print('array:',a)

#print('rotated elements is:',rotatearray(a,2))
d=int(input('enter d'))
print('N max elements:',rotatearray(a,d))
```

```
enter5
enter elements32
enter elements12
enter elements54
enter elements45
enter elements76
array: [76, 54, 45, 32, 12]
enter d3
N max elements: [76, 54, 45]
```

In [28]:

```
def arrrem(a):
    D=int(input('enter divisor'))
    p=1
    b=len(a)
    for i in range(b):
        p=p*a[i]
    return p%D
a=[]
d=int(input('enter size of array'))
for i in range(d):
    e=int(input('enter elements'))
    a.append(e)
print('array:',a)

print(arrrem(a))
```

```
enter size of array5
enter elements76
enter elements54
enter elements45
enter elements32
enter elements12
array: [76, 54, 45, 32, 12]
enter divisor11
10
```

In [33]:

```
def monotonic(A):
    A=[]
    x=[]
    y=[]

    a=int(input('enter size'))
    for i in range(a):
        b=int(input('enter elements'))
        A.append(b)
    print(A)
    x.extend(A)
    y.extend(A)
    x.sort()
    y.sort(reverse=True)
```

```
    if (x==A or y==A):
        return True
    else:
        return False
print(monotonic('A'))
```

```
enter size5
enter elements67
enter elements78
enter elements89
enter elements90
enter elements95
[67, 78, 89, 90, 95]
True
```

In [34]:
```
a=[43,45,47,48,49]
b=[]
b.extend(a)
print(b)
```

```
[43, 45, 47, 48, 49]
```

In [49]:
```
# Python Program to find position
# of n'th multiple of a number k
# in Fibonacci Series
#not written by myself ; not understand the code
def findPosition(k, n):
    f1 = 0
    f2 = 1
    i = 2;
    while i != 0:
        f3 = f1 + f2;
        f1 = f2;
        f2 = f3;

        if f2 % k == 0:
            return n * i

        i += 1

    return


# Multiple no.
n = 5;
# Number of whose multiple
# we are finding
k = 4;

print("Position of n'th multiple of k in Fibonacci Series is", findPosition(k, n))

# This code is contributed
# by Mohit Gupta_OMG
```

```
Position of n'th multiple of k in Fibonacci Series is 30
```

In [35]:
```
n=int(input('enter number'))
if(n>2 and n%2==0):
    print('composite number')
elif(n>2 and n%2 !=0):
    print('prime number')
elif(n<=0):
    print('not prime')
elif(n==1):
    print('neither prime nor composite')
```

```
elif(n==2):
    print('prime number')
```

```
enter number2
prime number
```

In [18]:

```
def primeno(x,y):
    a=[]
    for i in range(x,y):
        if(i<2):
            continue
        else:
            for j in range(2, int(i/2)+1):
                if(i%j==0):
                    break
            else:
                a.append(i)
    return a
x=int(input('enter 1st interval'))
y=int(input('enter 2nd interval'))
print(primeno(x,y))



def count_primes(num):
    count=0
    for i in range(num):
        if(i<2):
            continue
        else:
            for j in range(2,int(i/2)+1):
                if(i%j)==0:
                    break
            else:
                count+=1
    return count

num=int(input('enter number'))
print(count_primes(num))
```

```
enter 1st interval1
enter 2nd interval100
[2, 3, 5, 7, 11, 13, 17, 19, 23, 29, 31, 37, 41, 43, 47, 53, 59, 61, 67, 71, 73, 7
9, 83, 89, 97]
enter number100
25
```

In [52]:

```
x=int(input('enter number'))
if(x<2):
    print(x,'is neither prime number nor composite number')
else:
    for i in range(2, int(x/2)+1):
        if(x%i==0):
            print(x,'is a composite number')
            break
    else:
        print(x,'is a prime number')
```

```
enter number23
23 is a prime number
```

In [53]:

```
a=[1,2,3,4]
print ("The list is:"+str(a))
print (len((a)))
b=0
```

```
for i in a:
    b+=1
print (b)
```

```
The list is:[1, 2, 3, 4]
4
4
```

In [54]:

```
a=[1,2,3,4,5]
i =int(input('enter number in lists'))
if i in a:
    print('exist')
else:
    print('not exist')
b=[]
for j in a:
    b.insert(0,j)
print(b)


print(a[::-1])

a=a[:0]
print(a)

a.clear()
print(a)
```

```
enter number in lists5
exist
[5, 4, 3, 2, 1]
[5, 4, 3, 2, 1]
[]
[]
```

In [55]:

```
a=[]
d=int(input('enter size of array'))
for i in range(d):
    e=int(input('enter elements'))
    a.append(e)
print('array:',a)
a=[h for h in a if h%2==0]
print(*a) #for removing element in an array based on condition using list compreher
# even = [j for j in a if j%2==0] to print even number in an array or list
# positive = [k for k in a if k>0] to print +ve number in an array or list
# print(positive)
# negative = [g for g in a if g<0] to print -ve number in an array or list
# print(negative)
# print(even)
#for j in a:
#     #if j%2!=0: to print odd number in an array or list
     #if j%2==0:   #to print even number in an array or list
#         print(j,end=' ')
```

```
enter size of array5
enter elements1
enter elements2
enter elements3
enter elements4
enter elements5
array: [1, 2, 3, 4, 5]
2 4
```

In [18]:
```
def evenno(x,y):
    a=[]
    for i in range(x,y):
        #if(i%2==0): for printing even in an interval
        #if(i%2!=0): #for printing odd in an interval
        #if(i>0): # for +ve number in interval
        if(i<0): # for -ve no. in interval
            a.append(i)
    return a
x=int(input('enter 1st interval'))
y=int(input('enter 2nd interval'))
print(evenno(x,y))
```

```
enter 1st interval-100
enter 2nd interval100
[-100, -99, -98, -97, -96, -95, -94, -93, -92, -91, -90, -89, -88, -87, -86, -85,
-84, -83, -82, -81, -80, -79, -78, -77, -76, -75, -74, -73, -72, -71, -70, -69, -6
8, -67, -66, -65, -64, -63, -62, -61, -60, -59, -58, -57, -56, -55, -54, -53, -52,
-51, -50, -49, -48, -47, -46, -45, -44, -43, -42, -41, -40, -39, -38, -37, -36, -3
5, -34, -33, -32, -31, -30, -29, -28, -27, -26, -25, -24, -23, -22, -21, -20, -19,
-18, -17, -16, -15, -14, -13, -12, -11, -10, -9, -8, -7, -6, -5, -4, -3, -2, -1]
```

In [63]:
```
t=[]
a=int(input('enter size of elements'))
for i in range(0,a):
    b=int(input('elements'))
    t.append(b)
print(tuple(t))
c=tuple(t)
count=0
for i in c:
    count+=1
print(count)
import sys
print(str(sys.getsizeof(c)) + 'bytes')
d=tuple(sorted(t))
print(d)
print('maximum and minimum  elements is:',d[-1], 'and', d[0])
```

```
enter size of elements5
elements34
elements65
elements45
elements87
elements56
(34, 65, 45, 87, 56)
5
80bytes
(34, 45, 56, 65, 87)
maximum and minimum  elements is: 87 and 34
```

In [64]:
```
t=[]
a=int(input('enter size of elements'))
for i in range(0,a):
    b=int(input('elements'))
    t.append(b)
print(t)
# for i in t:
#     print([(i,i**3)],end='')

print([(i,i**3) for i in t])
print("The original list is : " + str(t))
a=(2,3,4,5,6)
```

```
t+=a
print("The container after addition : " + str(t))
```

```
enter size of elements5
elements1
elements2
elements3
elements4
elements5
[1, 2, 3, 4, 5]
[(1, 1), (2, 8), (3, 27), (4, 64), (5, 125)]
The original list is : [1, 2, 3, 4, 5]
The container after addition : [1, 2, 3, 4, 5, 2, 3, 4, 5, 6]
```

In [4]:

```
a={}
n=int(input('enter size'))
for i in range(n):
    fruit=input('enter name of fruit:')
    cost=[]
    x=int(input('enter size of elements'))
    for i in range(0,x):
        b=int(input('elements'))
        cost.append(b)
    a[fruit]=cost

print(a)
y=a.values()
k=[j for i in y for j in i]

# for i in y:
#     for j in i:
#         print(j,end=' ')

suma=0
for i in k:
    suma+=i
print('sum of elements:',suma)
print('cost of fruit:',k)
```

```
enter size2
enter name of fruit:mango
enter size of elements5
elements1
elements2
elements3
elements4
elements5
enter name of fruit:apple
enter size of elements5
elements6
elements7
elements8
elements9
elements0
{'mango': [1, 2, 3, 4, 5], 'apple': [6, 7, 8, 9, 0]}
sum of elements: 45
cost of fruit: [1, 2, 3, 4, 5, 6, 7, 8, 9, 0]
```

In [9]:

```
def staircase(t):
    m=1
    for i in range(0,t):
        for j in range(0,t):
            if (i+j)>=t-1:
                print(m,end=' ')
                m+=1
```

```
            else:
                print("",end='')

        print('\t')

t=int(input('number'))
print(staircase(t))
```

```
number4
1
2 3
4 5 6
7 8 9 10
None
```

In [23]:
```
#rotation of array
def rotatearray(a,d):
    b=[]
    c=[]
    n=len(a)
    for i in range (d,n):
        b.append(a[i])
    print('removed element:',b)

    for i in range(0,d):
        c.append(a[i])
    print('element left:',c)


   ## a[:] = a[d:n]+a[0:d]
e=int(input('enter'))
a=[]
for i in range(0,e):
    f=int(input('enter elements'))
    a.append(f)
#     a.sort(reverse=True)
print('array:',a)
d=int(input('d'))
rotatearray(a,d)
# d=int(input('enter d'))
# print('N max elements:',rotatearray(a,d))
```

```
enter5
enter elements1
enter elements2
enter elements3
enter elements4
enter elements5
array: [1, 2, 3, 4, 5]
d1
removed element: [2, 3, 4, 5]
element left: [1]
```

In [46]:
```
def cloning(a):
    b=[]
    for i in range(len(a)):
        b.append(a[i])
#     b=a    list copy using asignment operator
#     return b
    print('after cloning',b)

e=int(input('enter'))
a=[]
for i in range(0,e):
    f=int(input('enter elements'))
```

```
    a.append(f)
print('before cloning:',a)
cloning(a)
```

```
enter5
enter elements1
enter elements2
enter elements3
enter elements4
enter elements5
before cloning: [1, 2, 3, 4, 5]
after cloning [1, 2, 3, 4, 5]
```

In [52]:

```
def count(a,x):
    count=0
    for i in a:
        if i==x:
            count+=1
    return count

e=int(input('enter'))
a=[]
for i in range(0,e):
    f=int(input('enter elements'))
    a.append(f)
print(a)
x=int(input('to check number'))
print(count(a,x))
```

```
enter5
enter elements5
enter elements5
enter elements5
enter elements4
enter elements3
[5, 5, 5, 4, 3]
to check number5
3
```

In [63]:

```
def sumdigit(a):
    z=[]
    for i in a:
        suma=0
        for j in str(i):
            suma+=int(j)
        z.append(suma)

    return z

e=int(input('enter size'))
a=[]
for i in range(0,e):
    f=int(input('enter elements'))
    a.append(f)
print(a)
print(sumdigit(a))
```

```
enter size5
enter elements12
enter elements34
enter elements56
enter elements78
enter elements89
[12, 34, 56, 78, 89]
[3, 7, 11, 15, 17]
```

In [62]:
```
e=int(input('enter size of array'))
a=[]
for i in range(0,e):
    f=int(input('enter elements'))
    a.append(f)
print(a)
n=int(input('enter step'))
for i in range(0,len(a),n):
    print(a[i:i+n])
```

```
enter size of array8
enter elements2
enter elements3
enter elements4
enter elements5
enter elements6
enter elements7
enter elements8
enter elements9
[2, 3, 4, 5, 6, 7, 8, 9]
enter step2
[2, 3]
[4, 5]
[6, 7]
[8, 9]
```

In [59]:
```
a=[[1,2,3],[3,4,5]]
len(a)
```

Out[59]:
```
2
```

In [6]:
```
len(a[0])
```

Out[6]:
```
3
```

In [22]:
```
m=int(input('enter no of rows'))
n=int(input('enter no of columns'))
b=[]
for i in range(m):
    a=[]
    for j in range(n):
        c=int(input('enter elements'))
        a.append(c)
    b.append(a)
for i in b:
    print(i)


o=int(input('enter no of rows'))
p=int(input('enter no of columns'))
d=[]
for i in range(o):
    e=[]
    for j in range(n):
        f=int(input('enter elements'))
        e.append(f)
    d.append(e)
for i in d:
    print(i)

p=int(input('enter no of rows of zero matrix'))
q=int(input('enter no of columns for zero matrix'))
res=[]
```

```
for i in range(p):
    res1=[]
    for j in range(q):
        r=0
        res1.append(r)
    res.append(res1)
for i in range(len(b)):
    for j in range(len(b[0])):
#         res[i][j]=b[i][j]-d[i][j]
        res[i][j]=b[i][j]+d[i][j]
for k in res:
    print(k)
```

```
enter no of rows2
enter no of columns2
enter elements1
enter elements2
enter elements3
enter elements4
[1, 2]
[3, 4]
enter no of rows2
enter no of columns2
enter elements1
enter elements2
enter elements3
enter elements4
[1, 2]
[3, 4]
enter no of rows of zero matrix2
enter no of columns for zero matrix2
[2, 4]
[6, 8]
```

In [26]:

```
m=int(input('enter no of rows for 0 matrix opp to r mat'))
n=int(input('enter no of columns for 0 matrix opp to r mat'))
b=[]
for i in range(m):
    a=[]
    for j in range(n):
        c=0
        a.append(c)
    b.append(a)

p=int(input('enter no of rows'))
q=int(input('enter no of columns'))
r=[]
for i in range(p):
    s=[]
    for j in range(q):
        t=int(input('enter elements'))
        s.append(t)
    r.append(s)
for i in r:
    print(i)

for i in range(len(r)):
    for j in range(len(r[0])):
        b[j][i]=r[i][j]

for k in b:
    print(k)
```

```
enter no of rows for 0 matrix opp to r mat3
enter no of columns for 0 matrix opp to r mat3
enter no of rows3
enter no of columns3
enter elements1
enter elements2
enter elements3
enter elements4
enter elements5
enter elements6
enter elements7
enter elements8
enter elements9
[1, 2, 3]
[4, 5, 6]
[7, 8, 9]
[1, 4, 7]
[2, 5, 8]
[3, 6, 9]
```

In [34]:

```
m=int(input('enter no of rows'))
n=int(input('enter no of columns'))
b=[]
for i in range(m):
    a=[]
    for j in range(n):
        c=int(input('enter elements'))
        a.append(c)
    b.append(a)
for i in b:
    print(i)

p=1
for i in range(len(b)):
    for j in range(len(b[0])):
        p=p*b[i][j]

print('product of all elements in matrix',p)
```

```
enter no of rows3
enter no of columns2
enter elements2
enter elements3
enter elements4
enter elements5
enter elements6
enter elements7
[2, 3]
[4, 5]
[6, 7]
product of all elements in matrix 5040
```

In [40]:

```
m=int(input('enter no of rows'))
n=int(input('enter no of columns'))
b=[]
for i in range(m):
    a=[]
    for j in range(n):
        c=int(input('enter elements'))
        a.append(c)
    b.append(a)
for i in b:
    print(i)
```

```
k=int(input('kth column matrix, enter k'))
q=[]
for l in b:
    q.append(l[k])
print(q)
```

```
enter no of rows3
enter no of columns4
enter elements1
enter elements2
enter elements3
enter elements4
enter elements5
enter elements6
enter elements7
enter elements8
enter elements9
enter elements12
enter elements23
enter elements34
[1, 2, 3, 4]
[5, 6, 7, 8]
[9, 12, 23, 34]
kth column matrix, enter k3
[4, 8, 34]
```

In [37]:

```
def invertedstar(t):
    m=1
    for i in range(0,t):
        for j in range(0,t):
            if (i+j)<=t-1:
                print(m ,end=' ')
                m+=1
            else:
                print(" ", end=' ')
        print('\n')

t=int(input('number'))
print(invertedstar(t))
```

```
number4
1 2 3 4

5 6 7

8 9

10

None
```

In [25]:

```
def pattern(m):
    pat=''
    for i in range(0,m):
        for j in range(0,m):
            if((j==1 and i!=0 and i!=(m-1)) or ((i==0 or i==m-1) and j>1 and j<m-2
                pat+="*"
            else:
                pat+=' '
        pat+="\n"
    return pat

m=int(input('enter number'))
print(pattern(m))
```

```
enter number7
  ***
 *
 *
 * ***
 *   *
 *   *
  ***
```

In [28]:
```
rows = int(input('number'))
Ascii=65
for i in range(rows):
    for j in range(i+1):
        print(chr(Ascii),end=' ')
    Ascii+=1
    print('\n')
```

```
number6
A

B B

C C C

D D D D

E E E E E

F F F F F F
```

In [40]:
```
rows = int(input('number'))
for i in range(rows,0,-1):
    for j in range(i):
        print(j+1,end=' ')
    print('\n')
```

```
number6
1 2 3 4 5 6

1 2 3 4 5

1 2 3 4

1 2 3

1 2

1
```

In [53]:
```
a=[]
d=int(input('enter size of array'))
for i in range(d):
    e=int(input('enter elements'))
    a.append(e)
print('array:',a)
print('reversed array:',a[::-1])

for i in range(len(a)):
    k=a[0]
    a[0]=a[len(a)-1]
    a[len(a)-1]=k
print(a)
```

```
enter size of array5
enter elements12
enter elements34
enter elements45
enter elements56
enter elements67
array: [12, 34, 45, 56, 67]
reversed array: [67, 56, 45, 34, 12]
[67, 34, 45, 56, 12]
```

In [52]:
```
def swapped(a,n1,n2):
    a[n1],a[n2]=a[n2],a[n1]
    return a

a=[]
d=int(input('enter size of array'))
for i in range(d):
    e=int(input('enter elements'))
    a.append(e)
print('array:',a)

n1=int(input('enter position1 of swapping starting from zero to size-1'))
n2=int(input('enter position2 of swapping starting from zero to size-1'))
print('Swapped array is:',swapped(a,n1,n2))
```

```
enter size of array5
enter elements23
enter elements34
enter elements56
enter elements78
enter elements90
array: [23, 34, 56, 78, 90]
enter position1 of swapping starting from zero to size-10
enter position2 of swapping starting from zero to size-14
Swapped array is: [90, 34, 56, 78, 23]
```

In [57]:
```
def reverse(arr):
    a=0
    b=len(arr)-1
    while a<b:
        k=arr[a]
        arr[a]=arr[b]
        arr[b]=k
        a+=1
        b-=1
    return arr

arr=[]
d=int(input('enter size of array'))
for i in range(d):
    e=int(input('enter elements'))
    arr.append(e)
print('array:',arr)

print('reversed array:',reverse(arr))
```

```
enter size of array5
enter elements23
enter elements45
enter elements67
enter elements89
enter elements98
array: [23, 45, 67, 89, 98]
reversed array: [98, 89, 67, 45, 23]
```

In [4]:
```
print('WELCOME, TO THE STONE,PAPER AND SCISSOR GAME')
print('RULES:1)If you choose stone and comp choose paper then you lose or if comp c
print('2)If you choose paper and comp choose scissor then you win or if comp choose
print('3)If you choose scissor and comp paper then you win and if comp choose stone
import random
n=int(input('no of time we will play a game'))
c=0  # total time played a game
d=0 #you won count
e=0 #computer won count
f=0 #when game is tie
for i in range(n):
    a=str(input('enter yourchoice'))

    if (a=='stone'):
        a_name='stone'
        print("your's choice :",a_name)
    elif a=='paper':
        a_name='paper'
        print("your's choice :",a_name)
    elif a=='scissor' :
        a_name='scissor'
        print("your's choice :",a_name)

    else:
        print('this is not in option')

    print("now its computer's turn")
    b=random.randint(1,3)
    if (b==1):
        b_name='stone'
        print("comp's choice :",b_name)
    elif b==2:
        b_name='paper'
        print("comp's choice :",b_name)
    elif b==3 :
        b_name='scissor'
        print("comp's choice :",b_name)


    if a==b_name:
        print('game is tie')
        c+=1
        f+=1
    elif(a=='stone' and b==3 ):
        print('you won')
        c+=1
        d+=1
    elif(a=='stone' and b==2):
        print('you lose')
        c+=1
        e+=1
    elif(a=='paper' and b==1):
        print('you won')
        c+=1
        d+=1
    elif(a=='paper' and b==3):
        print('you lose')
        c+=1
        e+=1
    elif(a=='scissor' and b==1):
        print('you lose')
        c+=1
        e+=1
```

```
    elif(a=='scissor' and b==2):
        print('you win')
        c+=1
        d+=1

print('no of times you won:',d)
print('no of times comp won:',e)
print('total no of times game played :',c)
print('total no of times game tie:',f)
```

```
WELCOME, TO THE STONE,PAPER AND SCISSOR GAME
RULES:1)If you choose stone and comp choose paper then you lose or if comp choose
scissor then you won as stone broke scissors and paper folded stone
2)If you choose paper and comp choose scissor then you win or if comp choose stone
then you loose as paper broke paper into pieces and stone is folded by paper
3)If you choose scissor and comp paper then you win and if comp choose stone then
you loose
no of time we will play a game5
enter yourchoicestone
your's choice : stone
now its computer's turn
comp's choice : stone
game is tie
enter yourchoicepaper
your's choice : paper
now its computer's turn
comp's choice : stone
you won
enter yourchoicescissor
your's choice : scissor
now its computer's turn
comp's choice : paper
you win
enter yourchoicemayank
this is not in option
now its computer's turn
comp's choice : scissor
enter yourchoicepaper
your's choice : paper
now its computer's turn
comp's choice : paper
game is tie
no of times you won: 2
no of times comp won: 0
total no of times game played : 4
total no of times game tie: 2
```

In [8]:

```
def my_password(a):
    guess=input("please guess the password:")
    if(a==guess):
        print("ACCESS GRANTED")

    else:
        print("ACCESS DENIED")

a=input('please make your password')
my_password(a)
```

```
please make your passwordmayank@123
please guess the password:mayank
ACCESS DENIED
```

In [3]:
```
def my_palindrome(n):
    if(n[::-1]==n):
        print("It is palindrome")
    else:
        print("Not a palindrome")

n=str(input("Enter any word!! \n"))
my_palindrome(n)
```

```
Enter any word!!
malayalam
It is palindrome
```

In [11]:
```
def my_symmetrical(n):
    a=int(len(n)/2)
    if len(n)%2==0:
        if(n[0:a]==n[a:len(n)]):
            print("It is symmetrical")
        else:
            print("Not symmetrical")
    elif(len(n)%2!=0):
        if(n[0:a]==n[a+1:len(n)]):
            print("It is symmetrical")
        else:
            print("Not symmetrical")

n=str(input("Enter any word!!"))
my_symmetrical(n)

def my_palindrome(n):
    if(n[::-1]==n):
        print("It is palindrome")
    else:
        print("Not a palindrome")

n=str(input("Enter any word!! \n"))
my_palindrome(n)
```

```
Enter any word!!khokho
It is symmetrical
Enter any word!!
khokho
Not a palindrome
```

In [24]:
```
def count(n):
    num=0
    for i in n:
        num+=1
    print(num)
n=str(input("enter a sentence!!"))
count(n)
```

```
enter a sentence!! h e l   l  o
14
```

In [42]:
```
def evenword(n):
    a=n.split(" ")
    for i in a:
        if (len(i)%2==0):
            print(i,end=' ')
        else:
            continue
n=str(input("Enter any word!!"))
evenword(n)
```

```
Enter any word!!i am mayank
am mayank
```

In [59]:
```
def reverse(n):
    a=n.split(" ")[::-1]
    print(a)
    k=[]
    for i in a:
        k.append(i)
        b=" ".join(k)
    return b

n=str(input("Enter any word!!"))
print(reverse(n))
```

```
Enter any word!!my name is mayank
['mayank', 'is', 'name', 'my']
mayank is name my
```

In [61]:
```
def reverse(n):
    a=n.split(" ")
    print(a)
    k=[]
    for i in a[::-1]:
        k.append(i)
        b=" ".join(k)
    return b

n=str(input("Enter any word!!"))
print(reverse(n))
```

```
Enter any word!!my name is mayank
['my', 'name', 'is', 'mayank']
mayank is name my
```

In [28]:
```
t=[]
a=int(input('enter size of elements'))
for i in range(0,a):
    b=int(input('elements'))
    t.append(b)
print(t) # create an srray 8-1 part
e=[]
for i in range(0,a):
    e.append(t[i])
print('transversed array:',e)
f=int(input("please give kth value stored in array")) # 8-2 part
print("kth value is:",e[f]) # 8-2 part
d=sorted(t)
print("sort the elements then insert:",d)
m=int(input("index for inserting elements")) #8-3-c part
n=int(input("enter elements to be inserted"))
d.insert(m,n)
print(d)

k=int(input('enter number to be inserted'))
l=int(input("please give index of element to insert"))
t.insert(-1,k) # 8-3-a
print(t)
t.insert(l,k)#8-3-b
print(t)
```

```
enter size of elements5
elements65
elements43
elements67
elements54
elements12
[65, 43, 67, 54, 12]
transversed array: [65, 43, 67, 54, 12]
please give kth value stored in array4
kth value is: 12
sort the elements then insert: [12, 43, 54, 65, 67]
index for inserting elements5
enter elements to be inserted89
[12, 43, 54, 65, 67, 89]
enter number to be inserted56
please give index of element to insert3
[65, 43, 67, 54, 56, 12]
[65, 43, 67, 56, 54, 56, 12]
```

In [1]:

```
import time

# start time
start = time.time()

# code segment

N=int(input("enter number"))
for i in range(N):
    continue

# end time
end = time.time()

# difference between start
# and end time in milli. secs
print("The time of execution of above program is :",(end-start) , "sec")# importing
```

```
enter number1000000
The time of execution of above program is : 3.729153871536255 sec
```

In [41]:

```
m=int(input('enter no of rows'))
n=int(input('enter no of columns'))
b=[]
for i in range(m):
    a=[]
    for j in range(n):
        c=int(input('enter elements'))
        a.append(c)
    b.append(a)
for i in range(m):
    for j in range(n):
        print(b[i][j],end=" ")
    print()
d=[]
for i in range(m):
    suma=0
    c=[]
    for j in range(n):
        suma+=b[i][j]
        avg=suma/n
    c.append(avg)
    d.append(c)
e=[]
for i in range(len(d)):
```

```
    for j in range(len(d[0])):
        e.append(d[i][j])
print(e)
f=e.index(max(e))

print("maximum row avg  of matrix is in :",f,"index")
print("maximum row avg:",b[f])

g=e.index(min(e))

print("minimum row avg  of matrix is in :",g,"index")
print("minimum row avg:",b[g])


for i in range(0,n):
    t=b[f][i]
    b[f][i]=b[g][i]
    b[g][i]=t

for i in range(m):
    for j in range(n):
        print(b[i][j],end=" ")
    print(" ")
```

```
enter no of rows4
enter no of columns3
enter elements1
enter elements2
enter elements6
enter elements5
enter elements9
enter elements8
enter elements1
enter elements2
enter elements6
enter elements5
enter elements7
enter elements8
1 2 6
5 9 8
1 2 6
5 7 8
[3.0, 7.333333333333333, 3.0, 6.666666666666667]
maximum row avg  of matrix is in : 1 index
maximum row avg: [5, 9, 8]
minimum row avg  of matrix is in : 0 index
minimum row avg: [1, 2, 6]
5 9 8
1 2 6
1 2 6
5 7 8
```

In [25]:

```
def capital(n):
    a=n.split(" ")
    b=[]
    for i in a:
        c=i[0].upper()+i[1:-1]+i[-1].upper()
        b.append(c)
    b=" ".join(b)
    print(b)

n=str(input("enter any word!!"))
capital(n)
```

```
enter any word!!3
33
```

In [26]:
```
def upperhalf(n):
    for i in range(len(n)):
        if i>=(len(n)//2):
            print(n[i].upper(),end="")
        else:
            print(n[i],end="")

n=str(input("word!!"))
upperhalf(n)
```

```
word!!mayank
mayANK
```

In [25]:
```
def vowels(a):
    count=0
    for i in range(len(a)):
        if (a[i]=='a' or a[i]=='e'or a[i]=='i'or a[i]=='o'or a[i]=='u'or a[i]=='A'
            count+=1
    print(count)

a=input("word!!")
vowels(a)
```

```
word!!mayank,madhuri andAnAnyA
9
```

In [68]:
```
m=int(input('enter no of rows'))
n=int(input('enter no of columns'))
b=[]
for i in range(m):
    a=[]
    for j in range(n):
        c=int(input('enter elements'))
        a.append(c)
    b.append(a)
print("original matrix:")
for i in range(0,m):
    for j in range(0,n):
        print(b[i][j],end=" ")
    print()
d=[]
for i in range(n):
    suma=0
    c=[]
    for j in range(m):
        suma+=b[j][i]
        avg=suma/m
    c.append(avg)
    d.append(c)
e=[]
for i in range(0,len(d)):
    for j in range(0,len(d[0])):
        e.append(d[i][j])
print("avg of column :",e)


f=e.index(max(e))
print("maximum column avg  of matrix is in :",f+1,"position of column")

x=[]
for i in range(n):
```

```
    a=[]
    for j in range(m):
        c=0
        a.append(c)
    x.append(a)

for i in range(0,len(b)):
    for j in range(0,len(b[0])):
        x[j][i]=b[i][j]
print("maximum column avg:",x[f])
g=e.index(min(e))
print("minimum column avg  of matrix is in :",g+1,"position of column")
print("minimum column avg:",x[g])


for i in range(0,len(x[0])):
    t=x[f][i]
    x[f][i]=x[g][i]
    x[g][i]=t



y=[]
for i in range(m):
    z=[]
    for j in range(n):
        c=0
        z.append(c)
    y.append(z)

for i in range(0,len(x)):
    for j in range(0,len(x[0])):
        y[j][i]=x[i][j]
print("swapped maximum and minimum column of matrix:")
for i in range(len(y)):
    for j in range(len(y[0])):
        print(y[i][j],end=" ")
    print(" ")
```

```
enter no of rows2
enter no of columns3
enter elements1
enter elements2
enter elements3
enter elements4
enter elements5
enter elements6
original matrix:
1 2 3
4 5 6
avg of column : [2.5, 3.5, 4.5]
maximum column avg  of matrix is in : 3 position of column
maximum column avg: [3, 6]
minimum column avg  of matrix is in : 1 position of column
minimum column avg: [1, 4]
swapped maximum and minimum column of matrix:
3 2 1
6 5 4
```

In [21]:
```
## Lambda function questions
```

In [9]:
```
a=[]
n=int(input("enter size!!"))
```

```
for i in range(n):
    b=int(input("enter elements!!"))
    a.append(b)
print(a)

tem=[]
for i in a:
    d=lambda i : i**2
    tem.append(d(i))
print(tem)

k=int(input("enter elements in 'a' which we used to find!!"))

count=0
for i in a:
    if i==k:
        count+=1
    else:
        continue

def arr(a,k):
    return count
if arr(a,k):
    print("elements in lists")

else:
    print("elements is not in lists")

c=lambda a,k:True if k in a else False

if arr(a,k):
    print("elements in lists")

else:
    print("elements is not in lists")
```

```
enter size!!5
enter elements!!1
enter elements!!2
enter elements!!3
enter elements!!4
enter elements!!5
[1, 2, 3, 4, 5]
[1, 4, 9, 16, 25]
enter elements in 'a' which we used to find!!2
elements in lists
elements in lists
```

In [2]:

```
x=int(input("enter number!!  "))
z=int(input("enter num2!!  "))

k=lambda x,z: f"{x} is greater" if x>z else f"{z} is greater"

print(k(x,z))

y=lambda x: f"{x} is even" if x%2==0 else f"{x} is odd"

print(y(z))
```

```
enter number!!  6
enter num2!!  9
9 is greater
9 is odd
```

In [35]:
```
  k=lambda x,y :x if x>=y   else  y

print(k(3,3))
```

```
3
```

In [50]:
```
a=[1,2,3,4,5]
b=list(map(lambda i: i**2 , a))
c=[i**2 for i in a]

print(b,c)
```

```
[1, 4, 9, 16, 25] [1, 4, 9, 16, 25]
```

In [62]:
```
v=lambda a=2,b=4 : lambda c: a*b*c
o=v()
print(o(3))

a= lambda x: x**2
b=lambda f,n: lambda x: f(x)*n

print(b(a,3)(2))
```

```
24
12
```