Практическая работа 7

Задача 1

In [50]:
```
a,b,c,d = int(input()),int(input()),int(input()),int(input())

def min4(a, b, c, d):
    return min(min(min(a, b), c), d)

print(min4(a, b, c, d))
```

```
9
8
7
6
6
```

Задача 2

In [54]:
```
def distance(x1, y1, x2, y2):
    return sqrt((x1 - x2) ** 2 + (y1 - y2) ** 2)

x1,x2,y1,y2 = float(input()),float(input()),float(input()),float(input())
print(distance(x1, x2, y1, y2))
```

```
0
0
1
1
1.4142135623730951
```

Задача 3

In [68]:
```
def Dlina(x1,y1,x2,y2):
    return sqrt((x2-x1)**2+(y2-y1)**2)

x1,x2,x3,y1,y2,y3 = float(input()),float(input()),float(input()),float(input
()),float(input()),float(input())
AB= Dlina(x1,y1,x2,y2)
BC= Dlina(x2,y2,x3,y3)
AC= Dlina(x1,y1,x3,y3)
P=AB+BC+AC
print(P)
```

```
4
5
2
-5
-4
1
13.569720777555155
```

Задача 4

In [81]:
```
def isPointInSquare(x,y,v):
    return (v**2 >= x**2) and (v**2 >= y**2)

x, y = float(input()), float(input())
if isPointInSquare(x, y, 1):
    print('YES')
else:
    print('NO')
```

```
0
0
YES
```

Задача 5

In [88]:
```
def IsPointInSquare(x,y):
    return abs(x) + abs(y) <= 1;


x,y = float(input()),float(input()),
if IsPointInSquare(x, y):
    print('YES')
else:
    print('NO')
```

```
0.5
0.5
YES
```

Задача 6

In [92]:
```
def IsPointInCircle(x, y, xc, yc, r):
    return (x-xc)*(x-xc)+(y-yc)*(y-yc)<=r*r

x,y,xc,yc,r = float(input()),float(input()),float(input()),float(input()),flo
at(input())
if IsPointInCircle(x, y, xc, yc, r):
    print("YES")
else:
    print("NO")
```

```
0.5
0.5
0
0
1
YES
```

Задача 7

In [100]:
```
def IsPointInArea(x,y):
    A = 2 * 2 >= abs(x + 1) * abs(x + 1) + abs(y - 1) * abs(y - 1)
    B = y >= 2 * x + 2
    C = y >= -x
    E = y <= 2 * x + 2
    R = y <= -x
    G = 2 * 2 == abs(x + 1) * abs(x + 1) + abs(y - 1) * abs(y - 1)
    return A and B and C or (G or not A) and E and R


x,y = float(input()),float(input())
if IsPointInArea(x, y):
    print("YES")
else:
    print("NO")
```

```
0
-5
YES
```

Задача 8

In [7]:
```
def xor(x,y):
    return x != y
x, y = int(input()),int(input())
if xor(x,y)==True:
        print(1)
else:
        print(0)
```

```
0
1
1
```

Задача 9

In [13]:
```
n = int(input())
def MinDivisor(n):
    i = 2
    while n % i != 0:
        if i >= sqrt(n):
            print(n)
            return
        i += 1
    print(i)
MinDivisor(n)
```

```
4
2
```

Задача 10

In [31]:
```
def Isprime(n):
    i = 2
    j = 0
    while(True):
        if(i*i <= n and j != 1):
            if(n % i == 0):
                j=j+1
            i=i+1
        elif(j==1):
            print('No')
            return
        else:
            print('Yes')
            return
print(Isprime(int(input())))
```

```
4
No
None
```

Задача 11

In [35]:
```
def power(a, n):
    if n == 0:
        return 1
    else:
        return a * power(a, n - 1)
print(power(float(input()), int(input())))
```

```
5
4
625.0
```

Задача 12

In [37]:
```
def power(a, n):
    if n == 0:
        return 1
    else:
        return a * power(a, n - 1)
print(power(int(input()), int(input())))
```

```
2
2
4
```

Задача 13

In [57]:
```
def sum(a, b):
    if a == 0:
        return b;
    return sum(a-1, b+1)
sum(int(input()), int(input()))
```

```
34
454
```

Out[57]:
```
488
```

Задача 14

In [59]:
```
def power(a, n):
    if n == 0:
        return 1
    if n % 2 == 0:
        return power(a, n/2)**2
    else:
        return a*power(a, n-1)

print(power(int(input()),int(input())))
```

```
3
4
81
```

Задача 15

In [62]:
```
def gcd(a, b):
    if b == 0:
        return a
    else:
        return gcd(b, a % b)
print(gcd(int(input()),int(input())))
```

```
2
2
2
```

Задача 16

In [67]:
```
def ReduceFraction(n, m):
    div = gcd(n, m)
    return n // div, m // div
print(ReduceFraction(int(input()), int(input())))
```

```
15
12
(5, 4)
```

Задача 17

In [68]:
```
def phib(n):
    if n == 1 or n == 2:
        return 1
    else:
        return phib(n - 1) + phib(n - 2)
print(phib(int(input())))
```

```
3
2
```

Задача 18

In [83]:
```
def fan(n, k):
    if k == n or k == 0:
        return 1
    return fan(n - 1, k - 1) + fan(n - 1, k)
print(fan(int(input()), int(input())))
```

```
4
3
4
```

Задача 19

In [86]:
```
def sum():
    n = int(input())
    if n==0:
        return 0
    return n + sum()
print(sum())
```

```
1
2
3
4
0
10
```

Задача 20

In [1]:
```
def rv():
    n = int(input())
    if n != 0:
        rv()
    print(n,end=' ')
rv()
```

```
1
2
3
4
5
0
0 5 4 3 2 1
```

Задача 21

In [4]:
```
def h(n, x, y):
    if n == 1:
        print(1, x, y)
    else:
        h(n-1, x, 6-x-y)
        print(n, x, y)
        h(n-1, 6-x-y, y)
n=int(input())
h(n, 1, 3)
```

```
3
1 1 3
2 1 2
1 3 2
3 1 3
1 2 1
2 2 3
1 1 3
```

Задача 22

In [15]:
```
def kv(n):
    for i in range(4):
        s = int(n ** 0.5)
        n = n - s ** 2
        print(s)
n = int(input())
kv(n)
```

```
345
18
4
2
1
```

Задача 23

In [2]:
```
from math import *

def solve(n, a, t):
    c = n
    d = t
    while c > 0:
        if d > 0:
            x = trunc(float('{0:.11f}'.format((c ** (1 / 3))))) - 1
            d -= 1
        else:
            x = trunc(float('{0:.11f}'.format((c ** (1 / 3)))))
        if x <= 1:
            x = trunc(float('{0:.11f}'.format((c ** (1 / 3)))))
        if d > x:
            print(0)
            exit(0)
        a.append(x ** 3)
        c -= x ** 3
        if len(a) > 7:
            a.clear()
            solve(n, a, t + 1)
    print(*a)
    exit(0)


a = []
n = int(input())
t = 0
solve(n, a, t)
```

```
654
512 125 8 8 1
```

Задача 24

In [10]:
```
def sqr():
    n = int(input())
    if n != 0:
        sqr()
        if (n ** (1 / 2)).is_integer():
            t = 0
            print(n)
t = 1
sqr()
```

```
1
2
3
4
0
4
1
```