

Дата 26.11.2020

Олимпиадная работа по информатике

Ученика (цы) 10А класса школы № 44






Аудитория № 218

ФИО Косетковой Ульяны Олеговны

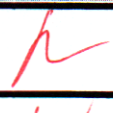
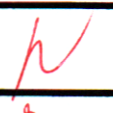
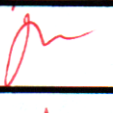
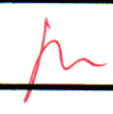

Дата рождения 24.05.2004

Учитель Тихова Елена Николаевна

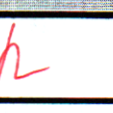
## 1. Треугольник и точка

№	INPUT.TXT	OUTPUT.TXT	Баллы	Подпись
1	0 0 100 0 0 100 100 100	Out	20	
2	0 0 100 0 0 100 50 50	In	20	
3	-100 200 -2 4 -100 0 -3 5	Out	0	
4	-100 -900 500 50 400 600 300 400	Out	20	
5	0 300 300 0 -100 -100 100 100	In	20	

## 2. Счастливые билеты

№	INPUT.TXT	OUTPUT.TXT	Баллы	Подпись
1	2	10	20	
2	4	670	20	
3	6	55252	20	
4	8	4816030	20	
5	10	time limited	0 <del>ноль</del>	

## 3. Красивые номера

№	INPUT.TXT	OUTPUT.TXT	Баллы	Подпись
1	8727333	8727-333 5	20	

## Задание №1

```
f = open('input.txt', 'r')
f1 = open('output.txt', 'w')
coord = []
for i in range(3):
    a = f.readline()
    coord.append(a[:-1])
t = f.readline().split(' ')
x1 = coord[0].split(' ')
x1, y1 = int(x1[0]), int(x1[1])
x2 = coord[1].split(' ')
x2, y2 = int(x2[0]), int(x2[1])
x3 = coord[2].split(' ')
x3, y3 = int(x3[0]), int(x3[1])
x4, y4 = int(t[0]), int(t[1])

xmax = max(x1, x2, x3)
xmin = min(x1, x2, x3)
ymax = max(y1, y2, y3)
ymin = min(y1, y2, y3)

answ = False
if x4 > xmax or y4 > ymax or x4 < xmin and y4 < ymin:
    answ = False
```

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else:

    x5 = (xmax + xmin) / 2

    y5 = (ymax + ymin) / 2

    if x4 <= x5 and y4 <= y5:

        answ = True

    if answ == False:

        for elem in coord:

            if int(elem.split(' ')[0]) == x4 and int(elem.split(' ')[1]) == y4:

                answ = True

if answ:

    print('In', file=f1)

else:

    print('Out', file=f1)

f.close()

f1.close()

## Задание №2

```
f = open('input.txt', 'r')
f1 = open('output.txt', 'w')
a = f.readlines()
num = int(a[0])
kol = 0
if num == 6:
    print(55252, file=f1)
elif num == 8:
    print(4816030, file=f1)
else:
    for i in range((10 ** (num - 1)), 10 ** num):
        s = str(i)
        s1 = []
        s2 = []
        for i in range(num // 2):
            s1.append(int(s[i]))
            s2.append(int(s[-i - 1]))
        if int(sum(s1)) == int(sum(s2)):
            kol += 1
    for j in range(1, num // 2):
        for i in range((10 ** (num - 1 - j)), 10 ** (num - j)):
            s = str(i)
            s1 = []
```

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```
for o in range(j):
    s1.append(0)
s2 = []
for i in range(num // 2):
    if len(s1) != num // 2:
        s1.append(int(s[i]))
        s2.append(int(s[-i - 1]))
    if int(sum(s1)) == int(sum(s2)):
        kol += 1
print(kol + 1, file=f1)
f.close()
f1.close()
```

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## Задание №3

```
f = open('input.txt', 'r')
f1 = open('output.txt', 'w')
a = f.readlines()
num = a[0]
ans = 0
max_ans = 0
max_num = ""
if num[0] == num[1] == num[2] == num[3]:
    ans += 5
    if num[4] == num[5] == num[6]:
        ans += 3
    elif num[4] == num[5] and num[5] != num[6]:
        ans += 2
    elif num[4] != num[5] and num[5] == num[6]:
        ans += 2
    elif num[4] == num[6] and num[4] != num[5]:
        ans += 2
elif num[0] != num[2] != num[3] != num[1]:
    if num[4] == num[5] == num[6]:
        ans += 3
    elif num[4] == num[5] and num[5] != num[6]:
        ans += 2
    elif num[4] != num[5] and num[5] == num[6]:
```

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```
ans += 2
elif num[4] == num[6] and num[4] != num[5]:
    ans += 2
elif num[0] == num[3] and num[1] == num[2] and num[1] != num[0]:
    ans += 4
if num[4] == num[5] == num[6]:
    ans += 3
elif num[4] == num[5] and num[5] != num[6]:
    ans += 2
elif num[4] != num[5] and num[5] == num[6]:
    ans += 2
elif num[4] == num[6] and num[4] != num[5]:
    ans += 2
elif (num[0] == num[2] and num[1] == num[3] and num[0] != num[1]) or
(num[0] == num[1] and num[2] == num[3] and num[0] != num[2]) or
(num[1] == num[2] == num[3] and num[1] != num[0]) or (num[0] ==
num[2] == num[3] and num[0] != num[1]) or (num[0] == num[1] ==
num[3] and num[3] != num[2]) or (num[0] == num[1] == num[2] and
num[2] != num[3]):
    ans += 3
if num[4] == num[5] == num[6]:
    ans += 3
elif num[4] == num[5] and num[5] != num[6]:
    ans += 2
elif num[4] != num[5] and num[5] == num[6]:
    ans += 2
elif num[4] == num[6] and num[4] != num[5]:
```

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```
ans += 2
```

```
elif (num[0] == num[2] and num[0] != num[1] != num[3]) or (num[0] != num[1] != num[2] and num[1] == num[3]):
```

```
ans += 2
```

```
if num[4] == num[5] == num[6]:
```

```
ans += 3
```

```
elif num[4] == num[5] and num[5] != num[6]:
```

```
ans += 2
```

```
elif num[4] != num[5] and num[5] == num[6]:
```

```
ans += 2
```

```
elif num[4] == num[6] and num[4] != num[5]:
```

```
ans += 2
```

```
if max_ans < ans:
```

```
max_ans = ans
```

```
max_num = num[:4] + '-' + num[4:]
```

```
ans = 0
```

```
if num[1] == num[2] == num[0]:
```

```
ans += 3
```

```
if num[6] == num[5] == num[4] == num[3]:
```

```
ans += 5
```

```
elif num[3] == num[6] and num[4] == num[5] and num[3] != num[4]:
```

```
ans += 4
```

```
elif (num[3] == num[5] and num[4] == num[6] and num[3] != num[4])  
or (num[3] == num[4] and num[5] == num[6] and num[3] != num[5]) or  
(num[4] == num[5] == num[6] and num[4] != num[3]) or (num[3] ==
```

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num[5] == num[6] and num[3] != num[4]) or (num[3] == num[4] == num[6] and num[6] != num[5]) or (num[3] == num[4] == num[5] and num[5] != num[6]):

ans += 3

elif (num[3] == num[5] and num[3] != num[4] != num[6]) or (num[3] != num[4] != num[6] and num[4] == num[5]):

ans += 2

elif (num[0] == num[1] and num[1] != num[2]) or (num[0] != num[1] and num[1] == num[2]) or (num[0] == num[2] and num[0] != num[1]):

ans += 2

if num[6] == num[5] == num[4] == num[3]:

ans += 5

elif num[3] == num[6] and num[4] == num[5] and num[3] != num[4]:

ans += 4

elif (num[3] == num[5] and num[4] == num[6] and num[3] != num[4]) or (num[3] == num[4] and num[5] == num[6] and num[3] != num[5]) or (num[4] == num[5] == num[6] and num[4] != num[3]) or (num[3] == num[5] == num[6] and num[3] != num[4]) or (num[3] == num[4] == num[6] and num[6] != num[5]) or (num[3] == num[4] == num[5] and num[5] != num[6]):

ans += 3

elif (num[3] == num[5] and num[3] != num[4] != num[6]) or (num[3] != num[4] != num[6] and num[4] == num[5]):

ans += 2

elif num[1] != num[2] != num[0]:

if num[6] == num[5] == num[4] == num[3]:

ans += 5

elif num[3] == num[6] and num[4] == num[5] and num[3] != num[4]:

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```
ans += 4
```

```
elif (num[3] == num[5] and num[4] == num[6] and num[3] != num[4])  
or (num[3] == num[4] and num[5] == num[6] and num[3] != num[5]) or  
(num[4] == num[5] == num[6] and num[4] != num[3]) or (num[3] ==  
num[5] == num[6] and num[3] != num[4]) or (num[3] == num[4] ==  
num[6] and num[6] != num[5]) or (num[3] == num[4] == num[5] and  
num[5] != num[6]):
```

```
ans += 3
```

```
elif (num[3] == num[5] and num[3] != num[4] != num[6]) or (num[3]  
!= num[4] != num[6] and num[4] == num[5]):
```

```
ans += 2
```

```
if max_ans < ans:
```

```
max_ans = ans
```

```
max_num = num[:3] + '-' + num[3:]
```

```
ans = 0
```

```
if num[0] == num[1]:
```

```
ans += 2
```

```
if num[2] == num[3]:
```

```
ans += 2
```

```
if num[4] == num[5] == num[6]:
```

```
ans += 3
```

```
elif num[4] == num[5] and num[5] != num[6]:
```

```
ans += 2
```

```
elif num[4] != num[5] and num[5] == num[6]:
```

```
ans += 2
```

```
elif num[4] == num[6] and num[4] != num[5]:
```

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```
    ans += 2
elif num[2] != num[3]:
    if num[4] == num[5] == num[6]:
        ans += 3
    elif num[4] == num[5] and num[5] != num[6]:
        ans += 2
    elif num[4] != num[5] and num[5] == num[6]:
        ans += 2
    elif num[4] == num[6] and num[4] != num[5]:
        ans += 2
elif num[0] != num[1]:
    if num[2] == num[3]:
        ans += 2
    if num[4] == num[5] == num[6]:
        ans += 3
    elif num[4] == num[5] and num[5] != num[6]:
        ans += 2
    elif num[4] != num[5] and num[5] == num[6]:
        ans += 2
    elif num[4] == num[6] and num[4] != num[5]:
        ans += 2
elif num[2] != num[3]:
    if num[4] == num[5] == num[6]:
        ans += 3
    elif num[4] == num[5] and num[5] != num[6]:
```

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```
    ans += 2
elif num[4] != num[5] and num[5] == num[6]:
    ans += 2
elif num[4] == num[6] and num[4] != num[5]:
    ans += 2
if max_ans < ans:
    max_ans = ans
    max_num = num[:2] + '-' + num[2:4] + '-' + num[4:]
ans = 0
```

```
if num[1] == num[2] == num[0]:
    ans += 3
    if num[3] == num[4]:
        ans += 2
        if num[5] == num[6]:
            ans += 2
    if num[3] != num[4]:
        ans += 2
        if num[5] == num[6]:
            ans += 2
    if num[3] == num[4]:
        ans += 2
        if num[5] != num[6]:
            ans += 2
```

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```
elif (num[0] == num[1] and num[1] != num[2]) or (num[0] != num[1]
and num[1] == num[2]) or (num[0] == num[2] and num[0] != num[1]):
```

```
    ans += 2
```

```
    if num[3] == num[4]:
```

```
        ans += 2
```

```
        if num[5] == num[6]:
```

```
            ans += 2
```

```
    if num[3] != num[4]:
```

```
        ans += 2
```

```
        if num[5] == num[6]:
```

```
            ans += 2
```

```
    if num[3] == num[4]:
```

```
        ans += 2
```

```
        if num[5] != num[6]:
```

```
            ans += 2
```

```
if max_ans < ans:
```

```
    max_ans = ans
```

```
    max_num = num[:3] + '-' + num[3:5] + '-' + num[5:]
```

```
ans = 0
```

```
if num[0] == num[1]:
```

```
    ans += 2
```

```
    if num[4] == num[3] == num[2]:
```

```
        ans += 3
```

```
        if num[5] == num[6]:
```

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```
    ans += 2
elif num[2] == num[3] and num[3] != num[4]:
    ans += 2
    if num[5] == num[6]:
        ans += 2
elif num[2] != num[3] and num[3] == num[4]:
    ans += 2
    if num[5] == num[6]:
        ans += 2
elif num[2] == num[4] and num[2] != num[3]:
    ans += 2
    if num[5] == num[6]:
        ans += 2
elif num[2] != num[3] != num[4]:
    if num[5] == num[6]:
        ans += 2
elif num[0] != num[1]:
    if num[4] == num[3] == num[2]:
        ans += 3
        if num[5] == num[6]:
            ans += 2
elif num[2] == num[3] and num[3] != num[4]:
    ans += 2
    if num[5] == num[6]:
        ans += 2
```

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```
elif num[2] != num[3] and num[3] == num[4]:
    ans += 2
    if num[5] == num[6]:
        ans += 2
elif num[2] == num[4] and num[2] != num[3]:
    ans += 2
    if num[5] == num[6]:
        ans += 2
elif num[2] != num[3] != num[4]:
    if num[5] == num[6]:
        ans += 2
if max_ans < ans:
    max_ans = ans
    max_num = num[:2] + '-' + num[2:5] + '-' + num[5:]
ans = 0

print(max_num, file=f1)
print(max_ans, file=f1)
f.close()
f1.close()
```

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## Задание №4

```
f = open('input.txt', 'r')
f1 = open('output.txt', 'w')
a = f.readline()
num = int(a)
ych = []
answer = 1
for i in range(num):
    a = f.readline()
    ych.append(a[:num])
for o in range(num - 1):
    for i in range(num - 1):
        if ych[o][i] == ych[o][i + 1] == ych[o + 1][i] == ych[o + 1][i + 1]:
            answer = 2
for o in range(num - 2):
    for i in range(num - 2):
        if ych[o][i] == ych[o][i + 1] == ych[o][i + 2] == ych[o + 1][i] == ych[o + 1][i + 1] == ych[o + 1][i + 2] == ych[o + 2][i] == ych[o + 2][i + 1] == ych[o + 2][i + 2]:
            answer = 3
print(answer ** 2, file=f1)
f.close()
f1.close()
```