

ШИФР 11.41  
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Олимпиадная работа по информатике

Ученика (цы) 11 класса школы (гимназии, лицея, интерната) № 3

Аудитория № 27

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Тесты 9 - 11 классы Шифр \_\_\_\_\_

1. Треугольник и точка

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

2. Счастливые билеты

№	INPUT.TXT	OUTPUT.TXT	Баллы	Подпись
1	2	10	20	pc
2	4	670	20	pc
3	6	55252	20	pc
4	8	4816030	20	pc
5	10	432457640	20	pc

3. Красивые номера

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



1191

2	8827291	88272-91 4	20	<i>ru</i>
3	7777007	777-7007 7	20	<i>ru</i>
4	1212123	121-2123 4	20	<i>ru</i>
5	5355676	5355-676 5	20	<i>M</i>

4. Фермер

№	INPUT.TXT	OUTPUT.TXT	Баллы	Подпись
1	7 1101101 1111110 1011100 0011100 1000010 1100111 1001110	9	20	<i>ru</i>
2	4 1111 0101 1111 1111	4	20	<i>ru</i>
3	5 10011 11111 00111 11111 11111	9	20	<i>ru</i>
4	3 101 011 111	4	20	<i>ru</i>
5	6 000000 011110 011110 011110 011110 000000	16	20	<i>ru</i>

Подпись тестируемого

*ru*

1.

```
defsq(a,b,c):  
    s1 = (b[0]-a[0])*(b[1]+a[1])/2  
    s2 = (c[0]-b[0])*(c[1]+b[1])/2  
    s3 = (a[0]-c[0])*(a[1]+c[1])/2  
    s = abs(s1+s2+s3)  
    return(s)  
  
a = [int(i) for i in filter(None, input().split(" "))]  
b = [int(i) for i in filter(None, input().split(" "))]  
c = [int(i) for i in filter(None, input().split(" "))]  
x = [int(i) for i in filter(None, input().split(" "))]  
if sq(a,b,c)== (sq(a,b,x)+sq(a,c,x)+sq(c,b,x)):  
    ans = "In"  
else:  
    ans = "Out"  
print(ans)
```

2.

```
n=int(input())  
dp=[]  
for i in range(n//2):  
    arr = [0]*9*(n//2)+[0]  
    dp+=arr  
for i in range(10):  
    dp[0][i]=1  
for i in range(1,len(dp)):  
    for j in range(len(dp[i])):  
        s=0  
        for qq in range(max(j-9,0),j+1):
```

```
s+=dp[i-1][qq]  
dp[i][j]=s  
s = 0  
for i in range(len(dp[-1])):  
s+=dp[-1][i]**2  
print(s)
```

3.

```
def value_comb(comb):  
s = 0  
if len(comb)==2:  
if comb[0]==comb[1]:  
s+=2  
  
elif len(comb)==3:  
if comb[0]==comb[2] and comb[0]!=comb[1]:  
s+=2  
  
elif comb[0]==comb[1] and comb[0]!=comb[2]:  
s+=2  
  
elif comb[1]==comb[2] and comb[0]!=comb[1]:  
s+=2  
  
elif comb[0]==comb[1] and comb[2]==comb[1]:  
s+=3  
  
elif len(comb)==4:  
if comb[0]==comb[2] and comb[0]!=comb[1] and comb[1]!=comb[3] and comb[2]!=comb[3]:  
s+=2
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```
elif comb[1]==comb[3] and comb[0]!=comb[1] and comb[2]!= comb[0] and comb[1]!= comb[2]:
    s+=2
elif comb[0]==comb[2] and comb[1]==comb[3] and comb[0]!= comb[1]:
    s+=3
elif comb[0]==comb[1] and comb[2]==comb[3] and comb[0]!= comb[2]:
    s+=3
elif comb[0]==comb[3] and comb[1]==comb[2] and comb[0]!= comb[1]:
    s+=4
elif comb[1]==comb[2] and comb[1]==comb[3] and comb[0]!=comb[1]:
    s+=3
elif comb[0]==comb[2] and comb[0]==comb[3] and comb[0]!=comb[1]:
    s+=3
elif comb[0]==comb[1] and comb[0]==comb[3] and comb[0]!=comb[2]:
    s+=3
elif comb[0]==comb[1] and comb[0]==comb[2] and comb[0]!=comb[3]:
    s+=3
elif comb[0]==comb[1] and comb[0]==comb[2] and comb[0]==comb[3]:
    s+=5
return s
```

```
def value(st):
    val = 0
    i=0
    comb=""
    while i<len(st):
        if st[i]!='-':
            comb+=st[i]
        else:
            val+=value_comb(comb)
```



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```
    comb=""  
  
    i+=1  
  
    val+=value_comb(comb)  
  
    return(val)  
  
n=input()  
a_num=[]  
ans = n  
max_sum = 0  
for i in n:  
    a_num.append(i)  
    for qq in range(64):  
        var = str(bin(qq))  
        var = var[2::]  
        var=var[::-1]  
        while len(var)<6:  
            var+="0"  
        var=var[::-1]  
        arr=[]  
        for i in range(7):  
            arr.append(a_num[i])  
            arr.append(".")  
        for i in range(len(var)):  
            if var[i]=="1":  
                arr[i*2+1]="-"  
        st = ""  
        for i in range(len(arr)):  
            if arr[i]!=".":  
                st+=arr[i]
```

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```
minrst = 10
maxrst=0
rst=0
valid = True
ifst=="121-212-3":
plov=1
fori in range(len(st)):
ifst[j]!="-":
rst+=1
else:
ifrst<=1:
valid = False
break
ifrst>=5:
valid = False
break
rst=0
ifrst<=1:
valid = False
ifrst>=5:
valid = False
if valid:
summ = value(st)
ifsumm>=max_sum:
max_sum=summ
ans = st
print(ans)
print(max_sum)
```



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4.

```
n = int(input())
arr=[]
dp=[]
for i in range(n):
aa = [0]*n
dp+=[aa]
st = input()
aa=[]
for i in range(n):
aa.append(int(st[i]))
arr+=[aa]
ans=0
for i in range(n):
if arr[i][0] or arr[0][i]==1:
ans = 1
dp[0][i]=arr[0][i]
dp[i][0]=arr[i][0]
for i in range(1,n):
for j in range(1,n):
if arr[i][j]==0:
dp[i][j]=0
else:
dp[i][j]=min(dp[i][j-1],dp[i-1][j-1],dp[i-1][j])+1
if dp[i][j]>ans:
ans = dp[i][j]
print(ans**2)
```