ШИФР 11.40

Дата 26.11.2020

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	
2	0 0 100 0 0 100 50 50	In	20	
3	-100 200 -2 4 -100 0 -3 5	In	20	
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	432457640	20	

3. Красивые номера

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

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2	8827291	88-272-91 4	20	
3	7777007	777-7007 7	20	
4	1212123	121-2123 4	20	
5	5355676	5 355-676 5	20	

4. Фермер

№	INPUT.TXT	OUTPUT.TXT	Баллы	Подпись
1	7 1101101 1111110 1011100 0011100 1000010 1100111 1001110	9	20	
2	4 1 1 1 1 0 1 0 1 1 1 1 1 1 1 1 1	4	20	
3	5 1 0 0 1 1 1 1 1 1 1 0 0 1 1 1 1 1 1 1 1 1 1 1 1 1	9	20	
4	3 1 0 1 0 1 1 1 1 1	4	20	
5	6 0 0 0 0 0 0 0 1 1 1 1 0 0 1 1 1 1 0 0 1 1 1 1 0 0 1 1 1 1 0 0 0 0 0 0 0	16	20	

Подпись тестируемого _____

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```
import math

t1 = [int(i) for i in filter(None, input().split(" "))]
t2 = [int(i) for i in filter(None, input().split(" "))]
t3 = [int(i) for i in filter(None, input().split(" "))]
p = [int(i) for i in filter(None, input().split(" "))]

g1 = math.sqrt((t1[0] - t2[0])**2 + (t1[1] - t2[1])**2)
g2 = math.sqrt((t1[0] - t3[0])**2 + (t1[1] - t3[1])**2)
g3 = math.sqrt((t3[0] - t2[0])**2 + (t3[1] - t2[1])**2)

gp1 = math.sqrt((t1[0] - p[0])**2 + (t1[1] - p[1])**2)
gp2 = math.sqrt((t1[0] - p[0])**2 + (t1[1] - p[1])**2)
gp3 = math.sqrt((t3[0] - p[0])**2 + (t3[1] - p[1])**2)

c1a = (t1[0] - t2[0])/g1
c1b = (t1[0] - t3[0])/g2
c2a = (t2[0] - t1[0])/g1
c2b = (t2[0] - t3[0])/g3
c3a = (t3[0] - t1[0])/g2
c3b = (t3[0] - t2[0])/g3

s1a = (t1[1] - t2[1])/g1
s1b = (t1[1] - t3[1])/g2
s2a = (t2[1] - t1[1])/g1
s2b = (t2[1] - t3[1])/g3
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s3a = (t3[1] - t1[1])/g2

s3b = (t3[1] - t2[1])/g3


c1p = (t1[0] - p[0])/gp1

c2p = (t2[0] - p[0])/gp2

c3p = (t3[0] - p[0])/gp3


s1p = (t1[1] - p[1])/gp1

s2p = (t2[1] - p[1])/gp2

s3p = (t3[1] - p[1])/gp3


if (((c1a <= c1p <= c1b)or(c1a >= c1p >= c1b)) or ((s1a <= s1p <= s1b)or(s1a >= s1p >= s1b))) and (((c2a
<= c2p <= c2b)or(c2a >= c2p >= c2b)) or ((s2a <= s2p <= s2b)or(s2a >= s2p >= s2b))) and (((c3a <= c3p
<= c3b)or(c3a >= c3p >= c3b)) or ((s3a <= s3p <= s3b)or(s3a >= s3p >= s3b))):

print("In")

else:

print("Out")


#2

n = int(input())

count = 0

def find_summ(a):

  s = 0

fori in range(len(str(a))):

    s += int(str(a)[i])

  #print(s)

return s

arr = []

fori in range(9 *n//2 + 1):
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arr.append(0)
fori in range(int("1"+"0"*(n//2))):
arr[find_summ(i)] += 1
fori in range(len(arr)):
count+=arr[i]**2
print(count)
```

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```
n = str(input())
maxS = 0
maxi = 0
sh = {"aa":2, "aba":2, "aab":2, "abb":2, "aaa":3,"abac":2,"abcb":2,"abab":3,"aabb":3,"abba":4, "abbb":3,
"abaa":3, "aaba":3, "aaab":3,"aaaa":5}
comb = [[n[0] + n[1], n[2] + n[3], n[4] + n[5] + n[6]],
    [n[0] + n[1], n[2] + n[3] + n[4], n[5]+ n[6]],
    [n[0] + n[1] + n[2], n[3] + n[4], n[5]+ n[6]],
    [n[0] + n[1] + n[2], n[3]+ n[4] + n[5]+ n[6]],
    [n[0] + n[1] + n[2]+ n[3], n[4] + n[5]+ n[6]]]
fori in range(5):
  s = 0
for j in range(len(comb[i])):
    a = comb[i][j][0]
    b = None
    c = None
thisSh = ""
for w in range(len(comb[i][j])):
if comb[i][j][w] == a:
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    thisSh += "a"
    elif comb[i][j][w] == b:
    thisSh += "b"
    elif b == None:
            b = comb[i][j][w]
    thisSh += "b"
    elif comb[i][j][w] == c:
    thisSh += "c"
    elif c == None:
            c = comb[i][j][w]
    thisSh += "c"
    ifsh.get(thisSh)!= None:
    s+= sh[thisSh]
    if s >maxS:
    maxS = s
    maxi = i
    for j in range(len(comb[maxi]) - 1):
    print(comb[maxi][j], end="-")
    pri.it(comb[maxi][-1])
    print(maxS)
```

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```
maxS = 0
def find(y, x, size: int):
  endProcess = False
  while endProcess == False:
    if x + size > n or y + size > n:
      endProcess = True
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    else:
        count = 0
        for i in range(size):
            for j in range(size):
                #print(a[y + i][x + j])
                if a[y + i][x + j] == "1":
                    count += 1
                else:
                    endProcess = True
        if count == size * size:
size += 1

return(size - 1)

a = []
n = int(input())

for k in range(n):
    b = str(input())
a.append(b)
for l in range(n):
for w in range(n):
        s = find(l, w, 1)
if s != None:
if s > maxS:
maxS = s
#print(s)
print (maxS**2)
```