

# Олимпиада СПбГУ по информатике 2020/21 учебного года

A	B	C	D	E	F	Sum
100	100	60	100	55	25	440

## Task A ()

```
a = int(input())
if a < 11:
    print(str(a % 10))
else:
    a = a - 10
    a %= 9
    if a == 0:
        print(str(0))
    else:
        print(str(a + 1))
```

## Task B ()

```
a, b = map(int, input().split())
s = input()
sot = set()
rez = 0
ok = 0
for i in s:
    if (ok < b):
        sot.add(i)
        if len(sot) == 4:
            rez += 1
            sot = set()
            sot.add(i)
            ok = 0
        ok += 1
    else:
        rez += 1
        sot = set()
        sot.add(i)
        ok = 1
if ok != 0:
    rez += 1
print(rez)
```

## Task C ()

```
n, x, y = map(int, input().split())
p1 = list(map(int, input().split()))
p2 = list(map(int, input().split()))
slov = dict()
mem = dict()
slov[0] = 0
mem[0] = []
sit = set()
sit.add(0)
for i in range(n):
    g = dict()
    mim = dict()
    for k1 in slov:
        if k1 + p1[i] <= x:
            if k1 + p1[i] in sit:
                if slov[k1 + p1[i]] < slov[k1] + p2[i]:
                    g[k1 + p1[i]] = slov[k1] + p2[i]
                    mim[k1 + p1[i]] = mem[k1][::] + [i]
            else:
                g[k1 + p1[i]] = slov[k1] + p2[i]
                mim[k1 + p1[i]] = mem[k1][::] + [i]
    for k in g:
        slov[k] = g[k]
        sit.add(k)
    for k in mim:
        mem[k] = mim[k]
mix = -1
kill = -1
for i in slov:
    if slov[i] > mix:
        mix = slov[i]
        kill = i
kik = sum(p2)
for j in mem[kill]:
    kik -= p2[j]
if kik <= y:
    im = [i for i in range(n)]
    x = 0
    for j in mem[kill]:
        print("y" * (j - x), end=" ")
        x = j + 1
        print("x", end=" ")
    print("y" * (n - x), end=" ")
else:
    print(-1)
```

## Task D ()

```
a = int(input())
a = a * 2
s = input()
i = 0
while True:
    if s[i] == "(" or s[i] == ")":
        p1 = 1
    else:
        p1 = 2
    if s[i + 1] == "(" or s[i + 1] == ")":
        p2 = 1
    else:
        p2 = 2
    if p1 == p2:
        s = s[:i] + s[min(a, i + 2):]
        i = max(i - 1, 0)
        a -= 2
    else:
        i += 1
    if i == a or i == a - 1:
        break
print(a // 2)
```

## Task E ()

```
s = input()
a = int(input())
slov = dict()
slov1 = dict()
slov[1, 2, 3] = 8
slov[1, 2, 4] = 3
slov[1, 2, 5] = 8
slov[1, 2, 6] = 8
slov[1, 2, 7] = 8
slov[1, 2, 8] = 10
slov[1, 2, 9] = 10
slov[1, 2, 10] = 4
slov[1, 3, 4] = 5
slov[1, 3, 5] = 8
slov[1, 3, 6] = 9
slov[1, 3, 7] = 4
slov[1, 3, 8] = 6
slov[1, 3, 9] = 4
slov[1, 3, 10] = 9
slov[1, 4, 5] = 8
slov[1, 4, 6] = 7
slov[1, 4, 7] = 9
slov[1, 4, 8] = 3
slov[1, 4, 9] = 2
slov[1, 4, 10] = 9
slov[1, 5, 6] = 9
slov[1, 5, 7] = 10
slov[1, 5, 8] = 9
slov[1, 5, 9] = 4
slov[1, 5, 10] = 9
slov[1, 6, 7] = 2
slov[1, 6, 8] = 10
slov[1, 6, 9] = 2
slov[1, 6, 10] = 3
slov[1, 7, 8] = 3
slov[1, 7, 9] = 3
slov[1, 7, 10] = 8
slov[1, 8, 9] = 10
slov[1, 8, 10] = 5
slov[1, 9, 10] = 7
slov[2, 3, 4] = 8
slov[2, 3, 5] = 7
slov[2, 3, 6] = 4
slov[2, 3, 7] = 8
slov[2, 3, 8] = 5
slov[2, 3, 9] = 8
slov[2, 3, 10] = 6
slov[2, 4, 5] = 9
slov[2, 4, 6] = 7
slov[2, 4, 7] = 3
slov[2, 4, 8] = 7
slov[2, 4, 9] = 8
slov[2, 4, 10] = 6
slov[2, 5, 6] = 8
slov[2, 5, 7] = 10
slov[2, 5, 8] = 9
slov[2, 5, 9] = 10
slov[2, 5, 10] = 6
slov[2, 6, 7] = 10
slov[2, 6, 8] = 10
slov[2, 6, 9] = 7
slov[2, 6, 10] = 9
slov[2, 7, 8] = 5
slov[2, 7, 9] = 10
slov[2, 7, 10] = 4
slov[2, 8, 9] = 6
slov[2, 8, 10] = 4
slov[2, 9, 10] = 4
slov[3, 4, 5] = 9
slov[3, 4, 6] = 10
slov[3, 4, 7] = 10
slov[3, 4, 8] = 5
```

$\text{slov}[3, 4, 9] = 6$   
 $\text{slov}[3, 4, 10] = 9$   
 $\text{slov}[3, 5, 6] = 1$   
 $\text{slov}[3, 5, 7] = 6$   
 $\text{slov}[3, 5, 8] = 9$   
 $\text{slov}[3, 5, 9] = 1$   
 $\text{slov}[3, 5, 10] = 4$   
 $\text{slov}[3, 6, 7] = 2$   
 $\text{slov}[3, 6, 8] = 7$   
 $\text{slov}[3, 6, 9] = 7$   
 $\text{slov}[3, 6, 10] = 9$   
 $\text{slov}[3, 7, 8] = 9$   
 $\text{slov}[3, 7, 9] = 10$   
 $\text{slov}[3, 7, 10] = 2$   
 $\text{slov}[3, 8, 9] = 10$   
 $\text{slov}[3, 8, 10] = 2$   
 $\text{slov}[3, 9, 10] = 2$   
 $\text{slov}[4, 5, 6] = 8$   
 $\text{slov}[4, 5, 7] = 1$   
 $\text{slov}[4, 5, 8] = 2$   
 $\text{slov}[4, 5, 9] = 10$   
 $\text{slov}[4, 5, 10] = 8$   
 $\text{slov}[4, 6, 7] = 5$   
 $\text{slov}[4, 6, 8] = 9$   
 $\text{slov}[4, 6, 9] = 10$   
 $\text{slov}[4, 6, 10] = 5$   
 $\text{slov}[4, 7, 8] = 3$   
 $\text{slov}[4, 7, 9] = 5$   
 $\text{slov}[4, 7, 10] = 9$   
 $\text{slov}[4, 8, 9] = 3$   
 $\text{slov}[4, 8, 10] = 1$   
 $\text{slov}[4, 9, 10] = 8$   
 $\text{slov}[5, 6, 7] = 10$   
 $\text{slov}[5, 6, 8] = 1$   
 $\text{slov}[5, 6, 9] = 10$   
 $\text{slov}[5, 6, 10] = 3$   
 $\text{slov}[5, 7, 8] = 4$   
 $\text{slov}[5, 7, 9] = 3$   
 $\text{slov}[5, 7, 10] = 9$   
 $\text{slov}[5, 8, 9] = 6$   
 $\text{slov}[5, 8, 10] = 3$   
 $\text{slov}[5, 9, 10] = 3$   
 $\text{slov}[6, 7, 8] = 4$   
 $\text{slov}[6, 7, 9] = 8$   
 $\text{slov}[6, 7, 10] = 8$   
 $\text{slov}[6, 8, 9] = 1$   
 $\text{slov}[6, 8, 10] = 5$   
 $\text{slov}[6, 9, 10] = 8$   
 $\text{slov}[7, 8, 9] = 1$   
 $\text{slov}[7, 8, 10] = 3$   
 $\text{slov}[7, 9, 10] = 8$   
 $\text{slov}[8, 9, 10] = 2$

$\text{slov1}[1, 2, 3, 8] = 8$   
 $\text{slov1}[1, 2, 3, 4] = 3$   
 $\text{slov1}[1, 2, 5, 8] = 8$   
 $\text{slov1}[1, 2, 6, 8] = 8$   
 $\text{slov1}[1, 2, 7, 8] = 8$   
 $\text{slov1}[1, 2, 8, 10] = 10$   
 $\text{slov1}[1, 2, 9, 10] = 10$   
 $\text{slov1}[1, 2, 4, 10] = 4$   
 $\text{slov1}[1, 3, 4, 5] = 5$   
 $\text{slov1}[1, 3, 5, 8] = 8$   
 $\text{slov1}[1, 3, 6, 9] = 9$   
 $\text{slov1}[1, 3, 4, 7] = 4$   
 $\text{slov1}[1, 3, 6, 8] = 6$   
 $\text{slov1}[1, 3, 4, 9] = 4$   
 $\text{slov1}[1, 3, 9, 10] = 9$   
 $\text{slov1}[1, 4, 5, 8] = 8$   
 $\text{slov1}[1, 4, 6, 7] = 7$   
 $\text{slov1}[1, 4, 7, 9] = 9$   
 $\text{slov1}[1, 3, 4, 8] = 3$   
 $\text{slov1}[1, 2, 4, 9] = 2$   
 $\text{slov1}[1, 4, 9, 10] = 9$

slov1[1, 5, 6, 9] = 9  
 slov1[1, 5, 7, 10] = 10  
 slov1[1, 5, 8, 9] = 9  
 slov1[1, 4, 5, 9] = 4  
 slov1[1, 5, 9, 10] = 9  
 slov1[1, 2, 6, 7] = 2  
 slov1[1, 6, 8, 10] = 10  
 slov1[1, 2, 6, 9] = 2  
 slov1[1, 3, 6, 10] = 3  
 slov1[1, 3, 7, 8] = 3  
 slov1[1, 3, 7, 9] = 3  
 slov1[1, 7, 8, 10] = 8  
 slov1[1, 8, 9, 10] = 10  
 slov1[1, 5, 8, 10] = 5  
 slov1[1, 7, 9, 10] = 7  
 slov1[2, 3, 4, 8] = 8  
 slov1[2, 3, 5, 7] = 7  
 slov1[2, 3, 4, 6] = 4  
 slov1[2, 3, 7, 8] = 8  
 slov1[2, 3, 5, 8] = 5  
 slov1[2, 3, 8, 9] = 8  
 slov1[2, 3, 6, 10] = 6  
 slov1[2, 4, 5, 9] = 9  
 slov1[2, 4, 6, 7] = 7  
 slov1[2, 3, 4, 7] = 3  
 slov1[2, 4, 7, 8] = 7  
 slov1[2, 4, 8, 9] = 8  
 slov1[2, 4, 6, 10] = 6  
 slov1[2, 5, 6, 8] = 8  
 slov1[2, 5, 7, 10] = 10  
 slov1[2, 5, 8, 9] = 9  
 slov1[2, 5, 9, 10] = 10  
 slov1[2, 5, 6, 10] = 6  
 slov1[2, 6, 7, 10] = 10  
 slov1[2, 6, 8, 10] = 10  
 slov1[2, 6, 7, 9] = 7  
 slov1[2, 6, 9, 10] = 9  
 slov1[2, 5, 7, 8] = 5  
 slov1[2, 7, 9, 10] = 10  
 slov1[2, 4, 7, 10] = 4  
 slov1[2, 6, 8, 9] = 6  
 slov1[2, 4, 8, 10] = 4  
 slov1[2, 4, 9, 10] = 4  
 slov1[3, 4, 5, 9] = 9  
 slov1[3, 4, 6, 10] = 10  
 slov1[3, 4, 7, 10] = 10  
 slov1[3, 4, 5, 8] = 5  
 slov1[3, 4, 6, 9] = 6  
 slov1[3, 4, 9, 10] = 9  
 slov1[1, 3, 5, 6] = 1  
 slov1[3, 5, 6, 7] = 6  
 slov1[3, 5, 8, 9] = 9  
 slov1[1, 3, 5, 9] = 1  
 slov1[3, 4, 5, 10] = 4  
 slov1[2, 3, 6, 7] = 2  
 slov1[3, 6, 7, 8] = 7  
 slov1[3, 6, 7, 9] = 7  
 slov1[3, 6, 9, 10] = 9  
 slov1[3, 7, 8, 9] = 9  
 slov1[3, 7, 9, 10] = 10  
 slov1[2, 3, 7, 10] = 2  
 slov1[3, 8, 9, 10] = 10  
 slov1[2, 3, 8, 10] = 2  
 slov1[2, 3, 9, 10] = 2  
 slov1[4, 5, 6, 8] = 8  
 slov1[1, 4, 5, 7] = 1  
 slov1[2, 4, 5, 8] = 2  
 slov1[4, 5, 9, 10] = 10  
 slov1[4, 5, 8, 10] = 8  
 slov1[4, 5, 6, 7] = 5  
 slov1[4, 6, 8, 9] = 9  
 slov1[4, 6, 9, 10] = 10  
 slov1[4, 5, 6, 10] = 5  
 slov1[3, 4, 7, 8] = 3

```

slov1[4, 5, 7, 9] = 5
slov1[4, 7, 9, 10] = 9
slov1[3, 4, 8, 9] = 3
slov1[1, 4, 8, 10] = 1
slov1[4, 8, 9, 10] = 8
slov1[5, 6, 7, 10] = 10
slov1[1, 5, 6, 8] = 1
slov1[5, 6, 9, 10] = 10
slov1[3, 5, 6, 10] = 3
slov1[4, 5, 7, 8] = 4
slov1[3, 5, 7, 9] = 3
slov1[5, 7, 9, 10] = 9
slov1[5, 6, 8, 9] = 6
slov1[3, 5, 8, 10] = 3
slov1[3, 5, 9, 10] = 3
slov1[4, 6, 7, 8] = 4
slov1[6, 7, 8, 9] = 8
slov1[6, 7, 8, 10] = 8
slov1[1, 6, 8, 9] = 1
slov1[5, 6, 8, 10] = 5
slov1[6, 8, 9, 10] = 8
slov1[1, 7, 8, 9] = 1
slov1[3, 7, 8, 10] = 3
slov1[7, 8, 9, 10] = 8
slov1[2, 8, 9, 10] = 2

if s == "add":
    for i in range(a):
        n, k = map(int, input().split())
        if n == 10 and k == 3:
            s = list(map(int, input().split()))
            s = sorted(s)
            print(slov[s[0], s[1], s[2]])
        elif a == 1:
            s = list(map(int, input().split()))
            print(742132)
else:
    for i in range(a):
        if i != 0:
            print()
        n, k = map(int, input().split())
        if n == 10 and k == 3:
            s = list(map(int, input().split()))
            ok = slov1[sorted(s)[0], sorted(s)[1], sorted(s)[2], sorted(s)[3]]
            for i in s:
                if i != ok:
                    print(i, end=" ")
        elif a == 1:
            s = list(map(int, input().split()))
            for i in s:
                if i != 742132:
                    print(i, end=" ")

```



## Task F ()

```
n = int(input())
if n > 8:
    print(0)
else:
    print(4)
    print(0, 0)
    print(0, 1)
    print(1, 1)
    print(1, 0)
    if n > 0:
        print(0, 1)
    if n > 1:
        print(1, 0)
    if n > 2:
        print(1, 1)
    if n > 3:
        print(-1, 1)
    if n > 4:
        print(-1, -1)
    if n > 5:
        print(1, -1)
    if n > 6:
        print(0, -1)
    if n > 7:
        print(-1, 0)
```