

Олимпиада СПбГУ по информатике 2021/22 учебного года

A	B	C	D	E	F	Sum
100	100	100	100	58	0	458

Task A ()

```
n = int(input())
size = 1799993
s = [0] * size
inputs = []
minb = 10 ** 9
for _ in range(n):
    a,b = map(int,input().split())
    while a % 10 == 0:
        a //= 10
        b += 1
    inputs.append((a,b))
    minb = min(b,minb)
for a,b in inputs:
    target = b - minb
    while a > 0 and target < size:
        s[target] += a % 10
        i = target
        while s[i] > 9:
            divisor = s[i] // 10
            s[i] %= 10
            if i + 1 >= size:
                break
            s[i + 1] += divisor
            i += 1
        a //= 10
        target += 1
for i in range(size):
    if s[i] != 0:
        print(i + minb)
        break
```

Task B ()

```
n = int(input())
a = list(map(int, input().split()))
def wait_for(i):
    print('Flip_and_wait', flush=True)
    k = 0
    while True:
        response = input()
        if response in ('Tired', 'Burn'):
            exit(0)
        k += (len(response) - 3) // 2
        if k > i:
            return
    print('Wait', flush=True)
for i in range(n-1, -1, -1):
    for j in range(a[i]):
        wait_for(i)
print('Stop', flush=True)
```

Task C ()

```
t = int(input())
for _ in range(t):
    x = input()
    n = len(x)
    d = {'0':0, '1':0, '?':0}
    for i in x:
        d[i] += 1
    if d['?'] == 0:
        # encode mode
        if n % 2 == 1:
            if d['0'] > 0 and d['1'] > 0:
                repl = '0' if d['0'] > d['1'] else '1'
                print(x.replace(repl, '?'))
            else:
                print('? ' * (n // 2) + x[n//2:])
        else:
            if d['1'] > 0:
                repl = '0' if d['0'] >= d['1'] else '1'
                print(x.replace(repl, '?'))
            else:
                print('? ' * (n // 2) + x[n//2:])
    else:
        # decode mode
        if n % 2 == 1:
            if d['?'] == n // 2:
                print(x.replace('?', x[-1]))
            else:
                repl = '0' if d['0'] == 0 else '1'
                print(x.replace('?', repl))
        else:
            if d['?'] == n:
                print('1' * n)
            elif d['?'] == d['0']:
                print('0' * n)
            else:
                repl = '0' if d['0'] == 0 else '1'
                print(x.replace('?', repl))
```

Task D ()

a = [587881817, 976543103, 69849174, 461353176, 461502822, 768340091, 312269802, 246237913, 561389429, 162004338, 789952026, 169259927, 958752482, 761872431, 681157243, 655017120, 363565319, 663650916, 280991609, 301008666, 300535250, 788996552, 88983881, 269927018, 836642999, 698416111, 692345313, 127427944, 997792754, 614225861, 580959567, 720807775, 625435244, 934270351, 830065882, 39115872, 322308378, 897244542, 440699360, 737677476, 19885755, 422220651, 294170276, 784516392, 733968638, 455329372, 90513476, 42468694, 54925113, 938687859, 60451190, 360965654, 347321771, 562821493, 640243407, 214273840, 129104937, 741076784, 130567242, 573527417, 167392478, 866785683, 836768026, 823580844, 410784344, 871958051, 638237905, 616105785, 399217338, 388750218, 294986185, 67588628, 865473874, 37891240, 601883218, 955156924, 698445331, 667936343, 606549789, 799170513, 415002616, 542830460, 24602574, 281850577, 638552996, 555440861, 549738625, 786644132, 478958961, 93457167, 818337943, 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```

mod = 998244353
divisor = 285212
n = int(input())
zeros = 0
n_1 = n + 1
while n_1 > 0:

```

```

    zeros += n_1 // mod
    n_1 //= mod
def powmod(a,b,n):
    if b == 0:
        return 1
    if b == 1:
        return a % n
    tmp = powmod(a,b//2,n)
    tmp = (tmp * tmp) % n
    if b % 2 == 1:
        tmp = (tmp * a) % n
    return tmp
comp1 = powmod(mod - 1,(n + 1) // mod,mod)
n = (n + 1) % mod
tmp = n // divisor
if tmp > 0:
    comp2 = a[tmp - 1]
else:
    comp2 = 1
for i in range(tmp * divisor+1,n+1):
    comp2 = (comp2 * i) % mod
answer = (comp1 * comp2) % mod
print(zeros,answer)

```

Task E ()

```
#include <iostream>
#include <vector>

using namespace std;

int main() {
    ios::sync_with_stdio(false);
    int n;
    cin >> n;
    vector<int> v(n,0);
    for (int i = 0; i < n; i++) {
        int k;
        cin >> k;
        v[i] = k;
    }
    int q;
    cin >> q;
    for (int w = 0; w < q; w++) {
        int a,b,d;
        cin >> a >> b >> d;
        int64_t s = 0;
        for (int i = a; i < b; i++) {
            s += (d + v[i] - 1) / v[i];
        }
        cout << s << endl;
    }
}
```

Task F ()

```
n = int(input())
inp = []
for i in range(n):
    inp.append(tuple(map(int, input().split())))
def process(i, a):
    if i == n:
        d = {}
        for i in a:
            d.setdefault(i, 0)
            d[i] += 1
        return max(d.values())
    if inp[i][0] <= 0 <= inp[i][1]:
        return process(i + 1, a + [a[-1]])
    possible = set([a[-1] + inp[i][0] if inp[i][0] > 0 else a[-1] + inp[i][1]])
    for x in a:
        if inp[i][0] <= x - a[-1] <= inp[i][1]:
            possible.add(a[-1])
    max_ans = 0
    for p in possible:
        max_ans = max(max_ans, process(i+1, a + [p]))
    return max_ans
print(process(0, [0]))
```