

Олимпиада СПбГУ по информатике 2021/22 учебного года

A	B	C	D	E	F	Sum
100	100	100	80	58	0	438

Task A ()

```
import sys

n = int(sys.stdin.readline())
ans = dict()
for i in range(n):
    a, b = map(int, sys.stdin.readline().split())
    carry = 10**(b % 10) * a
    ci = b // 10
    while carry != 0:
        if ci in ans:
            ans[ci] += carry
            carry = ans[ci] // 10**10
            ans[ci] = ans[ci] % 10**10
            if ans[ci] == 0:
                ans.pop(ci)
            ci += 1
        else:
            ans[ci] = carry % 10**10
            carry = carry // 10**10
            if ans[ci] == 0:
                ans.pop(ci)
            ci += 1
a = min(ans)
print(a * 10 + len(str(ans[a])) - len(str(ans[a]).rstrip("0")))
```

Task B ()

```
n = int(input())
k = list(map(int, input().split()))
y = 0
while y != n and k[y] <= 1:
    y += 1
c = 0
sost = 0
print("Flip_and_wait", flush=True)
while y != len(k):
    s = input()
    c += (len(s) - 3) // 2
    #print(y, sost, c)
    if c > y:
        if sost == 0:
            print("Flip_and_wait", flush=True)
            c = 0
            #print(c)
            sost = 1
            k[y] -= 1
        else:
            print("Flip_and_wait", flush=True)
            k[y] -= 1
            c = 0
            #print(c)
            while y != n and k[y] <= 1:
                y += 1
            sost = 0
    else:
        print("Wait", flush=True)
    #print(y, sost, c)
#print(y)
y -= 1
#print(k)
while y != -1 and k[y] != 1:
    y -= 1
while y != -1:
    s = input()
    c += (len(s) - 3) // 2
    #print(c, y)
    if c > y:
        k[y] -= 1
        c = 0
        while y != -1 and k[y] != 1:
            y -= 1
        if y == -1:
            print("Stop", flush=True)
        else:
            print("Flip_and_wait", flush=True)
    else:
        print("Wait", flush=True)
```

Task C ()

```
import sys

n = int(input())
for i in range(n):
    s = sys.stdin.readline().rstrip()
    if "?" in s:
        if s == "?1":
            print("01")
            continue
        if "0" in s and "1" in s:
            ss = ""
            prev = "."
            for j in s:
                if j != "?":
                    prev = j
                ss += prev
            sys.stdout.write(ss+"\n")
        else:
            if "0" in s:
                if s[0] == "0" and s[1:].count("0") == 0:
                    sys.stdout.write(s.replace("?", "0")+"\n")
                else:
                    sys.stdout.write(s.replace("?", "1")+"\n")
            else:
                if s[0] == "1" and s[1:].count("1") == 0:
                    sys.stdout.write(s.replace("?", "1")+"\n")
                else:
                    sys.stdout.write(s.replace("?", "0")+"\n")
            continue
        if s == "01":
            print("?1")
            continue
    ss = ""
    prev = "."
    for j in s:
        if j != prev:
            ss += j
            prev = j
        else:
            ss += "?"
    if ss.count("?") < len(s) // 2:
        if s.count("0") > s.count("1"):
            sys.stdout.write(s.replace("0", "?")+"\n")
        else:
            sys.stdout.write(s.replace("1", "?")+"\n")
    else:
        sys.stdout.write(ss+"\n")
```

Task D ()

```
import math

def quickst(a, b):
    global mod
    if b == 0:
        return 1
    elif b == 1:
        return a
    promans = quickst(a, b>>1)
    if b & 1:
        return ((a * promans) % mod * promans) % mod
    else:
        return (promans * promans) % mod

def fact(n):
    global mod, promsum
    newst = n // 1000000 * 1000000
    izn = promsum[n // 1000000]
    for i in range(newst+1, n+1):
        if i == mod:
            continue
        izn = (izn * i) % mod
    return izn

promsum = [1, 373341033, 45596018, 834980587, 623627864, 428937595, 442819817, 499710224,
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```

```
n = int(input())  
mod = 998244353  
ans1 = 0  
nn = n+1  
while nn != 0:  
    ans1 += nn // mod  
    nn //= mod  
n += 1  
perrem = 998244352  
ans = quickst(perrem, n // mod)  
ans = (ans * fact(n // mod)) % mod  
ans = (ans * fact(n % mod)) % mod  
print(ans1, ans)
```

Task E ()

```
#pragma optimization ("Ofast")
#pragma target ("avx2")

#include <iostream>

using namespace std;

int l[5003];

int main(){
    ios_base::sync_with_stdio(false);
    cin.tie(0);
    cout.tie(0);
    int n;
    cin >> n;
    for(int i = 0; i < n; ++i){
        cin >> l[i];
    }
    int q, a, b, d;
    cin >> q;
    long long ans;
    for(int j = 0; j < q; ++j){
        cin >> a >> b >> d;
        ans = b-a;
        --d;
        for(int i = a; i < b; ++i){
            ans += d / l[i];
        }
        cout << ans << '\n';
    }
}
```

Task F ()