Олимпиада СПбГУ по информатике 2021/22 учебного года

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

Task A ()

```cpp
#include <bits/stdc++.h>

using namespace std;

#define int long long

const long long mod = 998244353;

void solve(){
    int n;
    cin >> n;
    map<long long, vector<long long>> mas;
    for(int i = 0; i<n; ++i){
        long long a, b;
        cin >> a >> b;
        while(a>0){
            mas[b].push_back(a%10);
            ++b;
            a/=10;
        }
    }
    long long it = (*mas.begin()).first;
    for(auto iter = mas.begin(); iter!=mas.end(); ++iter){
        long long sm = 0;
        for(int i = (*iter).second.size()-1; i>=0; --i){
            sm += (*iter).second[i];
            if(sm>80){
                mas[(*iter).first+1].push_back(sm/10);
                sm%=10;
            }
            (*iter).second.pop_back();
        }
        mas[(*iter).first+1].push_back(sm/10);
        sm%=10;
        if(sm!=0)
            break;
        ++it;
    }
    cout << it << "\n";
}

main(){
    ios_base::sync_with_stdio(0);
    cin.tie(0);
    cout.tie(0);
    int n = 1;
    //cin >> n;
    while(n--){
        solve();
    }
}
```

Task B ()

```
#include <bits/stdc++.h>

using namespace std;

#define int long long

int rez(){
    string str;
    cin >> str;
    return (str.size()-3)/2;
}

void solve(){
    int n;
    cin >> n;
    vector<long long> mas(n);
    for(int i = 0; i<n; ++i)
        cin >> mas[i];
    for(int i = 0; i<n; ++i){
        while(mas[i]>=2){
            cout << "Flip and wait" << endl;
            mas[i]-=2;
            int kol = rez();
            while(kol<=i){
                cout << "Wait" << endl;
                kol+=rez();
            }
            cout << "Flip and wait" << endl;
            kol = rez();
            while(kol<=i){
                cout << "Wait" << endl;
                kol+=rez();
            }
        }
    }
    for(int i = n-1; i>=0; --i){
        if(mas[i]>0){
            cout << "Flip and wait" << endl;
            int kol = rez();
            while(kol<=i){
                cout << "Wait" << endl;
                kol+=rez();
            }
        }
    }
    cout << "Stop\n";
}

main(){
    ios_base::sync_with_stdio(0);
    cin.tie(0);
    cout.tie(0);
    int n = 1;
    //cin >> n;
    while(n--){
        solve();
    }
}
```

Task C ()

```
#include <bits/stdc++.h>

using namespace std;

#define int long long

void solve(){
    string str;
    cin >> str;
    int f = 0;
    for(int i = 0; i<str.size(); ++i){
        if(str[i]=='?')
            f = 1;
    }
    if(f==0){
        vector<char> mas(str.size());
        for(int i = 0; i<str.size(); ++i)
            mas[i] = str[i];
        for(int i = 0; i+1<str.size(); i+=2){
            if(mas[i]==mas[i+1]){
                mas[i] = '?';
            }
            else{
                mas[i+1] = '?';
            }
        }
        for(int i = 0; i<str.size(); ++i){
            cout << mas[i];
        }
        cout << "\n";
    }
    else{
        vector<char> mas(str.size());
        for(int i = 0; i<str.size(); ++i)
            mas[i] = str[i];
        for(int i = 0; i+1<str.size(); i+=2){
            if(mas[i]=='?'){
                mas[i] = mas[i+1];
            }
            else{
                if(mas[i]=='1')
                    mas[i+1] = '0';
                else
                    mas[i+1] = '1';
            }
        }
        for(int i = 0; i<str.size(); ++i){
            cout << mas[i];
        }
        cout << "\n";
    }
}

main(){
    ios_base::sync_with_stdio(0);
    cin.tie(0);
    cout.tie(0);
    int n = 1;
    cin >> n;
    while(n--){
        solve();
    }
}
```

Task D ()

```
#include <bits/stdc++.h>

using namespace std;

#define int unsigned long long

const unsigned long long mod = 998244353;

const unsigned long long a = 464016596, b = 63299249, c = 478389955, d = 55395755, e = 203730522,
    f = 533107751, g = 293833759;

unsigned long long st(unsigned long long ad, unsigned long long bd){
    if(bd==0)
        return 1;
    unsigned long long it = (st(ad, bd/2));
    it = (it*it)%mod;
    if(bd%2==1)
        it = (it*ad)%mod;
    return it;
}

unsigned long long gt(unsigned long long nw){
    unsigned long long it = 1;
    unsigned long long i = 1;
    if(nw>=7e8){
        it = g;
        i = 7e8;
    }
    else if(nw>=4e8){
        it = d;
        i = 4e8;
    }
    else if(nw>=2e8){
        it = b;
        i = 2e8;
    }
    else if(nw>=1e8){
        it = a;
        i = 1e8;
    }
    for(; i<nw; ++i){
        it = (it*i)%mod;
    }
    return it;
}

void solve(){
    unsigned long long it = 1;
    unsigned long long n;
    cin >> n;
    long long dob = 0;
    for(long long i = mod*mod; i<=n+1; i+=mod*mod)
        ++dob;
    cout << (n+1)/(mod)+dob << "␣" << (gt(1+((n+1)%(mod)))*st(gt(mod), (n+1)/(mod)))%mod << "\n";
}

main(){
    ios_base::sync_with_stdio(0);
    cin.tie(0);
    cout.tie(0);
    int n = 1;
    //cin >> n;
    while(n--){
        solve();
    }
}
```

Task E ()

```cpp
#include <bits/stdc++.h>

using namespace std;

#define int long long

void solve(){
    int n;
    cin >> n;
    vector<long long> mas(n);
    for(int i = 0; i<n; ++i)
        cin >> mas[i];
    int q;
    cin >> q;
    while(q--){
        int a, b;
        cin >> a >> b;
        long long d;
        cin >> d;
        long long it = 0;
        for(int i = a; i<b; ++i){
            it+=d/mas[i]+(d%mas[i]==0?0:1);
        }
        cout << it << "\n";
    }
}

main(){
    ios_base::sync_with_stdio(0);
    cin.tie(0);
    cout.tie(0);
    int n = 1;
    //cin >> n;
    while(n--){
        solve();
    }
}
```

Task F ()