23ος ΠΑΝΕΛΛΗΝΙΟΣ ΔΙΑΓΩΝΙΣΜΟΣ ΠΛΗΡΟΦΟΡΙΚΗΣ

ΕΝΔΕΙΚΤΙΚΕΣ ΛΥΣΕΙΣ ΘΕΜΑΤΩΝ ΤΕΛΙΚΗΣ ΦΑΣΗΣ

Prevdiv

Κηπουρίδης Βαγγέλης **100%**
11ο ΓΕΛ Θεσσαλονίκης

```
/*
USER : pdp23u1
LANG : C++
TASK : prevdiv
*/
#include <cstdio>
#include <algorithm>
#define INF 2100000000
int Calc ( int a, int b ) {
        int fac_a=1, fac_b=1;
        if ( a==1 || b==1 ) return ( a>b?a:b );
        if ( a < b ) fac_a = b/a;
        if ( b < a ) fac_b = a/b;
        while ( fac_a*a!=fac_b*b ) {
                if ( fac_a*a < fac_b*b )
                        //fac_a = fac_b*b/fac_a*a;
                        ++fac_a;
                else
                        ++fac_b;
                        //fac_b = fac_a*a/fac_b*b;
                if ( fac_a*a > INF || fac_b*b > INF ) return (INF);
        }
        return ( fac_a*a );
}
int main ( void ) {
        int i, tmp, MaXiM, ekp, N;
        FILE *fin = fopen("prevdiv.in", "r"), *fout = fopen("prevdiv.out", "w" );
        fscanf ( fin, "%d %d", &N, &tmp );
        ekp = MaXiM = tmp;
        for ( i=2; i<=N; ++i ) {
                fscanf ( fin, "%d", &tmp );
                ekp = Calc ( tmp, ekp );
                if ( ekp == INF )
                        break;
                if ( tmp > MaXiM ) {
```

```
                        if ( tmp % ekp == 0 ) {
                                MaXiM = ekp;
                        }
                }
        }

        fprintf ( fout,"%d\n", MaXiM );
        fclose(fin);fclose(fout);
        return(0);
}
```

Annealing

Τζάμος Νίκος **100%**
4ο ΓΕΛ Χαλανδρίου

```
/*
USER : pdp23u29
LANG : C++
TASK : annealing
*/
#include<stdio.h>
#include<algorithm>
using namespace std;
int temp[26000], N;
long long sum, dp[26000];
int main() {
	freopen("annealing.in","r",stdin);
	freopen("annealing.out","w",stdout);
	int i, j;
	scanf("%d", &N);
	for(i=0;i<N;i++) scanf("%d", &temp[i]);
	for(i=N-1;i>=0;i--) {
		sum = 0;
		for(j=N-1;j>i;j--) {
			if(temp[j]>temp[i]) sum += temp[j]-temp[i];
			else {
				if(2*temp[j]<dp[j]-sum) sum += 2*temp[j];
				else sum += dp[j]-sum;
			}
		}
		dp[i] = sum;
	}
	sum = 0;
	for(j=N-1;j>=0;j--) {
		if(2*temp[j]<dp[j]-sum) sum += 2*temp[j];
		else sum += dp[j]-sum;
	}
	printf("%lld\n", sum);
	return 0;
}
```

Fish boats

Τζάμος Νίκος **62%**
4ο ΓΕΛ Χαλανδρίου

```
/*
USER : pdp23u29
LANG : C++
TASK : fishboats
*/
#include<stdio.h>
#include<vector>
#include<algorithm>
using namespace std;
int N,M,x,mx=-10000,mn=10000;
vector<int> A;
int main() {
	int i,s;
	freopen("fishboats.in","r",stdin);
	freopen("fishboats.out","w",stdout);
	scanf("%d %d", &N,&M);
	for(i=0;i<N;i++) {
		scanf("%d", &x);
		A.push_back(x);
		if(x>mx)mx = x;
		if(x<mn)mn = x;
	}
	sort(A.begin(),A.end());
	long long sum = 0,mxsum=0,d, Max = 0;
	for(s=0;s<N;s++){
		if(A[s]>=0){
			for(i=0;i<N;i++){
				d = 0;
				if(i>s){
					if(A[i]>=0) d = A[i]+2*A[s]+2*abs(mn);
					else d = abs(A[i])+2*A[s];
					sum += (M-d>0)?M-d:0;

				}
				else {
					if(A[i]>=0) d = A[i];
					else d = abs(A[i])+2*A[s];
					sum += (M-d>0)?M-d:0;
```

```
                        }
                    }
                    if(sum>mxsum)mxsum = sum;
                } else {
                    for(i=0;i<N;i++) {
                        d=0;
                        if(i<s){
                            if(A[i]>0) d = A[i]+2*abs(A[s]);
                            else d = abs(A[i])+2*abs(A[s])+2*mx;
                            sum += (M-d>0)?M-d:0;
                        } else {
                            if(A[i]>0) d = A[i]+2*abs(A[s]);
                            else d = abs(A[i]);
                            sum += (M-d>0)?M-d:0;
                        }
                    }
                    if(sum>mxsum)mxsum = sum;
                }
                if(mxsum>Max)Max = mxsum;
                sum=0;
            }

        printf("%lld\n", Max);
        return 0;
}
```