

比赛链接：[AtCoder Beginner Contest 128](#)

E - Roadwork

题意

在一条直线上有 N 个障碍，位于 x_i 且每个障碍仅在 $[S_i, T_i]$ 生效。有 Q 个人从 $x = 0$ 等待 D_i 秒后出发，以每秒一单位长度的速度向正方向行走，遇到生效的障碍则立刻停下。输出每个人走的路程，如果无穷则输出 -1 。

数据范围

$1 \leq N, Q \leq 2 \times 10^5$

$0 \leq S_i, T_i \leq 10^9$

$1 \leq X_i \leq 10^9$

$0 \leq D_1 \leq D_2 \leq \dots \leq D_Q \leq 10^9$

题解

第 j 个人在第 i 个障碍停下当且仅当 i 是满足 $S_i \leq x_i + D_j \leq T_i$ 且 x_i 最小的。也即 $S_i - x_i \leq D_j \leq T_i - x_i$

所以考虑对每个障碍按 x_i 排序，然后从大到小枚举。每次二分得到满足 $S_i - x_i \leq D_j \leq T_i - x_i$ 的一个区间，然后用线段树染色。

```
#include<bits/stdc++.h>
#define ll long long
#define pii_ pair<int,int>
#define mp_ make_pair
#define pb push_back
#define fi first
#define se second
#define rep(i,a,b) for(int i=(a);i<=(b);i++)
#define per(i,a,b) for(int i=(a);i>=(b);i--)
#define show1(a) cout<<#a<<" = "<<a<<endl
#define show2(a,b) cout<<#a<<" = "<<a<<"; "<<#b<<" = "<<b<<endl
using namespace std;
const ll INF = 1LL<<60;
const int inf = 1<<30;
const int maxn = 2e5+5;
inline void fastio() {ios::sync_with_stdio(false);cin.tie(0);cout.tie(0);}

int s[maxn],t[maxn],x[maxn],d[maxn],id[maxn];
int tr[maxn<<2],lazy[maxn<<2];
```

```
void push_down(int id)
{
    if(lazy[id]!=-1){
        tr[id<<1] = tr[id<<1|1] = lazy[id<<1] = lazy[id<<1|1] = lazy[id];
        lazy[id] = -1;
    }
}
void build(int id,int l,int r)
{
    tr[id] = -1,lazy[id] = -1;
    if(l==r) return;
    int mid = (l+r)>>1;
    build(id<<1,l,mid);build(id<<1|1,mid+1,r);
}
void update(int id,int stl,int str,int l,int r,int k)
{
    if(stl==l && str==r){
        tr[id] = k;
        lazy[id] = k;
        return ;
    }
    push_down(id);
    int mid = (stl+str)>>1;
    if(r<=mid) update(id<<1,stl,mid,l,r,k);
    else if(l>mid) update(id<<1|1,mid+1,str,l,r,k);
    else update(id<<1,stl,mid,l,mid,k),update(id<<1|1,mid+1,str,mid+1,r,k);
}
int query(int id,int stl,int str,int pos)
{
    if(stl == str) return tr[id];
    push_down(id);
    int mid = (stl+str)>>1;
    if(pos<=mid) return query(id<<1,stl,mid,pos);
    else return query(id<<1|1,mid+1,str,pos);
}
int main()
{
    fastio();
    int n,q;
    cin>>n>>q;
    rep(i,1,n) cin>>s[i]>>t[i]>>x[i];
    rep(i,1,q) cin>>d[i];
    build(1,1,q);
    rep(i,1,n) id[i] = i;
    sort(id+1,id+n+1,[](int a,int b){return x[a]<x[b];});
    per(i,n,1){
        int L = lower_bound(d+1,d+q+1,s[id[i]]-x[id[i]]) - d;
        int R = lower_bound(d+1,d+q+1,t[id[i]]-x[id[i]]) - d - 1;
        if(R<L || R==0) continue;
        update(1,1,q,L,R,x[id[i]]);
    }
}
```

```
    }  
    rep(i, 1, q) {  
        cout << query(1, 1, q, i) << endl;  
    }  
    return 0;  
}
```

F - Frog Jump

题意

数据范围

题解

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