Contents

```cpp
using dot = pair<int,int>;
using lin = pair<dot,dot>;

#define x first
#define y second
#define fi first
#define se second

const int TRF = 1e11;

int cross(dot a,dot b) {
    return a.x * b.y - a.y * b.x;
}

dot dsc(dot a,dot b) {
    return {a.x - b.x,a.y - b.y};
}

dot add(dot a,dot b) {
    return {a.x + b.x,a.y + b.y};
}

int cross(dot p1,dot p2,dot p0) {
    return cross(dsc(p1,p0),dsc(p2,p0));
}

int sign(int x) {
    if(x == 0) return 0;
    return x < 0 ? -1 : 1;
}

bool onseg(lin l,dot p) {
    return sign( cross(p,l.fi,l.se) == 0 ) &&
    (min(l.fi.x,l.se.x) <= p.x && p.x <= max(l.fi.x,l.se.x)) &&
    (min(l.fi.y,l.se.y) <= p.y && p.y <= max(l.fi.y,l.se.y)) ;
};

bool sic(lin a,lin b) {
    auto [s1,e1] = a;
    auto [s2,e2] = b;
    auto A = max(s1.x,e1.x),AA = min(s1.x,e1.x);
    auto B = max(s1.y,e1.y),BB = min(s1.y,e1.y);
    auto C = max(s2.x,e2.x),CC = min(s2.x,e2.x);
    auto D = max(s2.y,e2.y),DD = min(s2.y,e2.y);

    bool flag_cross = (sign(cross(s1,s2,e1)) * sign(cross(s1,e1,e2))) == 1 &&
                      (sign(cross(s2,s1,e2)) * sign(cross(s2,e2,e1))) == 1;
    bool flag_onseg = onseg(a,s2) || onseg(a,e2) ||
                      onseg(a,s2) || onseg(a,e2);

    return A >= CC && B >= DD && C >= AA && D >= BB && (flag_cross ||
flag_onseg);
}
```