**Лежит ли точка в отрезке**

bool point\_in\_segment(pair <int, int> pi, int p)

{

if (pi.first > pi.second) {swap(pi.first, pi.second);}

if (p >= pi.first && p <= pi.second) {return true;}

return false;

}

**Пересечение отрезков**

pair <int, pair <int, int> > intersection(pair <int, int> pi1, pair <int, int> pi2)

{

if (pi1.first > pi1.second) {swap(pi1.first, pi1.second);}

if (pi2.first > pi2.second) {swap(pi2.first, pi2.second);}

if (pi1.first > pi2.first) {swap(pi1.first, pi2.first); swap(pi1.second, pi2.second);}

if (pi1.second < pi2.first) {return make\_pair(0, make\_pair(0, 0) );}

else {return make\_pair(1, make\_pair(pi2.first, min(pi1.second, pi2.second) ) );}

}

**Объединение отрезков**

pair <int, pair <int, int> > intersection(pair <int, int> pi1, pair <int, int> pi2)

{

if (pi1.first > pi1.second) {swap(pi1.first, pi1.second);}

if (pi2.first > pi2.second) {swap(pi2.first, pi2.second);}

if (pi1.first > pi2.first) {swap(pi1.first, pi2.first); swap(pi1.second, pi2.second);}

if (pi1.second < pi2.first) {return make\_pair(0, make\_pair(0, 0) );}

else {return make\_pair(1, make\_pair(pi1.first, pi2.second));}

}