

```
1 // include strongly connected components
2
3 struct cnf2_t {
4     int n; // size of variables
5     struct literal_t {
6         int index;
7         bool neg;
8     };
9     struct clause_t {
10         literal_t x, y;
11     };
12     vector<clause_t> L;
13 };
14
15 class SAT2 {
16 private:
17     int n;
18     bool fail_flag;
19     vvi sccs;
20     vi scc_gid;
21     vector<bool> result;
22     int inv(int id) {
23         return (id + n) % (n * 2);
24     }
25 public:
26     SAT2(cnf2_t CNF) {
27         vvi lst(n * 2);
28         Loop(i, CNF.L.size()) {
29             lst[CNF.L[i].x.index + (CNF.L[i].x.neg ? 0 : n)].push_back(CNF.L[i].y.index + (CNF.L[i].y.neg ? n : 0));
30             lst[CNF.L[i].y.index + (CNF.L[i].y.neg ? 0 : n)].push_back(CNF.L[i].x.index + (CNF.L[i].x.neg ? n : 0));
31         }
32         Strongly_Connected_Components *scc = new Strongly_Connected_Components(lst);
33         sccs = scc->get_sccs();
34         scc_gid = scc->get_scc_gid();
35         fail_flag = false;
36         result.resize(n);
37         Loop(i, n) {
38             if (scc_gid[i] > scc_gid[inv(i)]) result[i] = true;
39             else if (scc_gid[i] < scc_gid[inv(i)]) result[i] = false;
40             else {
41                 result.clear();
42                 fail_flag = true;
43                 return;
44             }
45         }
46         return;
47     }
48     bool is_satisfiable() {
49         return !fail_flag;
50     }
51     vector<bool> get_result() {
52         return result;
53     }
54 };
```