Course Project: Milestone 2

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Code:

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% ============================================================
% CSE 579 — INSURANCE REFEREE ASSIGNMENT SOLVER (FINAL VERSION)
% ============================================================

% ----------------- ASSIGNMENT GENERATION -----------------
{ assign(R,C) : referee(R,_,_,_,_) } = 1 :- case(C,_,_,_,_,_).

% ----------------- HARD CONSTRAINTS ----------------------

% (1) Workload must not exceed referee max effort
work(R,Sum) :-
    referee(R,_,Max,_,_),
    Sum = #sum { Eff : assign(R,C), case(C,_,Eff,_,_,_) }.

:- work(R,Sum), referee(R,_,Max,_,_), Sum > Max.


% (2) Type compatibility: score 0 = cannot handle type
:- assign(R,C),
   case(C,T,_,_,_,_),
   prefType(R,T,0).


% (3) Region compatibility: score 0 = not allowed
:- assign(R,C),
   case(C,_,_,_,Reg,_),
   prefRegion(R,Reg,0).
```

```
% (4) External referees damage limitation
:- assign(R,C),
  referee(R,e,_,_,Limit),
  case(C,_,_,_,_,Damage),
  externalMaxDamage(Max),
  Damage > Max,
  Damage > Limit.

% INTERNAL referees (role=i) have no damage restriction.



% ---------- WEAK CONSTRAINTS (OPTIMIZATION) ----------

% LEVEL PRIORITIES:
%   @3  risk + external penalty
%   @2  region preference
%   @1  type preference

% (A) Prefer higher TYPE preference scores
:~ assign(R,C), case(C,T,_,_,_,_), prefType(R,T,S). [-S@1]

% (B) Prefer higher REGION preference scores
:~ assign(R,C), case(C,_,_,_,Reg,_), prefRegion(R,Reg,S). [-S@2]

% (C) Penalize assigning EXTERNAL referee if internal is available
:~ assign(R,C), referee(R,e,_,_,_). [3@3]



% ---------- OUTPUT ----------
#show assign/2.
#show work/2.
```