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A

Apêndices

A.1

Predicados

```
db(character(brian,1.0)).
db(character(hoel,1.0)).
db(character(marian,1.0)).
db(character(draco,-1.0)).

db(hero(brian,90.0)).
db(hero(hoel,90.0)).
db(victim(marian,90.0)).
db(villain(draco,90.0)).

db(place(princess_castle)).
db(place(dragon_castle)).
db(place(knight_castle)).
db(place(church)).

db(home(brian,knight_castle)).
db(home(hoel,princess_castle)).
db(home(marian,princess_castle)).
db(home(draco,dragon_castle)).

db(current_place(hoel,knight_castle)).
db(current_place(brian,knight_castle)).
db(current_place(marian,princess_castle)).
db(current_place(draco,dragon_castle)).

db(protection(princess_castle,1.0,70.0)).
db(protection(dragon_castle,-1.0,60.0)).
db(protection(knight_castle,1.0,0.0)).
db(protection(church,1.0,0.0)).

db(strength(hoel,40.0)).
db(strength(brian,80.0)).
db(strength(draco,45.0)).
db(strength(marian,10.0)).

db(affection(hoel,marian,100.0)).
db(affection(brian,marian,100.0)).
db(affection(marian,brian,0.0)).
db(affection(marian,hoel,0.0)).
db(alive(marian)).
db(alive(brian)).
db(alive(draco)).
db(alive(hoel)).
```

A.2

Operações

```
operator(1,
  go(CH, PL1),
  [
    alive(CH),
    not(kidnapped(_, CH)),
    not(kidnapped(CH, _)),
    current_place(CH, PL0),
    place(PL1),
    dif(PL0, PL1)
  ],
  [
    not(current_place(CH, PL0)),
    current_place(CH, PL1)
  ],
  10,
  [current_place(CH, PL1)],
  [], []).

operator(2,
  reduce_protection(PL),
  [
    protection(PL, KIND, LPROT),
    { LPROT>0.0, LPROT1=LPROT-10.0 }
  ],
  [
    not(protection(PL, KIND, LPROT)),
    protection(PL, KIND, LPROT1)],
  10,
  [protection(PL, KIND, LPROT1)],
  [], []).

operator(3,
  kidnap(VIL, VIC),
  [
    alive(VIC), alive(VIL),
    victim(VIC, VIC_L),
    character(VIC, KIND1),
    {VIC_L>80.0},
    not(kidnapped(VIC, _)),
    villain(VIL, VIL_L),
    {VIL_L>80.0},
    strength(VIC, VIC_S),
    current_place(VIC, PL),
    protection(PL, KIND2, LP),
    strength(VIL, VIL_S),
    current_place(VIL, PL),
    home(VIL, PL1),
    dif(PL, PL1),
    {VIL_S>VIC_S+LP*KIND1*KIND2}
  ],
  [
    kidnapped(VIC, VIL),
    not(current_place(VIC, PL)),
    not(current_place(VIL, PL)),
    current_place(VIC, PL1),
    current_place(VIL, PL1)
  ],
  10,
  [kidnapped(VIC, VIL)],
  [], []).
```

```

operator(4,
    attack(CH, PL),
    [
        alive(CH),
        not(kidnapped(CH, _)),
        character(CH, KIND1),
        current_place(CH, PL),
        protection(PL, KIND2, L_PROT),
        dif(KIND1, KIND2),
        {
            L_PROT>0.0,
            L_PROT1 = L_PROT-30.0
        }
    ],
    [
        not(protection(PL, KIND2, L_PROT)),
        protection(PL, KIND2, L_PROT1)
    ],
    10,
    [protection(PL, KIND2, L_PROT1)],
    [], []).

operator(5,
    fight(CH1, CH2),
    [
        alive(CH1), alive(CH2),
        not(kidnapped(CH1, _)),
        not(kidnapped(CH2, _)),
        dif(CH1, CH2),
        strength(CH1, LS1), strength(CH2, LS2),
        character(CH1, KIND1),
        character(CH2, KIND2),
        dif(KIND1, KIND2),
        {
            LS1>=10.0, LS2>=10.0
        },
        current_place(CH1, PL), current_place(CH2, PL),
        protection(PL, KIND3, L_PROT),
        {
            L_PROT<=0.0,
            NEW_LS1=LS1-LS2,
            NEW_LS2=LS2-LS1
        }
    ],
    [
        not(strength(CH1, LS1)), not(strength(CH2, LS2)),
        strength(CH1, NEW_LS1), strength(CH2, NEW_LS2)
    ],
    10,
    [strength(CH1, NEW_LS1), strength(CH2, NEW_LS2)],
    [], []).

operator(7,
    free(HERO, VIC),
    [
        hero(HERO, _), victim(VIC, _),
        alive(HERO), alive(VIC),
        kidnapped(VIC, VIL), not(alive(VIL)),
        current_place(VIC, PL), current_place(HERO, PL),
        affection(VIC, HERO, LA)
    ],
    [
        not(kidnapped(VIC, VIL)), not(affection(VIC, HERO, LA)),
        affection(VIC, HERO, 100.0)
    ],
    10,
    [not(kidnapped(VIC, VIL))],
    [], []).

```

```
operator(6,
  kill(CH1,CH2),
  [
    victim(VIC,_),
    alive(CH1), alive(CH2),
    not(kidnapped(CH1,_)),
    dif(CH1,CH2),
    character(CH1, KIND1),
    character(CH2, KIND2),
    dif(KIND1,KIND2),
    strength(CH1,LS1), strength(CH2,LS2),
    current_place(CH1,PL), current_place(CH2,PL),
    protection(PL,KIND3,L_PROT),
    {
      L_PROT=<0.0,
      LS2<0.0, LS1>0.0
    }
  ],
  [
    not(alive(CH2))/*,
    not(affection(VIC,CH1,LA)),
    affection(VIC,CH1,100.0) */
  ],
  10,
  [not(alive(CH2))],
  [], []).
```

```
operator(8,
  marry(CH1,CH2),
  [
    hero(CH1,_), victim(CH2,_),
    alive(CH1), alive(CH2),
    affection(CH1,CH2,L1),
    {L1>80.0},
    affection(CH2,CH1,L2),
    {L2>80.0},
    current_place(CH1,church),
    current_place(CH2,church),
    not(married(CH1,_)),
    not(married(CH2,_))
  ],
  [
    married(CH1,CH2), married(CH2,CH1)
  ],
  10,
  [married(CH1,CH2), married(CH2,CH1)],
  [], []).
```

```
operator(9,
  get_stronger(CH1),
  [
    alive(CH1),
    strength(CH1,L1),
    {L2=L1+80}
  ],
  [
    not(strength(CH1,L1)),
    strength(CH1,L2)
  ],
  10,
  [strength(CH1,L2)],
  [], []).
```

A.3

Regras que levam à geração dinâmica de objetivos

```
/*
Se, no início da história, há uma vítima, ela vai realizar alguma ação que a
tornará frágil.
*/
rule(
[
e(i,victim(VIC,LEVEL)),
e(i,character(VIC,KIND0)),
e(i,current_place(VIC,PLACE)),
e(i,protection(PLACE,KIND1,PROT))
],
(
[T],
[
h(T,current_place(VIC,PLACE1)),
h(T,protection(PLACE1,KIND2,PROT1)),
h({(KIND2*KIND0*PROT1)<(KIND1*KIND0*PROT)}),
h(T>i)
],
true
)
).

/* Se a vítima fica desprotegida, o vilão desejará raptá-la. */
rule(
[
e(i,victim(VIC,_)),
e(i,character(VIC,KIND0)),
e(i,current_place(VIC,PLACE1)),
e(i,protection(PLACE1,KIND1,PROT1)),
e(i,villain(VIL,_)),
h(g,current_place(VIC,PLACE2)),
h(g,protection(PLACE2,KIND2,PROT2)),
h({(KIND2*KIND0*PROT2)<(KIND1*KIND0*PROT1)})
],
(
[T3],
[
h(T3,kidnapped(VIC,VIL))
],
true
)
).

/* Se a vítima foi raptada, o herói tentará salvá-la */
rule(
[
e(T1,kidnapped(VIC,VIL))
],
(
[T2],
[
h(T2,not(kidnapped(VIC,VIL))),
h(T2>T1)
],
true
)
).
```

```
/*Se a afeição dos dois personagens é alta, eles desejarão casar*/
rule(
  [
    e(T,affection(CH1,CH2,L1)),
    h(T,affection(CH2,CH1,L2)),
    h(T,not(married(CH1,_))),
    h(T,not(married(CH2,_))),
    h({L2>95.0}), h({L1>95.0})
  ],
  (
    [T2],
    [
      h(T2,married(CH1,CH2)),
      h(T2>T)
    ],
    true
  )
).
```