Calcul Relationnel Tuples (TRC)

(1) $\{u.\text{NU}, u.\text{NomU}, u.\text{Ville} \mid \text{U}(u)\}$

(2) $\{u.\text{NU}, u.\text{NomU}, u.\text{Ville} \mid \text{U}(u) \wedge u.\text{Ville} = \text{‘Londres’}\}$

(3) $\{l.\text{NF} \mid \text{PUF}(l) \wedge l.\text{NU} = 1 \wedge l.\text{NP} = 1\}$

(4) $\{p.\text{NomP}, p.\text{Couleur} \mid \text{P}(p) \wedge \exists l\ (\ \text{PUF}(l) \wedge p.\text{NP} = l.\text{NP} \wedge l.\text{NF} = 1)\ \}$

(5) $\{l.\text{NF} \mid \text{PUF}(l) \wedge \exists p\ (\ \text{P}(p) \wedge l.\text{NP} = p.\text{NP} \wedge l.\text{NU} = 1 \wedge p.\text{Couleur} = \text{‘Rouge’})\ \}$

(6) $\{f.\text{NomF} \mid \text{F}(f) \wedge \exists l\ \exists p\ \exists u\ (\ \text{PUF}(l) \wedge \text{P}(p) \wedge \text{U}(u) \wedge f.\text{NF} = l.\text{NF} \wedge l.\text{NP} = p.\text{NP} \wedge$
$l.\text{NU} = u.\text{NU} \wedge p.\text{Couleur} = \text{‘Rouge’} \wedge$
$[\ u.\text{Ville} = \text{‘Londres’} \vee u.\text{Ville} = \text{‘Paris’}\ ]\ )\ \}$

(7) $\{l.\text{NP} \mid \text{PUF}(l) \wedge \exists f\ \exists u\ (\ \text{F}(f) \wedge \text{U}(u) \wedge l.\text{NF} = f.\text{NF} \wedge l.\text{NU} = u.\text{NU} \wedge$
$f.\text{Ville} = u.\text{Ville}\ )\ \}$

(8) $\{l.\text{NP} \mid \text{PUF}(l) \wedge \exists f\ \exists u\ (\ \text{F}(f) \wedge \text{U}(u) \wedge l.\text{NF} = f.\text{NF} \wedge l.\text{NU} = u.\text{NU} \wedge$
$f.\text{Ville} = \text{‘Londres’} \wedge f.\text{Ville} = u.\text{Ville}\ )\ \}$

(9) $\{l.\text{NU} \mid \text{PUF}(l) \wedge \exists u\ \exists f\ (\ \text{U}(u) \wedge \text{F}(f) \wedge l.\text{NU} = u.\text{NU} \wedge l.\text{NF} = f.\text{NF} \wedge$
$u.\text{Ville} \neq f.\text{Ville}\ )\ \}$

(10) $\{l_1.\text{NF} \mid \text{PUF}(l_1) \wedge \exists l_2\ (\ \text{PUF}(l_2) \wedge l_1.\text{NF} = l_2.\text{NF} \wedge l_1.\text{NU} = 1 \wedge l_2.\text{NU} = 2\ )\ \}$

(11) $\{u.\text{NU} \mid \text{U}(u) \wedge \exists l_1\ \exists l_2\ (\ \text{PUF}(l_1) \wedge \text{PUF}(l_2) \wedge u.\text{NU} = l_1.\text{NU} \wedge l_1.\text{NP} = l_2.\text{NP} \wedge$
$l_2.\text{NF} = 3\ )\ \}$

(12) $\{p_1.\text{NP} \mid \text{P}(p_1) \wedge \nexists p_2\ (\ \text{P}(p_2) \wedge p_2.\text{Poids} < p_1.\text{Poids}\ )\ \}$

$\{p_1.\text{NP} \mid \text{P}(p_1) \wedge \forall p_2\ (\ \text{P}(p_2) \rightarrow p_2.\text{Poids} \geq p_1.\text{Poids}\ )\ \}$

(13) $\{u.\text{NU} \mid \text{U}(u) \wedge \forall l\ \forall p\ \forall f\ (\ \text{PUF}(l) \wedge \text{P}(p) \wedge \text{F}(f) \wedge u.\text{NU} = l.\text{NU} \wedge l.\text{NP} = p.\text{NP} \wedge$
$l.\text{NF} = f.\text{NF} \rightarrow p.\text{Couleur} \neq \text{‘Rouge’} \vee f.\text{Ville} \neq \text{‘Londres’}\ )\ \}$

(14) $\{l.\text{NF} \mid \text{PUF}(l) \wedge \exists l_1\ \exists l_2\ \exists p\ (\ \text{PUF}(l_1) \wedge \text{PUF}(l_2) \wedge \text{P}(p) \wedge$
$l.\text{NP} = l_1.\text{NP} \wedge l_1.\text{NF} = l_2.\text{NF} \wedge l_2.\text{NP} = p.\text{NP} \wedge p.\text{Couleur} = \text{‘Rouge’}\ )\ \}$

(15) $\{f.\text{Ville}, l.\text{NP}, u.\text{Ville} \mid \text{F}(f) \wedge \text{PUF}(l) \wedge \text{U}(u) \wedge f.\text{NF} = l.\text{NF} \wedge l.\text{NU} = u.\text{NU}\ )\ \}$

(16) $\{f.\text{Ville}, l.\text{NP}, u.\text{Ville} \mid \text{F}(f) \wedge \text{PUF}(l) \wedge \text{U}(u) \wedge f.\text{NF} = l.\text{NF} \wedge l.\text{NU} = u.\text{NU} \wedge$
$f.\text{Ville} \neq u.\text{Ville}\ )\ \}$

(17) $\{p.\text{NP} \mid \text{P}(p) \wedge \forall u\ (\ \text{U}(u) \wedge u.\text{Ville} = \text{‘Londres’} \rightarrow$
$\exists l\ (\text{PUF}(l) \wedge p.\text{NP} = l.\text{NP} \wedge l.\text{NU} = u.\text{NU}\ )\ )\ \}$

(18) $\{l.\text{NF} \mid \text{PUF}(l) \wedge \forall u\ (\ \text{U}(u) \rightarrow \exists l_1\ (\ \text{PUF}(l_1) \wedge l_1.\text{NF} = l.\text{NF} \wedge$
$l_1.\text{NP} = l.\text{NP} \wedge l_1.\text{NU} = u.\text{NU}\ )\ )\ )\ \}$

ou bien

$$\{l.\mathrm{NF} \mid \mathrm{PUF}(l) \wedge \exists p(P(p) \wedge \forall u\ (\ \mathrm{U}(u) \rightarrow \exists l_1\ (\ \mathrm{PUF}(l_1) \wedge l_1.\mathrm{NF} = l.\mathrm{NF} \wedge l_1.\mathrm{NP} = p.\mathrm{NP} \wedge l_1.\mathrm{NU} = u.\mathrm{NU}\ )\ )\ \}$$

(19) $$\{u.\mathrm{NU} \mid \mathrm{U}(u) \wedge \forall l_1\ (\ \mathrm{PUF}(l_1) \wedge l_1.\mathrm{NF} = 4 \rightarrow \exists l_2\ (\ \mathrm{PUF}(l_2) \wedge u.\mathrm{NU} = l_2.\mathrm{NU} \wedge l_1.\mathrm{NP} = l_2.\mathrm{NP} \wedge l_2.\mathrm{NF} = 4\ )\ )\ \}$$

(20) $$\{u.\mathrm{NU} \mid \mathrm{U}(u) \wedge \nexists l\ (\ \mathrm{PUF}(l) \wedge u.\mathrm{NU} = l.\mathrm{NU} \wedge l.\mathrm{NF} \neq 3\ )\ \}$$

ou bien

$$\{u.\mathrm{NU} \mid \mathrm{U}(u) \wedge \forall\ l\ (\ (\ \mathrm{PUF}(l) \wedge u.\mathrm{NU} = l.\mathrm{NU}\ ) \rightarrow l.\mathrm{NF} = 3\ )\ \}$$