Cours - Prog Déclarative

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Table des matières

1. Résolution

1.1. Exercice

On définit:

B bus
T tram
C voiture
L en retard
M raté le meeting

$$
\begin{aligned}
\varphi &\equiv ((B \vee T) \wedge (B \vee C \to L \wedge M) \wedge \neg L) \to T \\
&\equiv \neg((B \vee T) \wedge (\neg(B \vee C) \vee (L \wedge M) \wedge \neg L) \vee T) \\
&\underset{\neg(A \wedge B) \equiv \neg A \vee \neg B}{\equiv} (\neg(B \vee T) \vee \neg(\neg(\neg(B \vee C) \vee L \wedge M) \vee \neg\neg L) \vee T) \\
&\equiv (\neg B \wedge \neg T) \vee ((B \vee C) \wedge \neg(L \wedge M)) \vee L \vee T \\
&\equiv ((\neg B \wedge \neg T) \vee ((B \vee C) \wedge (\neg L \vee \neg M)) \vee L \vee T) \\
&\equiv ...
\end{aligned}
$$

$$
\begin{gathered}
\mathrm{CNF}(\varphi) \equiv T \\
\wedge (\neg M \vee L \vee T) \\
\wedge (\neg B \vee C \vee T) \\
\wedge (\neg B \vee C \vee \neg M \vee T) \\
\wedge (B) \\
\wedge (B \vee \neg M \vee L) \\
\wedge C \\
\wedge (C \vee \neg M \vee L)
\end{gathered}
$$

$$
\mathrm{CLC}(\varphi) \equiv \{T, (\neg M \vee L \vee T), (\neg B \vee C \vee T), (\neg B \vee C \vee \neg M \vee T), (B), (B \vee \neg M \vee L), C, (C \vee \neg M \vee L)\}
$$

$$
\Phi \equiv \Sigma \to G
$$

$$
\Sigma \equiv (B \vee T) \wedge (B \vee C \to L \wedge M) \wedge \neg L
$$

$$
\mathrm{Phi} \equiv T
$$

$$
\mathrm{CNF}(\neg\varphi) \equiv \neg T
$$

$$
\mathrm{CL}(\Sigma \cup \{\neg\varphi\}) \underset{\mathbb{R}}{\vdash} \square
$$

$$
\dfrac{\dfrac{\dfrac{B \vee T, \neg B \vee L}{T \vee L, \neg T}}{L, \neg L}}{\square}
$$

1.2. Excercice Skolem

$$
\begin{aligned}
&\forall x(H(x) \to ((\exists y F(x,y)) \wedge (\exists z M(x,z)))) \\
&\equiv \forall x(\neg H(x) \vee ((\exists y F(x,y)) \wedge (\exists z M(x,z)))) \\
&\equiv \forall x(\neg H(x) \vee (\exists y \exists z F(x,y) \wedge M(x,z))) \\
&\equiv \forall x \exists y \exists z(\neg H(x) \vee F(x,y) \wedge M(x,e)) \\
&\equiv \forall x\big(\neg H(x) \vee F\big(x, f_y(x)\big) \wedge \big(\neg H(x) \vee M\big(x, f_z\big(x, f_y(x)\big)\big)\big)\big)
\end{aligned}
$$