Example 1

Suppose that we have the default logic theory \( \langle D, F \rangle \), where

\[ D = \{ \langle \text{OperaFan}(x) \Rightarrow \text{WineDrinker}(x) \rangle \} \] and

\[ F = \{ \text{OperaFan}(john), \text{JazzFan}(bob) \} \]

What are the extension(s) of this default logic theory?
Example 1

Suppose that we have the default logic theory $\langle \mathcal{D}, \mathcal{F} \rangle$, where

$$\mathcal{D} = \{ \langle \text{OperaFan}(x) \Rightarrow \text{WineDrinker}(x) \rangle \}$$

and

$$\mathcal{F} = \{ \text{OperaFan}(\text{john}), \text{JazzFan}(\text{bob}) \}?$$

What are the extension(s) of this default logic theory?

Only one extension

$$\{ \phi \mid \mathcal{F} \cup \{ \text{WineDrinker}(\text{john}) \} \models \phi \}$$
Example 2

Suppose that we have the default logic theory $\langle D, F \rangle$, where

$$D = \{ \langle \text{OperaFan}(x) \Rightarrow \text{WineDrinker}(x) \rangle, \langle \text{RockFan}(x) \Rightarrow \neg \text{WineDrinker}(x) \rangle \}$$

and $F = \{ \text{OperaFan}(\text{john}), \text{RockFan}(\text{john}), \text{RockFan}(\text{bob}) \}$.

What are the extension(s) of this default logic theory?
Example 2

Suppose that we have the default logic theory \( \langle D, F \rangle \), where

\[
D = \{ \langle \text{OperaFan}(x) \Rightarrow \text{WineDrinker}(x) \rangle, \langle \text{RockFan}(x) \Rightarrow \neg \text{WineDrinker}(x) \rangle \}
\]

and \( F = \{ \text{OperaFan}(\text{john}), \text{RockFan}(\text{john}), \text{RockFan}(\text{bob}) \} \)?

What are the extension(s) of this default logic theory?

Two extensions:

\[
\{ \phi \mid F \cup \{ \text{WineDrinker}(\text{john}), \neg \text{WineDrinker}(\text{bob}) \} \models \phi \}
\]

and

\[
\{ \phi \mid F \cup \{ \neg \text{WineDrinker}(\text{john}), \neg \text{WineDrinker}(\text{bob}) \} \models \phi \} \]
Example 3

Let $KB = \{ \text{Student}(john), \text{Student}(mary) \}$

Does $KB \models \neg \text{Student}(paul)$?

Does $KB \models_{cwa} \neg \text{Student}(paul)$?
Example 4

Let $KB = \{\text{Student}(john), (\text{Student}(mary) \lor \text{Student}(paul))\}$.

Does $KB \models_{CWA} \neg \text{Student}(paul)$?

Does $KB \models_{CWA} \neg \text{Student}(mary)$?

$KB \cup \text{Negs}$ consistent?
Example 5

Let $KB = \{\text{OperaFan}(john), \forall x.\text{OperaFan}(x) \land \neg \text{Ab}(x) \supset \text{WineDrinker}(x)\}$

Does $KB \models \text{WineDrinker}(john)$?

Does $KB \models_{\leq} \text{WineDrinker}(john)$?
Example 6

Let $KB = \{ \text{OperaFan}(john) \lor \text{OperaFan}(mary), \forall x. \text{OperaFan}(x) \land \neg \text{Ab}(x) \supset \text{WineDrinker}(x) \}$

Does $KB \models \text{WineDrinker}(john)$?

Does $KB \models \text{WineDrinker}(john) \lor \text{WineDrinker}(mary)$?