Logik TUT 5

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5.1 Noch ein Erfuellbarkeitstest

5.1.1

NNF bilden:
$\varphi = \neg((\neg A \vee B) \to (C \vee \neg A))$
$\equiv \neg(\neg(\neg A \vee B) \vee (C \vee \neg A))$
$\equiv (\neg A \vee B) \wedge \neg(C \vee \neg A)$
$\equiv (\neg A \vee B) \wedge \neg C \wedge A = \varphi'$

Tableaukalkuel:

$$
\begin{array}{ccc}
 & A & \\
 & | & \\
 & \neg C & \\
 & | & \\
 & (\neg A \vee B) & \\
 & l, r & \\
l: & & r: \\
\neg A & & B \\
\lightning & & \checkmark
\end{array}
$$

5.1.2

NNF bilden:
$\varphi = \neg((A \to B) \to B) \wedge A$
$\equiv \neg(\neg(A \to B) \vee B) \wedge A$
$\equiv \neg(\neg(\neg A \vee B) \vee B) \wedge A$
$\equiv (\neg A \vee B) \wedge \neg B \wedge A = \varphi'$

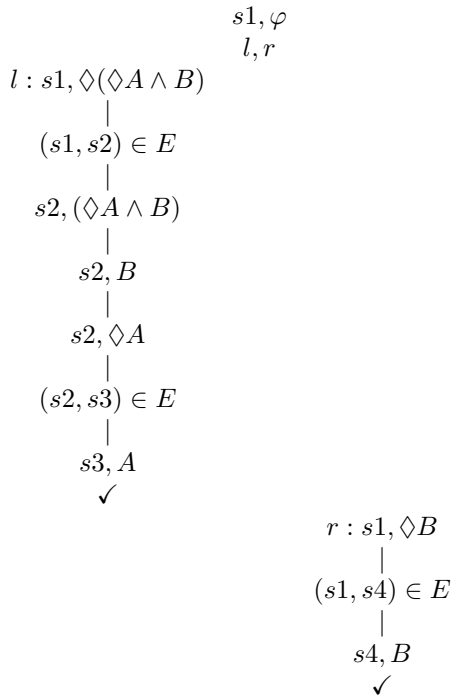
Tableaukalkuel:

$$
\begin{array}{ccc}
 & A & \\
 & | & \\
 & \neg B & \\
 & | & \\
 & (\neg A \vee B) & \\
 & l, r & \\
l: & & r: \\
\neg A & & B \\
\lightning & & \lightning
\end{array}
$$

5.1.3

NNF vorhanden

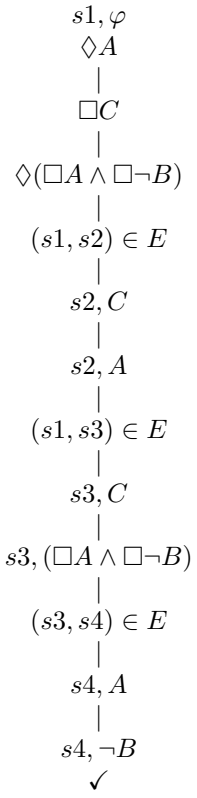
Tableaukalkuel:



5.1.4

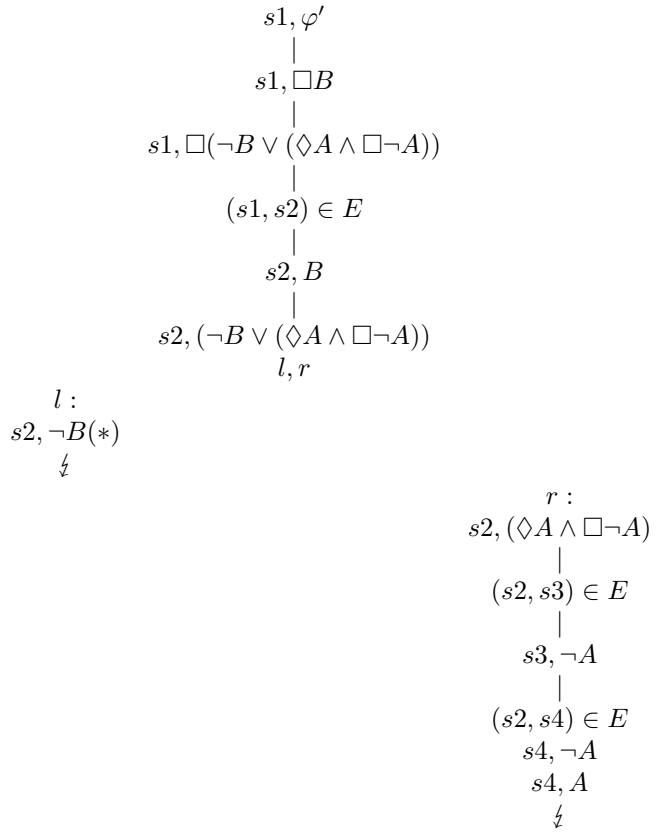
NNF vorhanden

Tableaukalkuel:



5.1.5

NNF bilden:
$\varphi = \Box(B \to (\Diamond A \wedge \Box\neg A)) \wedge \Box B$
$\equiv \Box(\neg B \vee (\Diamond A \wedge \Box\neg A)) \wedge \Box B = \varphi'$
Tableaukalkuel:



alternativ:
$\varphi' \equiv \Box(\neg B \vee (\Diamond A \wedge \neg\Diamond A)) \wedge \Box B$
$\equiv \Box(\neg B \vee \bot) \wedge \Box B$
$\equiv \Box\neg B \wedge \Box B$
$\equiv \bot$

5.2 Anwendung des Erfuellbarkeitstest