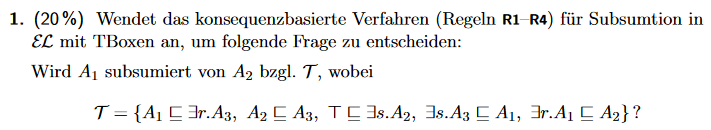
Beschreibungslogik | Übung 06

D. Marschner, A. Mahdavi

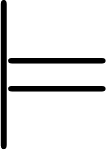
[alma@uni-bremen.de](mailto:alma@uni-bremen.de)

[mail@dennis-marschner.de](mailto:mail@dennis-marschner.de)



|  |  |
| --- | --- |
|  | **Aussprache**  C  D  D wird von C subsumiert bezüglich der T-Box?  C  D  C impliziert D |

Wird A2 subsumiert von A1 bezüglich TBox [](https://www.codecogs.com/eqnedit.php?latex=%5Cmathcal%7BT%7D#0)?

Frage:[](https://www.codecogs.com/eqnedit.php?latex=%5Cmathcal%7BT%7D#0) [](https://www.codecogs.com/eqnedit.php?latex=%5Cmodels#0) A2 [](https://www.codecogs.com/eqnedit.php?latex=%5Csqsubseteq#0) A1 ? Wobei [](https://www.codecogs.com/eqnedit.php?latex=%5Cmathcal%7BT%7D#0) wie folgt definiert ist:

[](https://www.codecogs.com/eqnedit.php?latex=%5Cmathcal%7BT%7D#0) = {

A1 [](https://www.codecogs.com/eqnedit.php?latex=%5Csqsubseteq#0) ∃r. A3 , (1)

A2 [](https://www.codecogs.com/eqnedit.php?latex=%5Csqsubseteq#0) A3 , (2)

[](https://www.codecogs.com/eqnedit.php?latex=%5Ctop#0)[](https://www.codecogs.com/eqnedit.php?latex=%5Csqsubseteq#0) ∃s. A2 , (3)

∃s. A3 [](https://www.codecogs.com/eqnedit.php?latex=%5Csqsubseteq#0) A1, (4)

∃r. A1 [](https://www.codecogs.com/eqnedit.php?latex=%5Csqsubseteq#0) A2, (5)

}

Die TBox [](https://www.codecogs.com/eqnedit.php?latex=%5Cmathcal%7BT%7D#0) ist bereits in NF.

Algorithmus: Subsumption mit TBox

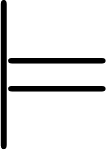
**R1** A1 [](https://www.codecogs.com/eqnedit.php?latex=%5Csqsubseteq#0) A1 A2 [](https://www.codecogs.com/eqnedit.php?latex=%5Csqsubseteq#0) A2 A3 [](https://www.codecogs.com/eqnedit.php?latex=%5Csqsubseteq#0) A3 [](https://www.codecogs.com/eqnedit.php?latex=%5Ctop#0) [](https://www.codecogs.com/eqnedit.php?latex=%5Csqsubseteq#0) [](https://www.codecogs.com/eqnedit.php?latex=%5Ctop#0) (6)

**R2** A1 [](https://www.codecogs.com/eqnedit.php?latex=%5Csqsubseteq#0) [](https://www.codecogs.com/eqnedit.php?latex=%5Ctop#0) A2 [](https://www.codecogs.com/eqnedit.php?latex=%5Csqsubseteq#0) [](https://www.codecogs.com/eqnedit.php?latex=%5Ctop#0)A3 [](https://www.codecogs.com/eqnedit.php?latex=%5Csqsubseteq#0) [](https://www.codecogs.com/eqnedit.php?latex=%5Ctop#0) (7)

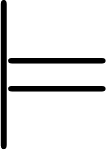
**R3** Nicht anwendbar

**R4** auf (3)[](https://www.codecogs.com/eqnedit.php?latex=%5Ctop#0)[](https://www.codecogs.com/eqnedit.php?latex=%5Csqsubseteq#0) ∃s. A2 , (2) A2 [](https://www.codecogs.com/eqnedit.php?latex=%5Csqsubseteq#0) A3 ,(4) ∃s. A3 [](https://www.codecogs.com/eqnedit.php?latex=%5Csqsubseteq#0) A1

[](https://www.codecogs.com/eqnedit.php?latex=%5Ctop#0)[](https://www.codecogs.com/eqnedit.php?latex=%5Csqsubseteq#0) A1 (8)

Durch Regelanwendung **R4** kam heraus, dass gilt :[](https://www.codecogs.com/eqnedit.php?latex=%5Cmathcal%7BT%7D#0) [](https://www.codecogs.com/eqnedit.php?latex=%5Cmodels#0) [](https://www.codecogs.com/eqnedit.php?latex=%5Ctop#0)[](https://www.codecogs.com/eqnedit.php?latex=%5Csqsubseteq#0) A1.

Und wenn [](https://www.codecogs.com/eqnedit.php?latex=%5Ctop#0) subsumiert wird von A1 bzgl. Der TBox, dann wird auch A2 subsumiert von A1 bzgl. Der TBox. Also gilt:

[](https://www.codecogs.com/eqnedit.php?latex=%5Cmathcal%7BT%7D#0) [](https://www.codecogs.com/eqnedit.php?latex=%5Cmodels#0) A2 [](https://www.codecogs.com/eqnedit.php?latex=%5Csqsubseteq#0) A1