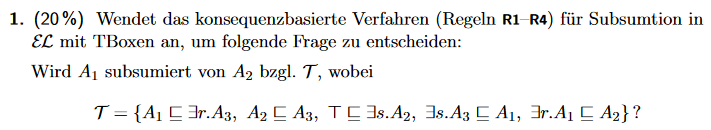
Beschreibungslogik | Übung 06

D. Marschner, A. Mahdavi

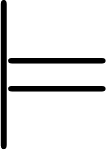
[alma@uni-bremen.de](mailto:alma@uni-bremen.de)

[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)*

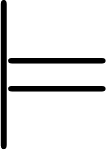
**R3** Zunächst nicht anwendbar auf *(1)-(7)*

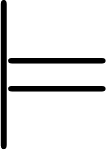
**R4** auf *(3)*[](https://www.codecogs.com/eqnedit.php?latex=%5Ctop#0)[](https://www.codecogs.com/eqnedit.php?latex=%5Csqsubseteq#0) ∃s. A2 , *(2)* A2 [](https://www.codecogs.com/eqnedit.php?latex=%5Csqsubseteq#0) A3 ,*(4)* ∃s. A3 [](https://www.codecogs.com/eqnedit.php?latex=%5Csqsubseteq#0) A1

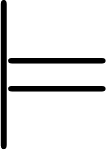
[](https://www.codecogs.com/eqnedit.php?latex=%5Ctop#0)[](https://www.codecogs.com/eqnedit.php?latex=%5Csqsubseteq#0) A1 *(8)*

**R3** auf *(7)* A2 [](https://www.codecogs.com/eqnedit.php?latex=%5Csqsubseteq#0) [](https://www.codecogs.com/eqnedit.php?latex=%5Ctop#0), *(8)* [](https://www.codecogs.com/eqnedit.php?latex=%5Ctop#0)[](https://www.codecogs.com/eqnedit.php?latex=%5Csqsubseteq#0) A1

A2 [](https://www.codecogs.com/eqnedit.php?latex=%5Csqsubseteq#0) A1  *(9)*

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.

Durch die anschließende Anwendung von **R3** kam heraus, dass 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 .

Daher ist die Frage ob [](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 gilt, eindeutig mit “Ja” zu beantworten.