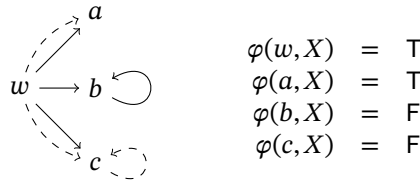


Assignment8 – Multi-Modal Logics

Problem 8.1

Consider a multimodal logic with two modalities $[1]$ and $[2]$ and the following *Kripke structure*. The solid arrows represent the *accessibility relation* for $[1]$ and the dashed ones for $[2]$. Use the variable assignment φ with



. Which of the following formulae are true *in world w*:

- ☐ $[1]X$
- ☐ $\langle 2 \rangle X$
- ☐ $[1]\langle 2 \rangle X$
- ☐ $\langle 1 \rangle [2]X$
- ☐ $\langle 1 \rangle (\neg X \wedge \neg \langle 1 \rangle X)$

Problem 8.2 (DPL)

Which of the following *expressions* are *valid* in DL^1 ?

Justify *your* answers – you will not get points without an *explanation*.

1. $[X := 3; X := 5]X = 5$
2. $[X := 3 \cup X := 5]X = 5$
3. $[X := 3; X := 5; (X = 3)?]X = 5$
4. $[(X := 3 \cup X := 5); (X = 3)?]X = 5$

Objective: analyze *propositional dynamic logic*