

Assignment 3

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1 Proofs

1.1 a

1.2 b

1.3 c

2 Virtual agent

2.1 1

Write down a logical formula, ϕ , in the language of beliefs, knowledge and conditional beliefs to encode all the above assumptions.

$$\begin{aligned}\phi = & \neg Kd \wedge \neg K\neg d \wedge \neg Kt \wedge \neg K\neg t \wedge \\ & B(\neg d \wedge t) \wedge \\ & B^{\neg(\neg d \wedge t)}(d \wedge t) \wedge \\ & B^{(\neg t)}(\neg t \wedge \neg d)\end{aligned}$$

2.2 2

Note: The reflexive and transitive arrows are left out.



2.3 3

$$\varphi = t \Leftrightarrow B(d)$$

2.4 4



2.5 5

$$\psi = d \Leftrightarrow B(\neg d)$$

2.6 6

