

LHC

06.12.2023

### Seminar 5

- ①  $e: V \rightarrow \{0,1\}$   
 $e^+ : \text{Form} \rightarrow \{0,1\}$   
 $e^+(u) = e(u) \quad \forall u \in V$   
 $e^+(\neg \varphi) = \neg e^+(\varphi)$   
 $e^+(\varphi \vee \psi) = e^+(\varphi) \vee e^+(\psi)$   
 $e^+(\varphi \wedge \psi) = e^+(\varphi) \wedge e^+(\psi)$   
 $e^+(\varphi \rightarrow \psi) = \neg e^+(\varphi) \vee e^+(\psi)$

- $\neg \varphi \rightsquigarrow \text{mem } \varphi$   
 $\varphi \wedge \psi \rightsquigarrow \text{si}(\varphi, \psi)$   
 $\varphi \vee \psi \rightsquigarrow \text{max}(\varphi, \psi)$   
 $\varphi \rightarrow \psi \rightsquigarrow \text{imp}(\varphi, \psi)$

$$\text{Var}(v) = \{v\}, v \in V$$

$$\text{Var}(\neg \varphi) = \text{Var}(\varphi)$$

$$\text{Var}(\varphi \vee \psi) = \text{Var}(\varphi) \cup \text{Var}(\psi)$$

$$\text{Var}(\varphi \wedge \psi) = \text{Var}(\varphi) \cup \text{Var}(\psi)$$

$$\text{Var}(\varphi \rightarrow \psi) = \text{Var}(\varphi) \cup \text{Var}(\psi)$$

$$\frac{\neg a}{\{a\}} \rightarrow \frac{(a \rightarrow b)}{\{a, b\}}$$

$$\text{vars}(V, \{V\}) :- \text{atom}(V).$$

$$\text{vars}(\text{mem}(F, Vg)) :- \text{vars}(F, Vg).$$

$$\text{vars}(\text{sau}(A, B), R) :- \text{vars}(A, VA), \text{vars}(B, VB), \text{union}(VA, VB, R).$$

$$\text{vars}(\text{si}(A, B), R) :- \text{vars}(A, VA), \text{vars}(B, VB), \text{union}(VA, VB, R).$$

$$\text{vars}(\text{imp}(A, B), R) :- \text{vars}(A, VA), \text{vars}(B, VB), \text{union}(VA, VB, R).$$

② Exemplu:  $\text{val}(b, \{(a, 1), (b, 0)\}, A)$ . Trebuie să fie  $A=0$

$$\text{val}(V, \{(V, \text{Valoare}) \mid T\}, \text{Valoare})$$

$$\text{val}(V, \{ \_ \mid T \}, \text{Valoare}) :- \text{val}(V, T, \text{Valoare}).$$

$$\text{Soluție alternativă: } \text{val}(V, E, A) :- \text{member}((V, A), E)$$

③ Exemplu:  $\text{bsi}(1, 0, c) \Rightarrow c=0$

$$\text{bimp}(A, 0, 0) \Rightarrow A=1$$

$$\text{bimp}(0, B, 0) \Rightarrow \text{false}$$

$$\text{bmem}(0, 1), \text{bmem}(1, 0).$$

$$\text{bsi}(A, B, C)$$

$$\text{bsi}(\_, \_, C) :- \text{bsi}(A, B, C) \wedge C = A \wedge B \mid \Rightarrow \text{nu e bine}$$

$$\text{bimp}(X, Y, Z) :- \text{bmem}(X, NX), \text{bsau}(NX, Y, Z)$$

$$\text{eval}(F, E, R) :- \text{atom}(F), \text{eval}(F, E, R).$$

$$\text{eval}(\text{mem}(F), E, RA) :- \text{eval}(F, E, R1), \text{bmem}(R1, RA).$$

$$\text{eval}(\text{imp}(A, B), E, R) :- \text{eval}(A, E, RA), \text{eval}(B, E, RB), \text{bimp}(RA, RB, R).$$

$$\text{eval}(\text{si}(A, B), E, R) :- \text{eval}(A, E, RA), \text{eval}(B, E, RB), \text{bsi}(RA, RB, R).$$

$$\text{eval}(\text{sau}(A, B), E, R) :- \text{eval}(A, E, RA), \text{eval}(B, E, RB), \text{bsau}(RA, RB, R).$$

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