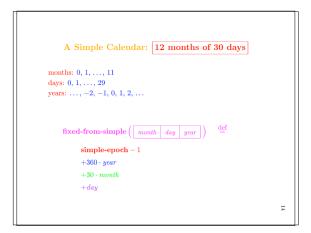


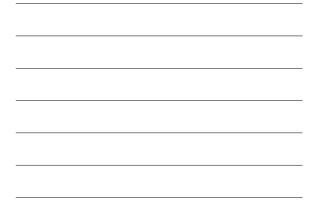


- Terese, Sect. 7.7
- Jouannaud, Sect. 6.2-3
- Baader & Snyder Handout

#13 Semantic Unification

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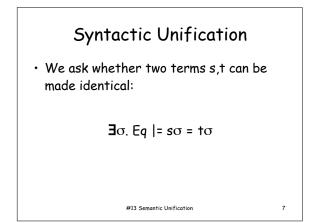
A Simple Calendar:	12 months of 30 days
simple-from-fixed $(date)$ where	$\stackrel{\text{def}}{=} \boxed{month day year}$
$n = date - simple-epoch$ $year = \lfloor n/360 \rfloor$ $month = \lfloor (n - 360 \cdot year)/3$ $day = n \mod 30$	0]

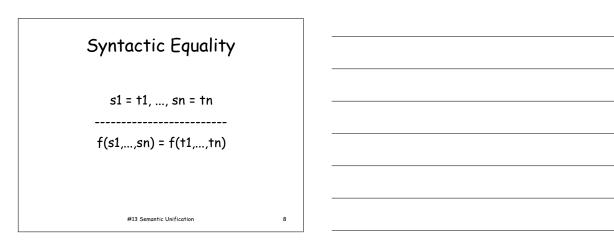
Goal Solving

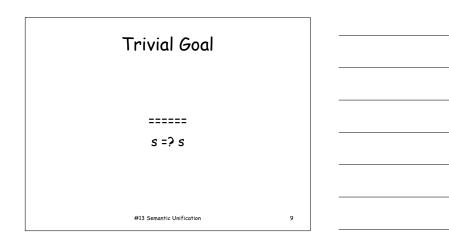
- Given N,
- find d,m,y such that
 - 1. fixed-from-simple([d,m,y]) =? N
 - 2. 0 ≤ d < 30 =? T
 - 3. 0 <u><</u> m < 12 =? T

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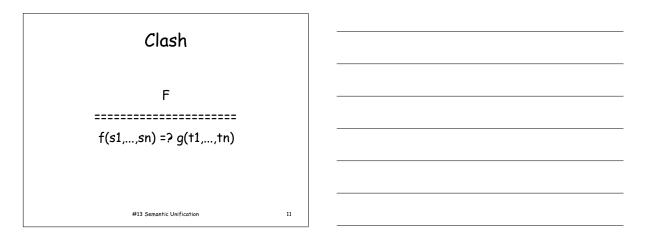
6

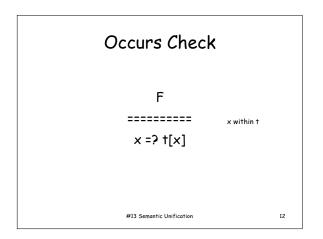


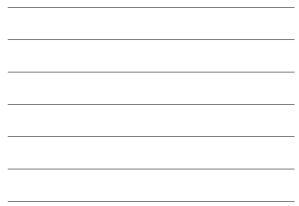


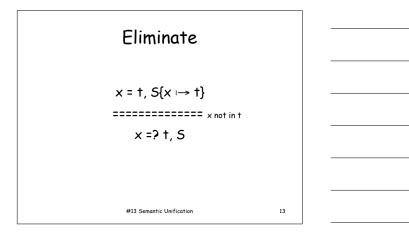


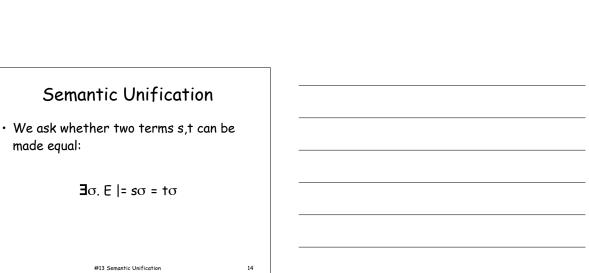
Decompose Goal		
s1 =? t1 ,, sn =? tn ========= f(s1,,sn) =? f(t1,,tn)		
#13 Semantic Unification	10	

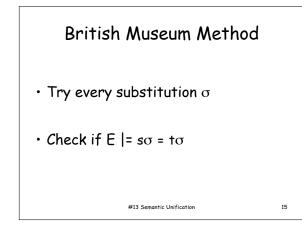




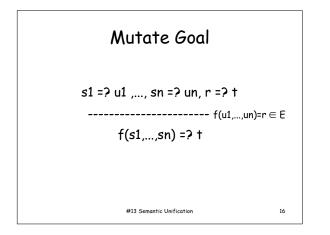


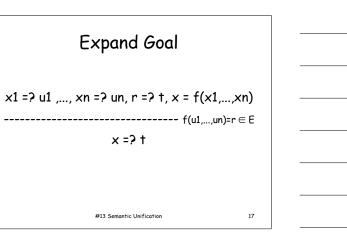


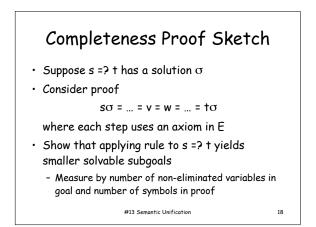


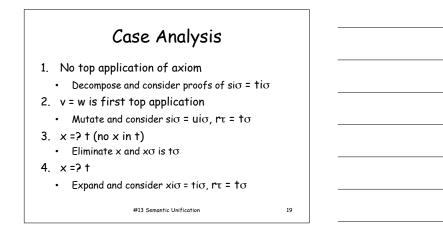


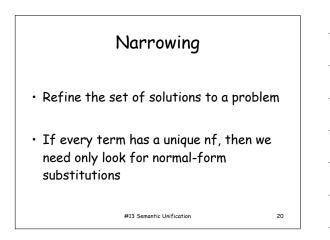
made equal:

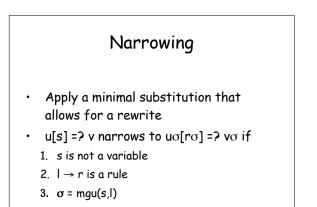




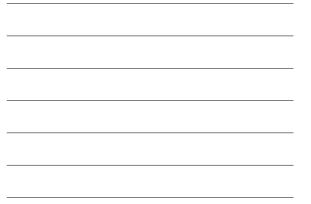


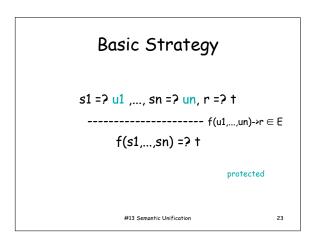


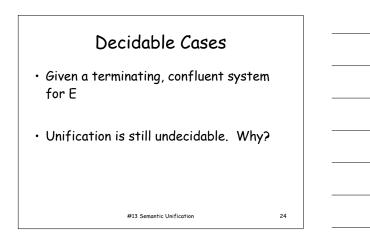




#13 Semantic Unification







Decidable Cases

- Every non-ground right side is a variable [Hullot, 1980].
- Every non-ground right side is a constructor term [Dershowitz et al., 1992].
- Every non-ground right side is a proper subterm of its left side [Narendran, Pfenning and Statman, 1997].
- Every non-ground right side is either a constructor term or a proper subterm of its left side [Mitra, 1994].
- Every right side is composed of constructors and proper subterms of its left side [Mitra, 1994].

#13 Semantic Unification

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Cont'd

- All variables are shallow on the left side [Christian, 1992].
- The system is linear and every variable that appears on both sides is shallow on both sides (convergence is unnecessary) [Nieuwenhuis, 1998].
- The system is linear and the right side of every f-rule is either a constructor term or a proper subterm of the left side, except for at most one right side that may be a value context with a single subterm $g(\ldots, r_{i_1}\ldots)$, where every r_i is either a variable or a value [Dershowitz and Mitra, 1992].
- The system is linear and the right side of every f-rule is a constructor term, except for at most one right side that may be a constructor context with a single subterm g(..., r_i,...), where every r_i is either a variable or a value [Mitra, 1994].

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