Date 19-11-2024

Lab 7

Unification Algorithm

Algorithm: Unify(Ψ_1, Ψ_2)

Step 1: if Ψ_1 or Ψ_2 is a Variable or constant, then:

a) if Ψ_1 or Ψ_2 are identical then return NIL

b) Else if Ψ_1 is a Variable,

a. then if Ψ_1 occurs in Ψ_2, then return Failure

b. Else return $\{(\Psi_2/\Psi_1)\}$.

c) Else if Ψ_2 is a Variable,

a. If Ψ_2 occurs in Ψ_1 then return FAILURE

b. Else return $\{(\Psi_1/\Psi_2)\}$

d) Else return FAILURE.

Step 2: if the initial predicate symbol in Ψ_1 and Ψ_2 are not same, the return FAILURE

Step 3: IF Ψ_1 and Ψ_2 have a different number of arguments then return FAILURE.

Step 4: Set Substitution set (SUBST) to NIL

Step 5: For i=1 to the number of elements in Ψ_1

(a) call unify function with the ith element of Ψ_1 and ith element of Ψ_2 and put the result into S

(b) if S = failure then return failure

(c) If S ≠ NIL then do

a. Apply S to the remainder of both L_1 and L_2

b. SUBST = APPEND (S, SUBST).

Step 6: Return SUBST

Output

Enter the first term:

f(1,x)

Enter the second term:

f(y,2)

Unification successful! Resulting substitution:

f(1,x) = f(y,2)

Enter the first term:

Eats(x,y)

Enter the second term:

Eats(ram,y)

cannot unify Eats(x,y) and Eats(ram,y)

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