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UNIFICATION IN FIRST ORDER LOGIC

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, then return FAILURE.

Step 3: If Ψ_1 and Ψ_2 have a different number of arguments, then return ~~FAILR~~ 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 returning failure.

c) If S ≠ NIL then do,

  a. Apply S to the remainder of both L1 & L2.

  b. SUBST = APPEND(S, SUBST).

Step 6: Return SUBST.