

Homework

Homework Number 12:

Due Tuesday November 24, 2009

Computation Deduction.

Using **Resolution Refutation** deduce the following computation to obtain a value for the goal by drawing the Consistent Solution Graph for the goal and prove its consistency. Make sure your graph is clearly marked and it follows a complete strategy.

Facts:

F1: $\text{member}(X, \text{cons}(X, Y))$.

F2: $\text{subset}(\text{nil}, Z)$.

Rules:

R1: $\text{member}(X2, Y2) \rightarrow \text{member}(X2, \text{cons}(U, Y2))$.

R2: $\text{member}(X3, Y3) \wedge \text{subset}(Z3, Y3) \rightarrow \text{subset}(\text{cons}(X3, Z3), Y3)$.

Goal: $\text{subset}(\text{cons}(3, \text{cons}(2, \text{nil})), \text{cons}(1, \text{cons}(2, \text{cons}(3, \text{cons}(4, \text{nil}))))))$.

{Note: If you prefer, you may use the notation $\text{subset}([3,2], [1,2,3,4])$ or $\text{subset}((3\ 2), (1\ 2\ 3\ 4))$.}

Draw the graph, show the substitutions are consistent, and obtain the value of the goal.