Homework set 7: Unification — due Wednesday 21 February

Total number of points available on this homework is 100. Full credit is equivalent to 100 points.

1. (50 pts.) Using the append program discussed in the class, what unification problems will need to be solved on the following query? On each such unification problem, show the steps of the Unification Algorithm.

append([a | X], Y, [a, b, a]).

2. (50 pts.) Sketch the steps of the Unification Algorithm for the equations \{s_1 = t_1, s_2 = t_2\}, where \(s_1, s_2, t_1, \text{ and } t_2\) given below. \(f, g, h, a, b\) are function symbols and \(X, Y, Z, U\) are variable symbols.

(i) \(s_1 = f(g(a(), X), h(f(Y, Z))), s_2 = g(Y, h(f(Z, U))), t_1 = f(U, h(f(X, X))), t_2 = g(f(h(X), a()), h(f(a(), b()))),

(ii) \(s_1 = f(X, Y, Z, a()), s_2 = g(X, X, f(Y, Z, h(a()), h(b()))), t_1 = f(Y, Z, X, a()), t_2 = g(Y, Z, f(X, Z, h(X), h(W))).
