# 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 {`s1 = t1, s2 = t2`}, where `s1, s2, t1, and t2` given below. f, g, h, a, b are function symbols and X, Y, Z, U are variable symbols.

   (i) `s1 = f(g(a(), X), h(f(Y, Z))), s2 = g(Y, h(f(Z, U))),`
   `t1 = f(U, h(f(X, X))), t2 = g(f(h(X), a()), h(f(a(), b()))) ,`

   (ii) `s1 = f(X, Y, Z, a()), s2 = g(X, X, f(Y, Z, h(a()), h(b()))),`
   `t1 = f(Y, Z, X, a()), t2 = g(Y, Z, f(X, Z, h(X), h(W))).`