Assignment 5 — Unification — assigned Monday 30 September — due Wednesday 16 October

This assignment is worth 100 points.

Unification

Write a generic implementation of a unification algorithm.

You can implement any unification algorithm you choose. In particular, it is straightforward to implement the Martelli-Montanari unification algorithm, following the development in Krzysztof R. Apt: *From Logic Programming to Prolog*, Chapter 2.

If you are implementing in ML, you must write a structure that matches the following signature:

```
signature POLYUNIFICATION =
sig
   datatype (''variable, ''functionSymbol) term =
       Function of ''functionSymbol * (''variable, ''functionSymbol) term list
     | Variable of ''variable
   type (''variable, ''functionSymbol) equation =
      (''variable, ''functionSymbol) term * (''variable, ''functionSymbol) term
   type (''variable, ''functionSymbol) binding =
      ''variable * (''variable, ''functionSymbol) term
   type (''variable, ''functionSymbol) substitution =
      (''variable, ''functionSymbol) binding list
   datatype equationOutcome = HaltWithFailure | NoMatch | Success
   val unify : (''variable, ''functionSymbol) equation list ->
       equationOutcome * (''variable, ''functionSymbol) equation list
end
```

If you are using another implementation language, the implementation must be generic in the same sense that the ML implementation is polymorphic with respect to the actual types of variable symbols and function symbols in terms.

How to turn in

Turn in your code by running *~darko/handin your-file* on a regular UNM CS machine or on *delta*.

You should use whatever filename is appropriate in place of your-file. You can put multiple files on the command line, or even directories. Directories will have their entire contents handed in, so please be sure to clean out any cruft.

Remember to submit extensive tests of your programs!

Homework must be accompanied by the following statement: *"I pledge my honor that in the preparation of this assignment I have complied with the University of New Mexico Board of Regents' Policy Manual, including Section 4.8, Academic Dishonesty."* The manual is available at `http://www.unm.edu/~brpm/index.html`.