Challenging Problems 1: Language Syntax

due on paper before class on Feb 13, 2012

NOTE: Solutions must be almost entirely correct to count.

1. Give a **non-ambiguous** BNF for each of the following languages

   (a) The set of strings over {d, e, f} that have the same numbers of e's and f's. For example, *dd*, *ddedf* and *edffde* are in the language, but *defe* and *ddf* are not.

   (b) The set of strings over {d, e, f} that contain an odd number of d's and an even number of f's. For example *dff* and *fdefe* are in the language, but *df* and *ddff* are not.

2. Give a **non-ambiguous** BNF for the small core of the Scheme programming language that we are using for this class. You can use N to represent all numbers and ID to represent all names of variables or operators. You language should support numbers, booleans, symbols, lists, functions, and global and local variable declarations.