Programming Languages (CS 329) **Lab 1**
Computer Science and Engineering **Out: 2000-08-17**
Indian Institute of Technology Bombay **Due: 2000-09-07**

1. Does the Scheme evaluator follow applicative or normal order? Write the simplest expression you can to figure out. Turn in the code.

2. Use the applicative order Y designed in Homework 1 to implement two functions without using recursion in Scheme: factorial of a positive integer and length of a list.

3. Write a simple Scheme function which, when given a Church numeral, will output a regular integer suitable for printing. Write in Scheme the exponentiation routine `EXP` which takes two Church numerals $\bar{m}$ and $\bar{n}$ and outputs $\overline{m^n}$. Verify the output to test cases using the transormation from Church numerals to integers.