EECS 345 Homework #6 - due 11/15/05

1. Assuming that `list` contains only positive numbers, then the following recursive Common Lisp function returns the maximum number in the list. Rewrite this function to be tail recursive.

```
(defun maxlist (list)
  (if (null list)
      0
      (max (first list) (maxlist (rest list)))))
```

2. Reimplement the definitions of `DELAY` (with memoization), `FORCE`, `STREAM-CONS`, `STREAM-CAR`, `STREAM-CDR` and `STREAM-NTH` given in class in Common Lisp. Use this stream implementation to define an infinite stream of the Fibonacci numbers. You should then be able to access the *n*th Fibonacci number simply by using `STREAM-NTH` on this stream.

3. Explain how ML would infer a type for the following function. Note that you may need to read Section 6.8 in the textbook carefully in order to fully answer this question.

```
fun fac n =
  if n = 0 then 1
  else n * fac(n-1);
```