

# CS2104 - Programming Language Concepts

## HOMEWORK 8

October 11, 2002

### Guidelines

Please prepare your homework according to the following guidelines:

1. Please prepare your answers in MSWord (.doc file) or plain text (.txt file) format.
  2. All answers should be placed in a single .doc file or .txt file.
  3. You have to upload your homework before the deadline. **No late submission is allowed!**
  4. You must upload your homework using the file name given below.
  5. To upload your homework, follow the link **Workbin** from the course web-site:  
<http://www.comp.nus.edu.sg/~cs2104>
  6. Upload your file into the **HW8** folder of workbin. For file transfer, please FTP only in binary mode (not in ASCII mode).
  7. In the “*Description*” of the file just input a single digit indicating your tutorial group number.
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### Questions

Deadline: Thu 17 Oct 2002, 11:59 PM (*i.e.* before midnight)

**The system might be busy just before the deadline.**

**It is your responsibility to submit well ahead of deadline.**

File name: <NUSNet (Windows) user-name>.doc (for example: isc90000.doc) OR

<NUSNet (Windows) user-name>.txt (for example: isc90000.txt)

First two lines of file: Your name (first line), Your matric (second line)

You can use SML syntax to write your functional programs. Reading on ML appears in the tutorials posted in the course web-site.

QUESTION 1 (1 mark) Define a curried function `applyList` which takes in a list of functions and a value. It applies each function to the value, and produces a list of the results.

QUESTION 2 (1 mark) Consider the higher order function `reduce` whose specification was discussed in class. How can you use this function to find the minimum of a list of real numbers ?

QUESTION 3 (1 mark) Define a function which takes an integer `x` and a binary search tree `T`, and returns true if `x` appears in `T` (it returns false otherwise). How can you generalize your solution to arbitrary binary search trees (where the nodes may not be integers) ?