

CS2104 - Programming Language Concepts

HOMEWORK 10

October 26, 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 **HW10** 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 31 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)

QUESTION 1 (1 mark) Define a Prolog predicate to perform mergesort of a list of integers. Thus you should define a binary predicate whose first argument is an unsorted list, and the second argument is a sorted list.

QUESTION 2 (1 mark) Let L and L1 denote two lists of terms. Write a Prolog predicate to replace the first occurrence of X in L with Y, giving the result in L1.

QUESTION 3 (1 mark) Let L and L1 denote two lists of terms. Write a Prolog predicate to remove all duplicates from L, and returning this list in L1.

QUESTION 4 (1 mark) Consider the Prolog program:

```
find(X) :- not(p(X)).  
p(X) :- q(X), r(X).  
q(f(X)) :- q(X), X \= b.  
r(X) :- X \= a.
```

Assume \neq denotes not-equal-to What happens when the query find(X) is evaluated ?