

CS2104 - Programming Language Concepts

HOMEWORK 4

August 30, 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 **HW4** 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 5 Sep 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) Consider the following program in an imperative language.

```
program main;
  var x: integer;
  procedure sub1 begin writeln(x) end;
  procedure sub2
    var x: integer;
    begin x := 10; sub1
  end;
begin // main begins here
  x:= 5; sub2
end
```

What will be printed if the language is statically scoped ? Explain your answer.

QUESTION 2 (2 marks) Consider the following imperative program.

```
procedure Main;
  integer Globvar;
  integer array List[1..2];
  procedure Subprogram(Parameter: integer);
    begin
      Parameter := 3;
      Globvar := Globvar + 1;
      Parameter := 5;
    end
begin // Main
  List[1] := 1;
  List[2] := 2;
  Globvar := 1;
  Subprogram(List[Globvar]);
  print(List[1], List[2])
end; // Main
```

What is printed if the parameters are passed by (a) name, (b) value (c) reference and (d) value-result ? Explain your answer in each case.

QUESTION 3 (1 mark) Exercise 5.3 of textbook (page 151).