

CSC 461 PROGRAMMING LANGUAGES

Fall 2024 Dr. Krebsbach

Assignment #3 20 Points.

Due: 11:59 PM Wednesday Oct. 9 {QUIZ format to record answers}

{NO LATES ALLOWED}

You will be given multiple choices for each answer, one being “None of the others”. You will choose the answer that matches yours or None if that is the case.

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Q1. For the following program FOO, assuming each scoping method:

- a) Static and
- b) Dynamic Scoping,

show the output x at locations * ** ***

The program execution begins execution in MAIN.

PROGRAM FOO()

VAR x : integer; // this is global

//===== A =====

PROCEDURE A()

VAR d : integer;

BEGIN

x := 5;

d := 6;

B(); // call to B

writeln(x); // output the value of x ***

END // procedure A

//===== B =====

PROCEDURE B()

BEGIN

writeln(x); // output the value of x **

END // procedure B

//===== MAIN =====

PROCEDURE MAIN()

VAR x : integer;

BEGIN // (Program starts here

x := 10;

A(); // call to A

writeln(x); // output the value of x *

END

END. // program FOO

a) Static scoping? X: * _____ ** _____ *** _____

b) Dynamic scoping? X: * _____ ** _____ *** _____

Q2. For the program in Q1, assuming Dynamic Scoping, what would be the referencing environment for statements when executing the first line (so after the BEGIN) in

- a) procedure A? (*include only variable names*)
- b) procedure B? (*include only variable names*)
- c) procedure MAIN? (*include only variable names*)

Q3. True or False

- a) The declaration of a local variable with the same name as a non-local variable can only hide the non-local variable in the local scope when using Static Scoping but not when using Dynamic Scoping.
- b) A globally declared variable will always be visible everywhere in a program.
- c) Run-time overhead is the main reason Dynamic scoping is not chosen over Static scoping.
- d) The type and value are always bound to a variable name at the same time.
- e) A Heap-Dynamic variable typically requires the user to create a Reference or Pointer typed variable to allow them to be accessed by the user.