

COSC 230 Programming Assignment on Compiler Construction

Enhance the PL/0 compiler with at least two additional features of your choice, known or totally new. Possible features are

Type declaration: floating, char, history variable, etc.

Data types: arrays, pointers, records, objects, etc.

Control structures: for, if-then-else, repeat, loop, go to, break, nwhile, etc.

Procedures: procedure parameters, array parameters, etc.

Input statements:

Graphics commands:

Generation of machine instructions other than the PL/0 machine.

Present the following documents in print using word processing

Documentation of the new compiler including the syntax chart. (20)

Documentation of the enhanced PL/0 machine. (10)

Documentation of the sample program. (5)

Annotated object code of the sample program (5)

An annotated snapshot of the stack in execution of the above program (5)

Source code of the compiler (40)

Source code of the sample program (5)

The execution result of the sample object code (5)

What could have been done in this assignment project, but not done due to time limit. Explain briefly how to implement your ideas.(5)

Worth 16 %

Due date 12 May 2006, drop 19 May, both 5:00 pm

Note: Several versions of the PL/0 compiler are available from Prof. Takaoka's home page at <http://www.cosc.canterbury.ac.nz/~tad/cosc230/>.

If you have not enhanced the PL/0 machine, document the existing one.

The sample program must demonstrate your new features.

Your sample program must be meaningful. A meaningful program performs some useful computation. Examples may be greatest common divisor, sorting, etc. If you are not sure about your sample program, ask lecturer or tutor.

Some indications for compiler source: if-then-else + repeat = 30 out of 40
if-then-else + array = 40 out of 40

Examples of meaningful programs are factorial computation, sorting, gcd, etc.

Electronic submission is required for the source code of the compiler and the sample program. Type "submit".

Your work will be based on Version 1 or 3. In the past, several students offered their work for our archive; Thong's version and Ryan's version. You may get some hints from these versions. Try the URL above.