

CS4215 Programming Language Implementation

Challenge C:

Compiling simPL to x86 Machine Code

1 Setting

Early in the project (by Monday, 12/3), the interested student indicates his/her intention to work on the project by email to the lecturer, with a rough outline of the project schedule. Discussions with tutors and lecturer are done on a per-need basis. A mid-way check will be around 20/3, with an informal meeting (tutor and/or lecturer). The project completion date is on Friday, 30/3.

2 Goal

The low-level virtual machine for simPL (Lab Task 7) is sufficiently low-level to be translated to x86 machine code. A practical way of doing this is to transform a given array of sVML instructions to a text file written in x86 assembler code. The assembler code can then be assembled to an x86 executable.

You may use an assembler format of your choice; for details, see http://en.wikipedia.org/wiki/X86_assembly_language.

3 Requirements

- Download http://www.comp.nus.edu.sg/~cs4215/labtasks/challenge_x86.zip
- Look at `simPLcompiler.simplc`. The compiler calls `SimPLtoX86.simPLtoX86` on the given instruction array.
- Modify `SimPLtoX86.simPLtoX86` to achieve the goal stated above, using an assembler format of your choice.
- Submit the resulting file `VerifyMachineCode.java`, and a brief text document that describes the approach you have taken. Include instructions how to assemble resulting `.asm` files, and examples.

4 Submission and Assessment

After project completion, the student sends all software and other documents in a zip file to the lecturer via email. Please include instructions how to install and run the application. The submission will be assessed by the tutors and lecturer. If the project goals are achieved, the student will be asked to present the solution in person to the lecturer and tutors. Sufficient achievement leads to issuing of an Assignment Voucher, which the student can use at the end of the semester to replace any module assignment score by full score.